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NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 4 Laboratory Report, and Data Validation Report, SDG K1602494

Naval Air Warfare Center Weapons Division China Lake
China Lake, California

November 2019

APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

ALS Environmental
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April 28, 2016

Analytical Report for Service Request No: K1602494
Revised Service Request No: K1602494.02

Karin Kaiser
Kleinfelder/Gwen Vineyard
550 West C Street, Suite 1200
San Diego, CA 92101

RE: CCTO-067 - China Lake

Dear Karin,

Enclosed are the results of the sample(s) submitted to our laboratory March 10, 2016
For your reference, these analyses have been assigned our service request number **K1602494.**

The data has been reported on a dry weight basis.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Senior Project
Manager

REVISED
5:47 pm, Apr 28, 2016

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Kleinfelder	**Service Request No.:**	K1602494
Project:	CCTO-067 - China Lake	**Date Received:**	03/10/16
Sample Matrix:	Soil and Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water and eight soil samples were received for analysis at ALS Environmental on 03/10/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Surrogate Exceptions:
The recovery of surrogates in several field and QC samples was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Elevated Detection Limits:
The detection limits were elevated for all analytes in sample KCH067-013. The analysis indicated the presence of non-target background components suppressing the instrument internal standard. The samples were diluted in order to achieve optimal resolution of the target analytes.

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Chain of Custody

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Chain of Custody Form

K1602494

COC# 067- 3/8
Page 1 of 2

NAWS China Lake,Groundwater and Soil Investigations,CTO 067	Sampler: Bill Bergeron	
Project Chemist: Karin Kaiser	Sampler Phone: 781 5724574	Date: 3/8/16
Contact: kkaiser@kleinfelder.com; 720-612-0485	Signature:	

Analytical Laboratory
ALS-KELSO
1317 South 13th Avenue
Kelso, WA 98626
(360) 577-7222
Attn: Greg Salata

28-day LIV package &
EQuIS LOD/LOQ EFWEDD

Deliver data to
kkaiser@kleinfelder.com &
gkellar@kleinfelder.com

General Comments:
P=Preserved;
U=Unpreserved;
FP=Filtered/Preserved

Sample ID	Location ID	Sample Matrix	Sample Date	Sample Time	# Containers	PFOA/PFOS/PFBS-LC/MS/MS											Sample Comments
KCH067-009	KCHAOC166-SB045L	S	3/8	1400	1	U											
KCH067-010	" SUB			1405	1	U											
KCH067-011	SUB			1410	1	U											
KCH067-012	KCHAOC166-SB035L			1420	1	U											
KCH067-013	" SUB			1425	1	U											
KCH067-014	" SUB			1430	1	U											
KCH067-015	KCHAOC166-SB025L			1450	1	U											
KCH067-016	" SUB	↓	↓	1500	1	U											

Sample Transport:
Lab Courier ☐
Shipping Company: ~~FEDEX~~

Sample Disposal
Disposal by Lab - 60 day retention

Tracking # 8092 1486 5099

Relinquished by:	Date:	Time:	Received by: ALS	Date: 3/10/16	Time: 1000
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

KI6008494

Chain of Custody Form

COC# 067- 3/8
Page 2 of 2

NAWS China Lake,Groundwater and Soil Investigations,CTO 067	Sampler: Bill Bergeron	
Project Chemist: Karin Kaiser	Sampler Phone: 781 572 4574	Date: 3/8/16
Contact: kkaiser@kleinfelder.com; 720-612-0485	Signature:	

Analytical Laboratory
ALS-KELSO
1317 South 13th Avenue
Kelso, WA 98626
(360) 577-7222
Attn: Greg Salata

28-day LIV package &
EQuIS LOD/LOQ EFWEDD

Deliver data to
kkaiser@kleinfelder.com &
gkellar@kleinfelder.com

General Comments:
P=Preserved;
U=Unpreserved;
FP=Filtered/Preserved

Sample ID	Location ID	Sample Matrix	Sample Date	Sample Time	# Containers	PFOA/PFOS/PFBS-LC/MS/MS	Sample Comments
KCH067- 016 MS	KCHA0x166-SB02x[illegible]	S	3/8	1500	1	U	
KCH067- 016 MSD	" "	S	3/8	1500	1	U	
KCH067- 019	RINSATE KCHA0x166-SB01x[illegible]	W	3/8	1735	2	U	
KCH067-							
KCH067-							
KCH067-							
KCH067-							
KCH067-							

PSB 3/8/16

Sample Transport:
Lab Courier ☐
Shipping Company: ☐

Sample Disposal
Disposal by Lab - 60 day retention
Tracking #

Relinquished by:	Date:	Time:	Received by:	Date: 3/10/16	Time: 1000
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

PC Greg

Cooler Receipt and Preservation Form

Client KCH Service Request K16 07494

Received: 3/10/16 Opened: 3/10/16 By: MM Unloaded: 3/10/16 By: MM

1. Samples were received via? *Mail* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where?_____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
-0.5	-0.6	1.4	1.3	-0.1	359	✓	7825 5607 7062	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page____ of____

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:00
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-009	**Units:**	ng/g
Lab Code:	K1602494-001	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND	U	1.0	0.20	0.092	1	04/19/16 00:02	3/16/16	
Perfluorooctanoic Acid	**0.35**	**J**	1.0	0.21	0.21	1	04/19/16 00:02	3/16/16	
Perfluorooctane Sulfonate	**0.41**	**J**	1.0	0.20	0.061	1	04/19/16 00:02	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	74	70 - 130	04/19/16 00:02	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	65	70 - 130	04/19/16 00:02	*
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	80	70 - 130	04/19/16 00:02	

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:05
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-010	**Units:**	ng/g
Lab Code:	K1602494-002	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	0.95	0.20	0.090	1	04/19/16 00:12	3/16/16	
Perfluorooctanoic Acid	ND U	0.95	0.20	0.20	1	04/19/16 00:12	3/16/16	
Perfluorooctane Sulfonate	ND U	0.95	0.20	0.060	1	04/19/16 00:12	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	83	70 - 130	04/19/16 00:12	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	73	70 - 130	04/19/16 00:12	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	88	70 - 130	04/19/16 00:12	

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:10
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-011	**Units:**	ng/g
Lab Code:	K1602494-003	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND	U	0.92	0.20	0.090	1	04/19/16 00:22	3/16/16	
Perfluorooctanoic Acid	**0.29**	**J**	0.92	0.20	0.20	1	04/19/16 00:22	3/16/16	
Perfluorooctane Sulfonate	**0.44**	**J**	0.92	0.20	0.060	1	04/19/16 00:22	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	75	70 - 130	04/19/16 00:22	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	65	70 - 130	04/19/16 00:22	*
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	82	70 - 130	04/19/16 00:22	

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:20
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-012	**Units:**	ng/g
Lab Code:	K1602494-004	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND	U	0.95	0.20	0.090	1	04/19/16 00:33	3/16/16	
Perfluorooctanoic Acid	**0.27**	**J**	0.95	0.20	0.20	1	04/19/16 00:33	3/16/16	
Perfluorooctane Sulfonate	**0.24**	**J**	0.95	0.20	0.060	1	04/19/16 00:33	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	86	70 - 130	04/19/16 00:33	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	77	70 - 130	04/19/16 00:33	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	87	70 - 130	04/19/16 00:33	

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:25
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-013	**Units:**	ng/g
Lab Code:	K1602494-005	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	9.8	2.0	0.90	10	04/19/16 14:10	3/16/16	
Perfluorooctanoic Acid	ND U	9.8	2.0	2.0	10	04/19/16 14:10	3/16/16	
Perfluorooctane Sulfonate	ND U	9.8	2.0	0.60	10	04/19/16 14:10	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	142	70 - 130	04/19/16 14:10	*
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	147	70 - 130	04/19/16 14:10	*
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	153	70 - 130	04/19/16 14:10	*

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:30
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-014	**Units:**	ng/g
Lab Code:	K1602494-006	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND	U	0.97	0.20	0.090	1	04/19/16 00:53	3/16/16	
Perfluorooctanoic Acid	**0.21**	**J**	0.97	0.20	0.20	1	04/19/16 00:53	3/16/16	
Perfluorooctane Sulfonate	**0.10**	**J**	0.97	0.20	0.060	1	04/19/16 00:53	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	82	70 - 130	04/19/16 00:53	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	85	70 - 130	04/19/16 00:53	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	91	70 - 130	04/19/16 00:53	

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:50
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-015	**Units:**	ng/g
Lab Code:	K1602494-007	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND	U	1.0	0.20	0.093	1	04/19/16 14:41	3/16/16	
Perfluorooctanoic Acid	**0.27**	**J**	1.0	0.21	0.21	1	04/19/16 14:41	3/16/16	
Perfluorooctane Sulfonate	**1.6**		1.0	0.20	0.062	1	04/19/16 14:41	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	81	70 - 130	04/19/16 14:41	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	90	70 - 130	04/19/16 14:41	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	81	70 - 130	04/19/16 14:41	

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 15:00
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-016	**Units:**	ng/g
Lab Code:	K1602494-008	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	**0.10 J**	0.95	0.20	0.090	1	04/19/16 01:33	3/16/16	
Perfluorooctanoic Acid	**0.24 J**	0.95	0.20	0.20	1	04/19/16 01:33	3/16/16	
Perfluorooctane Sulfonate	**0.37 J**	0.95	0.20	0.060	1	04/19/16 01:33	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	76	70 - 130	04/19/16 01:33	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	77	70 - 130	04/19/16 01:33	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	80	70 - 130	04/19/16 01:33	

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 17:35
Sample Matrix:	Water	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-019	**Units:**	ng/L
Lab Code:	K1602494-009	**Basis:**	NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND	U	4.3	1.2	0.41	1	03/17/16 23:52	3/17/16	
Perfluorooctanoic Acid	**0.47**	**J**	4.3	0.80	0.27	1	03/17/16 23:52	3/17/16	
Perfluorooctane Sulfonate	ND	U	4.3	1.2	0.60	1	03/17/16 23:52	3/17/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	82	20 - 128	03/17/16 23:52	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	83	13 - 142	03/17/16 23:52	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	82	11 - 131	03/17/16 23:52	

Analytical Report

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/g
Lab Code:	KQ1602426-04	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	1.0	0.20	0.090	1	04/18/16 23:22	3/16/16	
Perfluorooctanoic Acid	ND U	1.0	0.20	0.20	1	04/18/16 23:22	3/16/16	
Perfluorooctane Sulfonate	ND U	1.0	0.20	0.060	1	04/18/16 23:22	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	80	70 - 130	04/18/16 23:22	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	71	70 - 130	04/18/16 23:22	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	85	70 - 130	04/18/16 23:22	

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KQ1602477-03	**Basis:**	NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND	U	5.0	1.2	0.41	1	03/17/16 22:20	3/17/16	
Perfluorooctanoic Acid	**0.48**	**J**	5.0	0.80	0.27	1	03/17/16 22:20	3/17/16	
Perfluorooctane Sulfonate	ND	U	5.0	1.2	0.60	1	03/17/16 22:20	3/17/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	84	20 - 128	03/17/16 22:20	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	87	13 - 142	03/17/16 22:20	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	88	11 - 131	03/17/16 22:20	

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake
Sample Matrix: Soil

SURROGATE RECOVERY SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Extraction Method: EPA 3550B

Sample Name	Lab Code	Sodium perfluoro-1-hexane [18O2]sulfonate 70 - 130	Perfluoro-n-[1,2,3,4-13C4] octanoic acid 70 - 130	Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate 70 - 130
KCH067-009	K1602494-001	74	65 *	80
KCH067-010	K1602494-002	83	73	88
KCH067-011	K1602494-003	75	65 *	82
KCH067-012	K1602494-004	86	77	87
KCH067-013	K1602494-005	142 *	147 *	153 *
KCH067-014	K1602494-006	82	85	91
KCH067-015	K1602494-007	81	90	81
KCH067-016	K1602494-008	76	77	80
KCH067-016	KQ1602426-01	72	69 *	74
KCH067-016	KQ1602426-02	72	68 *	80
Lab Control Sample	KQ1602426-03	84	67 *	86
Method Blank	KQ1602426-04	80	71	85

REVISED
5:45 pm, Apr 28, 2016

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Extraction Method: EPA 3535A

Sample Name	Lab Code	Sodium perfluoro-1-hexane [18O2]sulfonate 20 - 128	Perfluoro-n-[1,2,3,4-13C4] octanoic acid 13 - 142	Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate 11 - 131
KCH067-019	K1602494-009	82	83	82
Lab Control Sample	KQ1602477-01	78	80	81
Duplicate Lab Control Sample	KQ1602477-02	78	82	81
Method Blank	KQ1602477-03	84	87	88

REVISED
5:45 pm, Apr 28, 2016

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Date Analyzed:** 03/17/16 21:44

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 031716\1019.wiff **Lab Code:** KQ1602612-01
Instrument ID: K-LCMS-02 **Analysis Lot:** 488491
Analysis Method: PFC/537M **Signal ID:** 1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	505,711	10.8
Upper Limit ==>	758,567	11.80
Lower Limit ==>	252,856	9.80

Associated Analyses

Continuing Calibration Verification	KQ1602612-01	470257.44	10.8
Method Blank	KQ1602477-03	539599.53	10.8
Lab Control Sample	KQ1602477-01	550427.20	10.8
Duplicate Lab Control Sample	KQ1602477-02	550957.43	10.8
KCH067-019	K1602494-009	558629.74	10.8

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Date Analyzed:** 03/17/16 21:44

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 031716\1031.wiff **Lab Code:** KQ1602612-02
Instrument ID: K-LCMS-02 **Analysis Lot:** 488491
Analysis Method: PFC/537M **Signal ID:** 1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	505,711	10.8
Upper Limit ==>	758,567	11.80
Lower Limit ==>	252,856	9.80

Associated Analyses

Continuing Calibration Verification	KQ1602612-02	512344.43	10.8

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Date Analyzed:** 03/17/16 21:44

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 031716\1043.wiff **Lab Code:** KQ1602612-03
Instrument ID: K-LCMS-02 **Analysis Lot:** 488491
Analysis Method: PFC/537M **Signal ID:** 1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	505,711	10.8
Upper Limit ==>	758,567	11.80
Lower Limit ==>	252,856	9.80

Associated Analyses

Continuing Calibration Verification	KQ1602612-03	523075.67	10.8

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Date Analyzed:** 04/18/16 23:02

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041816\2020.wiff **Lab Code:** KQ1603722-01
Instrument ID: K-LCMS-02 **Analysis Lot:** 492329
Analysis Method: PFC/537M **Signal ID:** 1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	3,067,548	6.97
Upper Limit ==>	4,601,322	7.97
Lower Limit ==>	1,533,774	5.97

Associated Analyses

Continuing Calibration Verification	KQ1603722-01	3176765.45	6.97
Method Blank	KQ1602426-04	3491886.97	6.97
Lab Control Sample	KQ1602426-03	3893250.27	6.97
KCH067-009	K1602494-001	3998063.58	6.97
KCH067-010	K1602494-002	4044251.13	6.96
KCH067-011	K1602494-003	4051751.87	6.97
KCH067-012	K1602494-004	4096475.83	6.97
KCH067-014	K1602494-006	3804992.65	6.96

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Date Analyzed:** 04/18/16 23:02

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041816\2032.wiff **Lab Code:** KQ1603722-02
Instrument ID: K-LCMS-02 **Analysis Lot:** 492329
Analysis Method: PFC/537M **Signal ID:** 1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	3,067,548	6.97
Upper Limit ==>	4,601,322	7.97
Lower Limit ==>	1,533,774	5.97

Associated Analyses

Continuing Calibration Verification	KQ1603722-02	3297668.99	6.96
KCH067-016	K1602494-008	4385805.39	6.96
KCH067-016	KQ1602426-01	4282526.39	6.96
KCH067-016	KQ1602426-02	3809014.40	6.97

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Date Analyzed:** 04/18/16 23:02

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041816\2044.wiff **Lab Code:** KQ1603722-03
Instrument ID: K-LCMS-02 **Analysis Lot:** 492329
Analysis Method: PFC/537M **Signal ID:** 1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	3,067,548	6.97
Upper Limit ==>	4,601,322	7.97
Lower Limit ==>	1,533,774	5.97

Associated Analyses

Continuing Calibration Verification	KQ1603722-03	3149713.14	6.96

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake **Date Analyzed:**04/18/16 23:02

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041816\2056.wiff **Lab Code:**KQ1603722-04
Instrument ID: K-LCMS-02 **Analysis Lot:**492329
Analysis Method: PFC/537M **Signal ID:**1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	3,067,548	6.97
Upper Limit ==>	4,601,322	7.97
Lower Limit ==>	1,533,774	5.97

Associated Analyses

Continuing Calibration Verification	KQ1603722-04	3488322.07	6.94

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake **Date Analyzed:**04/18/16 23:02

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041816\2061.wiff **Lab Code:**KQ1603722-05
Instrument ID: K-LCMS-02 **Analysis Lot:**492329
Analysis Method: PFC/537M **Signal ID:**1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	3,067,548	6.97
Upper Limit ==>	4,601,322	7.97
Lower Limit ==>	1,533,774	5.97

Associated Analyses

Continuing Calibration Verification	KQ1603722-05	3358215.34	6.93

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Date Analyzed:** 04/18/16 23:02

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041916\5032.wiff **Lab Code:** KQ1603722-06
Instrument ID: K-LCMS-02 **Analysis Lot:** 492329
Analysis Method: PFC/537M **Signal ID:** 1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	3,067,548	6.97
Upper Limit ==>	4,601,322	7.97
Lower Limit ==>	1,533,774	5.97

Associated Analyses

Continuing Calibration Verification	KQ1603722-06	2913957.97	6.51
KCH067-013	K1602494-005	3882501.64	6.51
KCH067-015	K1602494-007	4295265.49	6.51

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake **Date Analyzed:**04/18/16 23:02

Internal Standard Area and RT SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041916\5038.wiff **Lab Code:**KQ1603722-07
Instrument ID: K-LCMS-02 **Analysis Lot:**492329
Analysis Method: PFC/537M **Signal ID:**1

	N-methyl-d3-perfluoro-1-octanesulfonamide	
	Area	**RT**
ICAL Result ==>	3,067,548	6.97
Upper Limit ==>	4,601,322	7.97
Lower Limit ==>	1,533,774	5.97

Associated Analyses

Continuing Calibration Verification	KQ1603722-07	2961838.71	6.51

Superset Reference:

REVISED
5:46 pm, Apr 28, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16
Sample Matrix:	Soil	**Date Received:**	03/10/16
		Date Analyzed:	04/19/16
		Date Extracted:	03/16/16

Duplicate Matrix Spike Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Sample Name:	KCH067-016	**Units:**	ng/g
Lab Code:	K1602494-008	**Basis:**	Dry
Analysis Method:	PFC/537M		
Prep Method:	EPA 3550B		

		Matrix Spike			**Duplicate Matrix Spike**					
		KQ1602426-01			KQ1602426-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perfluorobutane Sulfonate	0.10 J	31.9	37.5	85	36.4	39.2	93	70-130	9	30
Perfluorooctane Sulfonate	0.37 J	35.9	37.5	95	38.4	39.2	97	70-130	2	30
Perfluorooctanoic Acid	0.24 J	35.0	37.5	93	41.0	39.2	104	70-130	11	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Analyzed:**	04/18/16
Sample Matrix:	Soil	**Date Extracted:**	03/16/16

Lab Control Sample Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method:	PFC/537M	**Units:**	ng/g
Prep Method:	EPA 3550B	**Basis:**	As Received
		Analysis Lot:	492329

Lab Control Sample
KQ1602426-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Perfluorobutane Sulfonate	33.9	40.0	85	70-130
Perfluorooctane Sulfonate	32.7	40.0	82	70-130
Perfluorooctanoic Acid	36.7	40.0	92	70-130

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Analyzed:**	03/17/16
Sample Matrix:	Water	**Date Extracted:**	03/17/16

Duplicate Lab Control Sample Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method:	PFC/537M	**Units:**	ng/L
Prep Method:	EPA 3535A	**Basis:**	NA
		Analysis Lot:	488491

	Lab Control Sample KQ1602477-01			Duplicate Lab Control Sample KQ1602477-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perfluorobutane Sulfonate	156	160	98	147	160	92	70-127	6	30
Perfluorooctane Sulfonate	159	160	99	152	160	95	74-135	4	30
Perfluorooctanoic Acid	151	160	94	140	160	87	72-130	7	30

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Analyzed:**	04/18/16 23:22
Sample Matrix:	Soil	**Date Extracted:**	03/16/16

Method Blank Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Sample Name:	Method Blank	**Instrument ID:**	K-LCMS-02
Lab Code:	KQ1602426-04	**File ID:**	041816\2022.wiff
Analysis Method:	PFC/537M	**Analysis Lot:**	492329
Prep Method:	EPA 3550B	**Extraction Lot:**	257445

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1602426-03	041816\2023.wiff	04/18/16 23:32
KCH067-009	K1602494-001	041816\2026.wiff	04/19/16 00:02
KCH067-010	K1602494-002	041816\2027.wiff	04/19/16 00:12
KCH067-011	K1602494-003	041816\2028.wiff	04/19/16 00:22
KCH067-012	K1602494-004	041816\2029.wiff	04/19/16 00:33
KCH067-014	K1602494-006	041816\2031.wiff	04/19/16 00:53
KCH067-016	K1602494-008	041816\2035.wiff	04/19/16 01:33
KCH067-016	KQ1602426-01	041816\2036.wiff	04/19/16 01:43
KCH067-016	KQ1602426-02	041816\2037.wiff	04/19/16 01:53
KCH067-013	K1602494-005	041916\5034.wiff	04/19/16 14:10
KCH067-015	K1602494-007	041916\5037.wiff	04/19/16 14:41

Client: Kleinfelder
Project: CCTO-067 - China Lake
Sample Matrix: Water

Service Request:K1602494
Date Analyzed:03/17/16 22:20
Date Extracted:03/17/16

Method Blank Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Sample Name: Method Blank
Lab Code: KQ1602477-03

Instrument ID:K-LCMS-02
File ID:031716\1021.wiff

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analysis Lot:488491
Extraction Lot:257569

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1602477-01	031716\1022.wiff	03/17/16 22:39
Duplicate Lab Control Sample	KQ1602477-02	031716\1023.wiff	03/17/16 22:57
KCH067-019	K1602494-009	031716\1026.wiff	03/17/16 23:52

Client: Kleinfelder
Project: CCTO-067 - China Lake
Sample Matrix: Soil

Service Request:K1602494
Date Analyzed:04/18/16 23:32
Date Extracted:03/16/16

Lab Control Sample Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Sample Name: Lab Control Sample
Lab Code: KQ1602426-03

Instrument ID:K-LCMS-02
File ID:041816\2023.wiff

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analysis Lot:492329
Extraction Lot:257445

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1602426-04	041816\2022.wiff	04/18/16 23:22
KCH067-009	K1602494-001	041816\2026.wiff	04/19/16 00:02
KCH067-010	K1602494-002	041816\2027.wiff	04/19/16 00:12
KCH067-011	K1602494-003	041816\2028.wiff	04/19/16 00:22
KCH067-012	K1602494-004	041816\2029.wiff	04/19/16 00:33
KCH067-014	K1602494-006	041816\2031.wiff	04/19/16 00:53
KCH067-016	K1602494-008	041816\2035.wiff	04/19/16 01:33
KCH067-016	KQ1602426-01	041816\2036.wiff	04/19/16 01:43
KCH067-016	KQ1602426-02	041816\2037.wiff	04/19/16 01:53
KCH067-013	K1602494-005	041916\5034.wiff	04/19/16 14:10
KCH067-015	K1602494-007	041916\5037.wiff	04/19/16 14:41

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Analyzed:**	03/17/16 22:39
Sample Matrix:	Water	**Date Extracted:**	03/17/16

Lab Control Sample Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-LCMS-02
Lab Code:	KQ1602477-01	**File ID:**	031716\1022.wiff
Analysis Method:	PFC/537M	**Analysis Lot:**	488491
Prep Method:	EPA 3535A	**Extraction Lot:**	257569

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1602477-03	031716\1021.wiff	03/17/16 22:20
Duplicate Lab Control Sample	KQ1602477-02	031716\1023.wiff	03/17/16 22:57
KCH067-019	K1602494-009	031716\1026.wiff	03/17/16 23:52

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake **Date Analyzed:**03/17/16 21:44

Tune Summary

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 031716\1019.wiff **Analytical Method:** PFC/537M
Instrument ID: K-LCMS-02 **Analysis Lot:** 488491

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1602612-01	031716\1019.wiff	03/17/16 21:44	
Method Blank	KQ1602477-03	031716\1021.wiff	03/17/16 22:20	
Lab Control Sample	KQ1602477-01	031716\1022.wiff	03/17/16 22:39	
Duplicate Lab Control Sample	KQ1602477-02	031716\1023.wiff	03/17/16 22:57	
KCH067-019	K1602494-009	031716\1026.wiff	03/17/16 23:52	
Continuing Calibration Verification	KQ1602612-02	031716\1031.wiff	03/18/16 01:24	
Continuing Calibration Verification	KQ1602612-03	031716\1043.wiff	03/18/16 05:04	

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake **Date Analyzed:**03/17/16 21:44

Tune Summary

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

File ID: 041816\2020.wiff **Analytical Method:** PFC/537M
Instrument ID: K-LCMS-02 **Analysis Lot:** 492329

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1603722-01	041816\2020.wiff	04/18/16 23:02	
Method Blank	KQ1602426-04	041816\2022.wiff	04/18/16 23:22	
Lab Control Sample	KQ1602426-03	041816\2023.wiff	04/18/16 23:32	
KCH067-009	K1602494-001	041816\2026.wiff	04/19/16 00:02	
KCH067-010	K1602494-002	041816\2027.wiff	04/19/16 00:12	
KCH067-011	K1602494-003	041816\2028.wiff	04/19/16 00:22	
KCH067-012	K1602494-004	041816\2029.wiff	04/19/16 00:33	
KCH067-014	K1602494-006	041816\2031.wiff	04/19/16 00:53	
Continuing Calibration Verification	KQ1603722-02	041816\2032.wiff	04/19/16 01:03	
KCH067-016	K1602494-008	041816\2035.wiff	04/19/16 01:33	
KCH067-016	KQ1602426-01	041816\2036.wiff	04/19/16 01:43	
KCH067-016	KQ1602426-02	041816\2037.wiff	04/19/16 01:53	
Continuing Calibration Verification	KQ1603722-03	041816\2044.wiff	04/19/16 03:04	
Continuing Calibration Verification	KQ1603722-04	041816\2056.wiff	04/19/16 05:05	
Continuing Calibration Verification	KQ1603722-05	041816\2061.wiff	04/19/16 05:56	
Continuing Calibration Verification	KQ1603722-06	041916\5032.wiff	04/19/16 13:50	
KCH067-013	K1602494-005	041916\5034.wiff	04/19/16 14:10	
KCH067-015	K1602494-007	041916\5037.wiff	04/19/16 14:41	
Continuing Calibration Verification	KQ1603722-07	041916\5038.wiff	04/19/16 14:51	

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Calibration Date:** 4/18/2016

Initial Calibration Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Calibration ID: KC1600049 **Signal ID:** 1
Instrument ID: K-LCMS-02

#	Lab Code	Sample Name	File Location	Aquisition Date
01	KC1600049-01	PFC 0.10ppb	041816\2010.wiff	04/18/2016 21:21
02	KC1600049-02	PFC 0.25ppb	041816\2011.wiff	04/18/2016 21:31
03	KC1600049-03	PFC 0.50ppb	041816\2012.wiff	04/18/2016 21:41
04	KC1600049-04	PFC 1.00ppb	041816\2013.wiff	04/18/2016 21:51
05	KC1600049-05	PFC 5.00ppb	041816\2014.wiff	04/18/2016 22:01
06	KC1600049-06	PFC 10.0ppb	041816\2015.wiff	04/18/2016 22:11
07	KC1600049-07	PFC 20.0ppb	041816\2016.wiff	04/18/2016 22:21
08	KC1600049-08	PFC 50.0ppb	041816\2017.wiff	04/18/2016 22:31
09	KC1600049-09	PFC 100ppb	041816\2018.wiff	04/18/2016 22:41

Analyte **Curve Fit** **Weighting**

Perfluorobutane Sulfonate **Average RF** **RSD = 11.31** **Average RF = 2.782**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.129	02	0.250	2.904	03	0.500	3.101	04	1.00	2.929
05	5.00	2.707	06	10.0	2.767	07	20.0	2.546	08	50.0	2.172

Perfluorooctanoic Acid **Average RF** **RSD = 16.12** **Average RF = 0.539**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.6869	04	1.00	0.5968	05	5.00	0.5171	06	10.0	0.4966
07	20.0	0.4864	08	50.0	0.4521						

Perfluorooctane Sulfonate **Average RF** **RSD = 10.70** **Average RF = 0.990**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.032	02	0.250	1.049	03	0.500	1.133	04	1.00	1.073
05	5.00	0.9702	06	10.0	0.9808	07	20.0	0.8648	08	50.0	0.8173

Sodium perfluoro-1-hexane[18O2]sulfonate **Average RF** **RSD = 5.72** **Average RF = 2.759**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20.0	3.003	02	20.0	2.938	03	20.0	2.792	04	20.0	2.719
05	20.0	2.616	06	20.0	2.799	07	20.0	2.537	08	20.0	2.666

Perfluoro-n-[1,2,3,4-13C4] octanoic acid **Average RF** **RSD = 6.62** **Average RF = 3.804**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20.0	3.919	02	20.0	4.287	03	20.0	3.905	04	20.0	3.858
05	20.0	3.512	06	20.0	3.785	07	20.0	3.563	08	20.0	3.603

Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate **Average RF** **RSD = 5.51** **Average RF = 5.990**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20.0	6.439	02	20.0	6.443	03	20.0	5.806	04	20.0	5.924
05	20.0	5.636	06	20.0	6.22	07	20.0	5.745	08	20.0	5.708

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Calibration Date:** 3/17/2016

Initial Calibration Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Calibration ID: KC1600032 **Signal ID:** 1
Instrument ID: K-LCMS-02

#	Lab Code	Sample Name	File Location	Aquisition Date
01	KC1600032-01	PFC 0.02ppb	031716\1008.wiff	03/17/2016 18:22
02	KC1600032-02	PFC 0.05ppb	031716\1009.wiff	03/17/2016 18:41
03	KC1600032-03	PFC 0.10ppb	031716\1010.wiff	03/17/2016 18:59
04	KC1600032-04	PFC 0.25ppb	031716\1011.wiff	03/17/2016 19:17
05	KC1600032-05	PFC 0.50ppb	031716\1012.wiff	03/17/2016 19:36
06	KC1600032-06	PFC 1.0ppb	031716\1013.wiff	03/17/2016 19:54
07	KC1600032-07	PFC 5.0ppb	031716\1014.wiff	03/17/2016 20:12
08	KC1600032-08	PFC 10ppb	031716\1015.wiff	03/17/2016 20:31
09	KC1600032-09	PFC 20ppb	031716\1016.wiff	03/17/2016 20:49
10	KC1600032-10	PFC 50ppb	031716\1017.wiff	03/17/2016 21:07

Analyte **Curve Fit** **Weighting**

Perfluorobutane Sulfonate **Average RF** **RSD = 10.22** **Average RF = 3.463**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0200	4.05	02	0.0500	3.877	03	0.100	3.339	04	0.250	3.405
05	0.500	3.376	06	1.00	3.673	07	5.00	3.283	08	10.0	3.306
09	20.0	2.863									

Perfluorooctanoic Acid **Average RF** **RSD = 14.07** **Average RF = 0.560**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.0500	0.7215	03	0.100	0.579	04	0.250	0.5687	05	0.500	0.5491
06	1.00	0.5845	07	5.00	0.5004	08	10.0	0.5233	09	20.0	0.4535

Perfluorooctane Sulfonate **Average RF** **RSD = 7.74** **Average RF = 0.885**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0200	0.9752	02	0.0500	0.908	03	0.100	0.8583	04	0.250	0.8957
05	0.500	0.8583	06	1.00	0.9605	07	5.00	0.8606	08	10.0	0.9047
09	20.0	0.7412									

Sodium perfluoro-1-hexane[18O2]sulfonate **Average RF** **RSD = 10.36** **Average RF = 2.691**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.00	2.408	02	5.00	3.088	03	5.00	2.613	04	5.00	2.587
05	5.00	2.933	06	5.00	2.965	07	5.00	2.99	08	5.00	2.571
09	5.00	2.435	10	5.00	2.314						

Perfluoro-n-[1,2,3,4-13C4] octanoic acid **Average RF** **RSD = 8.09** **Average RF = 4.449**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.00	4.184	02	5.00	4.857	03	5.00	4.317	04	5.00	4.414
05	5.00	4.645	06	5.00	4.748	07	5.00	5.033	08	5.00	4.233
09	5.00	4.183	10	5.00	3.88						

Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate **Average RF** **RSD = 9.79** **Average RF = 5.139**
Control Criteria ≤

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Calibration Date:** 3/17/2016

Initial Calibration Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Calibration ID: KC1600032 **Signal ID:** 1
Instrument ID: K-LCMS-02

Analyte			Curve Fit			Weighting					
01	5.00	5.147	02	5.00	5.913	03	5.00	5.072	04	5.00	5.235
05	5.00	5.484	06	5.00	5.441	07	5.00	5.525	08	5.00	4.721
09	5.00	4.662	10	5.00	4.188						

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Calibration Date:** 4/18/2016

Initial Calibration Verification Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Calibration ID: KC1600049 **Signal ID:** 1
Instrument ID: K-LCMS-02

#	Lab Code	Sample Name	File Location	Aquisition Date
10	KC1600049-10	PFC 20.0ppb ICV	041816\2020.wiff	04/18/2016 23:02

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Perfluorobutane Sulfonate	20.0	20.3	2.782	2.824	1.51	±25	Average RF
Perfluorooctanoic Acid	20.0	21.6	0.539	0.584	8.20	±25	Average RF
Perfluorooctane Sulfonate	20.0	20.3	0.990	1.007	1.75	±25	Average RF
Sodium perfluoro-1-hexane[18O2]sulfonate	20.0	18.2	2.759	2.513	-8.920	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	16.4	3.804	3.119	-18.001	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	18.8	5.990	5.632	-5.983	±25	Average RF

Client: Kleinfelder **Service Request:** K1602494
Project: CCTO-067 - China Lake **Calibration Date:** 3/17/2016

Initial Calibration Verification Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Calibration ID: KC1600032 **Signal ID:** 1
Instrument ID: K-LCMS-02

#	Lab Code	Sample Name	File Location	Aquisition Date
11	KC1600032-11	PFC 2ppb ICV	031716\1019.wiff	03/17/2016 21:44

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Perfluorobutane Sulfonate	2.00	2.29	3.463	3.970	14.62	±25	Average RF
Perfluorooctanoic Acid	2.00	2.18	0.560	0.612	9.24	±25	Average RF
Perfluorooctane Sulfonate	2.00	2.44	0.885	1.078	21.81	±25	Average RF
Sodium perfluoro-1-hexane[18O2]sulfonate	5.00	5.48	2.691	2.950	9.64	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	5.00	5.51	4.449	4.904	10.21	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	5.00	5.26	5.139	5.403	5.14	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 03/17/16 21:44

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 031716\1019.wiff

Calibration Date: 3/17/2016 12:00:00 AM
Calibration ID: KC1600032
Analysis Lot: 488491
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	2.00	2.29	3.463	3.970	14.6	NA	±25	Average RF
Perfluorooctanoic Acid	2.00	2.19	0.560	0.612	9.2	NA	±25	Average RF
Perfluorooctane Sulfonate	2.00	2.44	0.885	1.078	21.8	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	5.00	5.48	2.691	2.950	9.6	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	5.00	5.51	4.449	4.904	10.2	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	5.00	5.26	5.139	5.403	5.1	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 03/18/16 01:24

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 031716\1031.wiff

Calibration Date: 3/17/2016 12:00:00 AM
Calibration ID: KC1600032
Analysis Lot: 488491
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	1.00	1.04	3.463	3.611	4.3	NA	±25	Average RF
Perfluorooctanoic Acid	1.00	0.989	0.560	0.554	-1.1	NA	±25	Average RF
Perfluorooctane Sulfonate	1.00	1.05	0.885	0.931	5.2	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	5.00	5.66	2.691	3.048	13.3	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	5.00	5.68	4.449	5.053	13.6	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	5.00	5.65	5.139	5.803	12.9	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 03/18/16 05:04

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 031716\1043.wiff

Calibration Date: 3/17/2016 12:00:00 AM
Calibration ID: KC1600032
Analysis Lot: 488491
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	1.00	1.05	3.463	3.638	5.0	NA	±25	Average RF
Perfluorooctanoic Acid	1.00	0.970	0.560	0.543	-3.0	NA	±25	Average RF
Perfluorooctane Sulfonate	1.00	1.10	0.885	0.970	9.7	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	5.00	5.61	2.691	3.020	12.3	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	5.00	5.95	4.449	5.291	18.9	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	5.00	5.82	5.139	5.986	16.5	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 04/18/16 23:02

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 041816\2020.wiff

Calibration Date: 4/18/2016 12:00:00 AM
Calibration ID: KC1600049
Analysis Lot: 492329
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	20.0	20.3	2.782	2.824	1.5	NA	±25	Average RF
Perfluorooctanoic Acid	20.0	21.6	0.539	0.584	8.2	NA	±25	Average RF
Perfluorooctane Sulfonate	20.0	20.4	0.990	1.007	1.7	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	20.0	18.2	2.759	2.513	-8.9	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	16.4	3.804	3.119	-18.0	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	18.8	5.990	5.632	-6.0	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 04/19/16 01:03

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 041816\2032.wiff

Calibration Date: 4/18/2016 12:00:00 AM
Calibration ID: KC1600049
Analysis Lot: 492329
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	10.0	9.92	2.782	2.760	-0.8	NA	±25	Average RF
Perfluorooctanoic Acid	10.0	9.18	0.539	0.495	-8.2	NA	±25	Average RF
Perfluorooctane Sulfonate	10.0	9.81	0.990	0.971	-1.9	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	20.0	18.9	2.759	2.608	-5.5	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	17.0	3.804	3.230	-15.1	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	19.3	5.990	5.789	-3.4	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 04/19/16 03:04

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 041816\2044.wiff

Calibration Date: 4/18/2016 12:00:00 AM
Calibration ID: KC1600049
Analysis Lot: 492329
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	10.0	9.94	2.782	2.764	-0.6	NA	±25	Average RF
Perfluorooctanoic Acid	10.0	9.80	0.539	0.529	-2.0	NA	±25	Average RF
Perfluorooctane Sulfonate	10.0	9.68	0.990	0.959	-3.2	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	20.0	19.9	2.759	2.739	-0.7	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	17.7	3.804	3.358	-11.7	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	20.8	5.990	6.232	4.0	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 04/19/16 05:05

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 041816\2056.wiff

Calibration Date: 4/18/2016 12:00:00 AM
Calibration ID: KC1600049
Analysis Lot: 492329
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	10.0	10.0	2.782	2.788	0.2	NA	±25	Average RF
Perfluorooctanoic Acid	10.0	10.1	0.539	0.543	0.6	NA	±25	Average RF
Perfluorooctane Sulfonate	10.0	10.2	0.990	1.008	1.8	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	20.0	19.2	2.759	2.642	-4.2	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	16.1	3.804	3.068	-19.3	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	19.4	5.990	5.812	-3.0	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 04/19/16 05:56

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 041816\2061.wiff

Calibration Date: 4/18/2016 12:00:00 AM
Calibration ID: KC1600049
Analysis Lot: 492329
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	10.0	9.71	2.782	2.701	-2.9	NA	±25	Average RF
Perfluorooctanoic Acid	10.0	9.49	0.539	0.512	-5.1	NA	±25	Average RF
Perfluorooctane Sulfonate	10.0	9.96	0.990	0.986	-0.4	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	20.0	18.9	2.759	2.610	-5.4	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	16.3	3.804	3.103	-18.4	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	19.1	5.990	5.712	-4.6	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 04/19/16 13:50

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 041916\5032.wiff

Calibration Date: 4/18/2016 12:00:00 AM
Calibration ID: KC1600049
Analysis Lot: 492329
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	10.0	9.94	2.782	2.764	-0.6	NA	±25	Average RF
Perfluorooctanoic Acid	10.0	11.0	0.539	0.592	9.7	NA	±25	Average RF
Perfluorooctane Sulfonate	10.0	10.0	0.990	0.991	0.1	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	20.0	18.6	2.759	2.560	-7.2	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	18.3	3.804	3.471	-8.8	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	18.8	5.990	5.626	-6.1	NA	±25	Average RF

Client: Kleinfelder
Project: CCTO-067 - China Lake

Service Request: K1602494
Date Analyzed: 04/19/16 14:51

Continuing Calibration Verification (CCV) Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
File ID: 041916\5038.wiff

Calibration Date: 4/18/2016 12:00:00 AM
Calibration ID: KC1600049
Analysis Lot: 492329
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorobutane Sulfonate	10.0	9.68	2.782	2.692	-3.2	NA	±25	Average RF
Perfluorooctanoic Acid	10.0	9.81	0.539	0.529	-1.9	NA	±25	Average RF
Perfluorooctane Sulfonate	10.0	10.1	0.990	0.998	0.8	NA	±25	Average RF
Sodium perfluoro-1-hexane[18O2] sulfonate	20.0	18.5	2.759	2.552	-7.5	NA	±25	Average RF
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	20.0	19.2	3.804	3.647	-4.1	NA	±25	Average RF
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	20.0	18.3	5.990	5.474	-8.6	NA	±25	Average RF

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake

Analysis Run Log
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M **Analysis Lot:**488491
Instrument ID:K-LCMS-02

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
031716\1019.wiff	Continuing Calibration Verification	KQ1602612-01	3/17/2016	21:44:16	
031716\1021.wiff	Method Blank	KQ1602477-03	3/17/2016	22:20:57	
031716\1022.wiff	Lab Control Sample	KQ1602477-01	3/17/2016	22:39:18	
031716\1023.wiff	Duplicate Lab Control Sample	KQ1602477-02	3/17/2016	22:57:37	
031716\1024.wiff	ZZZZZZZ	ZZZZZZZ	3/17/2016	23:15:58	
031716\1025.wiff	ZZZZZZZ	ZZZZZZZ	3/17/2016	23:34:18	
031716\1026.wiff	KCH067-019	K1602494-009	3/17/2016	23:52:39	
031716\1027.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	00:10:59	
031716\1028.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	00:29:16	
031716\1029.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	00:47:38	
031716\1030.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	01:05:58	
031716\1031.wiff	Continuing Calibration Verification	KQ1602612-02	3/18/2016	01:24:17	
031716\1033.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	02:00:56	
031716\1034.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	02:19:15	
031716\1035.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	02:37:31	
031716\1036.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	02:55:53	
031716\1037.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	03:14:13	
031716\1038.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	03:32:33	
031716\1039.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	03:50:53	
031716\1040.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	04:09:10	
031716\1041.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	04:27:30	
031716\1042.wiff	ZZZZZZZ	ZZZZZZZ	3/18/2016	04:45:46	
031716\1043.wiff	Continuing Calibration Verification	KQ1602612-03	3/18/2016	05:04:06	
041816\2024.wiff	ZZZZZZZ	ZZZZZZZ	4/18/2016	23:42:31	
041816\2025.wiff	ZZZZZZZ	ZZZZZZZ	4/18/2016	23:52:38	
041816\2038.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	02:04:03	
041816\2039.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	02:14:09	
041816\2040.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	02:24:14	
041816\2041.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	02:34:25	
041816\2042.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	02:44:29	
041816\2043.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	02:54:37	
041816\2046.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	03:24:59	
041816\2047.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	03:35:05	
041816\2048.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	03:45:10	
041816\2049.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	03:55:18	
041816\2050.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	04:05:24	
041816\2051.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	04:15:31	
041816\2052.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	04:25:38	
041816\2053.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	04:35:44	
041816\2054.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	04:45:49	
041816\2055.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	04:55:56	
041816\2058.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	05:26:14	
041816\2059.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	05:36:21	
041816\2060.wiff	ZZZZZZZ	ZZZZZZZ	4/19/2016	05:46:28	

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake

Analysis Run Log
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M **Analysis Lot:**492329
Instrument ID:K-LCMS-02

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
041816\2020.wiff	Continuing Calibration Verification	KQ1603722-01	4/18/2016	23:02:02	
041816\2022.wiff	Method Blank	KQ1602426-04	4/18/2016	23:22:14	
041816\2023.wiff	Lab Control Sample	KQ1602426-03	4/18/2016	23:32:23	
041816\2026.wiff	KCH067-009	K1602494-001	4/19/2016	00:02:45	*
041816\2027.wiff	KCH067-010	K1602494-002	4/19/2016	00:12:52	*
041816\2028.wiff	KCH067-011	K1602494-003	4/19/2016	00:22:59	*
041816\2029.wiff	KCH067-012	K1602494-004	4/19/2016	00:33:05	*
041816\2031.wiff	KCH067-014	K1602494-006	4/19/2016	00:53:21	*
041816\2032.wiff	Continuing Calibration Verification	KQ1603722-02	4/19/2016	01:03:29	
041816\2035.wiff	KCH067-016	K1602494-008	4/19/2016	01:33:47	*
041816\2036.wiff	KCH067-016 MS	KQ1602426-01	4/19/2016	01:43:50	*
041816\2037.wiff	KCH067-016 DMS	KQ1602426-02	4/19/2016	01:53:57	*
041816\2044.wiff	Continuing Calibration Verification	KQ1603722-03	4/19/2016	03:04:43	
041816\2056.wiff	Continuing Calibration Verification	KQ1603722-04	4/19/2016	05:05:59	
041816\2061.wiff	Continuing Calibration Verification	KQ1603722-05	4/19/2016	05:56:34	
041916\5032.wiff	Continuing Calibration Verification	KQ1603722-06	4/19/2016	13:50:40	
041916\5034.wiff	KCH067-013	K1602494-005	4/19/2016	14:10:56	*
041916\5037.wiff	KCH067-015	K1602494-007	4/19/2016	14:41:16	*
041916\5038.wiff	Continuing Calibration Verification	KQ1603722-07	4/19/2016	14:51:22	

Prep Summary Report

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake
Sample Matrix: Soil

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Prep Method: EPA 3550B **Extraction Lot:**257445
Analytical Method: PFC/537M

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
KCH067-009	K1602494-001	3/8/16	3/10/16	1.0170 g	2 mL	
KCH067-010	K1602494-002	3/8/16	3/10/16	1.0940 g	2 mL	
KCH067-011	K1602494-003	3/8/16	3/10/16	1.1160 g	2 mL	
KCH067-012	K1602494-004	3/8/16	3/10/16	1.0860 g	2 mL	
KCH067-013	K1602494-005	3/8/16	3/10/16	1.0580 g	2 mL	
KCH067-014	K1602494-006	3/8/16	3/10/16	1.0640 g	2 mL	
KCH067-015	K1602494-007	3/8/16	3/10/16	1.0090 g	2 mL	
KCH067-016	K1602494-008	3/8/16	3/10/16	1.0800 g	2 mL	
KCH067-016	KQ1602426-01	3/8/16	3/10/16	1.0910 g	2 mL	
KCH067-016	KQ1602426-02	3/8/16	3/10/16	1.0450 g	2 mL	
Lab Control Sample	KQ1602426-03	NA	NA	1 g	2 mL	
Method Blank	KQ1602426-04	NA	NA	1 g	2 mL	

Prep Summary Report

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake
Sample Matrix: Water

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Prep Method: EPA 3535A **Extraction Lot:**257569
Analytical Method: PFC/537M

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
KCH067-019	K1602494-009	3/8/16	3/10/16	290.0000	8 mL	
Lab Control Sample	KQ1602477-01	NA	NA	250.0000	8 mL	
Duplicate Lab Control Sample	KQ1602477-02	NA	NA	250.0000	8 mL	
Method Blank	KQ1602477-03	NA	NA	250.0000	8 mL	

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake
Sample Matrix: Soil

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Prep Method: EPA 3550B **Extraction Lot:**257445
Analytical Method: PFC/537M

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
KCH067-009	K1602494-001	3/8/16	3/10/16	1.0170 g	2 mL	97.2
KCH067-010	K1602494-002	3/8/16	3/10/16	1.0940 g	2 mL	96.4
KCH067-011	K1602494-003	3/8/16	3/10/16	1.1160 g	2 mL	97.4
KCH067-012	K1602494-004	3/8/16	3/10/16	1.0860 g	2 mL	97.2
KCH067-013	K1602494-005	3/8/16	3/10/16	1.0580 g	2 mL	96.1
KCH067-014	K1602494-006	3/8/16	3/10/16	1.0640 g	2 mL	96.6
KCH067-015	K1602494-007	3/8/16	3/10/16	1.0090 g	2 mL	96.8
KCH067-016	K1602494-008	3/8/16	3/10/16	1.0800 g	2 mL	97.7
KCH067-016	KQ1602426-01	3/8/16	3/10/16	1.0910 g	2 mL	97.7
KCH067-016	KQ1602426-02	3/8/16	3/10/16	1.0450 g	2 mL	97.7
Lab Control Sample	KQ1602426-03	NA	NA	1 g	2 mL	
Method Blank	KQ1602426-04	NA	NA	1 g	2 mL	

Prep Summary Report

Client: Kleinfelder **Service Request:**K1602494
Project: CCTO-067 - China Lake
Sample Matrix: Water

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Prep Method: EPA 3535A **Extraction Lot:**257569
Analytical Method: PFC/537M

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
KCH067-019	K1602494-009	3/8/16	3/10/16	290.0000	8 mL	
Lab Control Sample	KQ1602477-01	NA	NA	250.0000	8 mL	
Duplicate Lab Control Sample	KQ1602477-02	NA	NA	250.0000	8 mL	
Method Blank	KQ1602477-03	NA	NA	250.0000	8 mL	

REVISED
5:47 pm, Apr 28, 2016

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

4/19/2016

Project	Ewan's Projects\PFCs
Data File	041816\2026.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602494-001	Injection Volume	5
Acquisition Date	4/19/2016 12:02:45 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	25	Weight to Volume	0.00

Results Summary

ONLY

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	4664634	0.00 (1.43)	0	N/A	Yes
Pfpea 1	13C-PFHxA	5359567	2.31 (2.34)	6197	0.0370	No
Pfbs 1	18O_PFHS	3262945	2.58 (2.59)	4242	0.0090	Yes
Pfhxa 1	13C-PFHxA	5359567	3.59 (3.57)	65307	0.2480	No
Pfhpa 1	13C-PFHxA	5359567	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	3262945	4.41 (4.41)	38987	0.0810	No
Pfoa 1	13C-PFOA	3946587	4.95 (4.94)	18507	0.1740	No
Pfna 1	13C-PFNA	4382349	5.39 (5.40)	8230	0.0360	No
Pfos 1	13C_PFOS	7689787	5.39 (5.40)	77258	0.2030	Yes
Pfda 1	13C-PFDA	3171027	5.79 (5.78)	3779	0.0220	No
Pfuna 1	13C-PFUnA	894564	6.11 (6.12)	8999	0.0560	No
Pfds 1	13C_PFOS	7689787	6.08 (6.09)	4366	0.0090	No
Pfdoa 1	13C-PFDoA	51615	6.40 (6.39)	3517	0.0220	No
S_pfba 1	N_MeFOSA d3	3998064	1.42 (1.43)	4664634	11.0140	No
S_phhxa 1	N_MeFOSA d3	3998064	3.58 (3.58)	5359567	13.3800	No
S_pfhs 1	N_MeFOSA d3	3998064	4.41 (4.41)	3262945	14.7910	No
S_pfoa 1	N_MeFOSA d3	3998064	4.94 (4.94)	3946587	12.9750	No
S_pfna 1	N_MeFOSA d3	3998064	5.42 (5.38)	4382349	12.3810	No
S_pfda 1	N_MeFOSA d3	3998064	5.79 (5.79)	3171027	11.6620	No
S_pfos 1	N_MeFOSA d3	3998064	5.40 (5.39)	7689787	16.0540	No

Narrate interim.

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Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3998064	6.13 (6.11)	894564	13.2080	No
S_pfdoda 1	N_MeFOSA d3	3998064	6.40 (6.40)	51615	12.3870	No

IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.42)	0	Yes	0.00 (0.89)	No
Pfpea 2	2.34 (2.36)	7229	No	1.17 (1.07)	YES
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	3.56 (3.58)	5828	No	0.09 (0.09)	YES
Pfhpa 2	4.37 (4.37)	3136	No	0.00 (0.38)	No
Pfhxs 2	4.41 (4.41)	17016	No	0.44 (0.39)	YES
Pfoa 2	4.96 (4.94)	27470	No	1.48 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	5.40 (5.39)	24396	No	0.32 (0.34)	YES
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.13 (6.11)	803	No	0.09 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

Quantitative Peak Review K1602494-001 *No data for Sample ID*

APR 2 1 2016

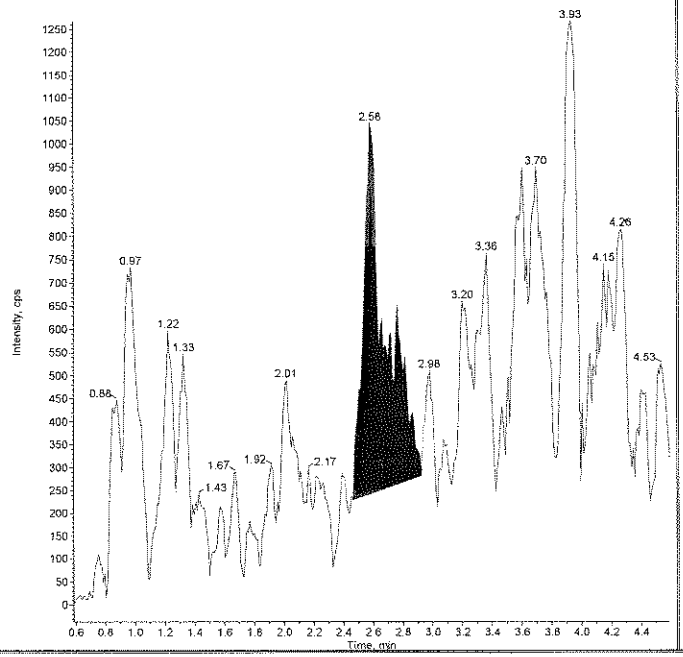
	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	Calculated Concentration (ng/mL)
590	041816\2025.wiff	KQ1603114-03	Unknown	S_pfoa 1	4188800.	N/A	4238200.	13.0
591	041816\2025.wiff	KQ1603114-03	Unknown	S_pfna 1	5457500.	N/A	4238200.	14.5
592	041816\2025.wiff	KQ1603114-03	Unknown	S_pfda 1	4352900.	N/A	4238200.	15.1
593	041816\2025.wiff	KQ1603114-03	Unknown	S_pfos 1	8153200.	N/A	4238200.	16.1
594	041816\2025.wiff	KQ1603114-03	Unknown	S_pfuna 1	896290.	N/A	4238200.	12.5
595	041816\2025.wiff	KQ1603114-03	Unknown	S_pfdoda 1	54291.	N/A	4238200.	12.3
596	041816\2026.wiff	K1602494-001	Unknown	Pfba 1	0.0000	N/A	4664600.	No Peak
597	041816\2026.wiff	K1602494-001	Unknown	Pfba 2	0.0000	N/A	4664600.	No Peak
598	041816\2026.wiff	K1602494-001	Unknown	Pfpea 1	6197.2	N/A	5359600.	0.0365
599	041816\2026.wiff	K1602494-001	Unknown	Pfpea 2	7228.8	N/A	5359600.	0.0399
600	041816\2026.wiff	K1602494-001	Unknown	Pfbs 1	8749.0	N/A	3262900.	0.0193

Sample Name: "K1602494-001" Sample ID: "" File: "2026.wiff"
Peak Name: "Pfbs 1" Mass(es): "299.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:        1
Sample Type:         Unknown
Concentration:       N/A
Calculated Conc:     0.0193     ng/mL
Acq. Date:           4/19/2016
Acq. Time:           12:02:45 AM

Modified:            No
Proc. Algorithm:     Specify Parameters - MQ III
Noise Percentage:    50
Base, Sub. Window:   0.70    min
Peak-Split. Factor:  2
Report Largest Peak: Yes
Min. Peak Height:    500.00    cps
Min. Peak Width:     0.00    sec
Smoothing Width:     11        points
RT Window:           10.0    sec
Expected RT:         2.59    min
Use Relative RT:     No

Int. Type:           Base To Base
Retention Time:      2.58    min
Area:                8749.0    counts
Height:              812.33    cps
Start Time:          2.46    min
End Time:            2.93    min
```

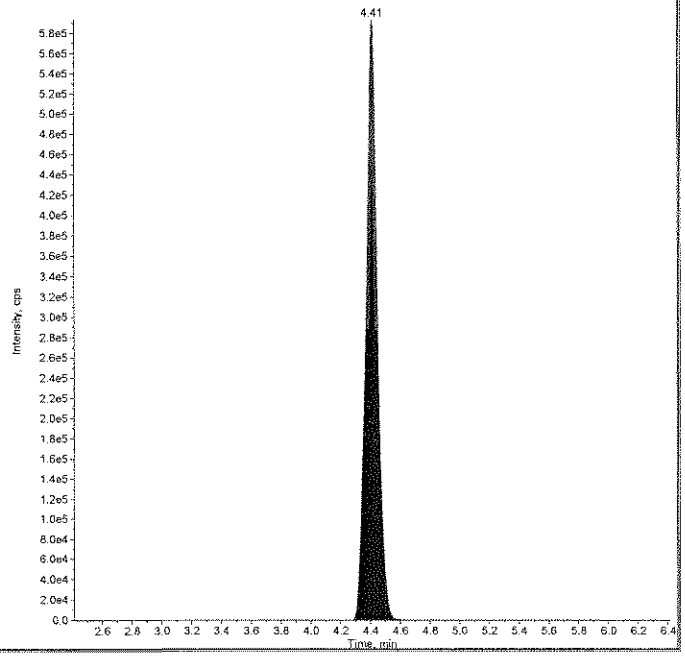


Sample Name: "K1602494-001" Sample ID: "" File: "2026.wiff"
Peak Name: "18O_PFHS(IS)" Mass(es): "403.000/103.000 Da"
Comment: "" Annotation: ""

```
Sample Index:        1
Sample Type:         Unknown
Concentration:       20.0    ng/mL
Calculated Conc:     N/A
Acq. Date:           4/19/2016
Acq. Time:           12:02:45 AM

Modified:            No
Proc. Algorithm:     Specify Parameters - MQ III
Noise Percentage:    50
Base, Sub. Window:   0.50    min
Peak-Split. Factor:  1
Report Largest Peak: Yes
Min. Peak Height:    500.00    cps
Min. Peak Width:     0.00    sec
Smoothing Width:     7         points
RT Window:           10.0    sec
Expected RT:         4.41    min
Use Relative RT:     No

Int. Type:           Valley
Retention Time:      4.41    min
Area:                5262900.    counts
Height:              898290.    cps
Start Time:          4.26    min
End Time:            4.65    min
```



APR 2 1 2016

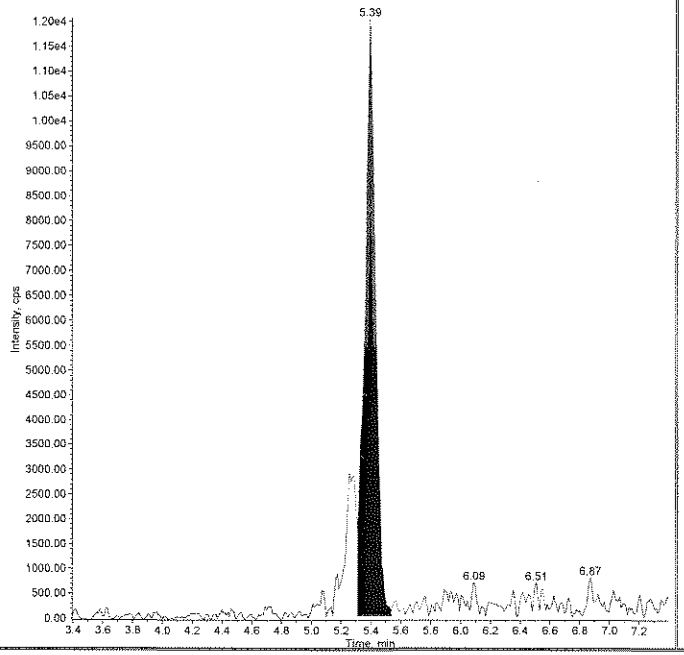
	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	Calculated Concentration (ng/mL)
600	041816\2026.wiff	K1602494-001	Unknown	Pfbs 1	4241.5	N/A	3262900.	0.00935
601	041816\2026.wiff	K1602494-001	Unknown	Pfbs 2	0.0000	N/A	3262900.	No Peak
602	041816\2026.wiff	K1602494-001	Unknown	Pfhxa 1	65307.	N/A	5359600.	0.248
603	041816\2026.wiff	K1602494-001	Unknown	Pfhxa 2	5827.9	N/A	5359600.	0.243
604	041816\2026.wiff	K1602494-001	Unknown	Pfhpa 1	0.0000	N/A	5359600.	No Peak
605	041816\2026.wiff	K1602494-001	Unknown	Pfhpa 2	3136.4	N/A	5359600.	0.0258
606	041816\2026.wiff	K1602494-001	Unknown	Pfhxs 1	38987.	N/A	3262900.	0.0809
607	041816\2026.wiff	K1602494-001	Unknown	Pfhxs 2	17016.	N/A	3262900.	0.0790
608	041816\2026.wiff	K1602494-001	Unknown	Pfoa 1	18507.	N/A	3946600.	0.174
609	041816\2026.wiff	K1602494-001	Unknown	Pfoa 2	27470.	N/A	3946600.	0.122
610	041816\2026.wiff	K1602494-001	Unknown	Pfna 1	8229.6	N/A	4382300.	0.0360

Sample Name: "K1602494-001" Sample ID: "" File: "2026.wiff"
Peak Name: "Pfos 1" Mass(es): "499.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:       1
Sample Type:        Unknown
Concentration:      N/A
Calculated Conc:    0.184    ng/mL
Acq. Date:          4/19/2016
Acq. Time:          12:02:45 AM

Modified:           No
Proc. Algorithm:    Specify Parameters - MQ III
Noise Percentage:   50
Base. Sub. Window:  0.50    min
Peak-Split. Factor: 1
Report Largest Peak: Yes
Min. Peak Height:   600.00   cps
Min. Peak Width:    0.00    sec
Smoothing Width:    5       points
RT Window:          10.0    sec
Expected RT:        5.40    min
Use Relative RT:    No

Int. Type:          Valley
Retention Time:     5.39    min
Area:               62512.  counts
Height:             12015.  cps
Start Time:         5.31    min
End Time:           5.54    min
```

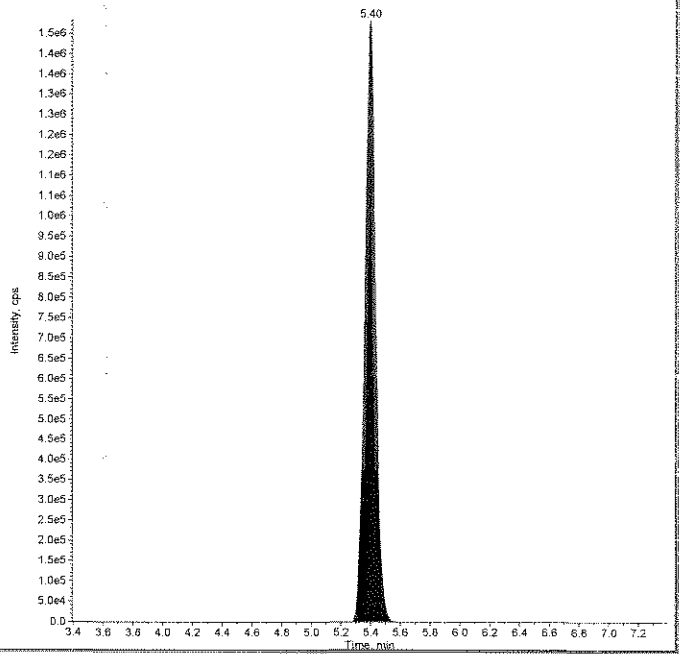


Sample Name: "K1602494-001" Sample ID: "" File: "2026.wiff"
Peak Name: "13C_PFOS(IS)" Mass(es): "503.000/80.000 Da"
Comment: "" Annotation: ""

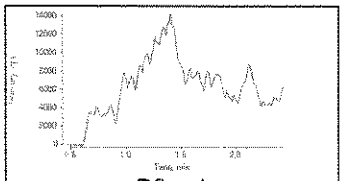
```
Sample Index:       1
Sample Type:        Unknown
Concentration:      20.0    ng/mL
Calculated Conc:    N/A
Acq. Date:          4/19/2016
Acq. Time:          12:02:45 AM

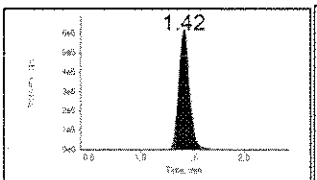
Modified:           No
Proc. Algorithm:    Specify Parameters - MQ III
Noise Percentage:   50
Base. Sub. Window:  0.50    min
Peak-Split. Factor: 10
Report Largest Peak: Yes
Min. Peak Height:   500.00   cps
Min. Peak Width:    0.00    sec
Smoothing Width:    5       points
RT Window:          30.0    sec
Expected RT:        5.39    min
Use Relative RT:    No

Int. Type:          Base To Base
Retention Time:     5.40    min
Area:               [illegible]  counts
Height:             1497800.  cps
Start Time:         5.26    min
End Time:           5.82    min
```

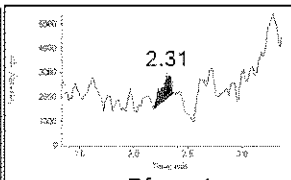


4/19/16

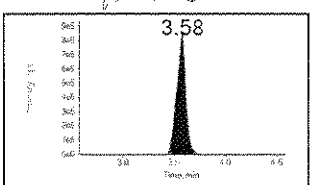

Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



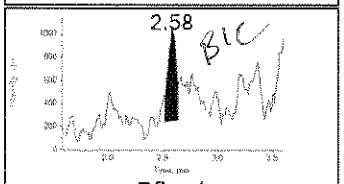
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



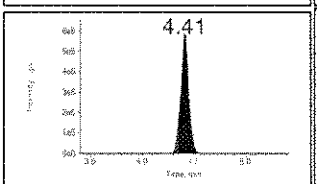
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



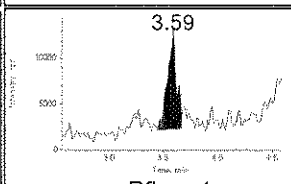
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



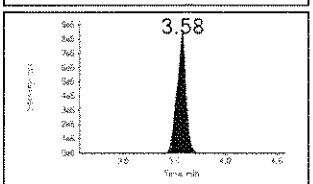
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



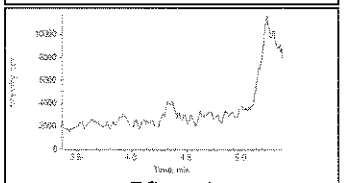
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

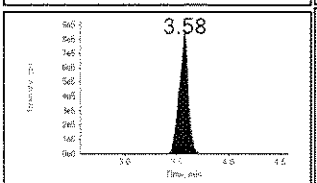


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

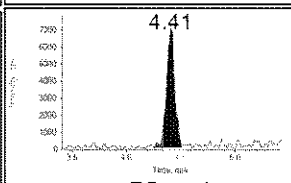


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

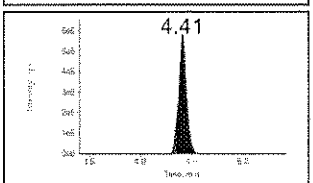

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



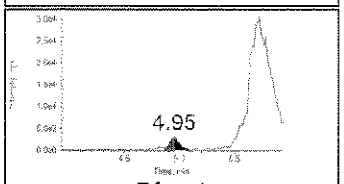
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



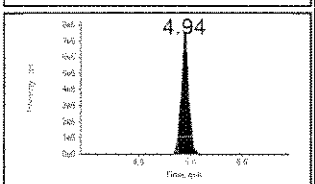
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



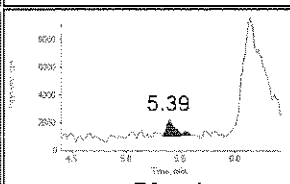
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



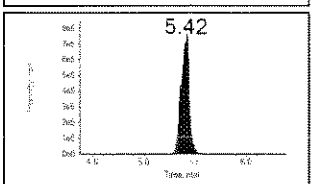
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



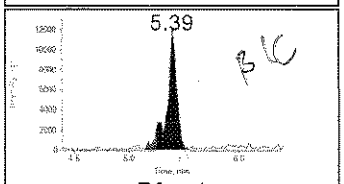
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



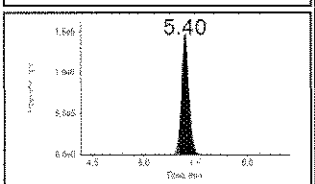
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



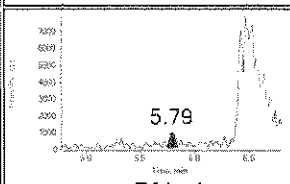
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



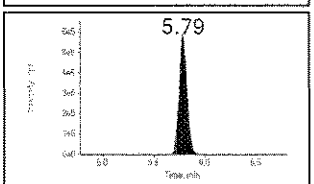
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

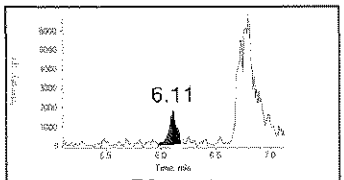


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

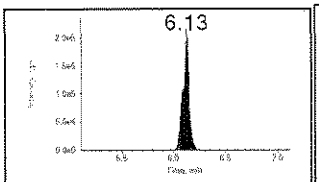


13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

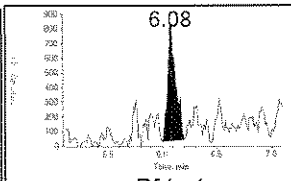
APR 21 2016



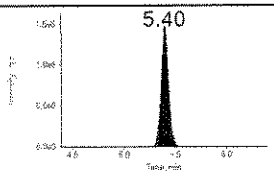
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



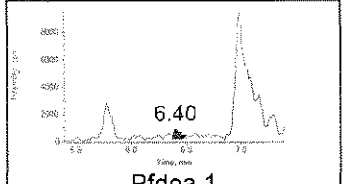
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



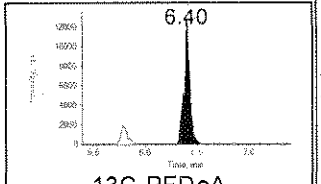
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



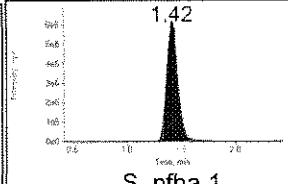
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



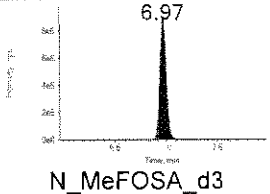
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



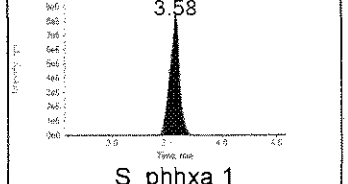
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



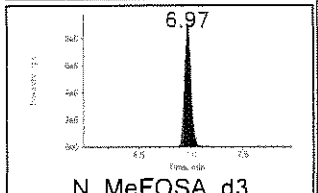
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



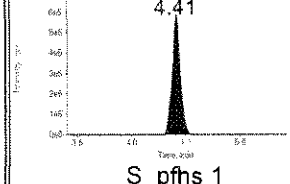
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



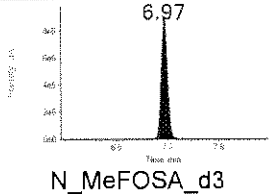
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



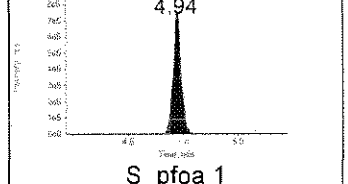
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



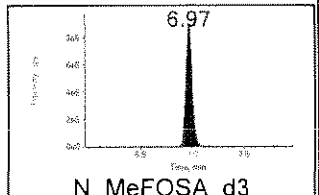
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



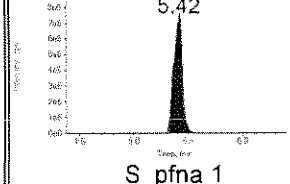
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



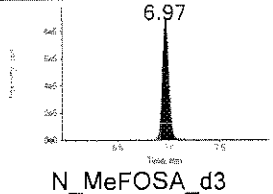
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



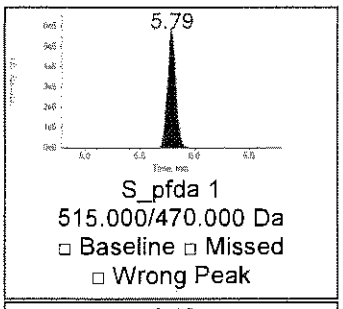
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



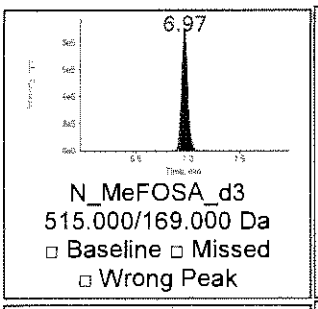
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



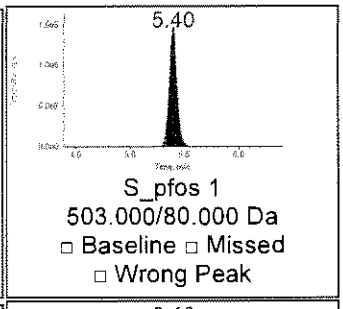
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



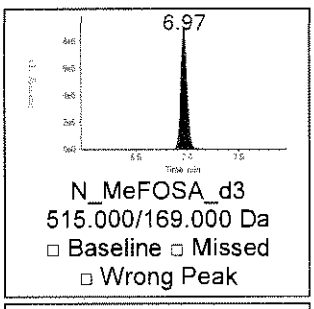
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



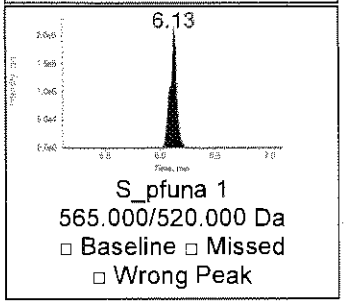
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



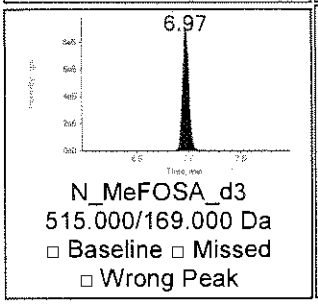
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



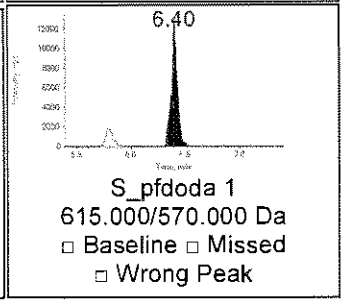
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



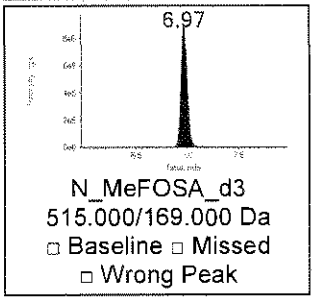
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

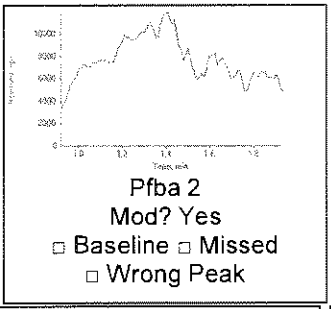


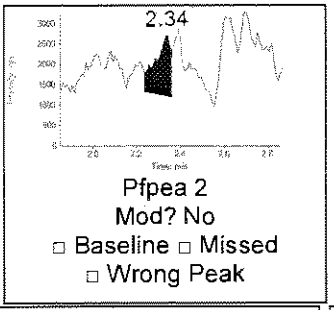
S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



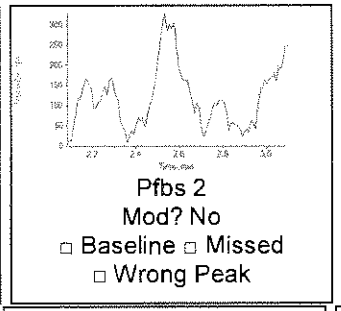
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

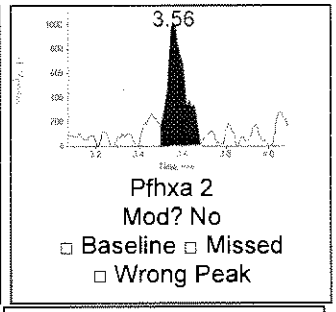
Ion Ratio Confirmation


Pfba 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak

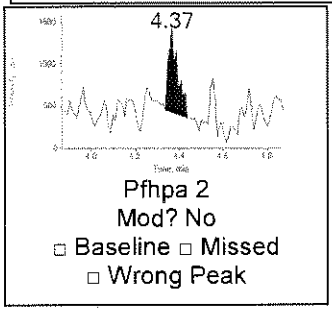


Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

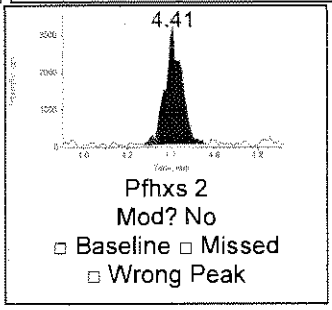

Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



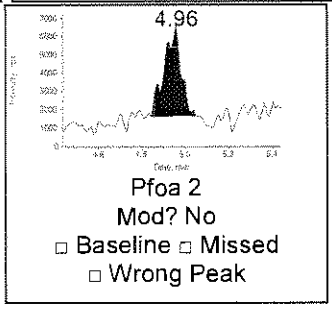
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



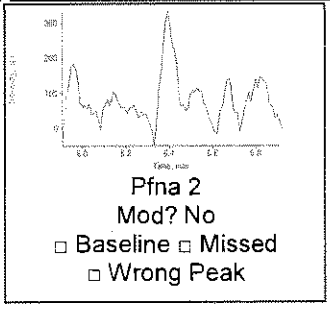
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

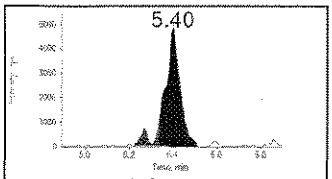


Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

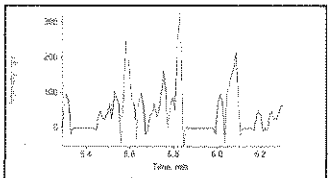


Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

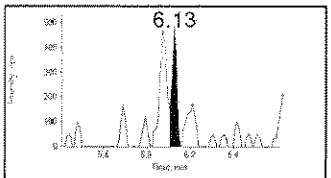

Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



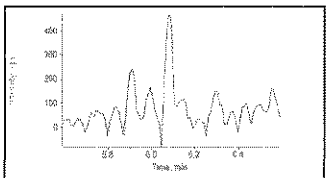
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



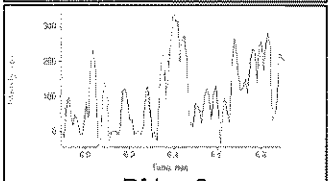
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Methylene

Project	Ewan's Projects\PFCs
Data File	041816\2027.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602494-002	Injection Volume	5
Acquisition Date	4/19/2016 12:12:52 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	26	Weight to Volume	0.00

Results Summary

Y ONLY

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5662279	1.40 (1.43)	27491	0.1070	No
Pfpea 1	13C-PFHxA	6205617	2.28 (2.34)	2163	0.0110	No
Pfbs 1	18O_PFHS	3687818	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	6205617	3.57 (3.57)	45599	0.1500	No
Pfhpa 1	13C-PFHxA	6205617	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	3687818	4.40 (4.41)	36670	0.0670	No
Pfoa 1	13C-PFOA	4468381	4.92 (4.94)	10354	0.0860	Yes
Pfna 1	13C-PFNA	4967624	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	8527242	5.40 (5.40)	12418	0.0290	No
Pfda 1	13C-PFDA	3632197	5.78 (5.78)	2515	0.0130	No
Pfuna 1	13C-PFUnA	1056927	6.13 (6.12)	7186	0.0380	No
Pfds 1	13C_PFOS	8527242	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	58823	0.00 (6.39)	0	N/A	No
S_pfba 1	N_MeFOSA d3	4044251	1.41 (1.43)	5662279	13.2160	No
S_phhxa 1	N_MeFOSA d3	4044251	3.56 (3.58)	6205617	15.3150	No
S_pfhs 1	N_MeFOSA d3	4044251	4.40 (4.41)	3687818	16.5260	No
S_pfoa 1	N_MeFOSA d3	4044251	4.94 (4.94)	4468381	14.5230	No
S_pfna 1	N_MeFOSA d3	4044251	5.39 (5.38)	4967624	13.8750	No
S_pfda 1	N_MeFOSA d3	4044251	5.78 (5.79)	3632197	13.2050	No
S_pfos 1	N_MeFOSA d3	4044251	5.39 (5.39)	8527242	17.6000	No

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Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	4044251	6.11 (6.11)	1056927	15.4270	No
S_pfdoda 1	N_MeFOSA d3	4044251	6.39 (6.40)	58823	13.9560	No

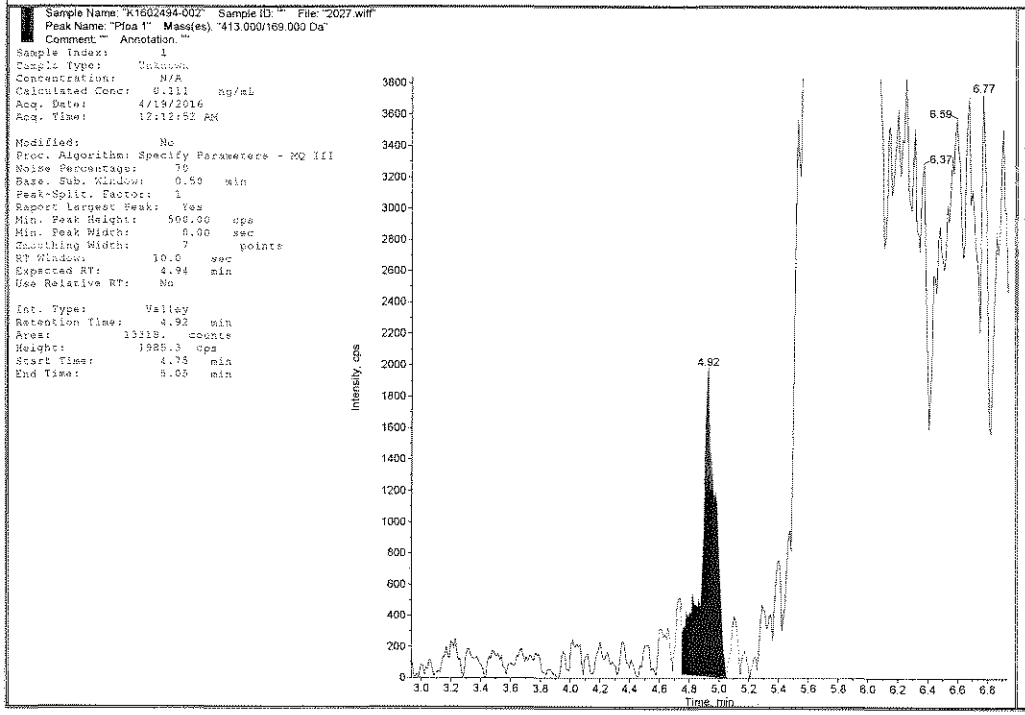
IRC Summary

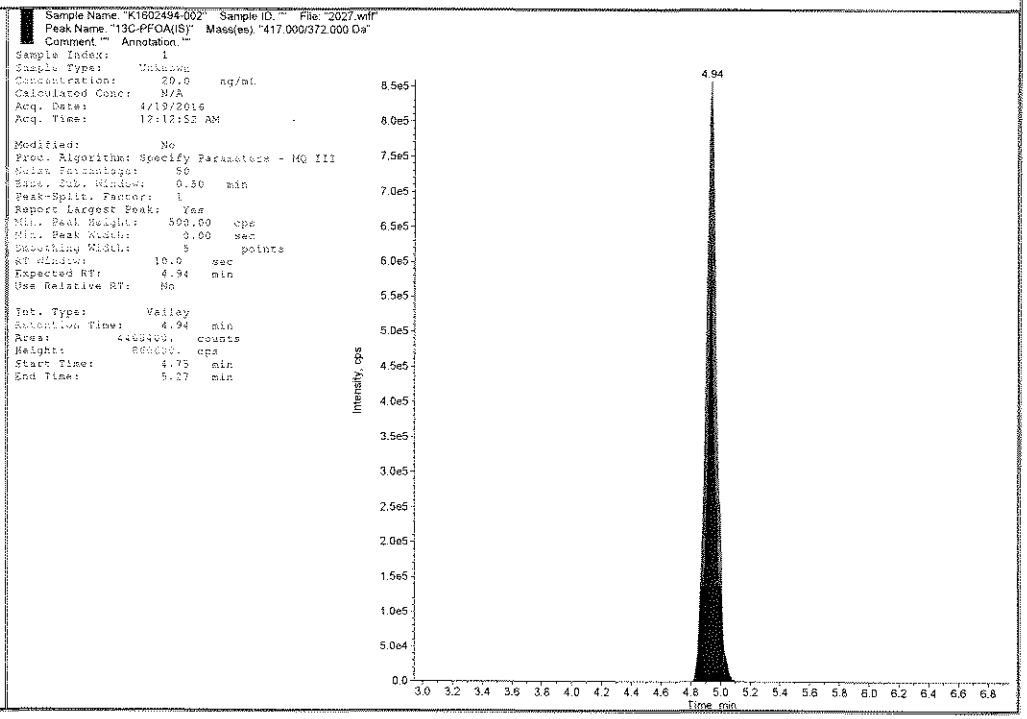
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.42 (1.41)	25534	No	0.93 (0.89)	YES
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	3.58 (3.58)	3763	No	0.08 (0.09)	YES
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.41 (4.41)	16051	No	0.44 (0.39)	YES
Pfoa 2	4.94 (4.94)	26113	No	2.52 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	5.41 (5.39)	4448	No	0.36 (0.34)	YES
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	No	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

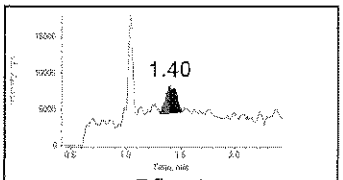
Quantitative Peak Review K1602494-002 *No data for Sample ID*

APR 2 1 2016

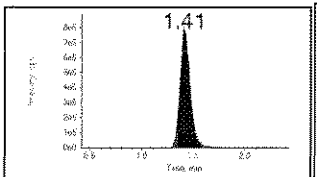
	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	Calculated Concentration (ng/mL)
631	041816\2027.wiff	K1602494-002	Unknown	Pfba 1	27491.	N/A	5662300.	0.107
632	041816\2027.wiff	K1602494-002	Unknown	Pfba 2	25534.	N/A	5662300.	0.111
633	041816\2027.wiff	K1602494-002	Unknown	Pfpea 1	2162.6	N/A	6205600.	0.0110
634	041816\2027.wiff	K1602494-002	Unknown	Pfpea 2	0.0000	N/A	6205600.	No Peak
635	041816\2027.wiff	K1602494-002	Unknown	Pfbs 1	0.0000	N/A	3687800.	No Peak
636	041816\2027.wiff	K1602494-002	Unknown	Pfbs 2	0.0000	N/A	3687800.	No Peak
637	041816\2027.wiff	K1602494-002	Unknown	Pfhxa 1	45599.	N/A	6205600.	0.150
638	041816\2027.wiff	K1602494-002	Unknown	Pfhxa 2	3762.5	N/A	6205600.	0.135
639	041816\2027.wiff	K1602494-002	Unknown	Pfhpa 1	0.0000	N/A	6205600.	No Peak
640	041816\2027.wiff	K1602494-002	Unknown	Pfhpa 2	0.0000	N/A	6205600.	No Peak
641	041816\2027.wiff	K1602494-002	Unknown	Pfhxs 1	36670.	N/A	3687800.	0.0673



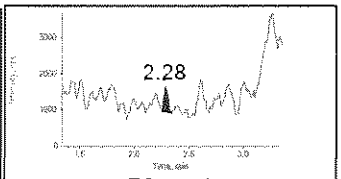




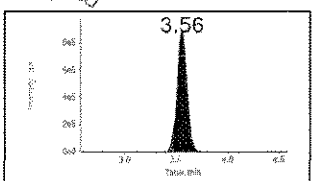
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



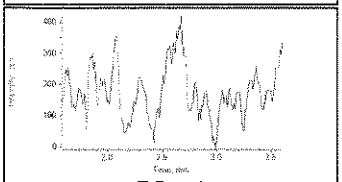
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



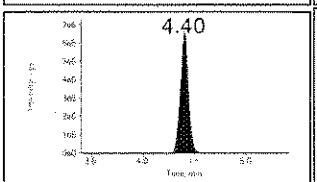
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



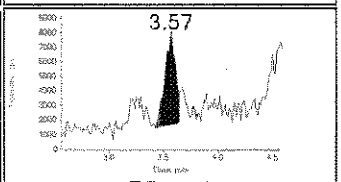
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



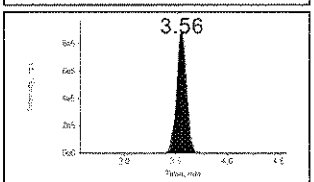
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



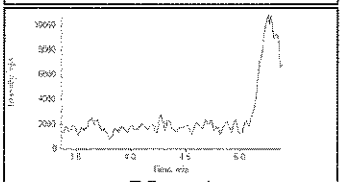
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



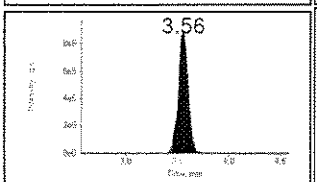
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



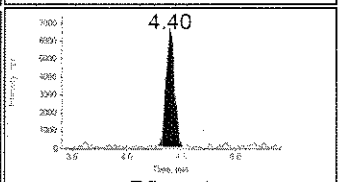
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



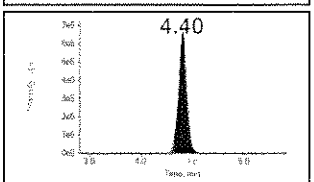
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



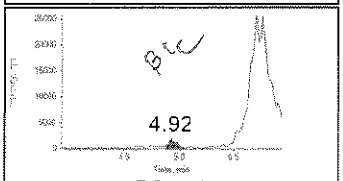
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



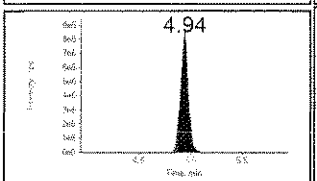
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



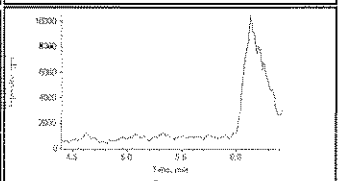
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



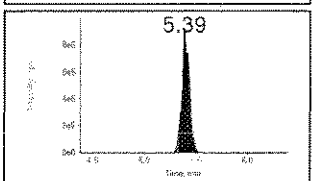
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



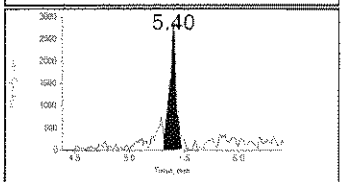
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



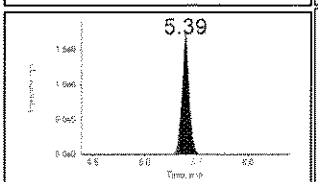
Pfna 1
463.000/419.000 Da
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□ Wrong Peak



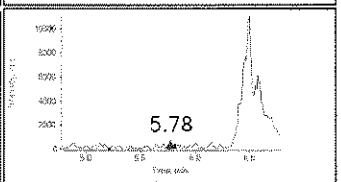
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



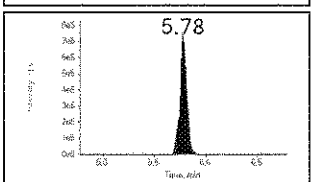
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

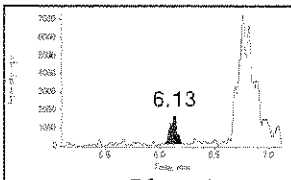


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

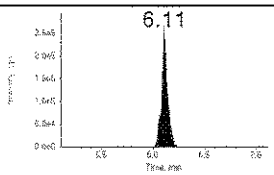


13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

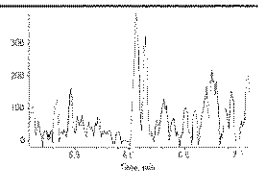
APR 21 2016



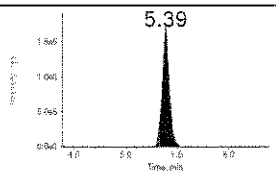
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



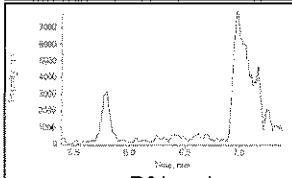
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



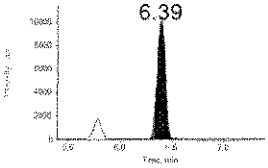
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



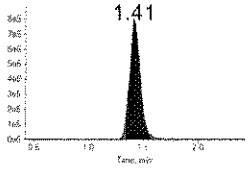
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



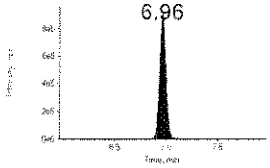
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



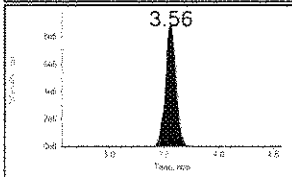
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



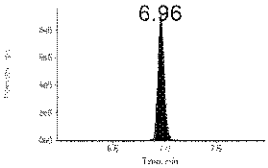
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



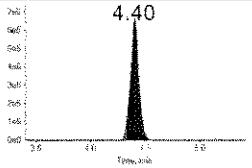
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



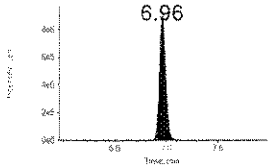
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



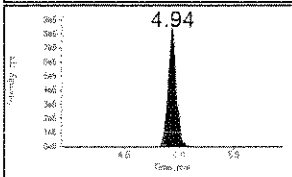
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



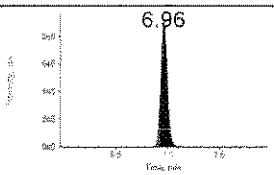
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



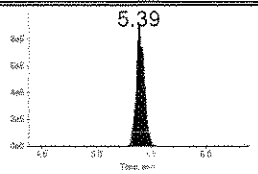
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



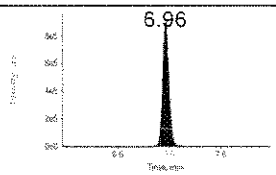
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



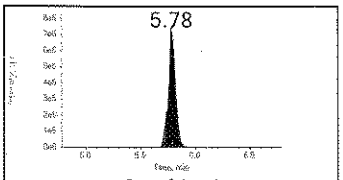
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



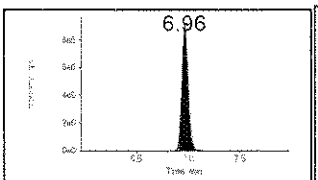
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



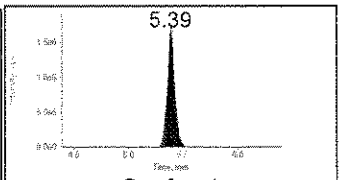
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



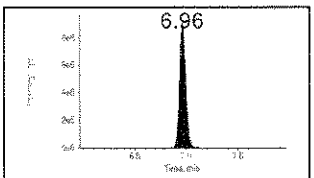
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



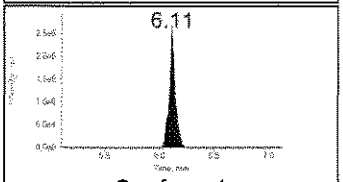
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



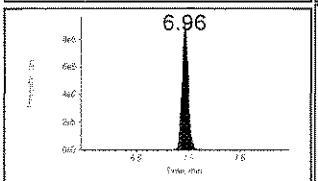
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



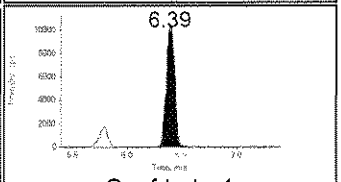
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



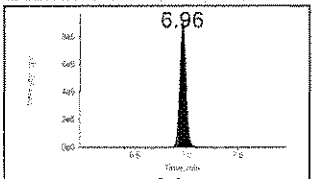
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

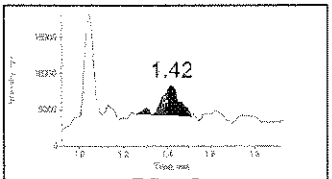


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

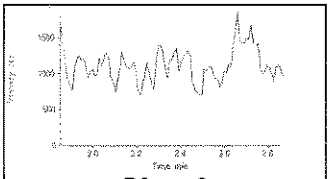


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

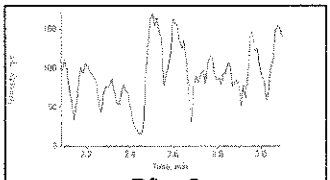
Ion Ratio Confirmation



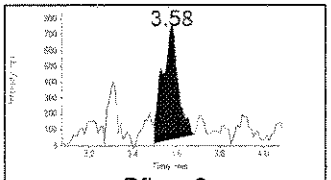
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



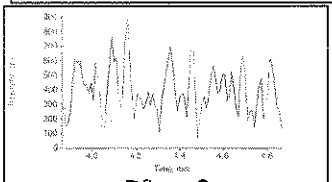
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



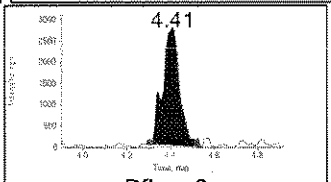
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



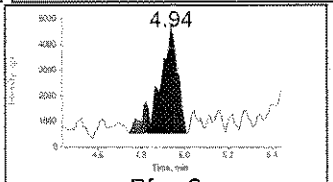
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



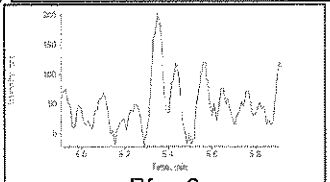
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



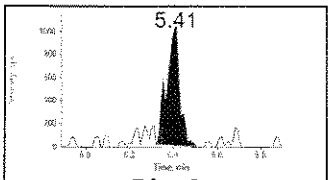
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



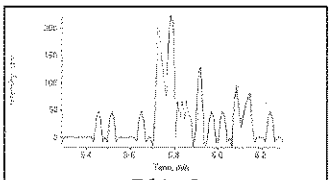
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



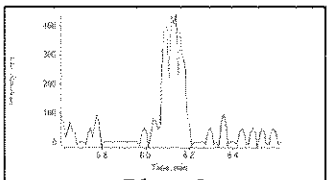
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



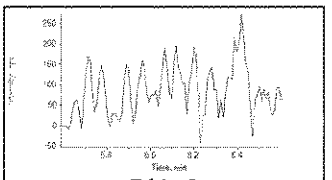
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



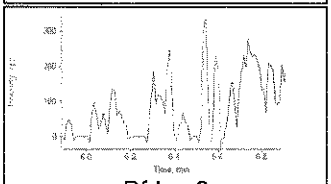
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

4/20/16

Project	Ewan's Projects\PFCs
Data File	041816\2028.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602924-003	Injection Volume	5
Acquisition Date	4/19/2016 12:22:59 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	27	Weight to Volume	0.00

Results Summary

KONY

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	4118587	1.42 (1.43)	76738	0.4090	No
Pfpea 1	13C-PFHxA	5486316	2.35 (2.34)	7408	0.0430	No
Pfbs 1	18O_PFHS	3347436	2.61 (2.59)	9570	0.0210	No
Pfhxa 1	13C-PFHxA	5486316	3.59 (3.57)	81894	0.3040	No
Pfhpa 1	13C-PFHxA	5486316	4.37 (4.37)	19235	0.0610	No
Pfhxs 1	18O_PFHS	3347436	4.41 (4.41)	42923	0.0870	No
Pfoa 1	13C-PFOA	3989054	4.95 (4.94)	16682	0.1550	No
Pfna 1	13C-PFNA	4914237	5.39 (5.40)	10426	0.0410	No
Pfos 1	13C_PFOS	7917308	5.40 (5.40)	94191	0.2400	No
Pfda 1	13C-PFDA	3342928	5.78 (5.78)	4731	0.0260	No
Pfuna 1	13C-PFUnA	863800	6.10 (6.12)	9618	0.0620	No
Pfds 1	13C_PFOS	7917308	6.07 (6.09)	5264	0.0110	No
Pfdoa 1	13C-PFDoA	58687	6.33 (6.39)	2418	0.0130	No
S_pfba 1	N_MeFOSA d3	4051752	1.41 (1.43)	4118587	9.5960	No
S_phhxa 1	N_MeFOSA d3	4051752	3.56 (3.58)	5486316	13.5150	No
S_pfhs 1	N_MeFOSA d3	4051752	4.41 (4.41)	3347436	14.9730	No
S_pfoa 1	N_MeFOSA d3	4051752	4.96 (4.94)	3989054	12.9410	No
S_pfna 1	N_MeFOSA d3	4051752	5.39 (5.38)	4914237	13.7000	No
S_pfda 1	N_MeFOSA d3	4051752	5.79 (5.79)	3342928	12.1310	No
S_pfos 1	N_MeFOSA d3	4051752	5.39 (5.39)	7917308	16.3100	No

Duplicate Interim.

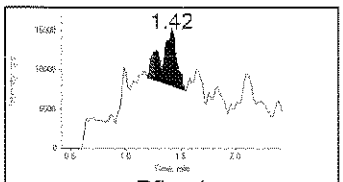
APR 21 2016

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	4051752	6.12 (6.11)	863800	12.5850	No
S_pfdoda 1	N_MeFOSA d3	4051752	6.42 (6.40)	58687	13.8980	No

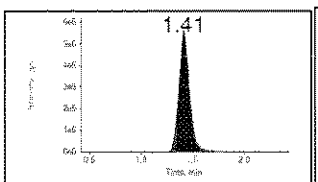
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.40 (1.41)	61390	No	0.80 (0.89)	YES
Pfpea 2	2.30 (2.36)	3563	No	0.48 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	3.57 (3.58)	8455	No	0.10 (0.09)	YES
Pfhpa 2	4.35 (4.37)	5335	No	0.28 (0.38)	No
Pfhxs 2	4.40 (4.41)	16998	No	0.40 (0.39)	YES
Pfoa 2	4.95 (4.94)	43223	No	2.59 (1.93)	No
Pfna 2	5.41 (5.41)	3190	No	0.31 (0.27)	YES
Pfos 2	5.39 (5.39)	26214	No	0.28 (0.34)	YES
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.11 (6.11)	1935	No	0.20 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

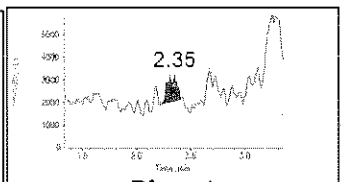
Quantitative Peak Review K1602924-003 *No data for Sample ID*



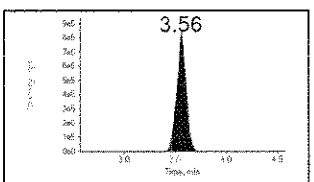
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



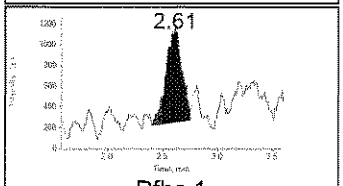
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



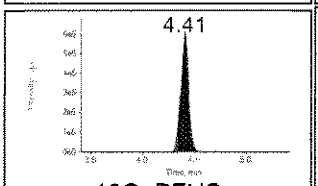
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



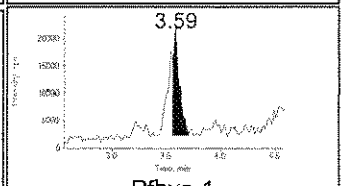
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



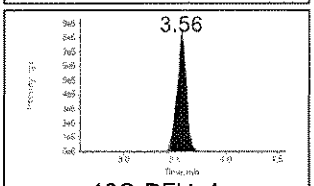
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



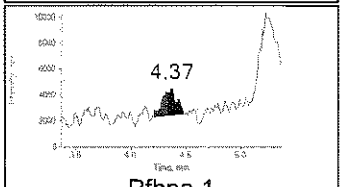
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



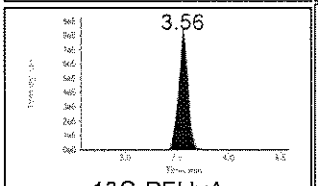
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



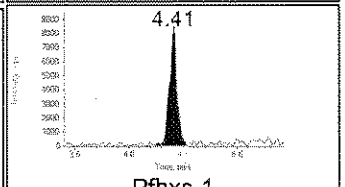
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



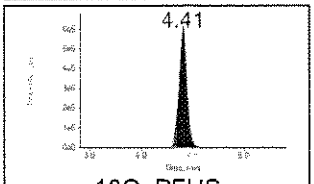
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



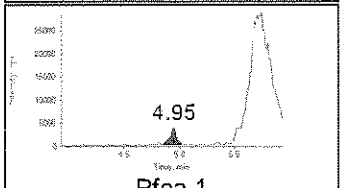
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



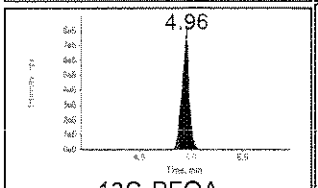
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



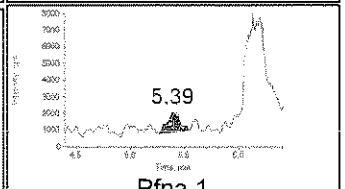
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



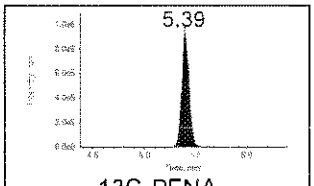
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



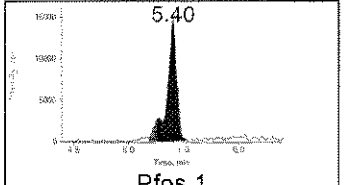
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



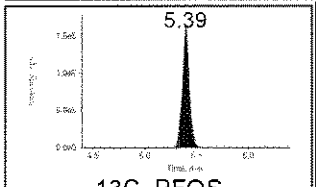
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



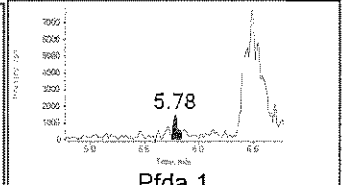
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



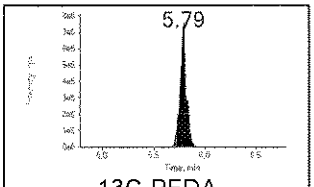
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



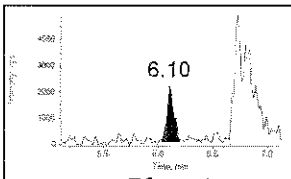
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



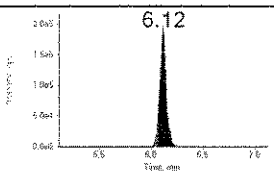
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



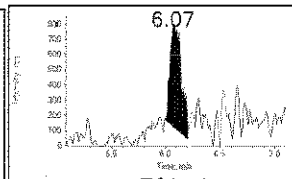
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



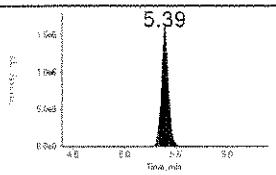
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



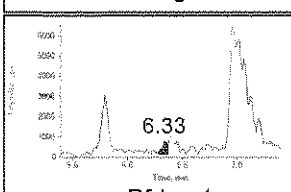
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



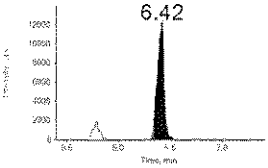
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



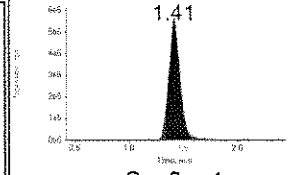
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



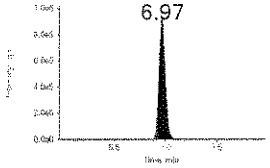
Pfdoa 1
613.000/569.000 Da
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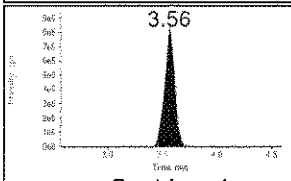
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



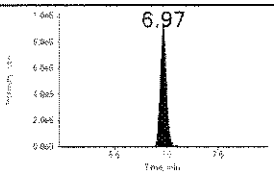
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



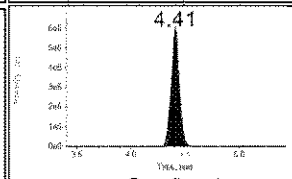
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



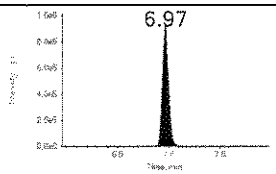
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



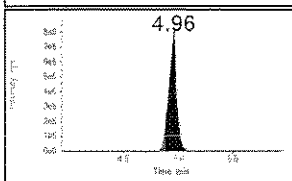
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
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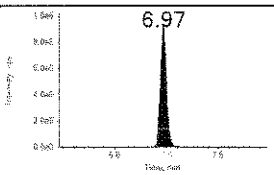
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



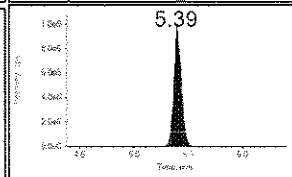
N_MeFOSA_d3
515.000/169.000 Da
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□ Wrong Peak



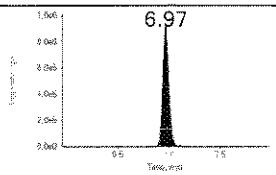
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



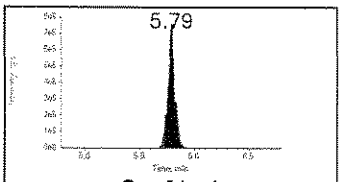
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



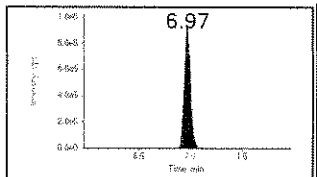
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



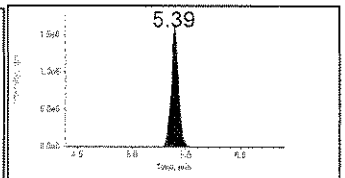
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



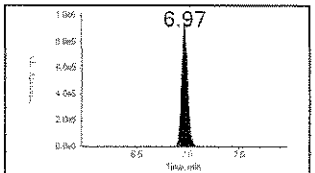
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



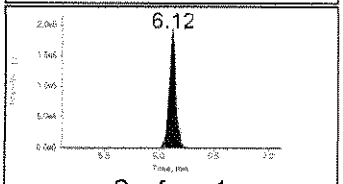
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



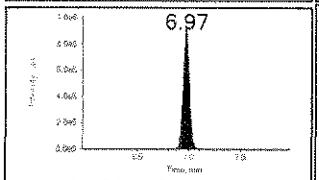
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



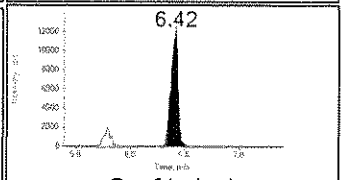
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



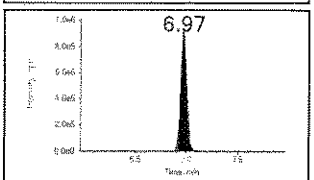
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

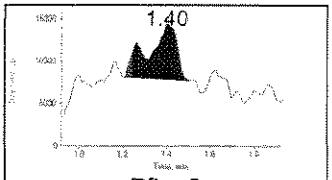


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

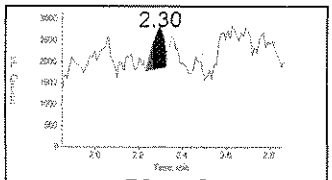


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

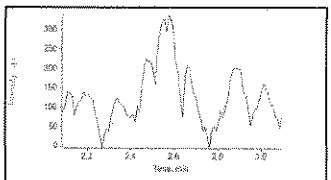
Ion Ratio Confirmation

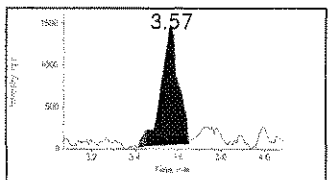


Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

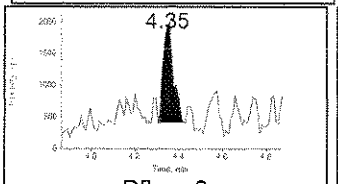


Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

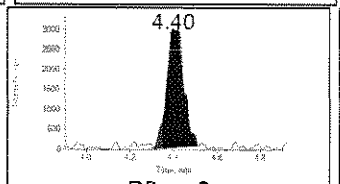

Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



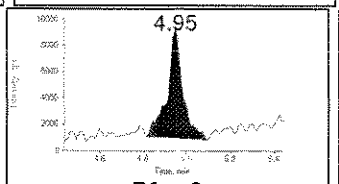
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



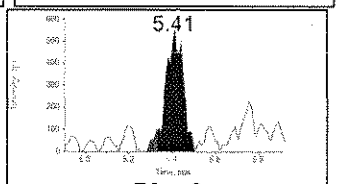
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



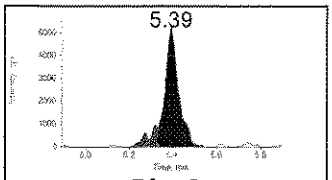
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



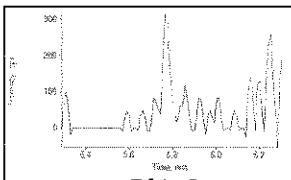
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



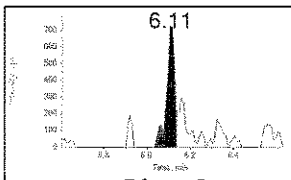
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



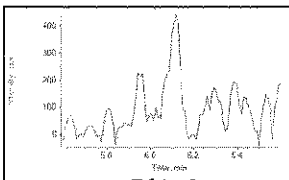
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



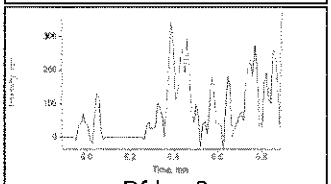
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

4/20/16

Project	Ewan's Projects\PFCs
Data File	041816\2029.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602494-004	Injection Volume	5
Acquisition Date	4/19/2016 12:33:05 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	28	Weight to Volume	0.00

Results Summary

ONLY

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5258547	1.43 (1.43)	95200	0.3980	No
Pfpea 1	13C-PFHxA	6337162	2.33 (2.34)	15794	0.0790	No
Pfbs 1	18O_PFHS	3878348	2.55 (2.59)	14563	0.0270	No
Pfhxa 1	13C-PFHxA	6337162	3.58 (3.57)	94616	0.3040	No
Pfhpa 1	13C-PFHxA	6337162	4.37 (4.37)	19618	0.0530	No
Pfhxs 1	18O_PFHS	3878348	4.42 (4.41)	61664	0.1080	No
Pfoa 1	13C-PFOA	4789780	4.96 (4.94)	18757	0.1450	No
Pfna 1	13C-PFNA	5551281	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	8576659	5.39 (5.40)	52983	0.1250	Yes
Pfda 1	13C-PFDA	4079038	5.77 (5.78)	5286	0.0240	No
Pfuna 1	13C-PFUnA	1000406	6.13 (6.12)	7961	0.0450	No
Pfds 1	13C_PFOS	8576659	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	54997	6.39 (6.39)	5384	0.0310	No
S_pfba 1	N_MeFOSA d3	4096476	1.43 (1.43)	5258547	12.1180	No
S_phhxa 1	N_MeFOSA d3	4096476	3.57 (3.58)	6337162	15.4400	No
S_pfhs 1	N_MeFOSA d3	4096476	4.42 (4.41)	3878348	17.1590 ✓	No
S_pfoa 1	N_MeFOSA d3	4096476	4.95 (4.94)	4789780	15.3690 ✓	No
S_pfna 1	N_MeFOSA d3	4096476	5.40 (5.38)	5551281	15.3070	No
S_pfda 1	N_MeFOSA d3	4096476	5.79 (5.79)	4079038	14.6400	No
S_pfos 1	N_MeFOSA d3	4096476	5.40 (5.39)	8576659	17.4760 ✓	No

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Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	4096476	6.11 (6.11)	1000406	14.4160	No
S_pfdoda 1	N_MeFOSA d3	4096476	6.40 (6.40)	54997	12.8820	No

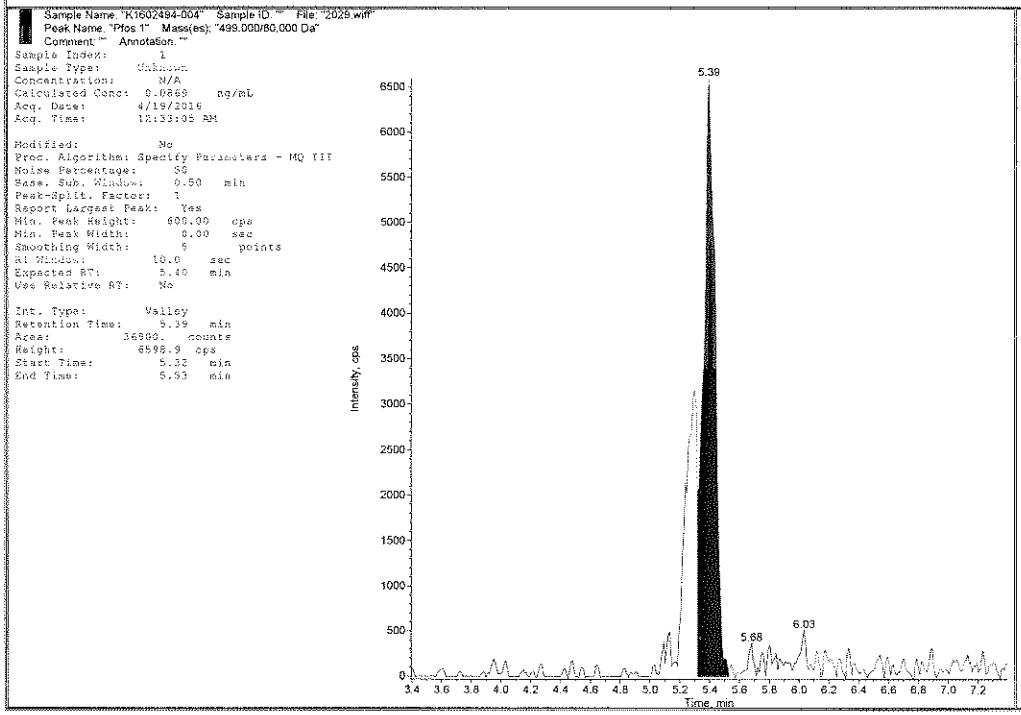
IRC Summary

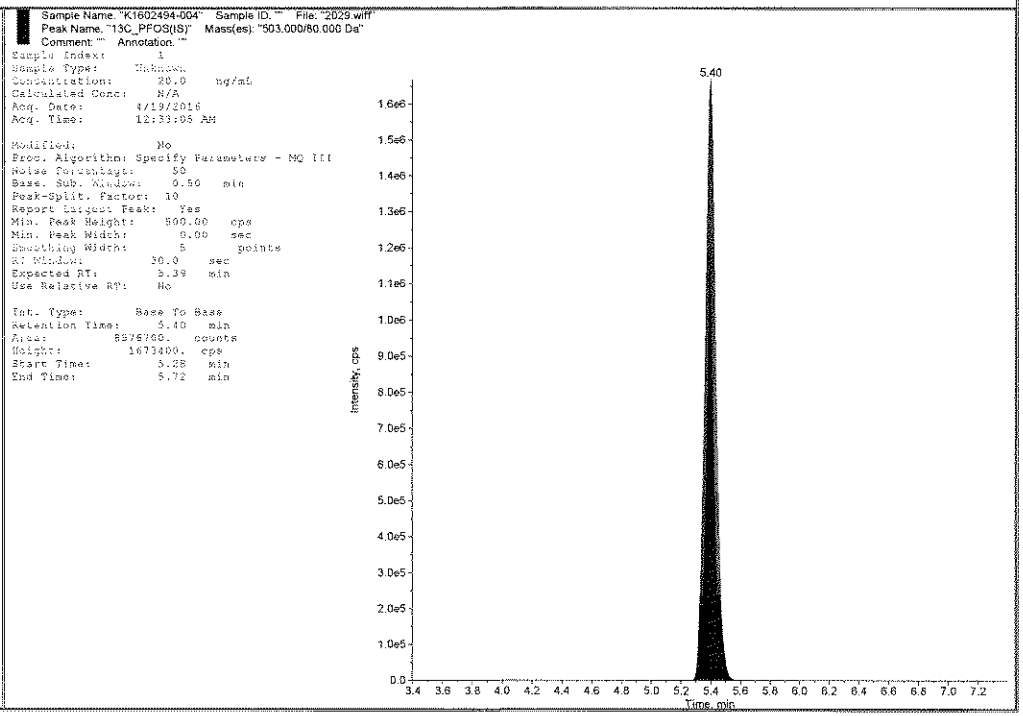
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.41 (1.43)	82592	No	0.87 (0.89)	YES
Pfpea 2	2.30 (2.36)	13868	No	0.88 (1.07)	YES
Pfbs 2	2.59 (2.59)	6310	No	0.43 (0.41)	YES
Pfhxa 2	3.58 (3.58)	7787	No	0.08 (0.09)	YES
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.43 (4.41)	21731	No	0.35 (0.39)	YES
Pfoa 2	4.97 (4.94)	30679	No	1.64 (1.93)	YES
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	5.39 (5.39)	11823	No	0.22 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.13 (6.11)	2849	No	0.36 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

Quantitative Peak Review K1602494-004 *No data for Sample ID*

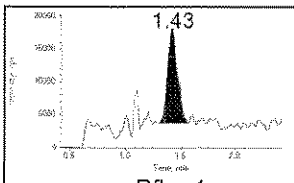
APR 2 1 2016

	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	Calculated Concentration (ng/mL)
705	041816\2029.wiff	K1602494-004	Unknown	Pfbs 1	14563.	N/A	3878300.	0.0270
706	041816\2029.wiff	K1602494-004	Unknown	Pfbs 2	6309.7	N/A	3878300.	< 0
707	041816\2029.wiff	K1602494-004	Unknown	Pfhxa 1	94616.	N/A	6337200.	0.304
708	041816\2029.wiff	K1602494-004	Unknown	Pfhxa 2	7787.3	N/A	6337200.	0.274
709	041816\2029.wiff	K1602494-004	Unknown	Pfhpa 1	19618.	N/A	6337200.	0.0535
710	041816\2029.wiff	K1602494-004	Unknown	Pfhpa 2	0.0000	N/A	6337200.	No Peak
711	041816\2029.wiff	K1602494-004	Unknown	Pfhxs 1	61664.	N/A	3878300.	0.108
712	041816\2029.wiff	K1602494-004	Unknown	Pfhxs 2	21731.	N/A	3878300.	0.0849
713	041816\2029.wiff	K1602494-004	Unknown	Pfoa 1	18757.	N/A	4789800.	0.145
714	041816\2029.wiff	K1602494-004	Unknown	Pfoa 2	30679.	N/A	4789800.	0.112
715	041816\2029.wiff	K1602494-004	Unknown	Pfna 1	0.0000	N/A	5551300.	No Peak

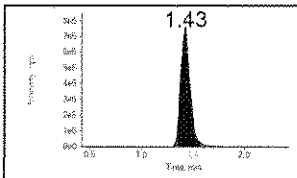




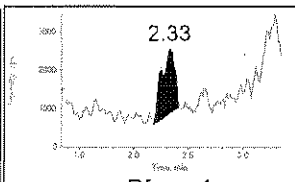
4/19/2016



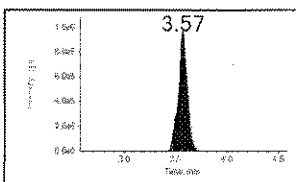
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



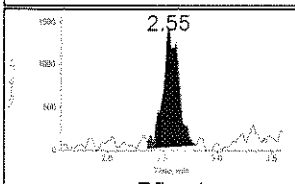
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



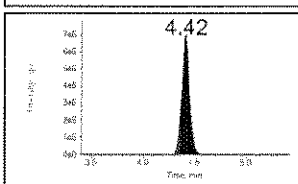
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



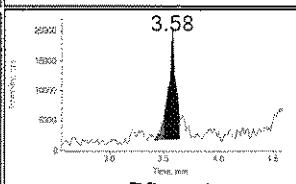
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



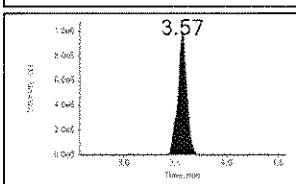
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



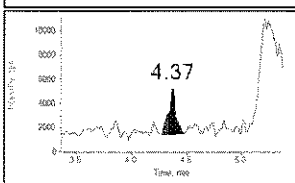
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



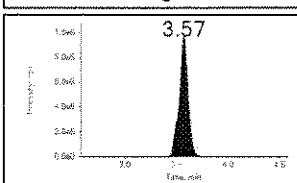
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



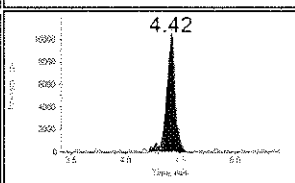
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



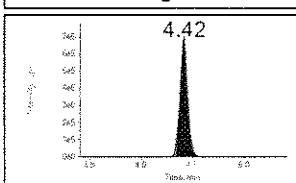
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



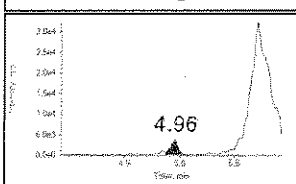
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



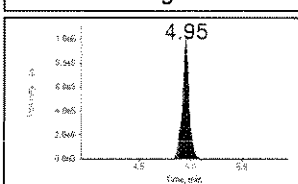
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



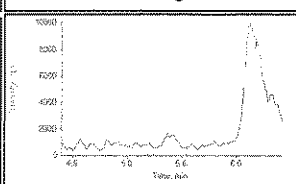
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

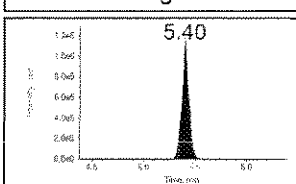


Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

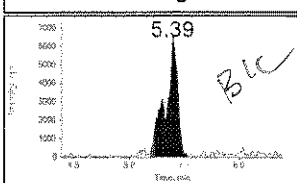


13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

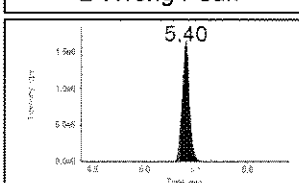

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



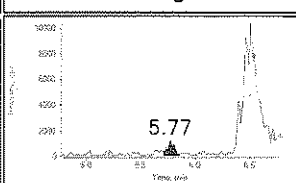
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



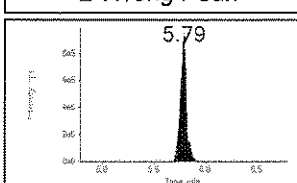
BLC
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

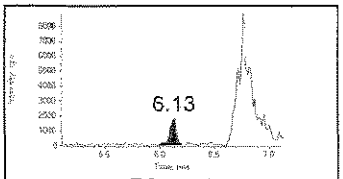


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

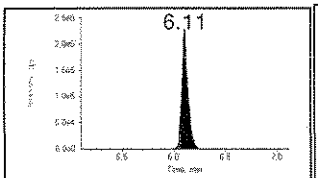


13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

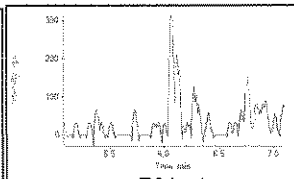
APR 21 2016



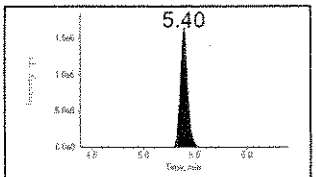
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



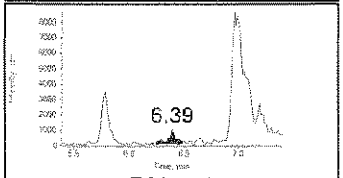
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



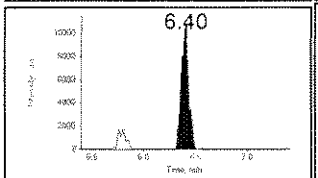
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



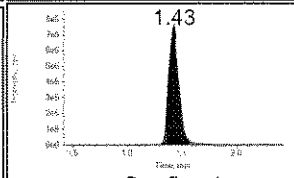
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



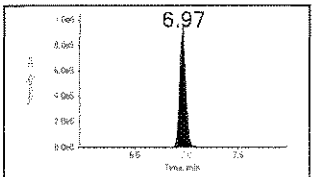
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



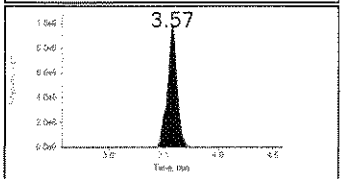
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



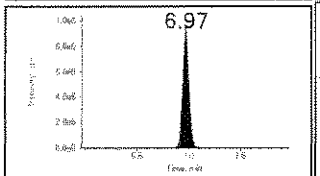
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



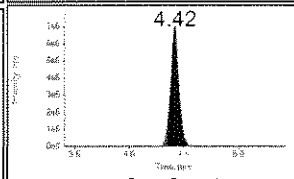
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



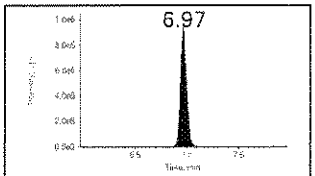
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



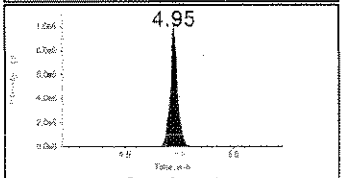
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



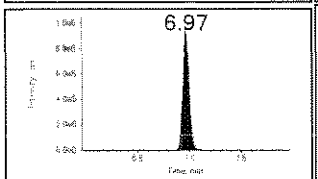
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



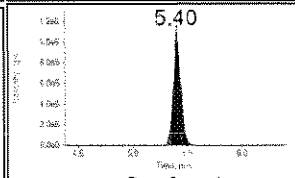
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



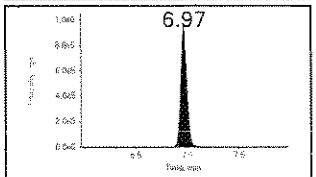
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



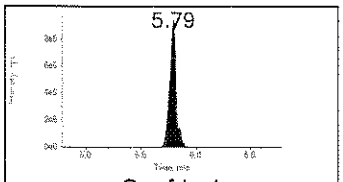
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



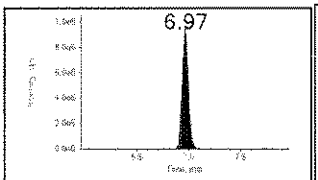
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



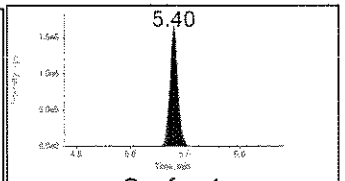
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



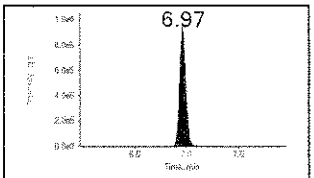
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



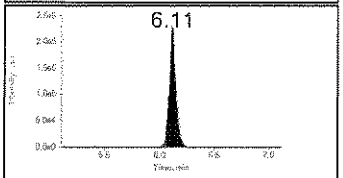
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



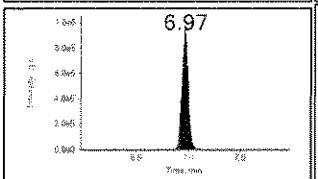
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



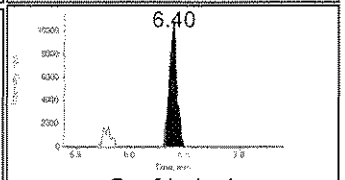
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



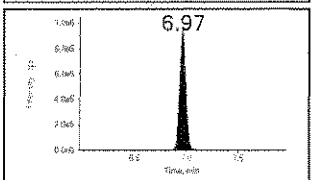
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

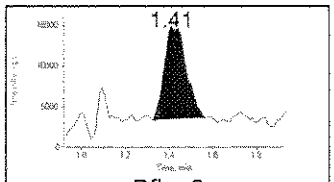


S_pfdoa 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

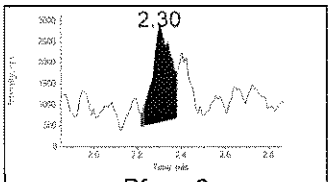


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

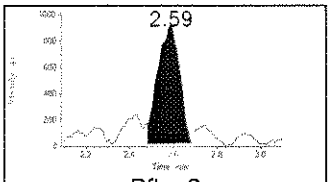
Ion Ratio Confirmation



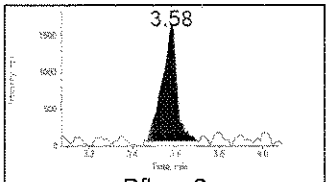
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



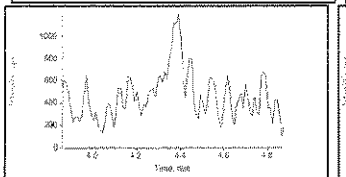
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



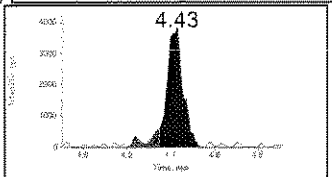
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



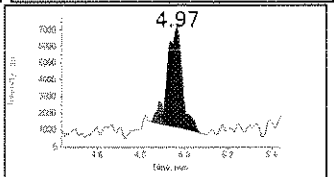
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



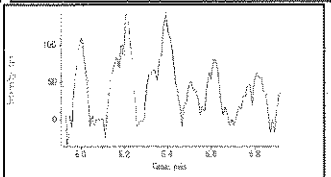
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



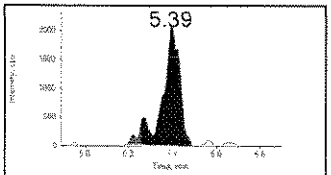
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



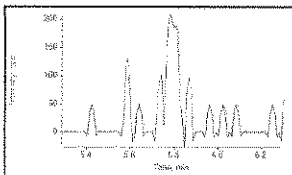
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



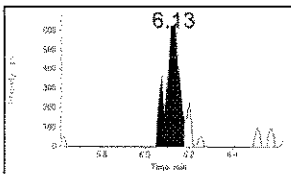
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



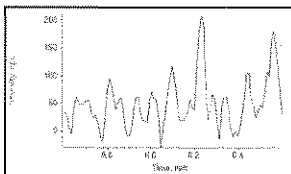
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



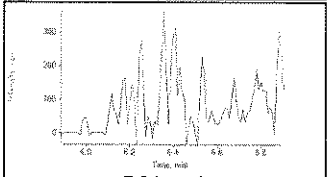
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

RH 4/20/16

Project	Ewan's Projects\PFCs
Data File	041916\5034.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602494-005 10X	Injection Volume	5
Acquisition Date	4/19/2016 2:10:56 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	54	Weight to Volume	0.00

Results Summary K ONLY

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	0	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	0	0.00 (2.34)	0	N/A	No
K Pfbs 1	18O_PFHS	610032	0.00 (2.59)	0	N/A	Yes
Pfhxa 1	13C-PFHxA	0	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	0	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	610032	0.00 (4.41)	0	N/A	Yes
K Pfoa 1	13C-PFOA	868883	4.41 (4.41)	2716	0.1160	Yes
Pfna 1	13C-PFNA	0	0.00 (5.40)	0	N/A	No
K Pfos 1	13C_PFOS	1423105	4.92 (4.92)	8533	0.1210	Yes
Pfda 1	13C-PFDA	0	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	0	0.00 (6.12)	0	N/A	No
Pfds 1	13C_PFOS	1423105	0.00 (6.09)	0	N/A	Yes
Pfdoa 1	13C-PFDoA	0	6.51 (6.39)	20523	N/A	No
S_pfba 1	N_MeFOSA d3	3882502	0.00 (1.43)	0	N/A	Yes
S_phhxa 1	N_MeFOSA d3	3882502	0.00 (3.58)	0	N/A	Yes
K S_pfhs 1	N_MeFOSA d3	3882502	3.85 (3.85)	610032	2.8480 ↑ interim	Yes
K S_pfoa 1	N_MeFOSA d3	3882502	4.41 (4.42)	868883	2.9420 ↑ I	Yes
S_pfna 1	N_MeFOSA d3	3882502	0.00 (5.38)	0	N/A	Yes
S_pfda 1	N_MeFOSA d3	3882502	0.00 (5.79)	0	N/A	Yes
K S_pfos 1	N_MeFOSA d3	3882502	4.91 (4.92)	1423105	3.0600 ↑ interim	Yes

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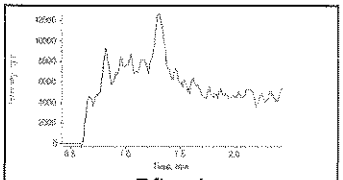
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3882502	0.00 (6.11)	0	N/A	Yes
S_pfdoda 1	N_MeFOSA d3	3882502	0.00 (6.40)	0	N/A	Yes

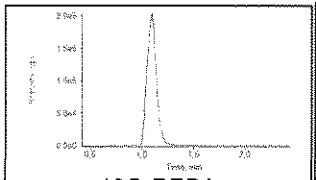
IRC Summary

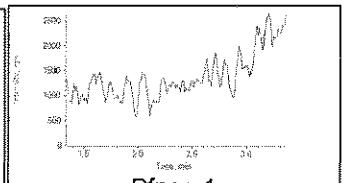
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.29 (1.42)	41343	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	Yes	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	0.00 (4.41)	0	Yes	0.00 (0.39)	No
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	Yes	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	No	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	Yes	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

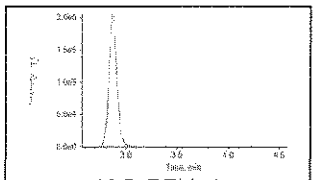
Quantitative Peak Review K1602494-005 10X *No data for Sample ID*

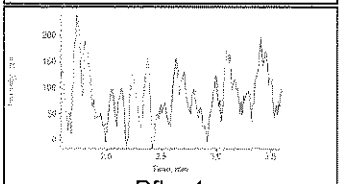
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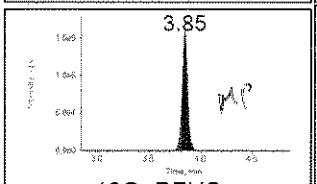

Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

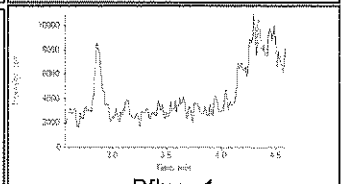

Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

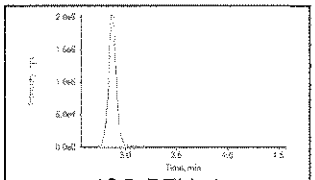

13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

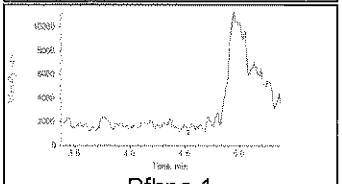

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

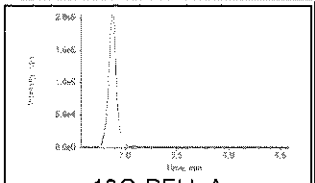


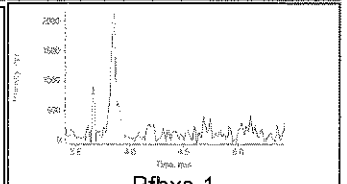
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

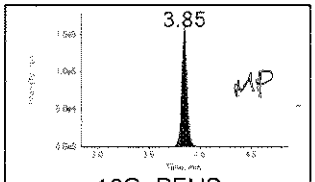

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

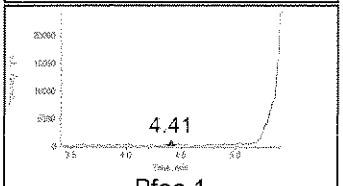

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

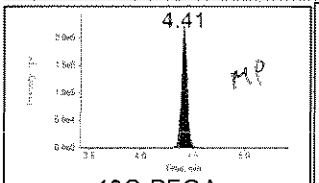

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



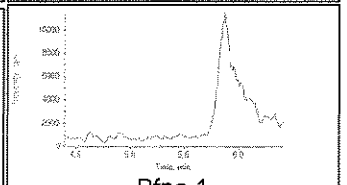
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

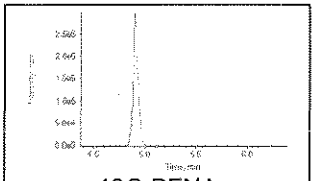


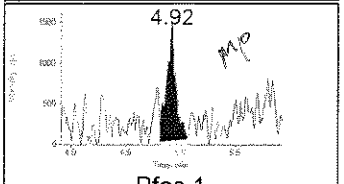
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



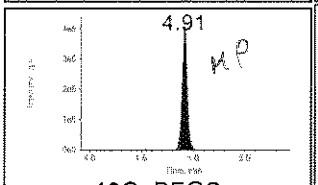
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

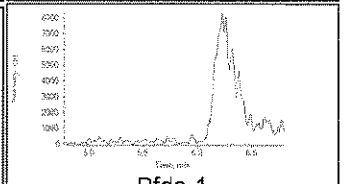

13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

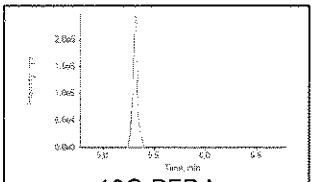


Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



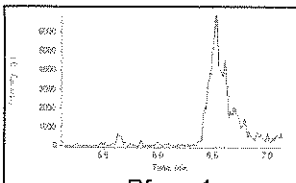
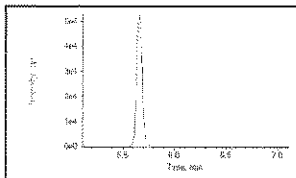
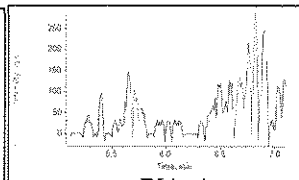
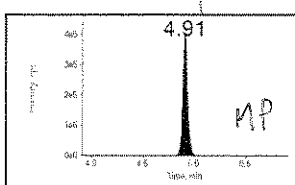
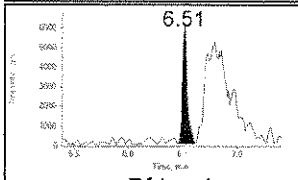
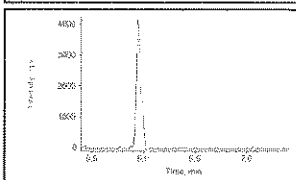
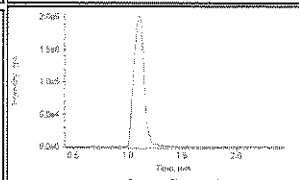
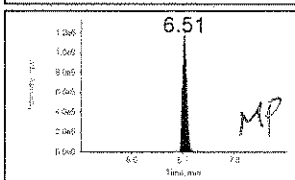
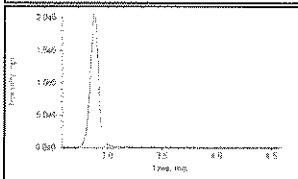
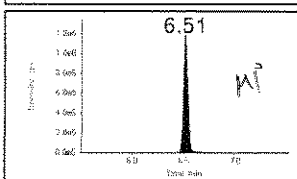
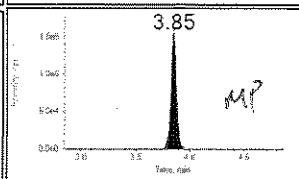
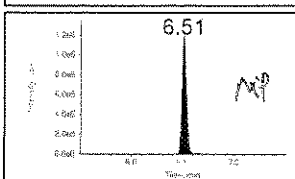
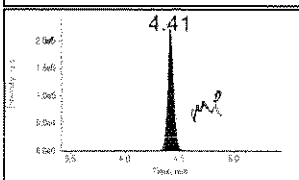
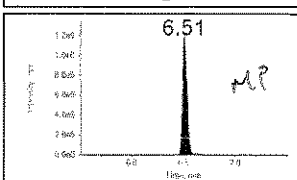
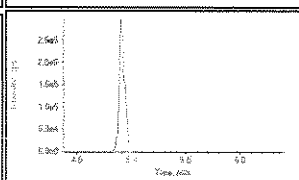
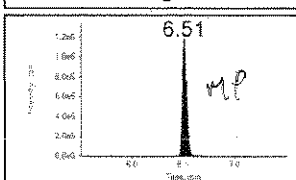
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

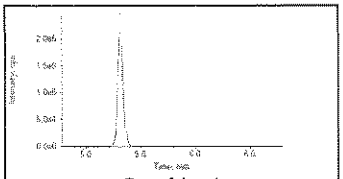
APR 21 2016

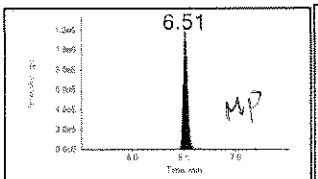
4/14/2016

 Pfuna 1 563.000/519.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFUnA 565.000/520.000 Da □ Baseline □ Missed □ Wrong Peak	 Pfds 1 599.000/80.000 Da □ Baseline □ Missed □ Wrong Peak	 13C_PFOS 503.000/80.000 Da □ Baseline □ Missed □ Wrong Peak
 Pfdoa 1 613.000/569.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFDoA 615.000/570.000 Da □ Baseline □ Missed □ Wrong Peak	 S_pfba 1 217.000/172.000 Da □ Baseline □ Missed □ Wrong Peak	 N_MeFOSA_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak
 S_phhxa 1 315.000/270.000 Da □ Baseline □ Missed □ Wrong Peak	 N_MeFOSA_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 S_pfhs 1 403.000/103.000 Da □ Baseline □ Missed □ Wrong Peak	 N_MeFOSA_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak
 S_pfoa 1 417.000/372.000 Da □ Baseline □ Missed □ Wrong Peak	 N_MeFOSA_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 S_pfna 1 468.000/423.000 Da □ Baseline □ Missed □ Wrong Peak	 N_MeFOSA_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak

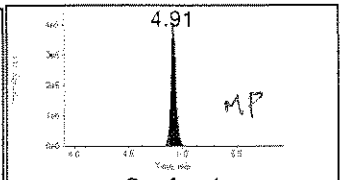
APR 21 2016

4/20/16

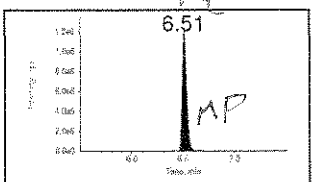

S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



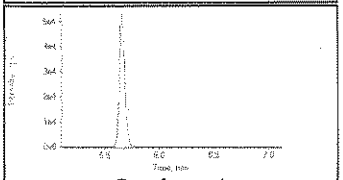
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

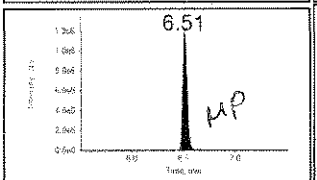


S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

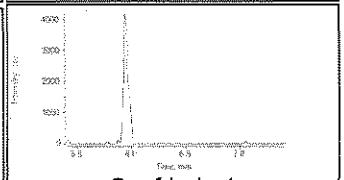


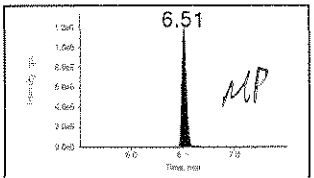
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



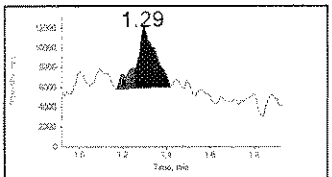
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

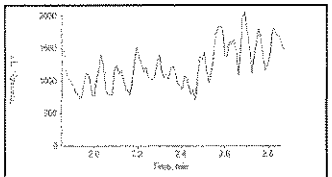


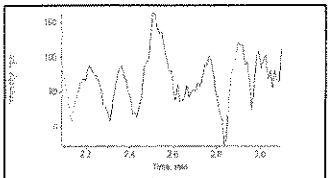
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

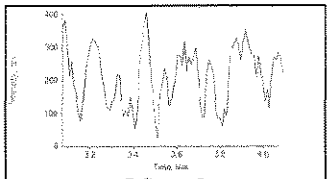
Ion Ratio Confirmation

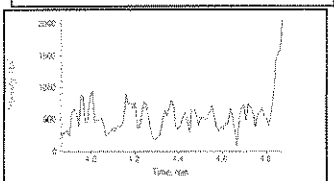


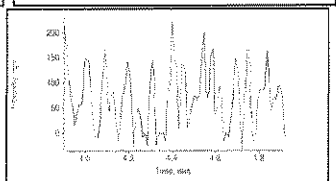
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

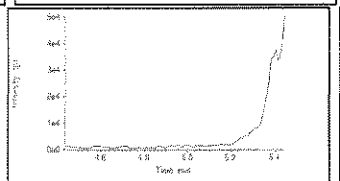

Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

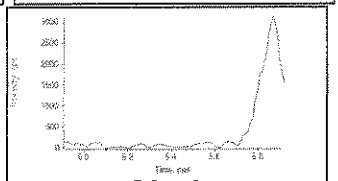

Pfbs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak


Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

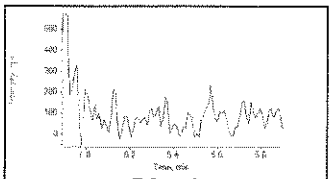

Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfhxs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak

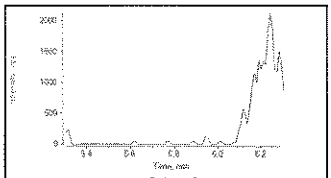

Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak


Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

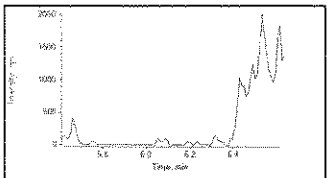
APR 21 2016



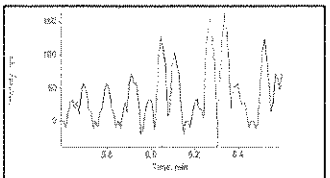
Pfos 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



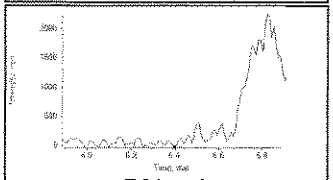
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

MH 4/20/16

Project	Ewan's Projects\PFCs
Data File	041816\2031.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602494-006	Injection Volume	5
Acquisition Date	4/19/2016 12:53:21 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	30	Weight to Volume	0.00

Results Summary *Conf

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	6094408	1.40 (1.43)	97490	0.3510	No
Pfpea 1	13C-PFHxA	6243975	2.33 (2.34)	20982	0.1060	No
* Pfbs 1	18O_PFHS	3440467	2.57 (2.59)	6419	0.0130	No
Pfhxa 1	13C-PFHxA	6243975	3.56 (3.57)	120352	0.3930	No
Pfhpa 1	13C-PFHxA	6243975	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	3440467	4.41 (4.41)	43504	0.0860	No
* Pfoa 1	13C-PFOA	4928814	4.93 (4.94)	14268	0.1070	No
Pfna 1	13C-PFNA	4983375	0.00 (5.40)	0	N/A	No
* Pfos 1	13C_PFOS	8323711	5.38 (5.40)	21275	0.0520	Yes
Pfda 1	13C-PFDA	4139159	5.76 (5.78)	4475	0.0200	No
Pfuna 1	13C-PFUnA	1012582	6.12 (6.12)	6048	0.0330	No
Pfds 1	13C_PFOS	8323711	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	61537	6.39 (6.39)	4349	0.0230	No
S_pfba 1	N_MeFOSA d3	3804993	1.42 (1.43)	6094408	15.1200	No
S_phhxa 1	N_MeFOSA d3	3804993	3.56 (3.58)	6243975	16.3780	No
* S_pfhs 1	N_MeFOSA d3	3804993	4.41 (4.41)	3440467	16.3870	No
* S_pfoa 1	N_MeFOSA d3	3804993	4.93 (4.94)	4928814	17.0260	No
S_pfna 1	N_MeFOSA d3	3804993	5.42 (5.38)	4983375	14.7940	No
S_pfda 1	N_MeFOSA d3	3804993	5.78 (5.79)	4139159	15.9940	No
* S_pfos 1	N_MeFOSA d3	3804993	5.39 (5.39)	8323711	18.2600	No

APR 21 2016

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3804993	6.11 (6.11)	1012582	15.7090	No
S_pfdoda 1	N_MeFOSA d3	3804993	6.39 (6.40)	61537	15.5180	No

IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.40 (1.41)	84343	No	0.87 (0.89)	YES
Pfpea 2	2.33 (2.36)	7293	No	0.35 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	3.56 (3.58)	8758	No	0.07 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.40 (4.41)	16759	No	0.39 (0.39)	YES
Pfoa 2	4.95 (4.94)	19097	No	1.34 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	5.39 (5.39)	4603	No	0.22 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.12 (6.11)	2551	No	0.42 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

Quantitative Peak Review K1602494-006 *No data for Sample ID*

APR 2 1 2016

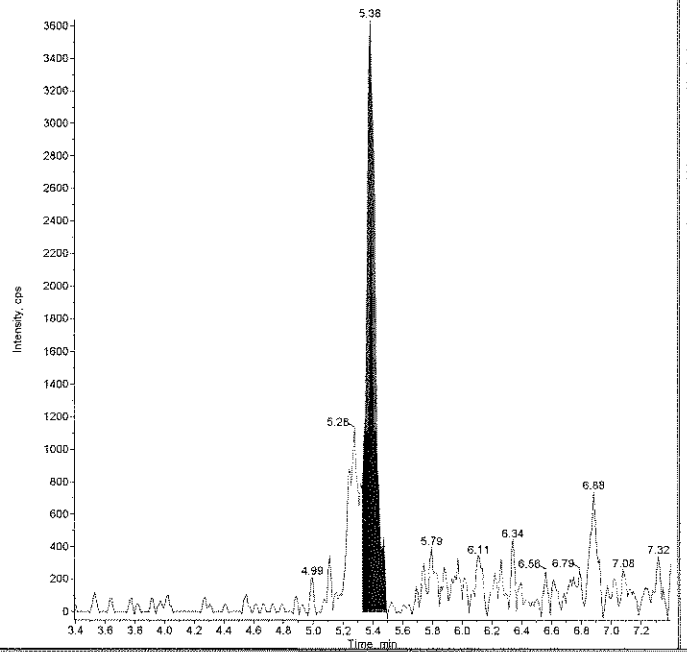
	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	Calculated Concentration (ng/mL)
775	041816\2031.wiff	K1602494-006	Unknown	Pfbs 1	6419.5	N/A	3440500.	0.0134
776	041816\2031.wiff	K1602494-006	Unknown	Pfbs 2	0.0000	N/A	3440500.	No Peak
777	041816\2031.wiff	K1602494-006	Unknown	Pfhxa 1	120350.	N/A	6244000.	0.393
778	041816\2031.wiff	K1602494-006	Unknown	Pfhxa 2	8758.0	N/A	6244000.	0.313
779	041816\2031.wiff	K1602494-006	Unknown	Pfhpa 1	0.0000	N/A	6244000.	No Peak
780	041816\2031.wiff	K1602494-006	Unknown	Pfhpa 2	0.0000	N/A	6244000.	No Peak
781	041816\2031.wiff	K1602494-006	Unknown	Pfhxs 1	43504.	N/A	3440500.	0.0856
782	041816\2031.wiff	K1602494-006	Unknown	Pfhxs 2	16759.	N/A	3440500.	0.0738
783	041816\2031.wiff	K1602494-006	Unknown	Pfoa 1	14268.	N/A	4928800.	0.107
784	041816\2031.wiff	K1602494-006	Unknown	Pfoa 2	19097.	N/A	4928800.	0.0679
785	041816\2031.wiff	K1602494-006	Unknown	Pfna 1	0.0000	N/A	4983400.	No Peak

Sample Name: "K1602494-006" Sample ID: "" File: "2031.wiff"
Peak Name: "Pfos 1" Mass(es): "499.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:        1
Sample Type:      Unknown
Concentration:      N/A
Calculated Conc:  0.0385    ng/mL
Acq. Date:        4/19/2016
Acq. Time:        12:53:21 AM

Modified:            No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:    50
Base. Sub. Window:   0.50   min
Peak-Split. Factor:  1
Report Largest Peak:  Yes
Min. Peak Height:    600.00   cps
Min. Peak Width:       0.00   sec
Smoothing Width:       5      points
RT Window:          10.0    sec
Expected RT:        5.40    min
Use Relative RT:    No

Int. Type:         Valley
Retention Time:     5.38    min
Area:          15786.    counts
Height:        3644.2    cps
Start Time:         5.33    min
End Time:           5.50    min
```

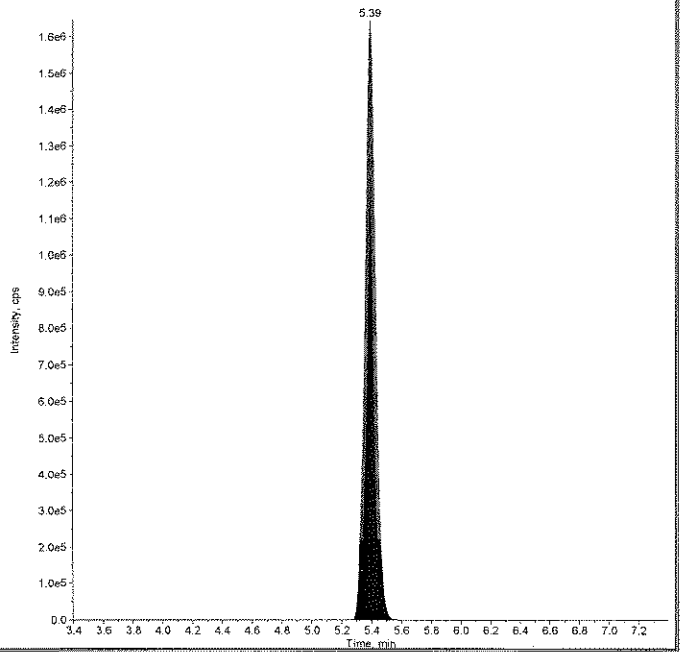


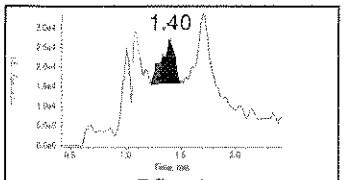
Sample Name: "K1602494-006" Sample ID: "" File: "2031.wiff"
Peak Name: "13C_PFOS(IS)" Mass(es): "503.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:        1
Sample Type:      Unknown
Concentration:      20.0    ng/mL
Calculated Conc:    N/A
Acq. Date:        4/19/2016
Acq. Time:        12:53:21 AM

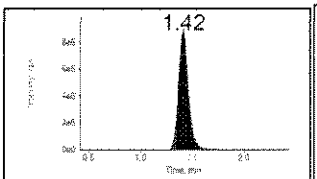
Modified:            No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:    50
Base. Sub. Window:   0.50   min
Peak-Split. Factor:  10
Report Largest Peak:  Yes
Min. Peak Height:    500.00   cps
Min. Peak Width:       0.00   sec
Smoothing Width:       5      points
RT Window:          30.0    sec
Expected RT:        5.39    min
Use Relative RT:    No

Int. Type:         Base To Base
Retention Time:     5.39    min
Area:          8925700.    counts
Height:        1651500.    cps
Start Time:         5.27    min
End Time:           5.85    min
```

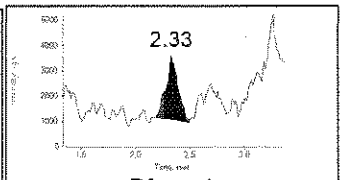




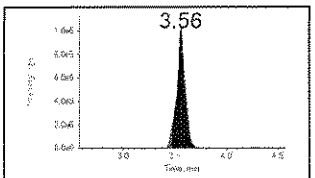
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



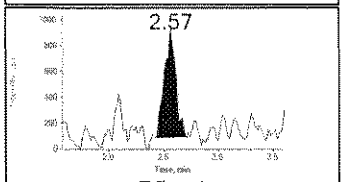
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



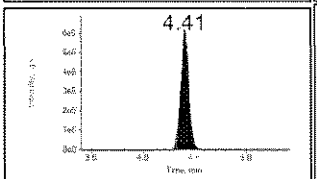
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



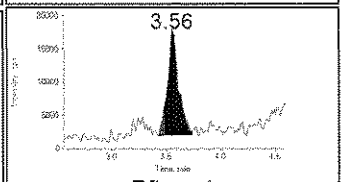
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



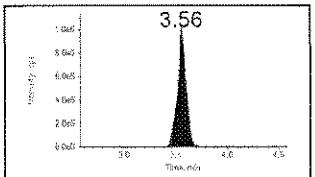
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



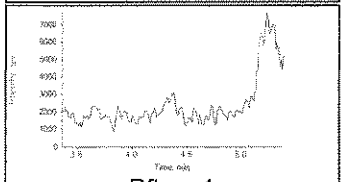
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



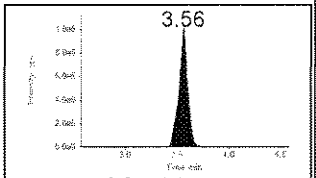
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



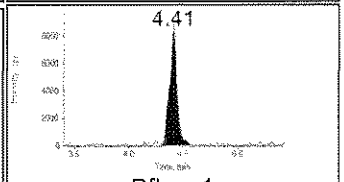
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



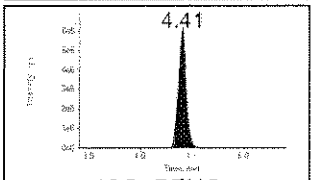
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



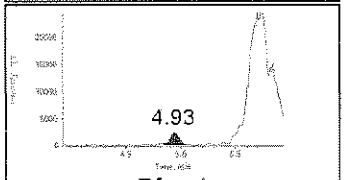
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



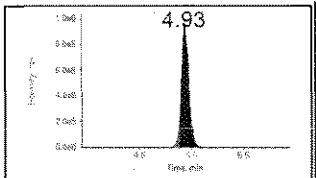
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



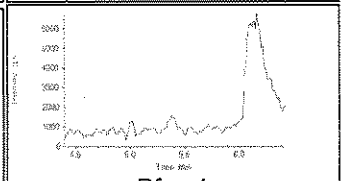
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



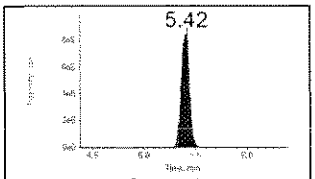
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



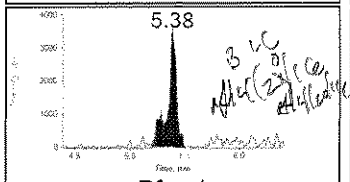
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



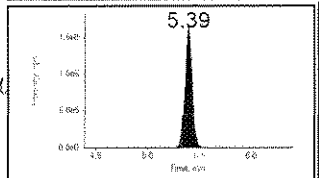
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



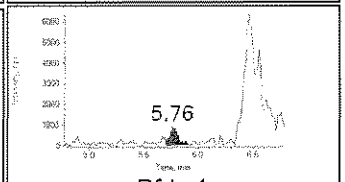
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



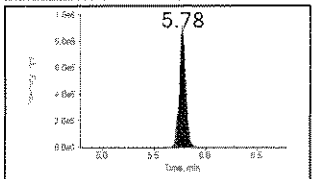
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

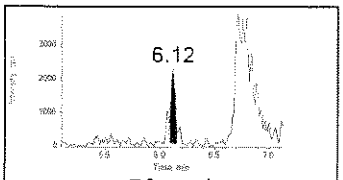


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

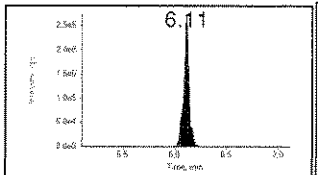


13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

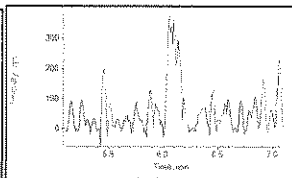
APR 21 2016



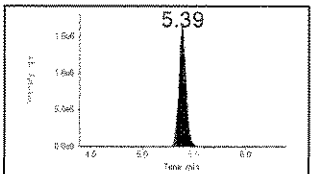
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



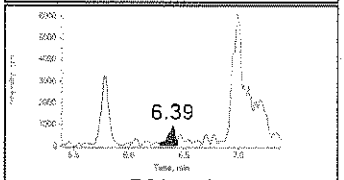
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



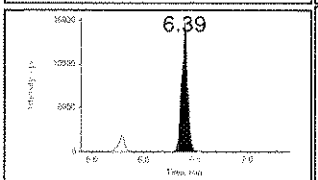
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



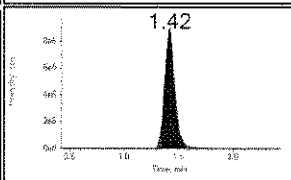
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



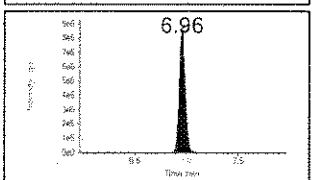
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



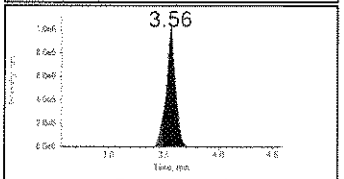
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



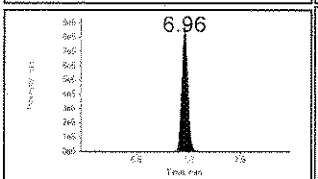
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



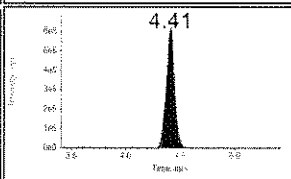
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



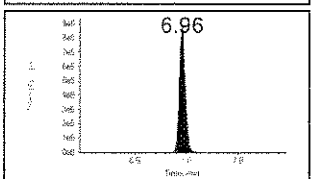
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



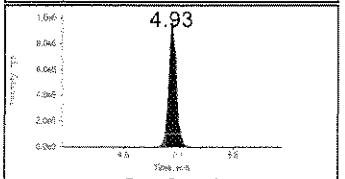
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



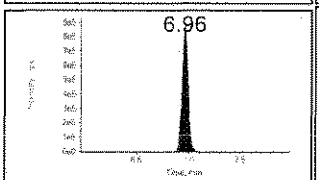
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



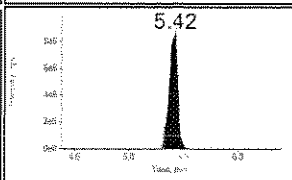
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



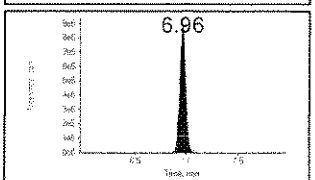
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



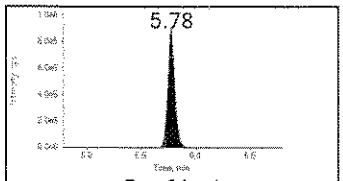
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



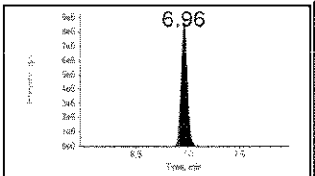
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



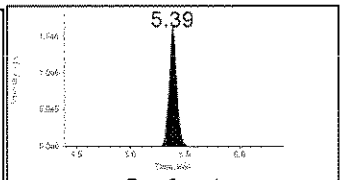
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



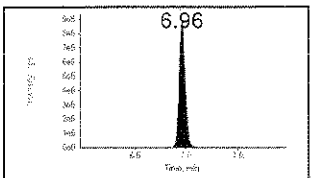
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



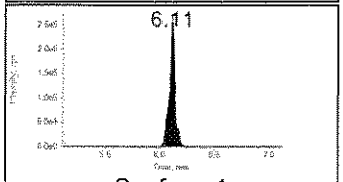
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



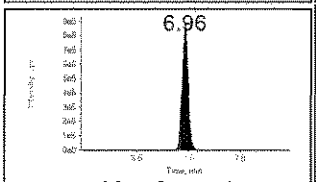
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



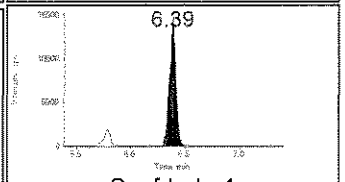
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



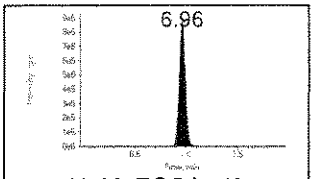
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

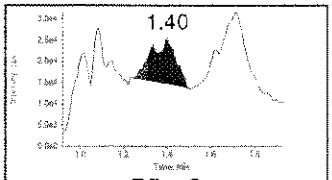


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

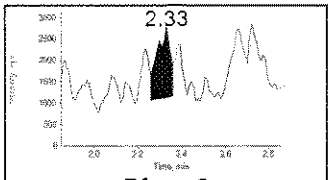


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

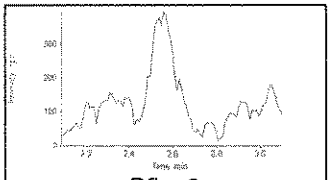
Ion Ratio Confirmation



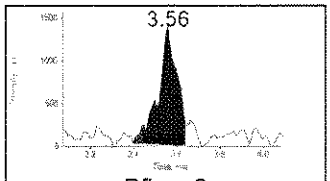
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



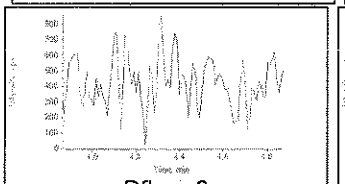
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



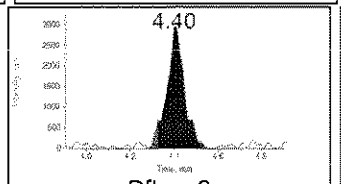
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



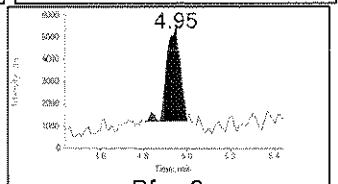
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



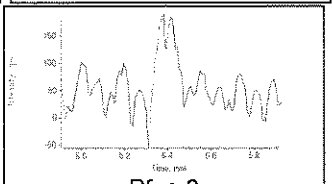
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



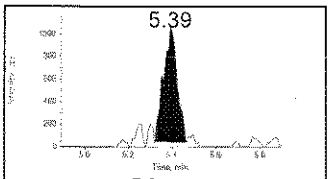
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



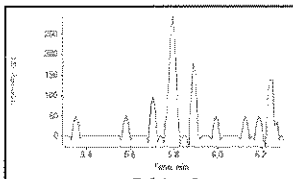
Pfoa 2
Mod? No
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□ Wrong Peak



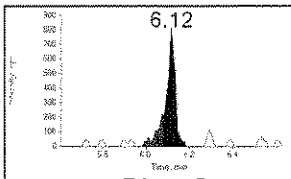
Pfna 2
Mod? No
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□ Wrong Peak



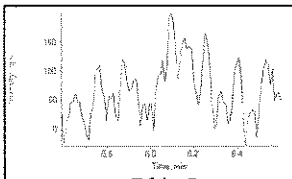
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



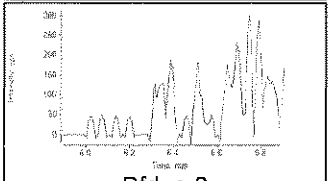
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Created with Analyst Reporter
Printed: 4/20/2016 3:08 PM

Project	Ewan's Projects\PFCs
Data File	041916\5037.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602494-007	Injection Volume	5
Acquisition Date	4/19/2016 2:41:16 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	57	Weight to Volume	0.00

Results Summary

COPY

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	0	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	0	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	3833884	1.83 (1.83)	2206	0.0040	Yes
Pfhxa 1	13C-PFHxA	0	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	0	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	3833884	0.00 (4.41)	0	N/A	Yes
Pfoa 1	13C-PFOA	5879736	4.42 (4.42)	20760	0.1310	Yes
Pfna 1	13C-PFNA	0	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	8355363	4.91 (4.91)	325159	0.7860	Yes
Pfda 1	13C-PFDA	0	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	0	0.00 (6.12)	0	N/A	No
Pfds 1	13C_PFOS	8355363	0.00 (6.09)	0	N/A	Yes
Pfdoa 1	13C-PFDoA	0	6.51 (6.39)	22824	N/A	No
S_pfba 1	N_MeFOSA d3	4295265	0.00 (1.43)	0	N/A	Yes
S_phhxa 1	N_MeFOSA d3	4295265	0.00 (3.58)	0	N/A	Yes
S_pfhs 1	N_MeFOSA d3	4295265	3.85 (3.85)	3833884	16.1770	Yes
S_pfoa 1	N_MeFOSA d3	4295265	4.41 (4.41)	5879736	17.9930	Yes
S_pfna 1	N_MeFOSA d3	4295265	0.00 (5.38)	0	N/A	Yes
S_pfda 1	N_MeFOSA d3	4295265	5.31 (5.31)	5035551	17.2370	Yes
S_pfos 1	N_MeFOSA d3	4295265	4.91 (4.92)	8355363	16.2370	Yes

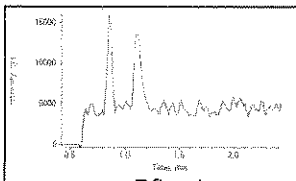
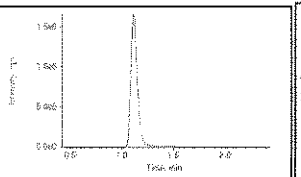
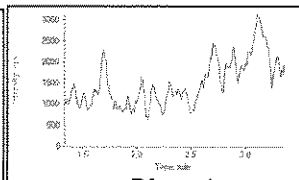
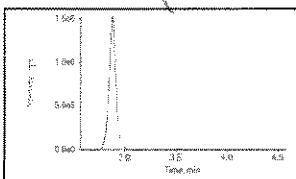
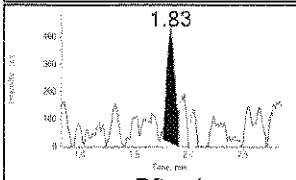
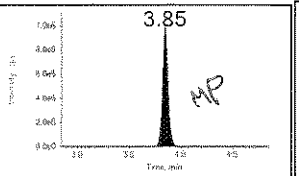
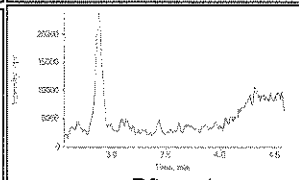
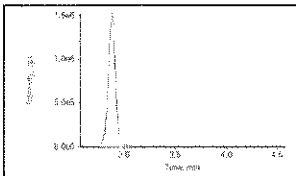
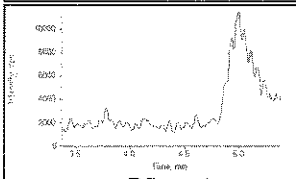
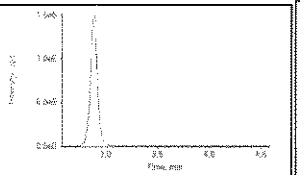
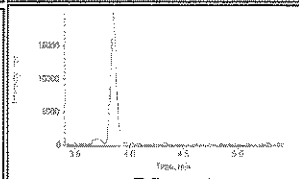
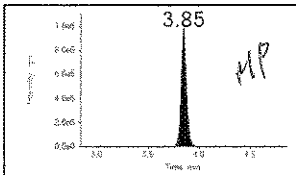
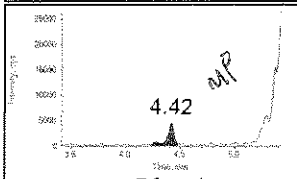
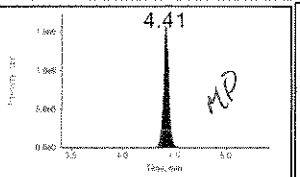
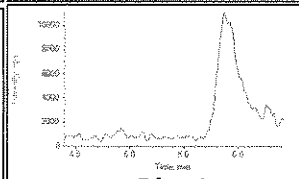
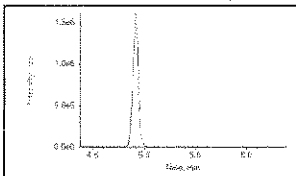
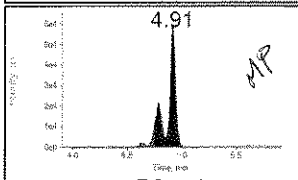
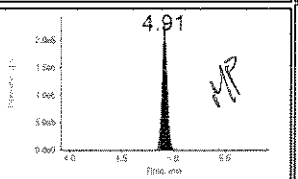
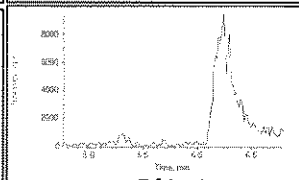
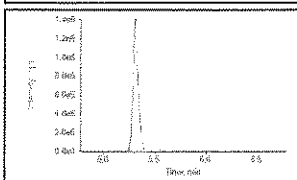
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Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	4295265	0.00 (6.11)	0	N/A	Yes
S_pfdoda 1	N_MeFOSA d3	4295265	0.00 (6.40)	0	N/A	Yes

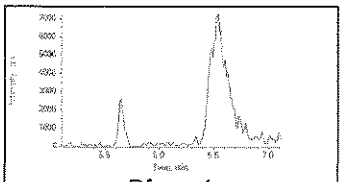
IRC Summary

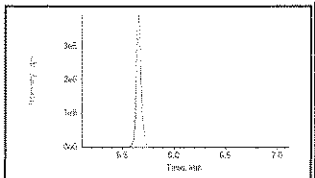
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.42)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	Yes	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	0.00 (4.41)	0	Yes	0.00 (0.39)	No
Pfoa 2	4.42 (4.42)	34962	Yes	1.68 (1.93)	YES
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	4.91 (4.92)	86856	Yes	0.27 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	No	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	Yes	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

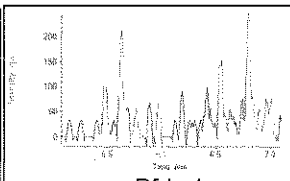
Quantitative Peak Review K1602494-007 *No data for Sample ID*

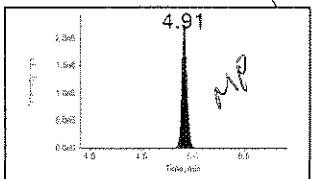
 Pfba 1 213.010/169.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFBA 217.000/172.000 Da □ Baseline □ Missed □ Wrong Peak	 Pfpea 1 263.010/219.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFHxA 315.000/270.000 Da □ Baseline □ Missed □ Wrong Peak
 Pfbs 1 299.000/80.000 Da □ Baseline □ Missed □ Wrong Peak	 18O_PFHS 403.000/103.000 Da □ Baseline □ Missed □ Wrong Peak	 Pfhxa 1 313.000/269.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFHxA 315.000/270.000 Da □ Baseline □ Missed □ Wrong Peak
 Pfhpa 1 363.000/319.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFHxA 315.000/270.000 Da □ Baseline □ Missed □ Wrong Peak	 Pfhxs 1 399.000/80.000 Da □ Baseline □ Missed □ Wrong Peak	 18O_PFHS 403.000/103.000 Da □ Baseline □ Missed □ Wrong Peak
 Pfoa 1 413.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFOA 417.000/372.000 Da □ Baseline □ Missed □ Wrong Peak	 Pfna 1 463.000/419.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFNA 468.000/423.000 Da □ Baseline □ Missed □ Wrong Peak
 Pfos 1 499.000/80.000 Da □ Baseline □ Missed □ Wrong Peak	 13C_PFOS 503.000/80.000 Da □ Baseline □ Missed □ Wrong Peak	 Pfda 1 513.000/469.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFDA 515.000/470.000 Da □ Baseline □ Missed □ Wrong Peak

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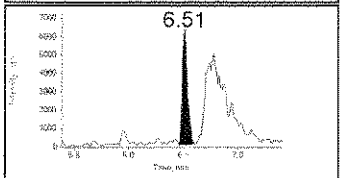

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

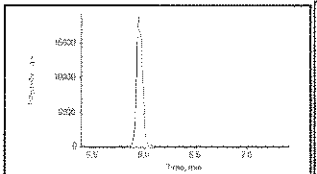

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

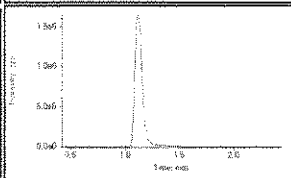


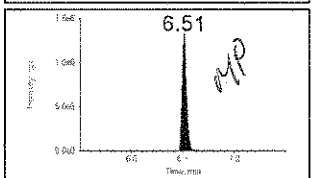
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



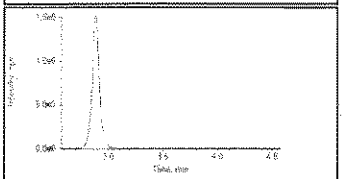
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

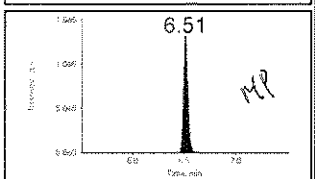

13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

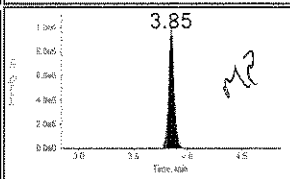


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

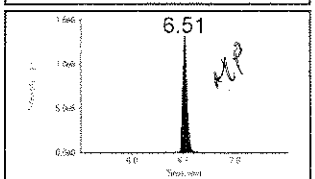

S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



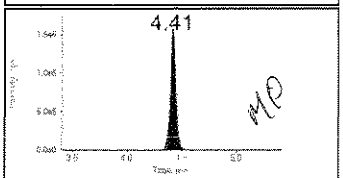
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



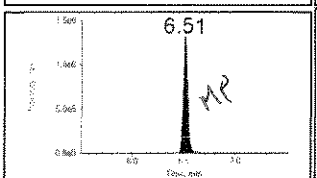
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



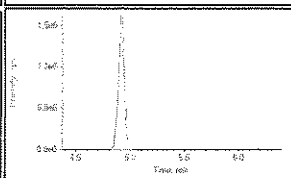
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

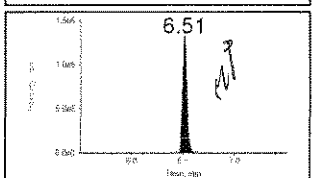


S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



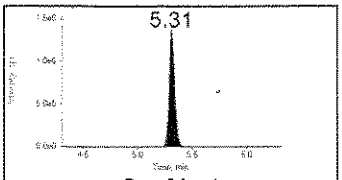
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

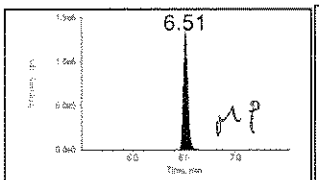


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

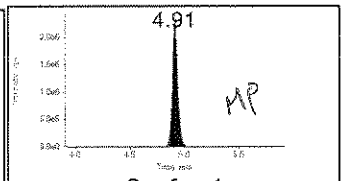
APR 21 2016



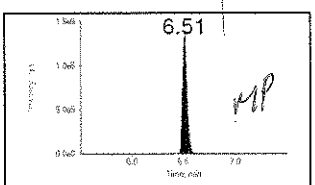
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



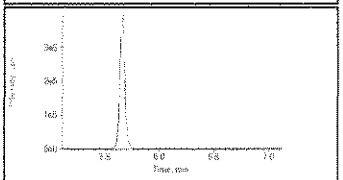
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

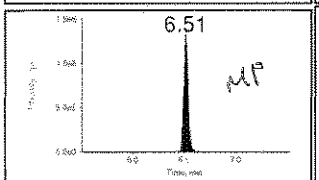


S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

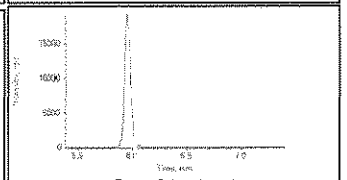


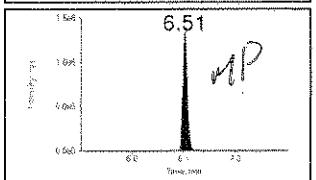
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



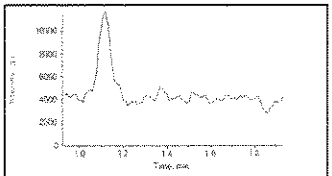
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

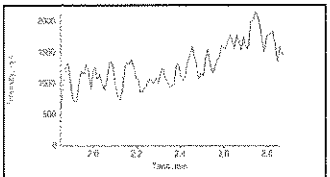

S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

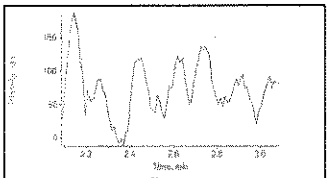


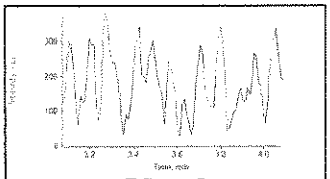
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

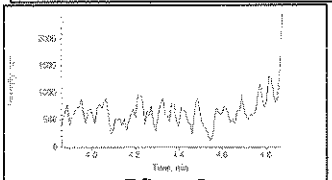
Ion Ratio Confirmation

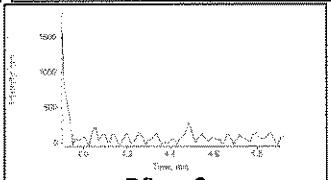

Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

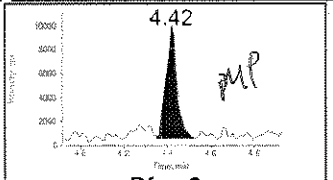

Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfbs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak

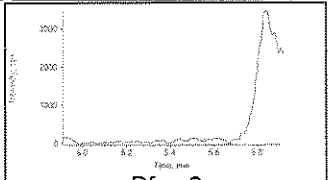

Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

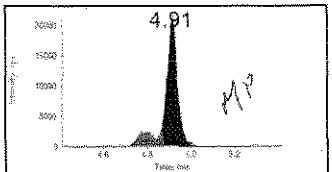

Pfhxs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



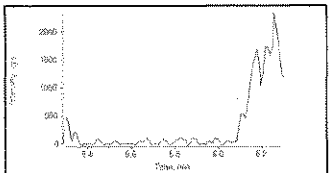
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak


Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

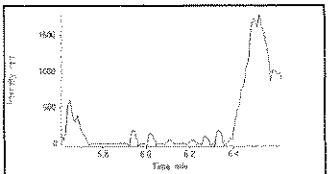
APR 2 1 2016



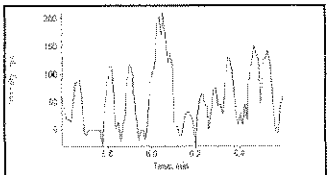
Pfos 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



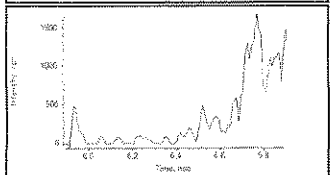
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

4/4/2016

Project	Ewan's Projects\PFCs
Data File	041816\2035.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	K1602494-008	Injection Volume	5
Acquisition Date	4/19/2016 1:33:47 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	32	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	6923803	1.43 (1.43)	33126	0.1050	No
Pfpea 1	13C-PFHxA	6925639	2.34 (2.34)	2896	0.0130	No
Pfbs 1	18O_PFHS	3678365	2.58 (2.59)	27576	0.0540	No
Pfhxa 1	13C-PFHxA	6925639	3.57 (3.57)	252509	0.7430	No
Pfhpa 1	13C-PFHxA	6925639	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	3678365	4.41 (4.41)	266236	0.4900	No
Pfoa 1	13C-PFOA	5118204	4.95 (4.94)	17121	0.1240	Yes
Pfna 1	13C-PFNA	5416345	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	8449613	5.40 (5.40)	81493	0.1950	Yes
Pfda 1	13C-PFDA	4213361	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	1061494	6.12 (6.12)	9230	0.0490	No
Pfds 1	13C_PFOS	8449613	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	64221	6.41 (6.39)	3326	0.0170	No
S_pfba 1	N_MeFOSA d3	4385805	1.42 (1.43)	6923803	14.9020	No
S_phhxa 1	N_MeFOSA d3	4385805	3.56 (3.58)	6925639	15.7610	No
S_pfhs 1	N_MeFOSA d3	4385805	4.41 (4.41)	3678365	15.2000	No
S_pfoa 1	N_MeFOSA d3	4385805	4.95 (4.94)	5118204	15.3390	No
S_pfna 1	N_MeFOSA d3	4385805	5.40 (5.38)	5416345	13.9500	No
S_pfda 1	N_MeFOSA d3	4385805	5.81 (5.79)	4213361	14.1250	No
S_pfos 1	N_MeFOSA d3	4385805	5.40 (5.39)	8449613	16.0810	No

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Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	4385805	6.11 (6.11)	1061494	14.2870	No
S_pfdoda 1	N_MeFOSA d3	4385805	6.39 (6.40)	64221	14.0500	No

IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.37 (1.42)	26403	No	0.80 (0.89)	YES
Pfpea 2	2.29 (2.36)	3825	No	1.32 (1.07)	No
Pfbs 2	2.57 (2.59)	11371	No	0.41 (0.41)	YES
Pfhxa 2	3.57 (3.58)	22489	No	0.09 (0.09)	YES
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.42 (4.41)	100758	No	0.38 (0.39)	YES
Pfoa 2	4.93 (4.94)	26760	No	1.56 (1.93)	YES
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	5.40 (5.39)	19881	No	0.24 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.12 (6.11)	2557	No	0.28 (0.28)	YES
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

Quantitative Peak Review K1602494-008 *No data for Sample ID*

APR 2 1 2016

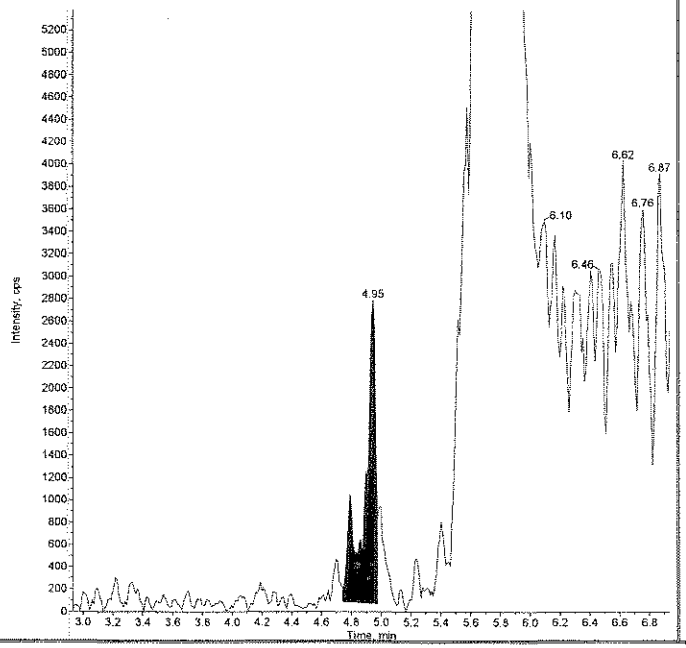
	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	Calculated Concentration (ng/mL)
911	041816\2035.wiff	K1602494-008	Unknown	Pfba 1	33126.	N/A	6923800.	0.105
912	041816\2035.wiff	K1602494-008	Unknown	Pfba 2	26403.	N/A	6923800.	0.0938
913	041816\2035.wiff	K1602494-008	Unknown	Pfpea 1	2896.4	N/A	6925600.	0.0132
914	041816\2035.wiff	K1602494-008	Unknown	Pfpea 2	3824.9	N/A	6925600.	0.0163
915	041816\2035.wiff	K1602494-008	Unknown	Pfbs 1	27576.	N/A	3678400.	0.0539
916	041816\2035.wiff	K1602494-008	Unknown	Pfbs 2	11371.	N/A	3678400.	< 0
917	041816\2035.wiff	K1602494-008	Unknown	Pfhxa 1	252510.	N/A	6925600.	0.743
918	041816\2035.wiff	K1602494-008	Unknown	Pfhxa 2	22489.	N/A	6925600.	0.725
919	041816\2035.wiff	K1602494-008	Unknown	Pfhpa 1	0.0000	N/A	6925600.	No Peak
920	041816\2035.wiff	K1602494-008	Unknown	Pfhpa 2	0.0000	N/A	6925600.	No Peak
921	041816\2035.wiff	K1602494-008	Unknown	Pfhxs 1	266240.	N/A	3678400.	0.490

Sample Name: "K1602494-008" Sample ID: "" File: "2035.wiff"
Peak Name: "Pfoa 1" Mass(es): "413.000/169.000 Da"
Comment: "" Annotation: ""

```
Sample Index:       1
Sample Type:        Unknown
Concentration:      N/A
Calculated Conc:    0.104     ng/mL
Acq. Date:          4/19/2016
Acq. Time:          1:33:47 AM

Modified:           No
Proc. Algorithm:    Specify Parameters - MQ III
Noise Percentage:   70
Base. Sub. Window:  0.50    min
Peak-Split. Factor: 1
Report Largest Peak:  Yes
Min. Peak Height:   500.00    cps
Min. Peak Width:    0.00    sec
Smoothing Width:    7       points
RT Window:          10.0    sec
Expected RT:        4.94    min
Use Relative RT:    No

Int. Type:          Valley
Retention Time:     4.95    min
Area:               14319.  counts
Height:             2715.8  cps
Start Time:         4.74    min
End Time:           4.98    min
```

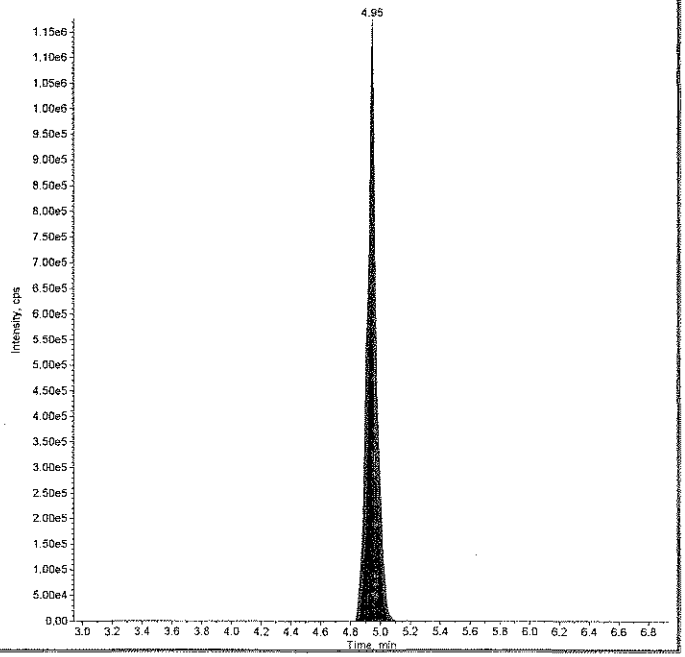


Sample Name: "K1602494-006" Sample ID: "" File: "2035.wiff"
Peak Name: "13C-PFOA(IS)" Mass(es): "417.000/372.000 Da"
Comment: "" Annotation: ""

```
Sample Index:       1
Sample Type:        Unknown
Concentration:      20.0      ng/mL
Calculated Conc:    N/A
Acq. Date:          4/19/2016
Acq. Time:          1:33:47 AM

Modified:           No
Proc. Algorithm:    Specify Parameters - MQ III
Noise Percentage:   50
Base. Sub. Window:  0.50    min
Peak-Split. Factor: 1
Report Largest Peak:  Yes
Min. Peak Height:   500.00    cps
Min. Peak Width:    0.00    sec
Smoothing Width:    5       points
RT Window:          10.0    sec
Expected RT:        4.94    min
Use Relative RT:    No

Int. Type:          Valley
Retention Time:     4.95    min
Area:               5118200.  counts
Height:             1176900.  cps
Start Time:         4.79    min
End Time:           5.13    min
```



APR 2 1 2016

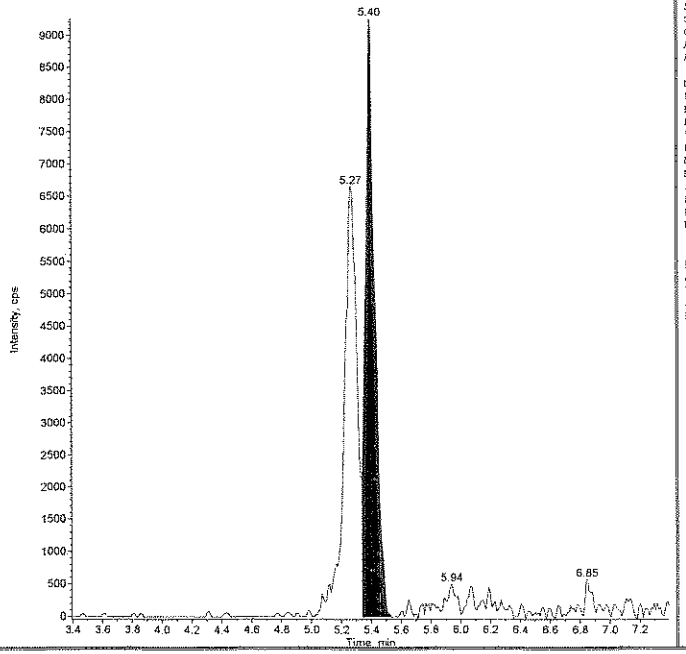
	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	Calculated Concentration (ng/mL)
915	041816\2035.wiff	K1602494-008	Unknown	Pfbs 1	27576.	N/A	3678400.	0.0539
916	041816\2035.wiff	K1602494-008	Unknown	Pfbs 2	11371.	N/A	3678400.	< 0
917	041816\2035.wiff	K1602494-008	Unknown	Pfhxa 1	252510.	N/A	6925600.	0.743
918	041816\2035.wiff	K1602494-008	Unknown	Pfhxa 2	22489.	N/A	6925600.	0.725
919	041816\2035.wiff	K1602494-008	Unknown	Pfhpa 1	0.0000	N/A	6925600.	No Peak
920	041816\2035.wiff	K1602494-008	Unknown	Pfhpa 2	0.0000	N/A	6925600.	No Peak
921	041816\2035.wiff	K1602494-008	Unknown	Pfhxs 1	266240.	N/A	3678400.	0.490
922	041816\2035.wiff	K1602494-008	Unknown	Pfhxs 2	100760.	N/A	3678400.	0.415
923	041816\2035.wiff	K1602494-008	Unknown	Pfoa 1	17121.	N/A	5118200.	0.124
924	041816\2035.wiff	K1602494-008	Unknown	Pfoa 2	26760.	N/A	5118200.	0.0916
925	041816\2035.wiff	K1602494-008	Unknown	Pfna 1	0.0000	N/A	5416300.	No Peak

Sample Name: "K1602494-008" Sample ID: "" File: "2035.wiff"
Peak Name: "Pfos 1" Mass(es): "499.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:        1
Sample Type:     Unknown
Concentration:       N/A
Calculated Conc:   0.101    ng/mL
Acq. Date:       4/19/2016
Acq. Time:       1:33:47 AM

Modified:            No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:     50
Base. Sub. Window:    0.50   min
Peak-Split. Factor:   1
Report Largest Peak:  Yes
Min. Peak Height:    600.00   cps
Min. Peak Width:       0.00   sec
Smoothing Width:        5       points
RT Window:           10.0     sec
Expected RT:         5.40     min
Use Relative RT:     No

Int. Type:         Valley
Retention Time:      5.40   min
Area:           42252.    counts
Height:          9432.3  cps
Start Time:          5.34   min
End Time:            5.54   min
```

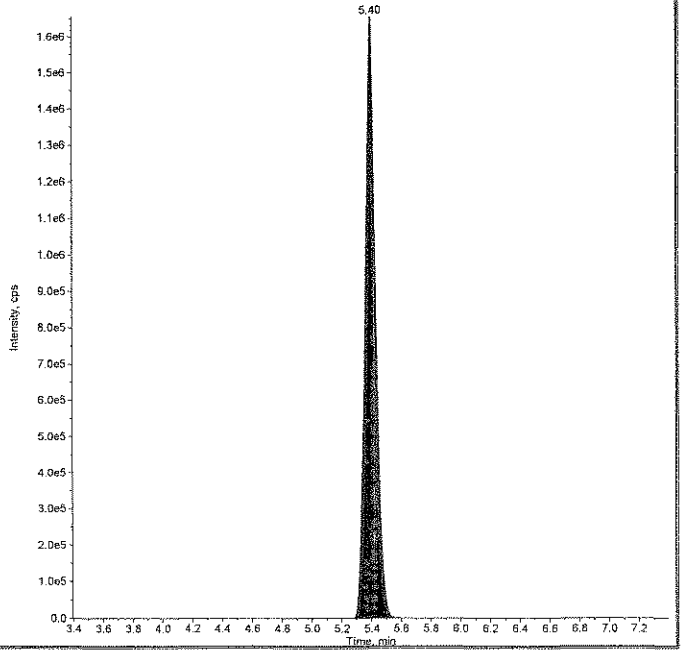


Sample Name: "K1602494-008" Sample ID: "" File: "2035.wiff"
Peak Name: "13C_PFOS(IS)" Mass(es): "503.000/80.000 Da"
Comment: "" Annotation: ""

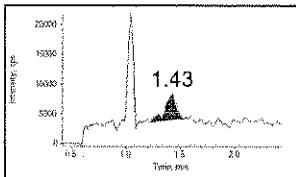
```
Sample Index:        1
Sample Type:     Unknown
Concentration:      20.0     ng/mL
Calculated Conc:     N/A
Acq. Date:       4/19/2016
Acq. Time:       1:33:47 AM

Modified:            No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:     50
Base. Sub. Window:    0.50   min
Peak-Split. Factor:   10
Report Largest Peak:  Yes
Min. Peak Height:    500.00   cps
Min. Peak Width:       0.00   sec
Smoothing Width:        5       points
RT Window:           30.0     sec
Expected RT:         5.39     min
Use Relative RT:     No

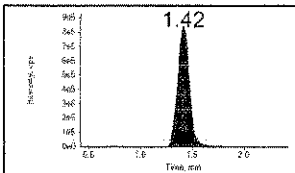
Int. Type:       Base To Base
Retention Time:      5.40   min
Area:          8449600.    counts
Height:        1680700.   cps
Start Time:          5.27   min
End Time:            5.83   min
```



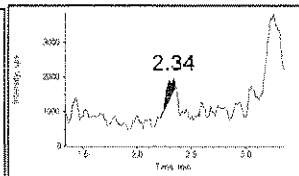
4/19/2016



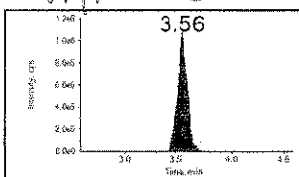
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



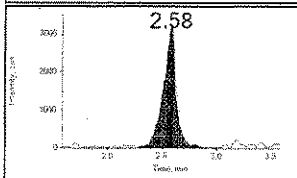
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



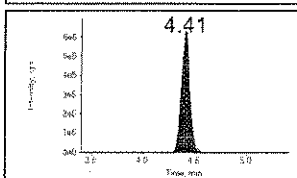
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



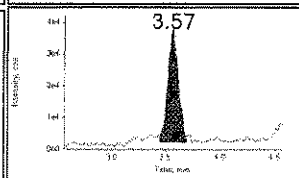
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



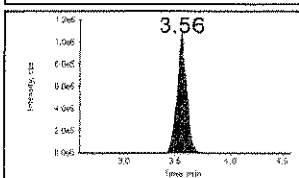
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



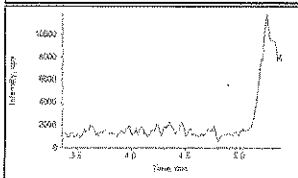
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



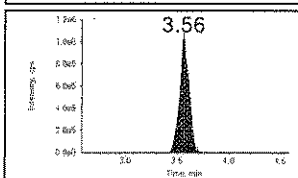
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



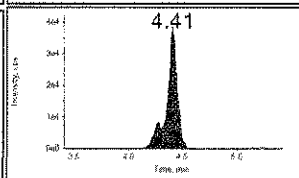
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



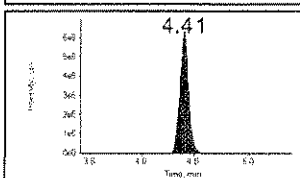
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



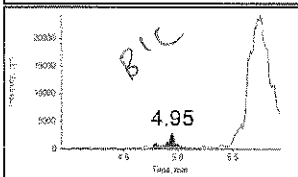
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



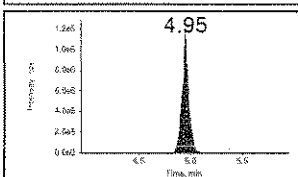
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



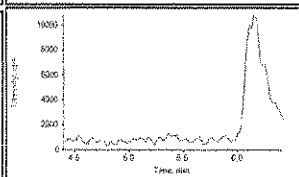
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



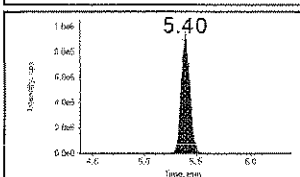
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



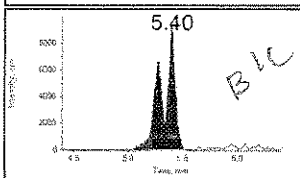
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



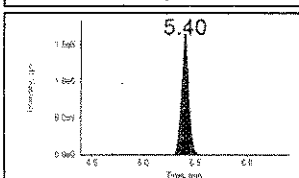
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



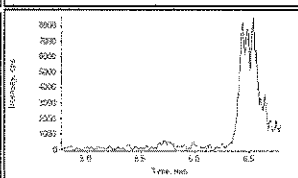
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



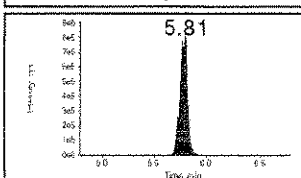
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

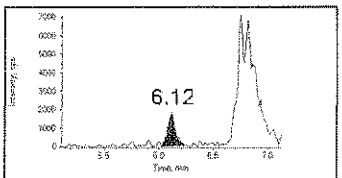


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

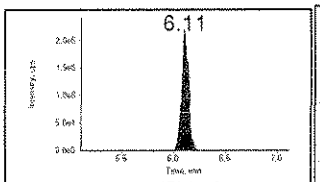


13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

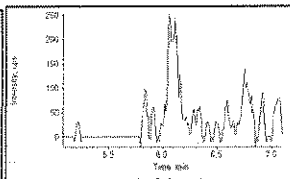
APR 21 2016



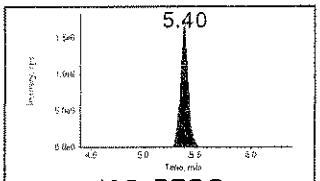
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



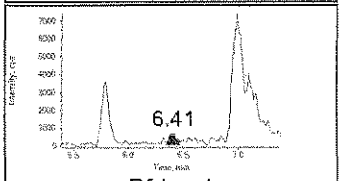
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



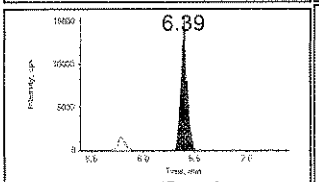
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



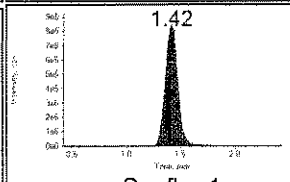
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



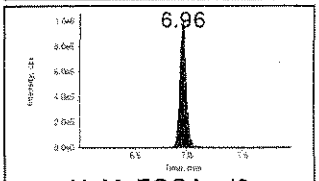
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



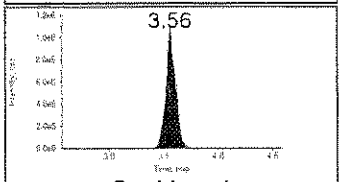
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



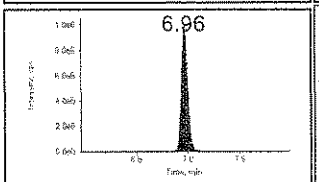
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



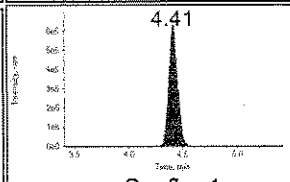
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



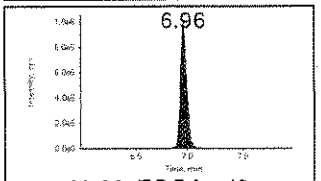
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



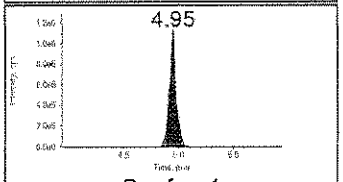
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



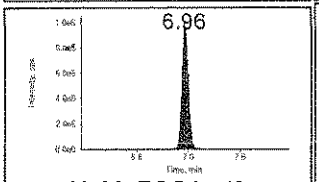
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



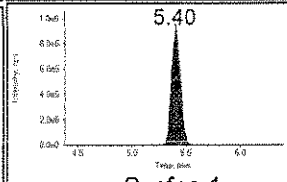
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



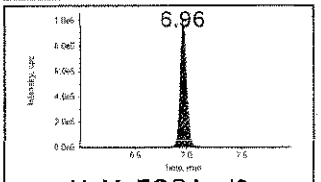
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



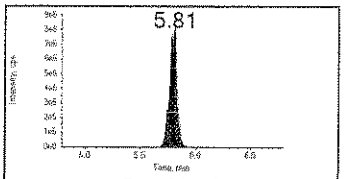
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



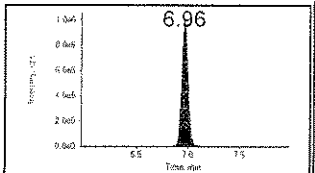
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



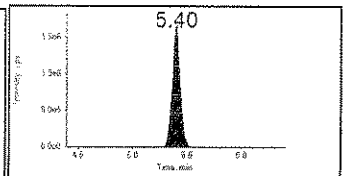
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



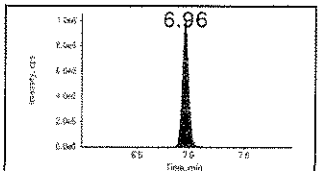
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



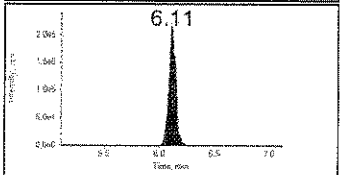
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



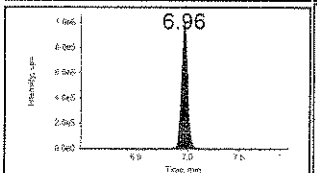
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



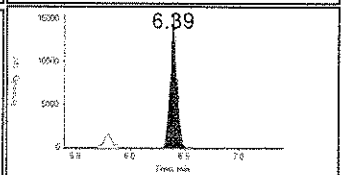
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



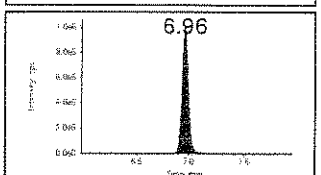
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

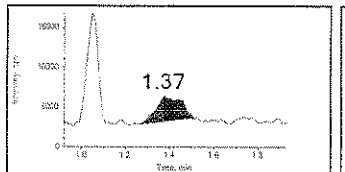


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

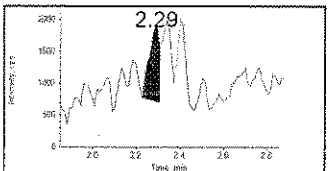


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

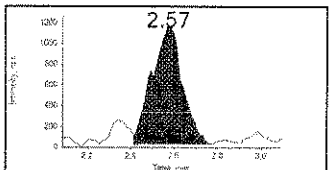
Ion Ratio Confirmation



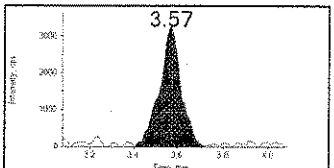
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



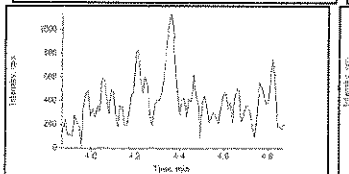
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



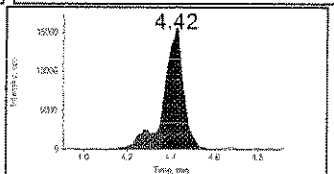
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



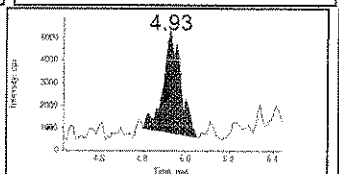
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



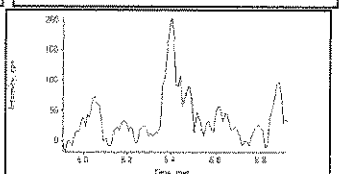
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



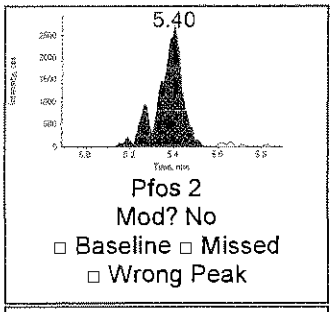
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



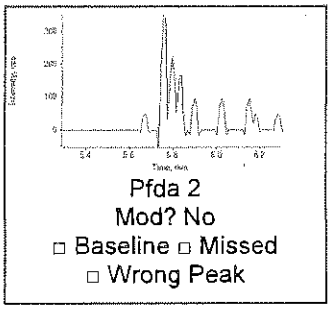
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



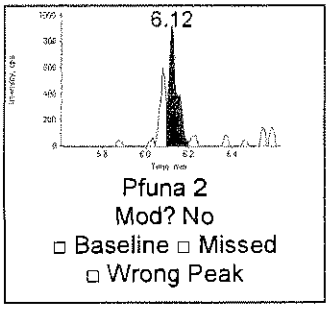
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



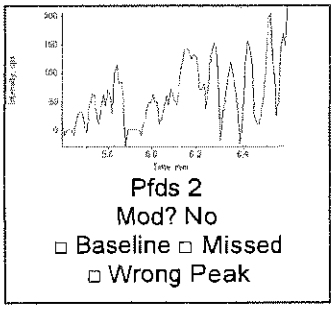
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



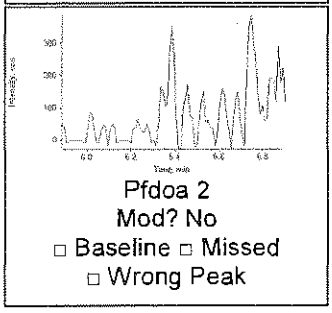
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1026.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	K1602494-009	Injection Volume	10
Acquisition Date	3/17/2016 11:52:39 PM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	20	Weight to Volume	0.00

Results Summary ✱ report only

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	2807313	2.69 (2.60)	1491	0.0250	No
Pfpea 1	13c_pfhxa	3297974	0.00 (5.13)	0	N/A	No
✱ Pfbs 1	18o-pfhs	1227914	0.00 (5.54)	0	N/A	No
Pfhxa 1	13c_pfhxa	3297974	6.63 (6.68)	35714	0.0580	No
Pfhpa 1	13c_pfhxa	3297974	0.00 (7.63)	0	N/A	No
Pfhxs 1	18o-pfhs	1227914	7.71 (7.72)	12315	0.0180	No
✱ Pfoa 1	13c-pfoa	2063276	8.36 (8.36)	3833	0.0170	No
Pfna 1	13c-pfna	2300341	8.95 (8.96)	5754	0.0140	No
✱ Pfos 1	13c-pfos	2363802	8.95 (9.00)	3111	0.0070	No
Pfda 1	13c-pfda	1335698	9.42 (9.45)	3301	0.0120	No
Pfuna 1	13c-pfuna	329605	9.86 (9.87)	3627	0.0190	No
Pfds 1	13c-pfos	2363802	9.84 (9.85)	3848	0.0080	No
Pfdoa 1	13c-pfdoda	18403	10.20 (10.30)	4892	0.0210	No
Fosa 1	d5-NEtFOSA	433357	9.95 (10.00)	2002	0.0060	No
Pfteda 1	13c-pfdoda	18403	10.80 (10.90)	982	0.0120	No
PFHpS 1	18o-pfhs	1227914	0.00 (8.40)	0	N/A	No
NMeFOSE 1	d7-NMeFOSE	839166	0.00 (10.80)	0	N/A	No
NMeFOSA 1	d7-NMeFOSE	839166	0.00 (10.80)	0	N/A	No
NEtFOSE 1	d9-EtFOSE	900959	11.20 (11.10)	653	0.0030	No
NEtFOSA 1	d5-NEtFOSA	433357	0.00 (11.00)	0	N/A	No

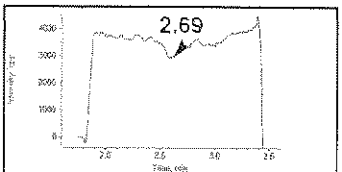
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	558630	11.00 (11.10)	900959	3.1600	No
d5-NEtFOSA 1	N_mefosa_d3	558630	11.00 (11.10)	433357	3.0300	No
d7-NMeFOSE 1	N_mefosa_d3	558630	10.80 (10.80)	839166	3.1730	No
13C_PFBA 1	N_mefosa_d3	558630	2.60 (2.60)	2807313	3.9910	No
13C_PFHXA 1	N_mefosa_d3	558630	6.63 (6.68)	3297974	4.2990	No
13C-PFOA 1	N_mefosa_d3	558630	8.36 (8.42)	2063276	4.1500	No
13C-PFNA 1	N_mefosa_d3	558630	8.95 (9.05)	2300341	4.2150	No
13C-PFOS 1	N_mefosa_d3	558630	8.95 (9.02)	2363802	4.1170	No
13C-PFDA 1	N_mefosa_d3	558630	9.44 (9.51)	1335698	4.1990	No
13C-PFUNA 1	N_mefosa_d3	558630	9.85 (9.92)	329605	4.1780	No
18O-PFHxS 1	N_mefosa_d3	558630	7.71 (7.75)	1227914	4.0850	No
13C-PFDoA 1	N_mefosa_d3	558630	10.20 (10.30)	18403	3.4760	No
PFTrDA 1	13c-pfdoda	18403	10.50 (10.60)	2101	0.0110	No
6_2-FTS 1	13C2-6_2-FTS	57835	8.31 (8.35)	1189	0.0140	No
8_2-FTS 1	13C2-6_2-FTS	57835	9.44 (9.45)	606	0.0240	No
13C2-6_2-FTS 1	N_mefosa_d3	558630	8.30 (8.36)	57835	3.7470	No

IRC Summary

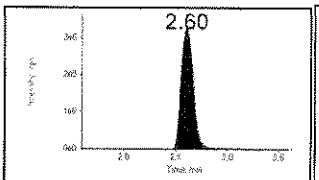
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (2.66)	0	No	0.00 (0.94)	No
Pfpea 2	0.00 (5.18)	0	No	0.00 (1.01)	No
Pfbs 2	0.00 (5.63)	0	No	0.00 (0.43)	No
Pfhxa 2	6.63 (6.73)	3565	No	0.10 (0.09)	YES
Pfhpa 2	0.00 (7.67)	0	No	0.00 (0.42)	No
Pfhxs 2	7.70 (7.80)	4932	No	0.40 (0.41)	YES
Pfoa 2	8.36 (8.46)	5828	No	1.52 (1.86)	YES
Pfna 2	0.00 (9.06)	0	No	0.00 (0.32)	No

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	0.00 (8.96)	0	No	0.00 (0.36)	No
Pfda 2	0.00 (9.43)	0	No	0.00 (0.31)	No
Pfuna 2	9.87 (9.86)	1791	No	0.49 (0.46)	YES
Pfds 2	0.00 (9.83)	0	No	0.00 (0.34)	No
Pfdoa 2	10.20 (10.20)	5173	No	1.06 (0.35)	No
Fosa 2	10.00 (10.00)	304	No	0.15 (0.02)	No
Pfteda 2	0.00 (10.90)	0	No	0.00 (0.36)	No
PFHpS 2	0.00 (8.48)	0	No	0.00 (0.43)	No
NMeFOSE 2	0.00 (10.80)	0	No	0.00 (0.01)	No
NMeFOSA 2	0.00 (10.80)	0	No	0.00 (1.05)	No
NEtFOSE 2	11.10 (11.10)	139	No	0.21 (0.00)	No
NEtFOSA 2	0.00 (11.10)	0	No	0.00 (0.68)	No
PFTrDA 2	0.00 (10.60)	0	No	0.00 (0.33)	No
6_2-FTS 2	0.00 (8.39)	0	No	0.00 (1.30)	No
8_2-FTS 2	0.00 (9.50)	0	No	0.00 (0.10)	No

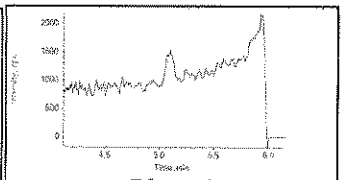
Quantitative Peak Review **K1602494-009** *No data for Sample ID*



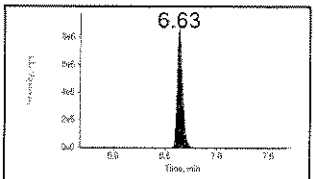
Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



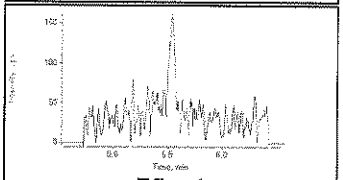
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



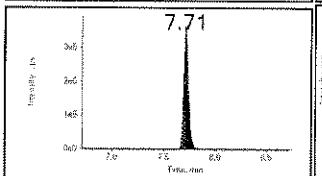
Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



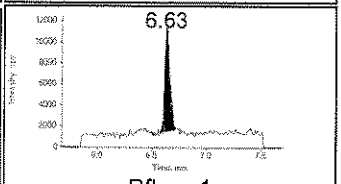
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



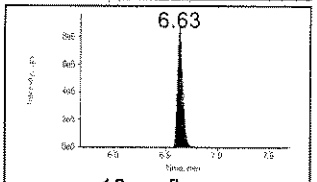
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



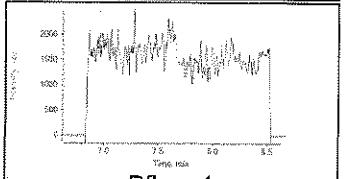
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



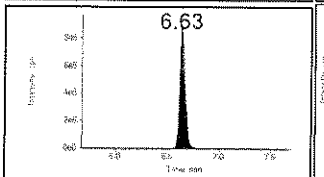
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



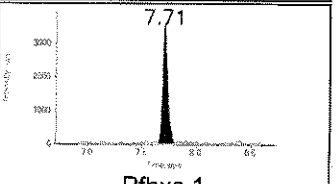
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



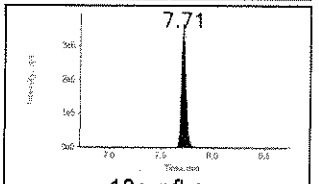
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



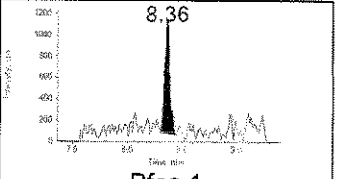
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



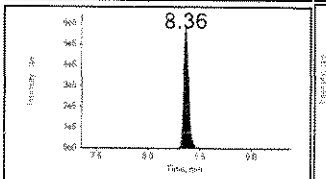
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



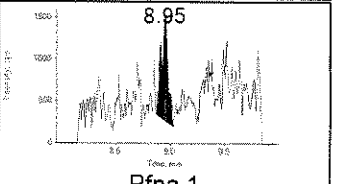
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



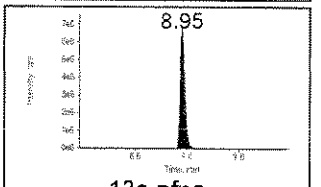
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



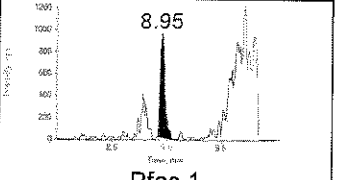
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



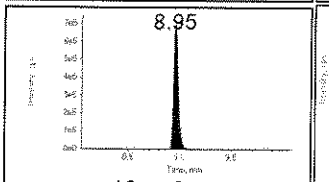
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



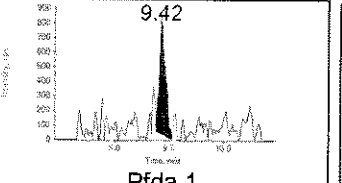
13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



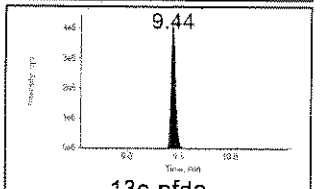
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



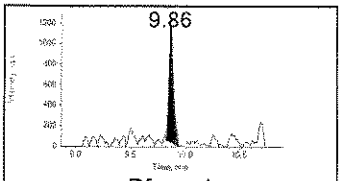
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



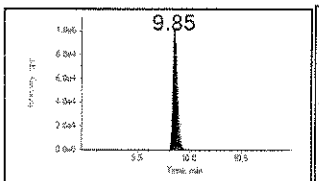
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



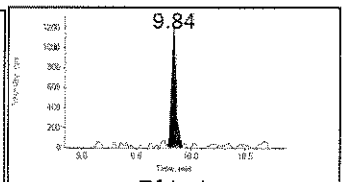
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



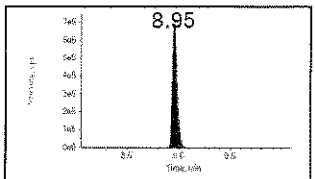
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



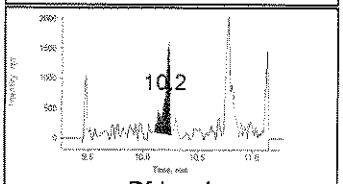
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



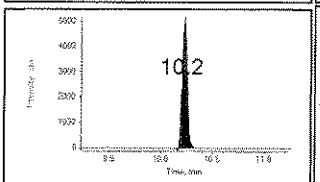
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



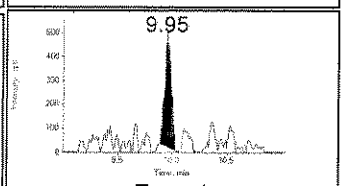
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



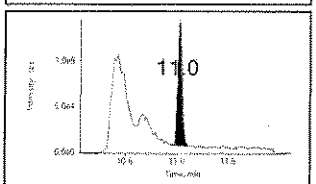
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



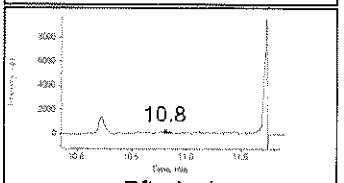
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



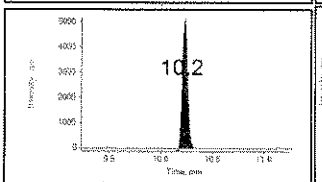
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



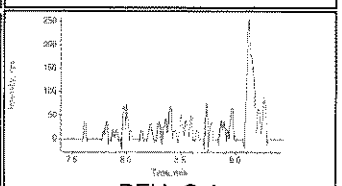
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



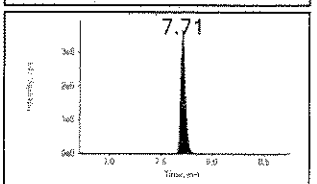
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



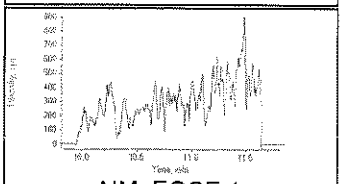
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



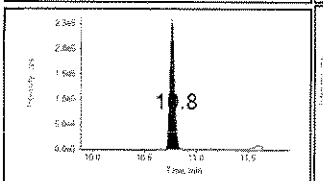
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



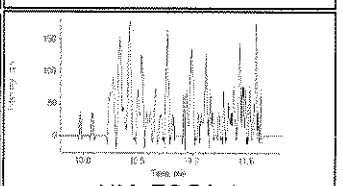
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



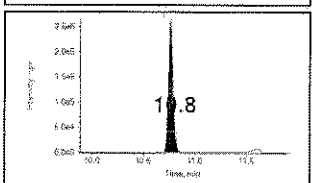
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



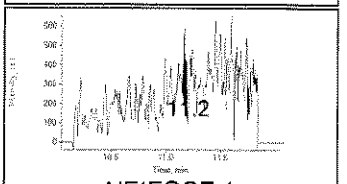
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



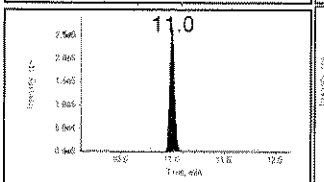
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



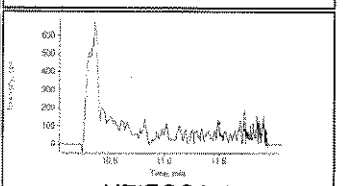
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



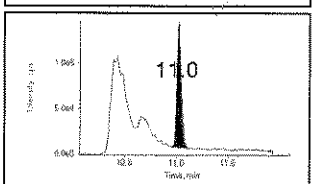
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



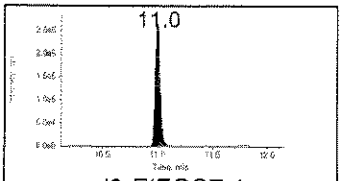
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



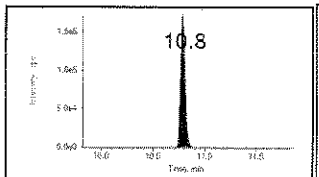
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



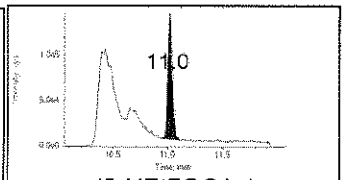
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



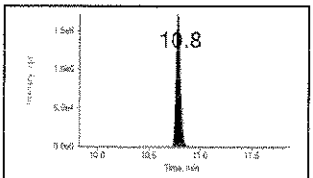
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



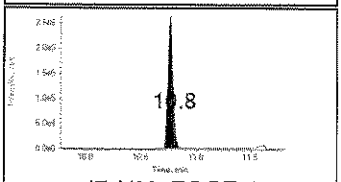
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



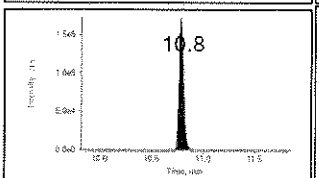
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



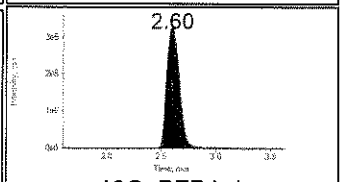
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



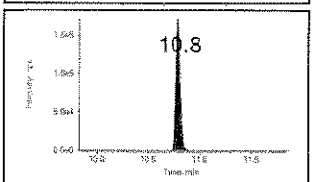
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



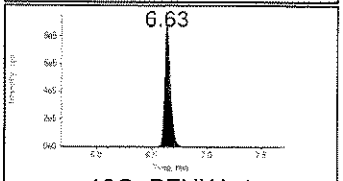
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



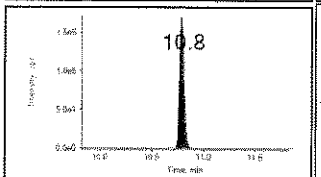
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



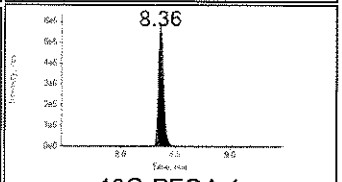
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



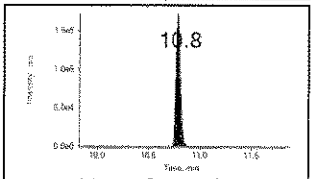
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



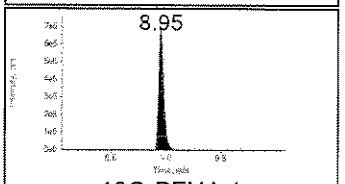
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



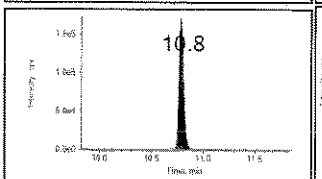
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



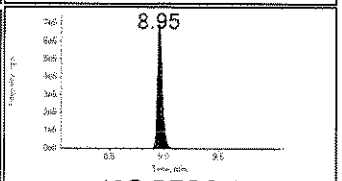
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



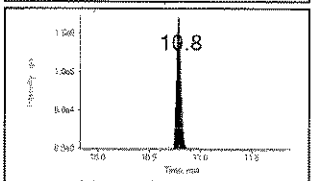
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



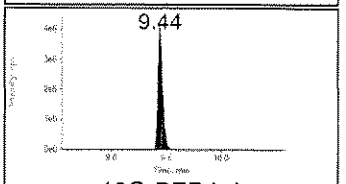
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



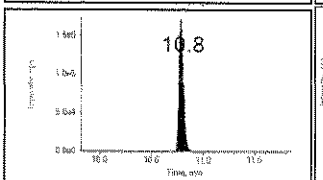
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



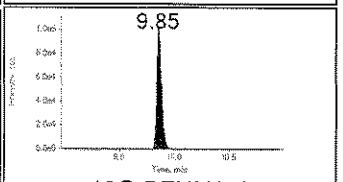
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



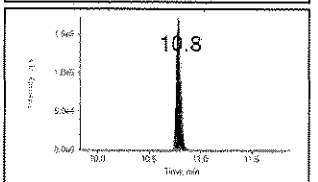
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



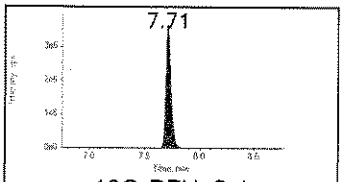
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



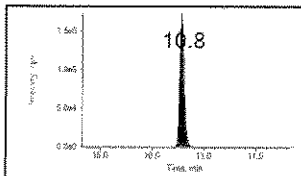
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



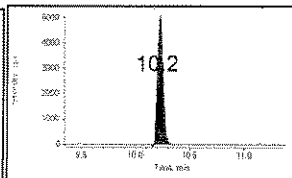
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



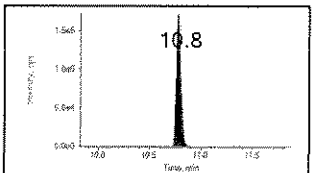
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



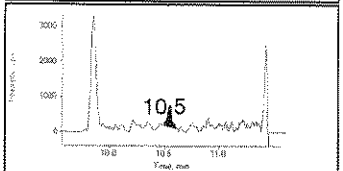
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



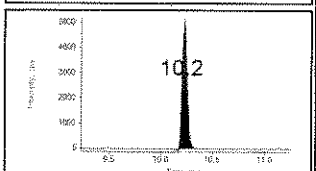
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



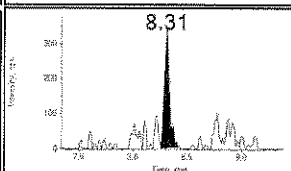
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



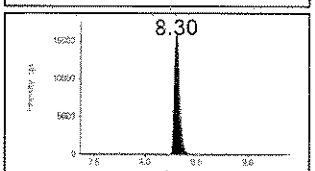
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



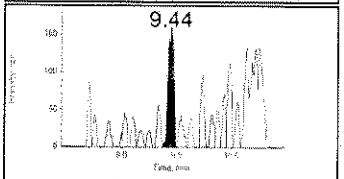
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



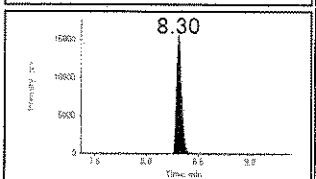
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



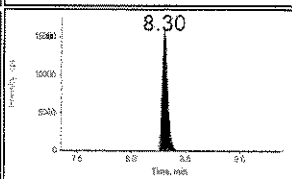
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



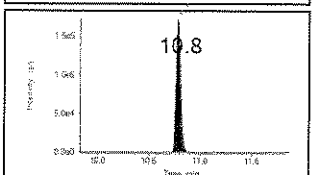
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

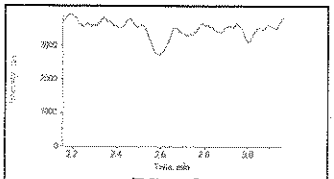


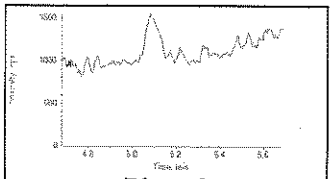
13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
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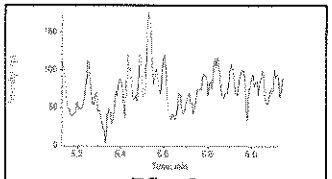


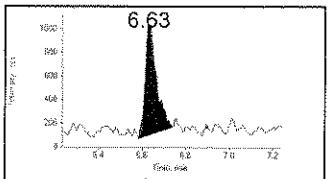
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

Ion Ratio Confirmation

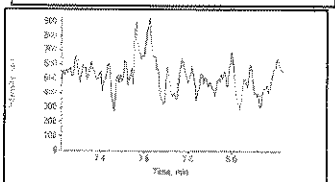

Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

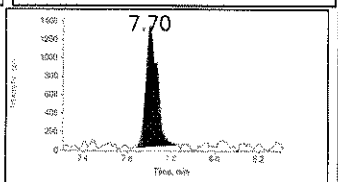

Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

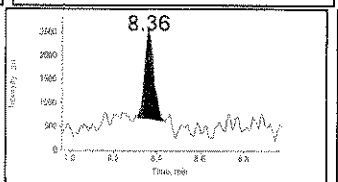


Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

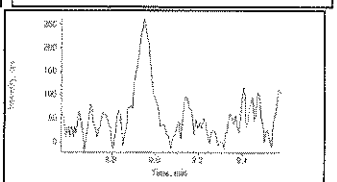

Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

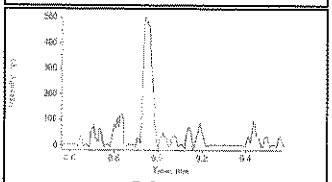


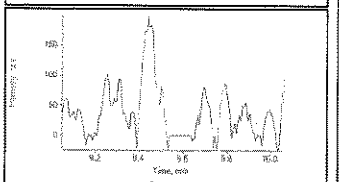
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

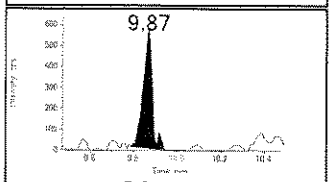


Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

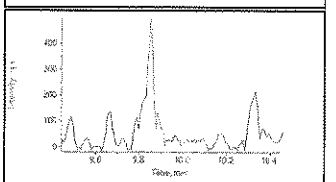

Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

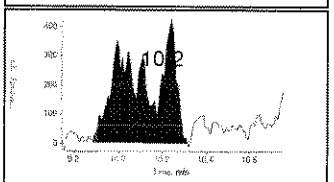

Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

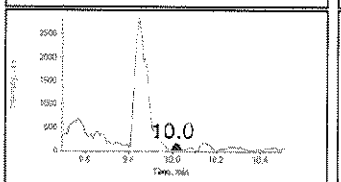


Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

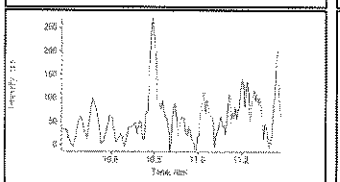

Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

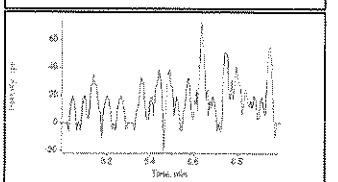


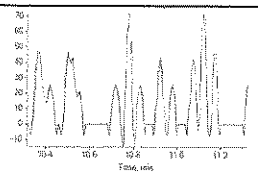
Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



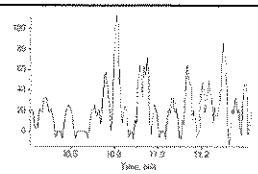
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

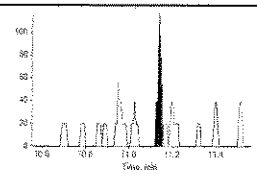

PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



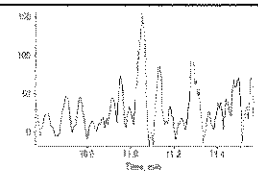
NMeFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



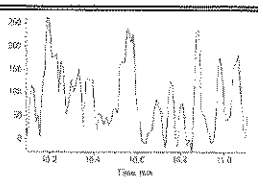
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



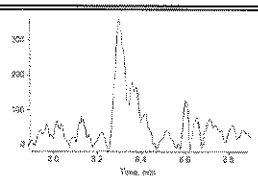
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



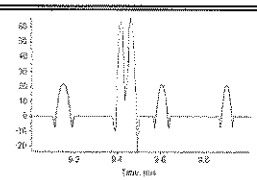
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

4/19/16

Project	Ewan's Projects\PFCs
Data File	041816\2022.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	KQ1602426-04 MB	Injection Volume	5
Acquisition Date	4/18/2016 11:22:14 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	21	Weight to Volume	0.00

Results Summary

LONG

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5276306	1.44 (1.43)	32314	0.1340	No
Pfpea 1	13C-PFHxA	5375905	0.00 (2.34)	0	N/A	Yes
Pfbs 1	18O_PFHS	3082004	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	5375905	3.57 (3.57)	72142	0.2730	No
Pfhpa 1	13C-PFHxA	5375905	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	3082004	4.42 (4.41)	31617	0.0690	No
Pfoa 1	13C-PFOA	3751994	4.91 (4.94)	6344	0.0630	No
Pfna 1	13C-PFNA	4739812	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	7080376	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	3160547	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	827075	6.11 (6.12)	10192	0.0690	No
Pfds 1	13C_PFOS	7080376	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	49891	0.00 (6.39)	0	N/A	No
S_pfba 1	N_MeFOSA d3	3491887	1.42 (1.43)	5276306	14.2640	No
S_phhxa 1	N_MeFOSA d3	3491887	3.57 (3.58)	5375905	15.3660	No
S_pfhs 1	N_MeFOSA d3	3491887	4.41 (4.41)	3082004	15.9960	No
S_pfoa 1	N_MeFOSA d3	3491887	4.93 (4.94)	3751994	14.1230	No
S_pfna 1	N_MeFOSA d3	3491887	5.41 (5.38)	4739812	15.3320	No
S_pfda 1	N_MeFOSA d3	3491887	5.77 (5.79)	3160547	13.3080	No
S_pfos 1	N_MeFOSA d3	3491887	5.39 (5.39)	7080376	16.9250	No

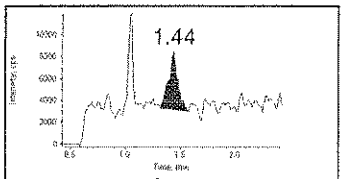
APR 21 2016

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3491887	6.11 (6.11)	827075	13.9820	No
S_pfdoda 1	N_MeFOSA d3	3491887	6.39 (6.40)	49891	13.7100	No

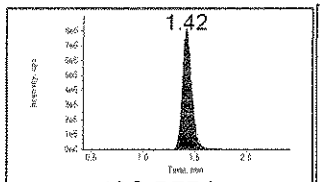
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.40 (1.42)	23069	No	0.71 (0.89)	No
Pfpea 2	0.00 (2.36)	0	Yes	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	3.60 (3.58)	5961	No	0.08 (0.09)	YES
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.39 (4.41)	12906	No	0.41 (0.39)	YES
Pfoa 2	4.94 (4.94)	19071	No	3.01 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.11 (6.11)	1584	No	0.16 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

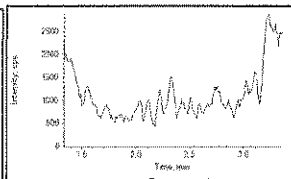
Quantitative Peak Review KQ1602426-04 MB



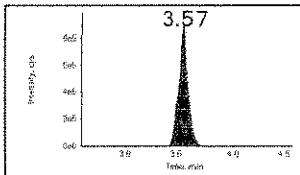
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



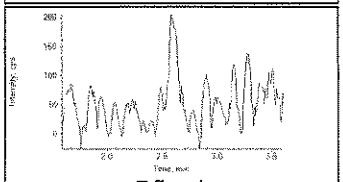
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



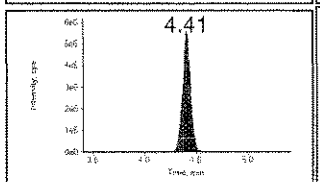
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



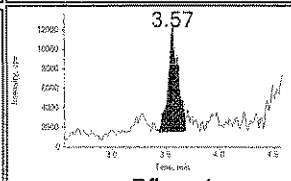
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



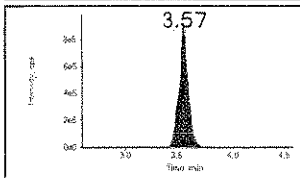
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



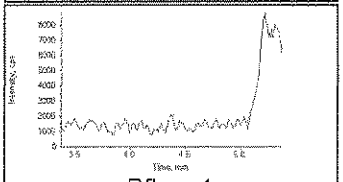
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



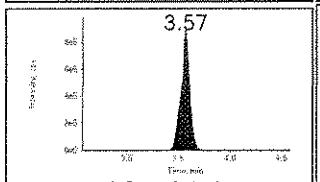
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



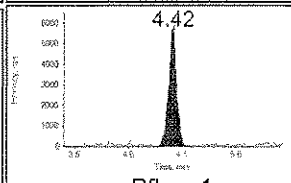
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



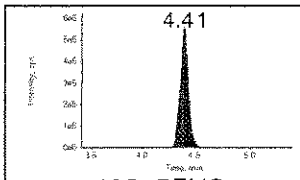
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



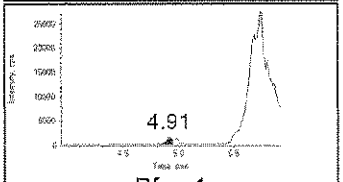
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



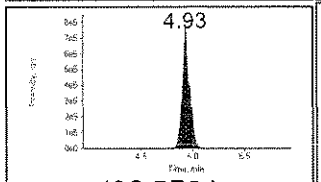
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



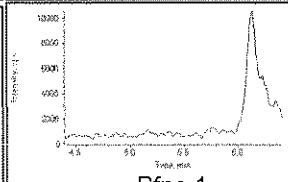
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



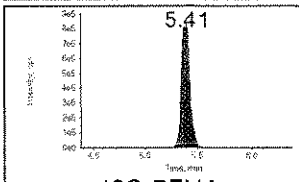
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



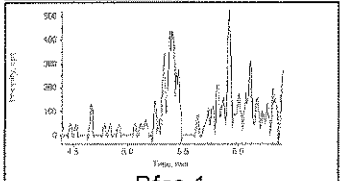
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



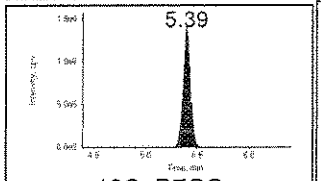
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



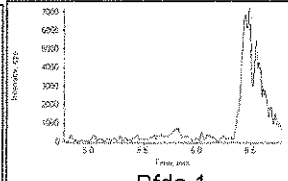
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



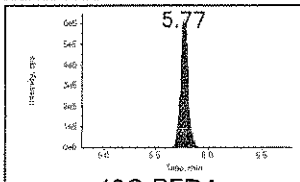
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



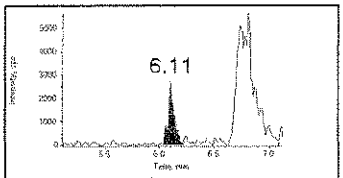
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



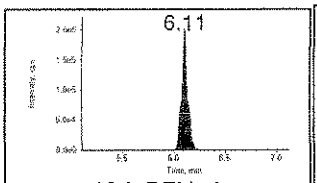
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



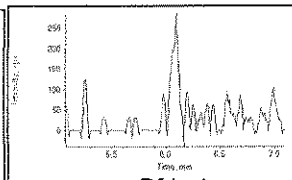
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



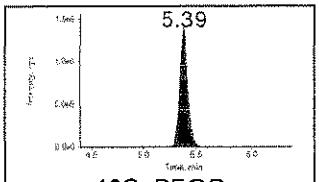
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



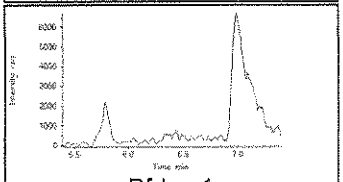
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



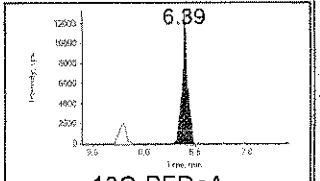
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



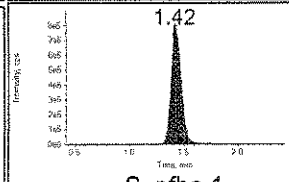
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



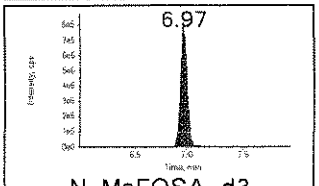
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



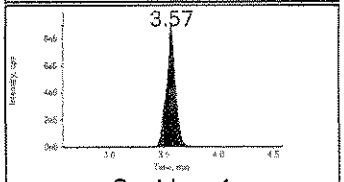
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



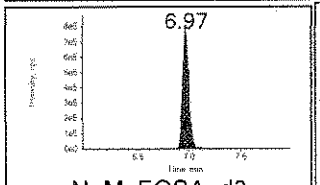
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



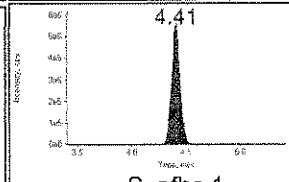
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



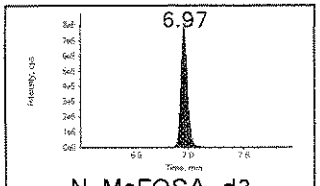
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



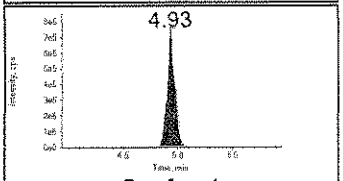
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



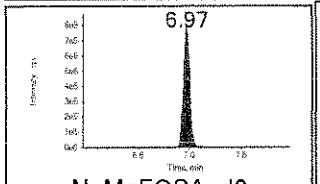
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



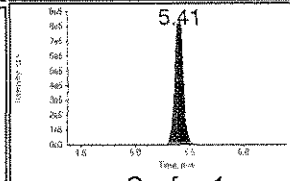
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



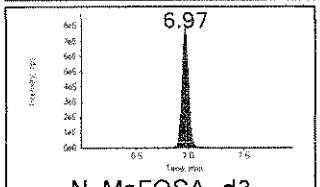
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



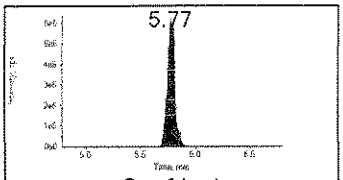
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



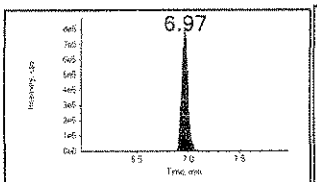
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



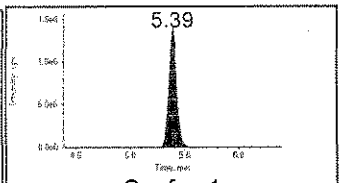
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



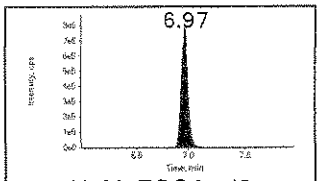
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



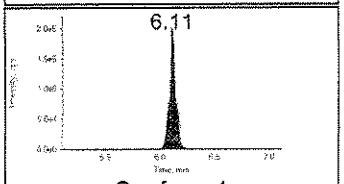
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



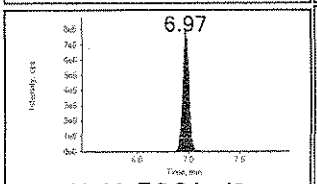
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



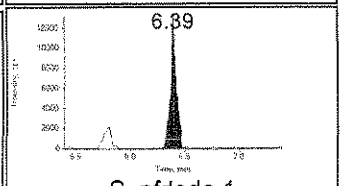
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



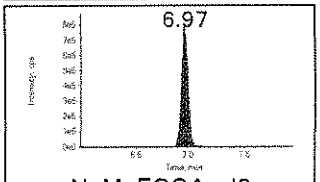
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

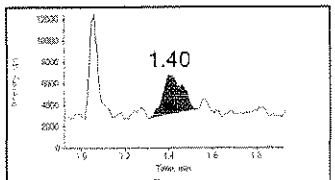


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

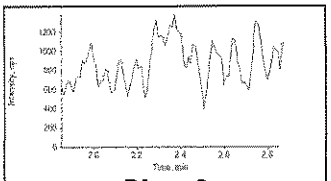


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

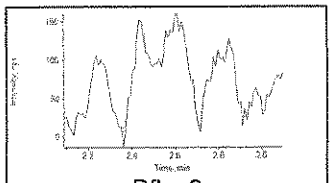
Ion Ratio Confirmation



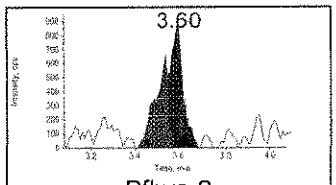
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



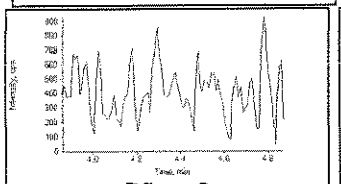
Pfpea 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



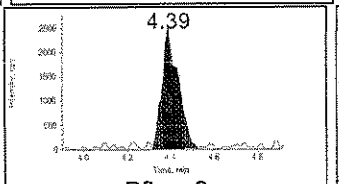
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



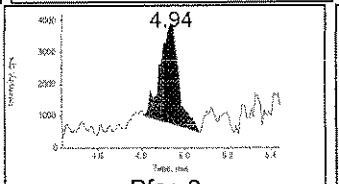
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



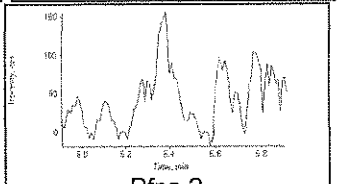
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



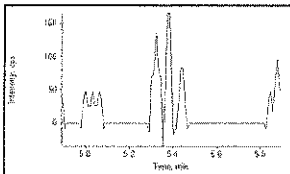
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



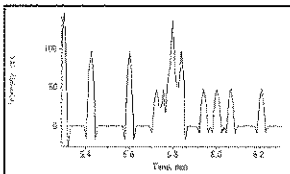
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



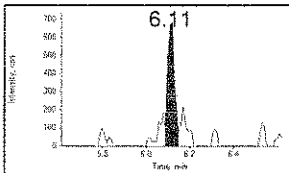
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



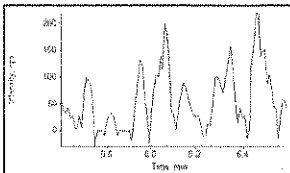
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



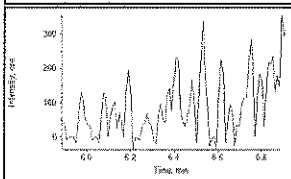
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1021.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	KQ1602477-03 MB	Injection Volume	10
Acquisition Date	3/17/2016 10:20:57 PM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	15	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	2870469	2.72 (2.60)	2158	0.0270	No
Pfpea 1	13c_pfhxa	3344009	0.00 (5.13)	0	N/A	No
Pfbs 1	18o-pfhs	1223380	5.54 (5.54)	848	0.0010	No
Pfhxa 1	13c_pfhxa	3344009	6.64 (6.68)	39992	0.0640	No
Pfhpa 1	13c_pfhxa	3344009	0.00 (7.63)	0	N/A	No
Pfhxs 1	18o-pfhs	1223380	7.72 (7.72)	12024	0.0170	No
Pfoa 1	13c-pfoa	2092618	8.39 (8.36)	3479	0.0150	No
Pfna 1	13c-pfna	2274129	8.96 (8.96)	3900	0.0090	No
Pfos 1	13c-pfos	2448321	8.96 (9.00)	1386	0.0030	No
Pfda 1	13c-pfda	1321716	9.46 (9.45)	2563	0.0100	No
Pfuna 1	13c-pfuna	304524	9.88 (9.87)	4592	0.0270	No
Pfds 1	13c-pfos	2448321	9.85 (9.85)	3182	0.0070	No
Pfdoa 1	13c-pfdoda	18634	10.20 (10.30)	6571	0.0280	No
Fosa 1	d5-NEtFOSA	426892	9.96 (10.00)	2438	0.0070	No
Pfteda 1	13c-pfdoda	18634	10.80 (10.90)	1764	0.0210	No
PFHpS 1	18o-pfhs	1223380	0.00 (8.40)	0	N/A	No
NMeFOSE 1	d7-NMeFOSE	777137	0.00 (10.80)	0	N/A	No
NMeFOSA 1	d7-NMeFOSE	777137	0.00 (10.80)	0	N/A	No
NEtFOSE 1	d9-EtFOSE	878977	11.00 (11.10)	448	0.0020	No
NEtFOSA 1	d5-NEtFOSA	426892	0.00 (11.00)	0	N/A	No

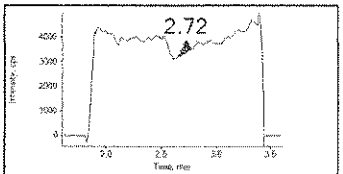
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	539600	11.00 (11.10)	878977	3.1920	No
d5-NEtFOSA 1	N_mefosa_d3	539600	11.00 (11.10)	426892	3.0900	No
d7-NMeFOSE 1	N_mefosa_d3	539600	10.80 (10.80)	777137	3.0420	No
13C_PFBA 1	N_mefosa_d3	539600	2.61 (2.60)	2870469	4.2240	No
13C_PFHXA 1	N_mefosa_d3	539600	6.63 (6.68)	3344009	4.5130	No
13C-PFOA 1	N_mefosa_d3	539600	8.37 (8.43)	2092618	4.3580	No
13C-PFNA 1	N_mefosa_d3	539600	8.96 (9.05)	2274129	4.3140	No
13C-PFOS 1	N_mefosa_d3	539600	8.97 (9.03)	2448321	4.4150	No
13C-PFDA 1	N_mefosa_d3	539600	9.45 (9.52)	1321716	4.3010	No
13C-PFUNA 1	N_mefosa_d3	539600	9.87 (9.93)	304524	3.9970	No
18O-PFHxS 1	N_mefosa_d3	539600	7.72 (7.75)	1223380	4.2130	No
13C-PFDoA 1	N_mefosa_d3	539600	10.20 (10.30)	18634	3.6440	No
PFTrDA 1	13c-pfdoda	18634	10.50 (10.60)	3856	0.0190	No
6_2-FTS 1	13C2-6_2-FTS	55488	8.33 (8.35)	645	0.0080	No
8_2-FTS 1	13C2-6_2-FTS	55488	9.44 (9.45)	541	0.0230	No
13C2-6_2-FTS 1	N_mefosa_d3	539600	8.32 (8.36)	55488	3.7220	No

IRC Summary

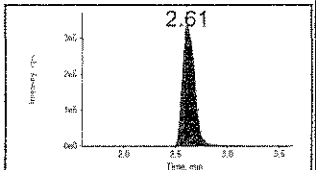
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	2.51 (2.66)	3572	No	1.66 (0.94)	No
Pfpea 2	0.00 (5.18)	0	No	0.00 (1.01)	No
Pfbs 2	0.00 (5.63)	0	No	0.00 (0.43)	No
Pfhxa 2	6.64 (6.73)	3177	No	0.08 (0.09)	YES
Pfhpa 2	0.00 (7.68)	0	No	0.00 (0.42)	No
Pfhxs 2	7.73 (7.81)	4349	No	0.36 (0.41)	YES
Pfoa 2	8.38 (8.47)	5589	No	1.61 (1.86)	YES
Pfna 2	8.94 (9.07)	915	No	0.23 (0.32)	No

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	0.00 (8.97)	0	No	0.00 (0.36)	No
Pfda 2	9.45 (9.45)	1273	No	0.50 (0.31)	No
Pfuna 2	0.00 (9.88)	0	No	0.00 (0.46)	No
Pfds 2	0.00 (9.85)	0	No	0.00 (0.34)	No
Pfdoa 2	10.00 (10.20)	2699	No	0.41 (0.35)	YES
Fosa 2	10.00 (10.00)	155	No	0.06 (0.02)	No
Pfteda 2	0.00 (10.90)	0	No	0.00 (0.36)	No
PFHpS 2	0.00 (8.50)	0	No	0.00 (0.43)	No
NMeFOSE 2	10.80 (10.80)	430	No	0.00 (0.01)	No
NMeFOSA 2	0.00 (10.80)	0	No	0.00 (1.05)	No
NEtFOSE 2	0.00 (11.10)	0	No	0.00 (0.00)	No
NEtFOSA 2	0.00 (11.10)	0	No	0.00 (0.68)	No
PFTrDA 2	0.00 (10.60)	0	No	0.00 (0.33)	No
6_2-FTS 2	0.00 (8.39)	0	No	0.00 (1.30)	No
8_2-FTS 2	0.00 (9.50)	0	No	0.00 (0.10)	No

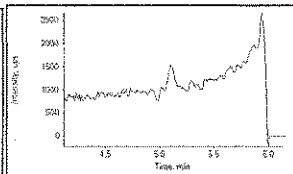
Quantitative Peak Review **KQ1602477-03 MB**



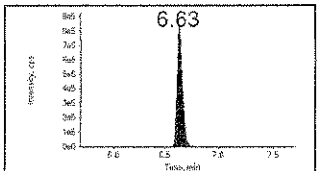
Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



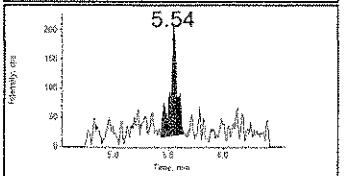
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



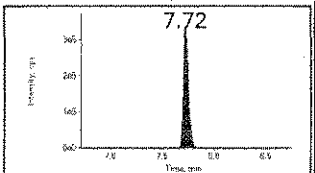
Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



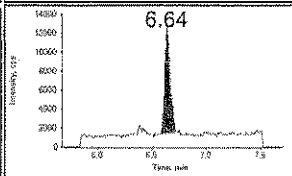
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



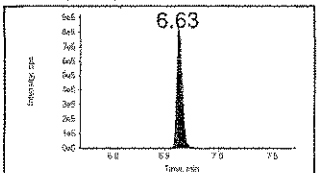
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



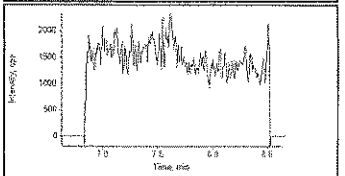
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



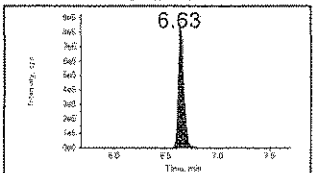
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



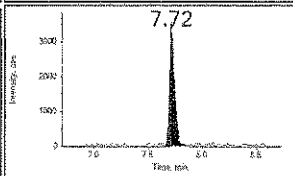
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



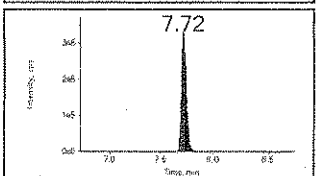
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



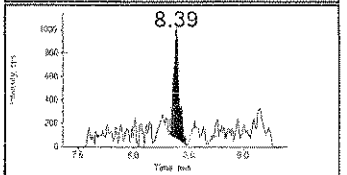
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



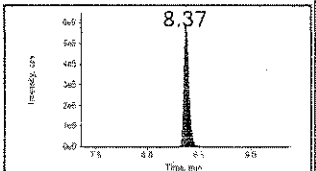
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



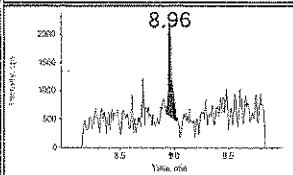
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



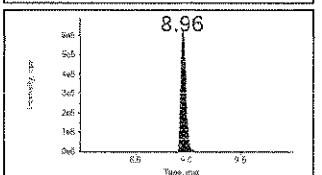
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



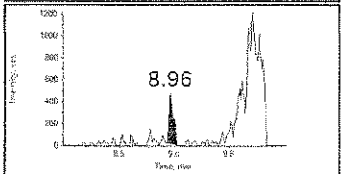
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



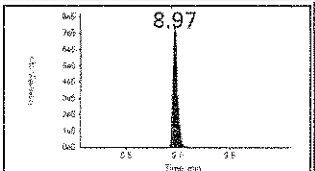
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



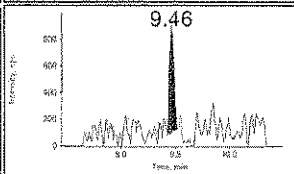
13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



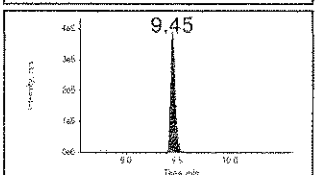
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



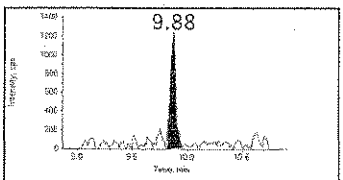
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



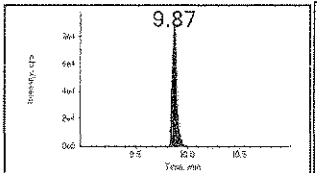
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



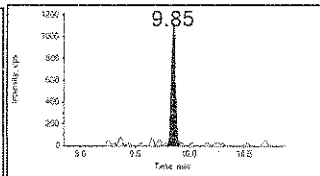
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



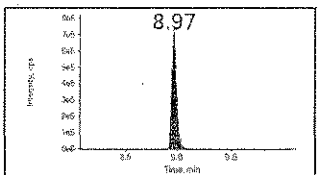
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



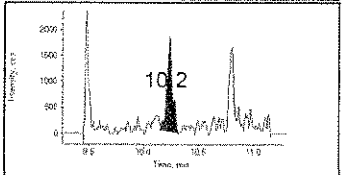
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



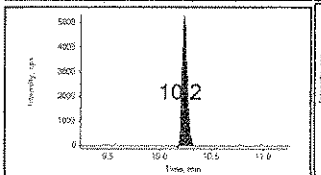
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



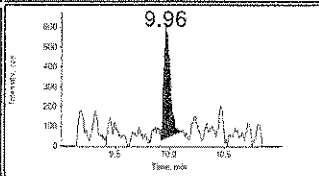
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



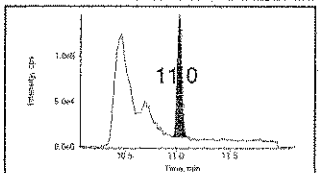
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



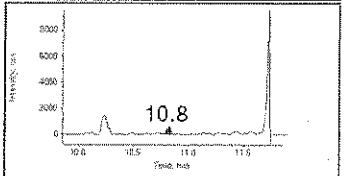
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



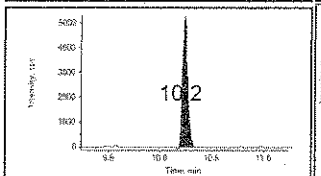
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



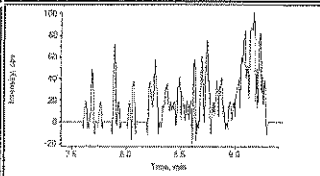
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



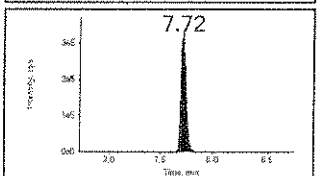
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



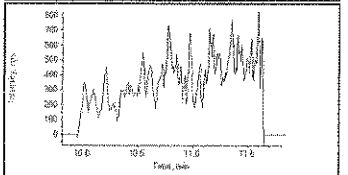
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



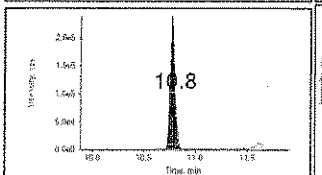
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



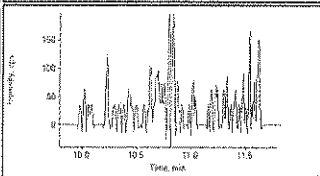
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



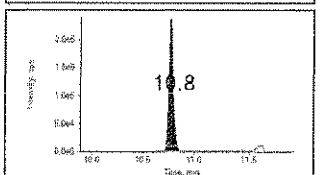
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



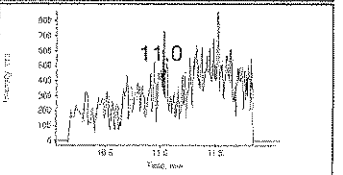
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



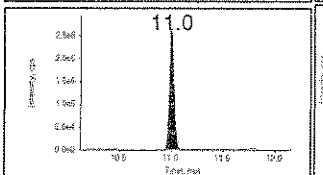
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



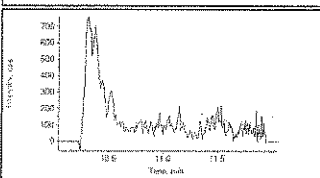
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



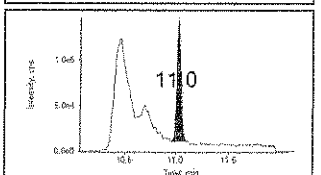
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



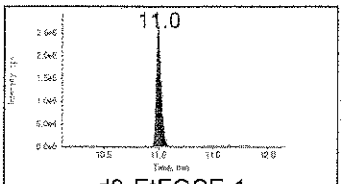
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



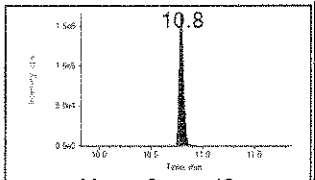
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



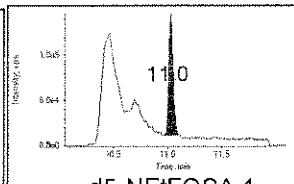
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



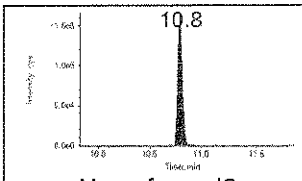
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



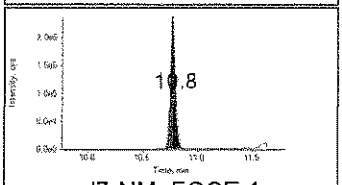
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



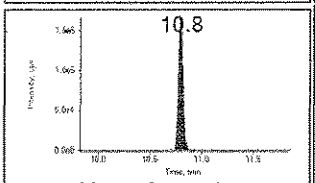
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



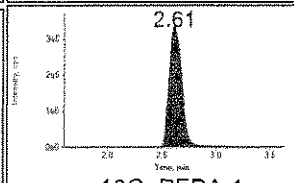
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



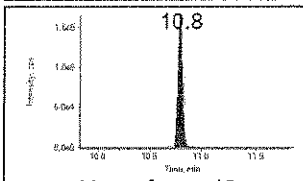
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



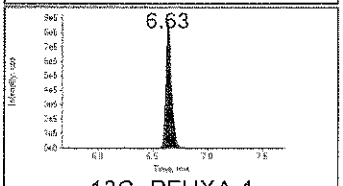
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



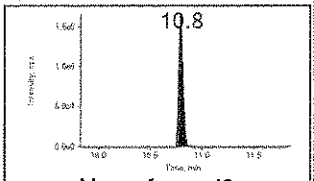
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



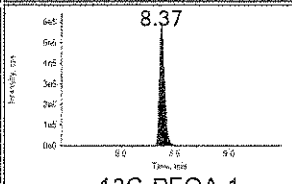
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



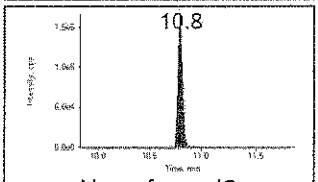
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



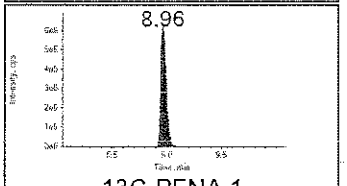
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



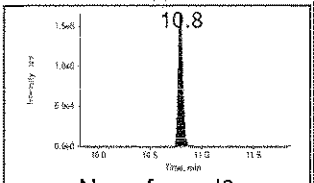
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



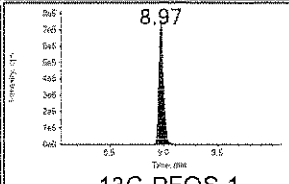
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



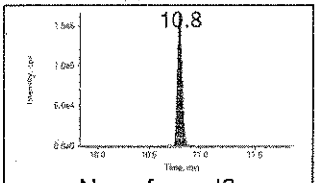
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



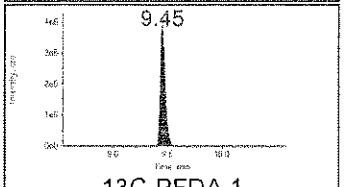
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



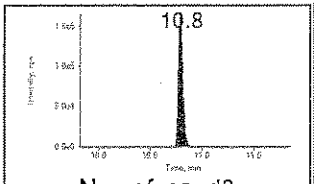
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



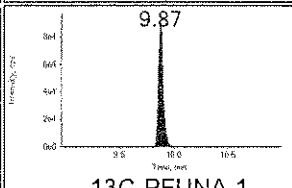
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



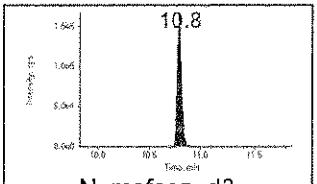
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



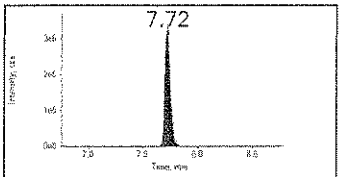
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



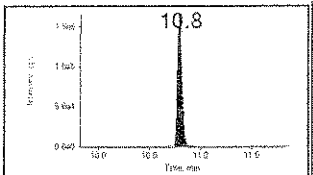
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



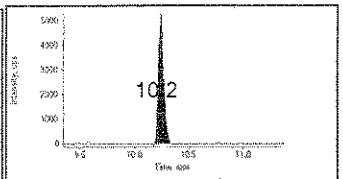
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



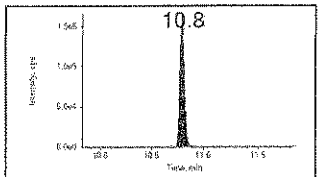
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



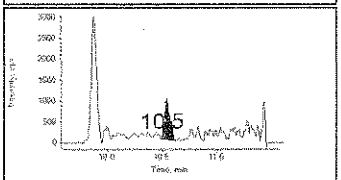
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



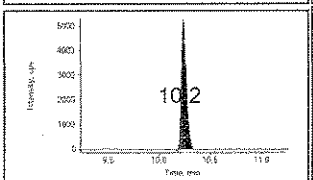
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



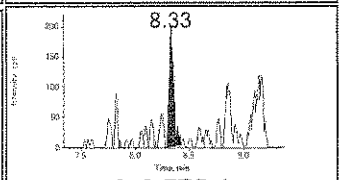
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



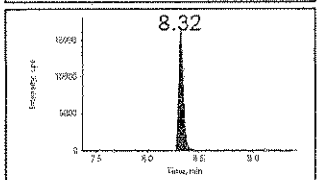
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



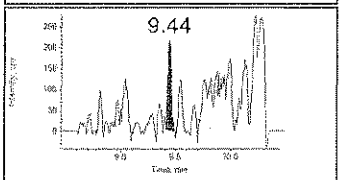
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



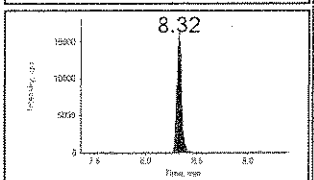
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



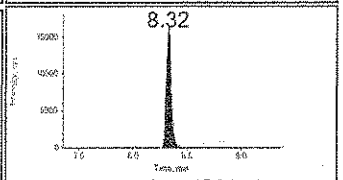
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



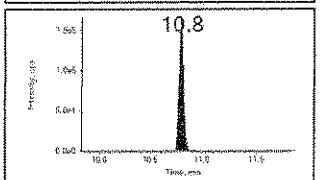
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

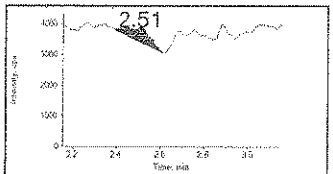


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

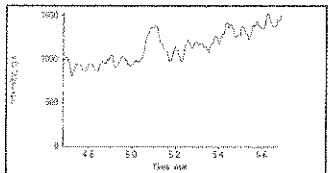


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

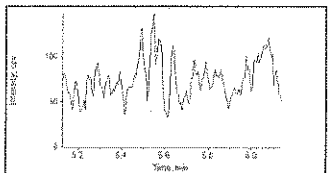
Ion Ratio Confirmation



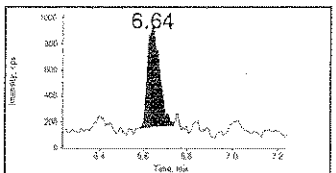
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



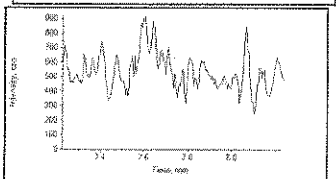
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



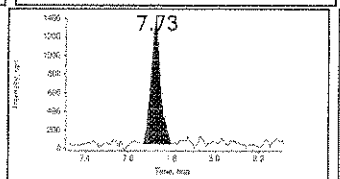
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



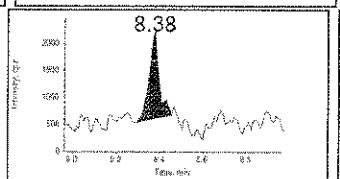
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



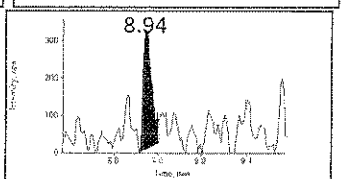
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



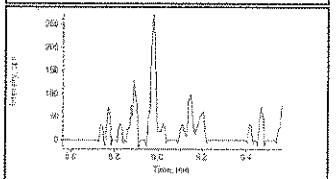
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



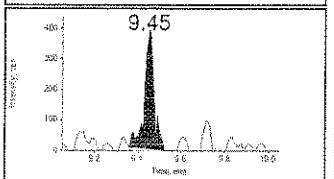
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



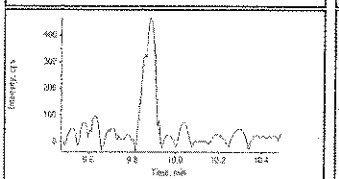
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



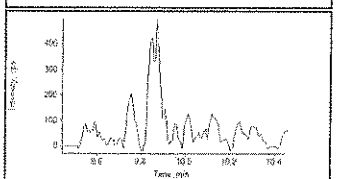
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



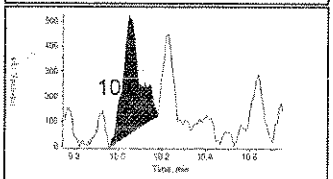
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



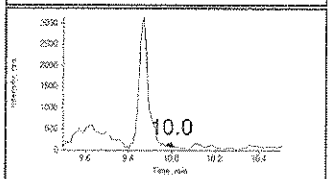
Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



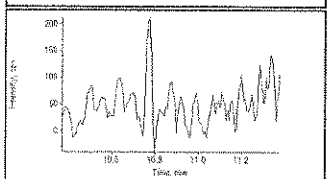
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



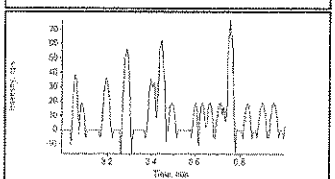
Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



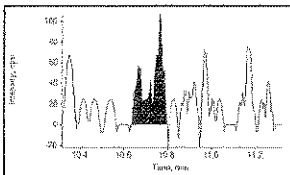
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



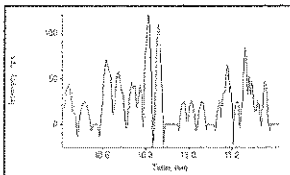
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



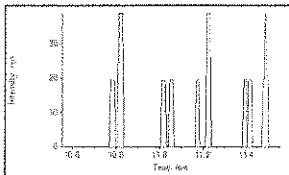
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



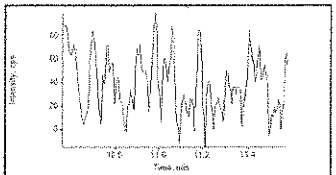
NMeFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



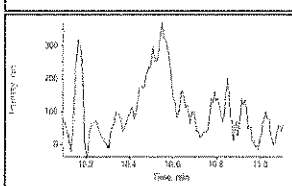
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



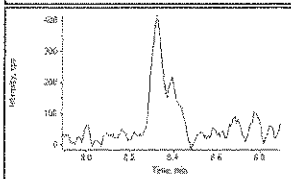
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



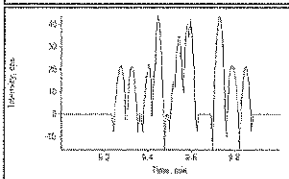
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	041816\2036.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

KQ1602494-8MS

Sample Name	KQ1602426-01 MS	Injection Volume	5
Acquisition Date	4/19/2016 1:43:50 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	33	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5761409	1.42 (1.43)	4832244	18.4170	No
Pfpea 1	13C-PFHxA	6391778	2.33 (2.34)	3441263	17.0000	No
Pfbs 1	18O_PFHS	3402631	2.57 (2.59)	8053591	17.0160	No
Pfhxa 1	13C-PFHxA	6391778	3.57 (3.57)	5429264	17.3010	No
Pfhpa 1	13C-PFHxA	6391778	4.36 (4.37)	6292851	17.0000	No
Pfhxs 1	18O_PFHS	3402631	4.41 (4.41)	9517761	18.9300	No
Pfoa 1	13C-PFOA	4505883	4.94 (4.94)	2266274	18.6520	No
Pfna 1	13C-PFNA	4905652	5.41 (5.40)	4537580	17.7370	No
Pfos 1	13C_PFOS	7641098	5.40 (5.40)	7241644	19.1450	No
Pfda 1	13C-PFDA	3682987	5.79 (5.78)	4103764	20.3520	No
Pfuna 1	13C-PFUnA	973622	6.10 (6.12)	1342555	7.7170	No
Pfds 1	13C_PFOS	7641098	6.09 (6.09)	9278913	19.4840	No
Pfdoa 1	13C-PFDoA	62755	6.39 (6.39)	3313320	16.8830	No
S_pfba 1	N_MeFOSA d3	4282526	1.42 (1.43)	5761409	12.7000	No
S_phhxa 1	N_MeFOSA d3	4282526	3.57 (3.58)	6391778	14.8970	No
S_pfhs 1	N_MeFOSA d3	4282526	4.41 (4.41)	3402631	14.4000	No
S_pfoa 1	N_MeFOSA d3	4282526	4.93 (4.94)	4505883	13.8300	No
S_pfna 1	N_MeFOSA d3	4282526	5.39 (5.38)	4905652	12.9390	No
S_pfda 1	N_MeFOSA d3	4282526	5.80 (5.79)	3682987	12.6450	No
S_pfos 1	N_MeFOSA d3	4282526	5.40 (5.39)	7641098	14.8930	No

Interim

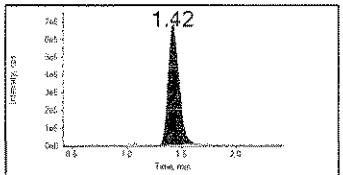
APR 21 2016

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	4282526	6.11 (6.11)	973622	13.4210	No
S_pfdoda 1	N_MeFOSA d3	4282526	6.39 (6.40)	62755	14.0610	No

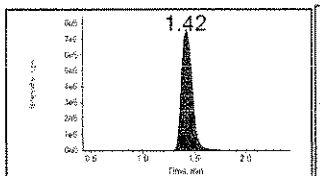
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.44 (1.42)	4293326	No	0.89 (0.89)	YES
Pfpea 2	2.33 (2.36)	3468580	No	1.01 (1.07)	YES
Pfbs 2	2.57 (2.59)	3397740	No	0.42 (0.41)	YES
Pfhxa 2	3.58 (3.58)	511680	No	0.09 (0.09)	YES
Pfhpa 2	4.37 (4.37)	2305800	No	0.37 (0.38)	YES
Pfhxs 2	4.41 (4.41)	3743288	No	0.39 (0.39)	YES
Pfoa 2	4.93 (4.94)	4047474	No	1.79 (1.93)	YES
Pfna 2	5.40 (5.41)	1219520	No	0.27 (0.27)	YES
Pfos 2	5.40 (5.39)	2417722	No	0.33 (0.34)	YES
Pfda 2	5.78 (5.79)	777356	No	0.19 (0.21)	YES
Pfuna 2	6.13 (6.11)	814512	No	0.61 (0.28)	No
Pfds 2	6.09 (6.09)	2873816	No	0.31 (0.32)	YES
Pfdoa 2	6.39 (6.39)	980018	No	0.30 (0.30)	YES

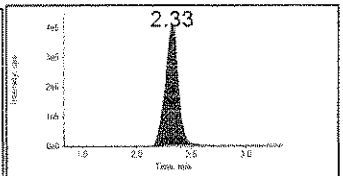
Quantitative Peak Review KQ1602426-01 K1602494-008 MS



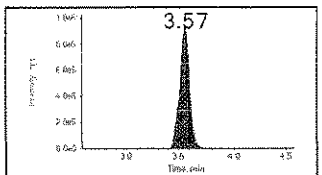
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



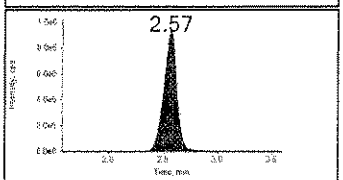
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



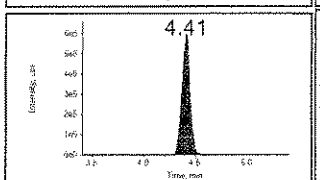
Pfpea 1
263.010/219.000 Da
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□ Wrong Peak



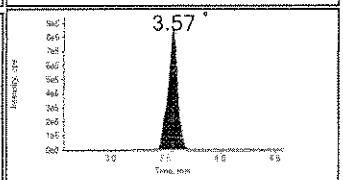
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



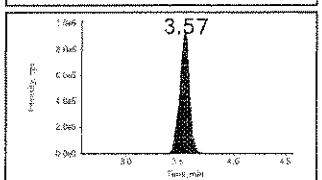
Pfbs 1
299.000/80.000 Da
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□ Wrong Peak



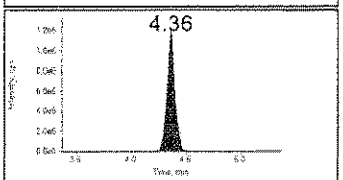
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



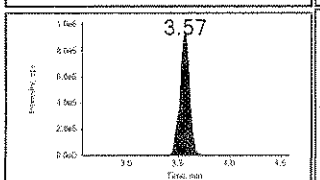
Pfhxa 1
313.000/269.000 Da
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□ Wrong Peak



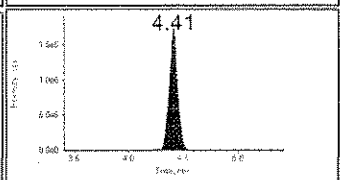
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



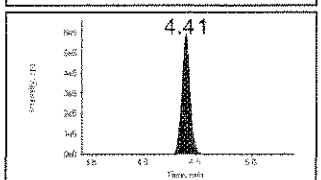
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



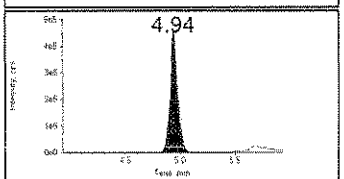
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



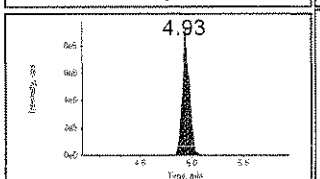
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



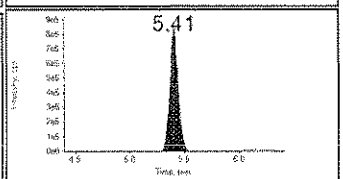
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



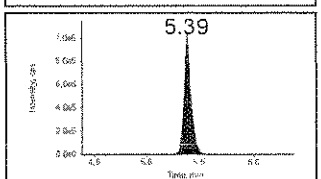
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



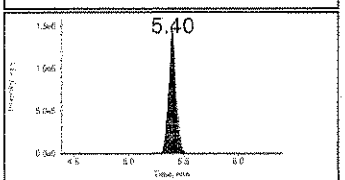
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



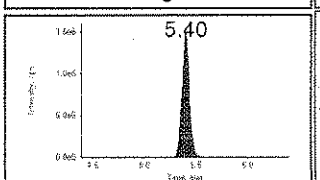
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



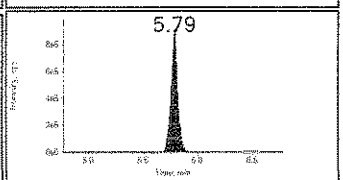
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



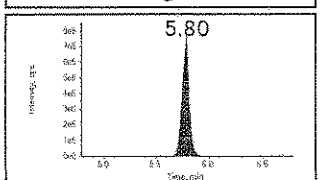
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



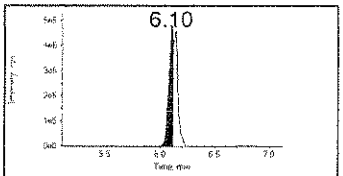
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



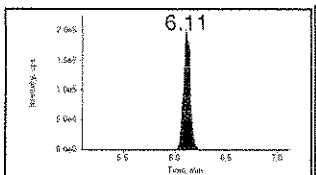
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



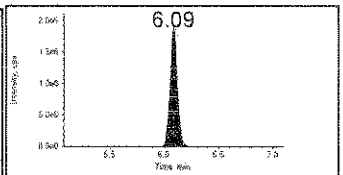
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



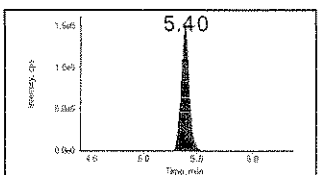
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



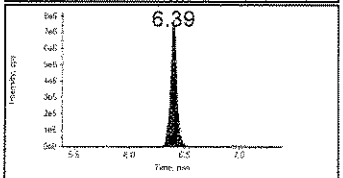
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



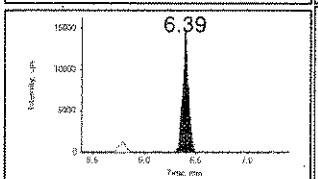
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



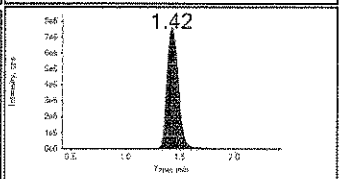
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



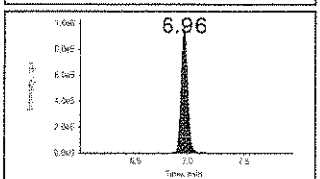
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



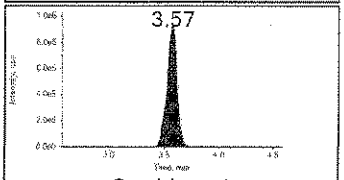
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



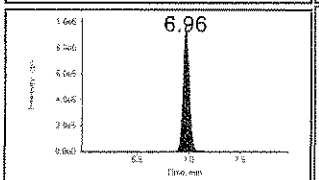
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



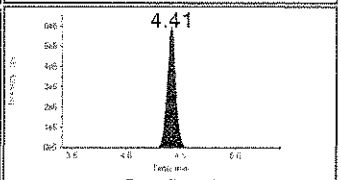
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



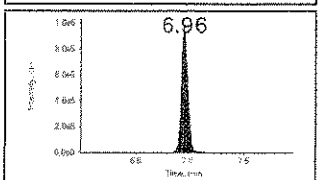
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



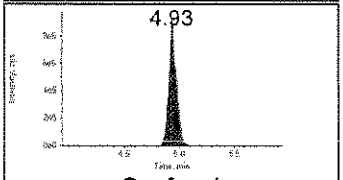
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



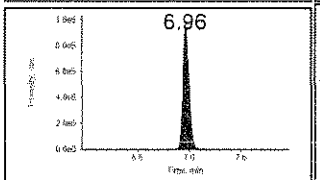
S_pfhs 1
403.000/103.000 Da
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□ Wrong Peak



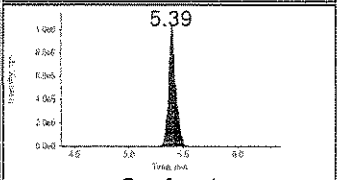
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515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



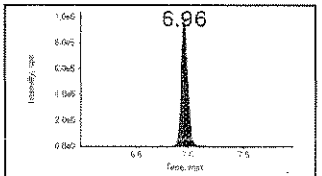
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



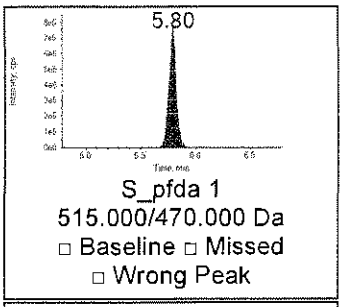
N_MeFOSA_d3
515.000/169.000 Da
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□ Wrong Peak



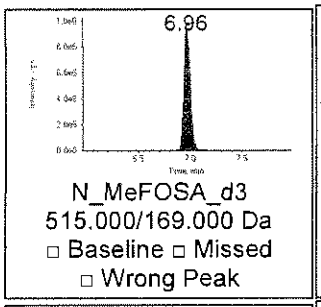
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



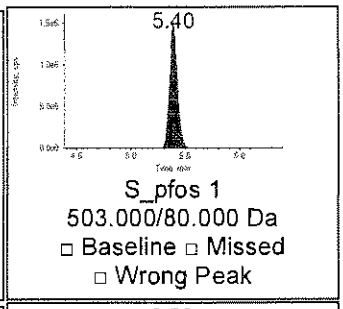
N_MeFOSA_d3
515.000/169.000 Da
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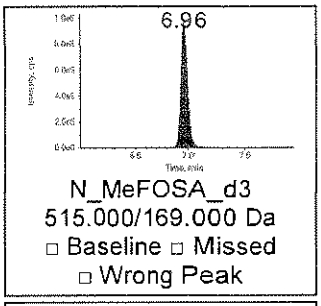
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



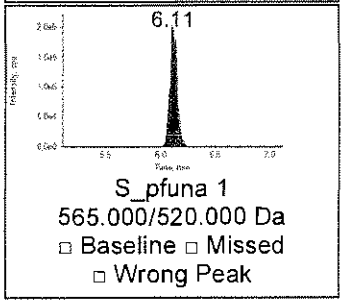
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



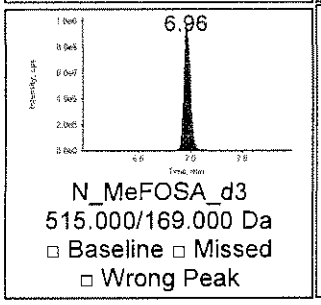
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503.000/80.000 Da
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□ Wrong Peak



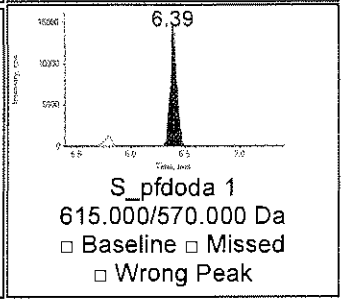
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



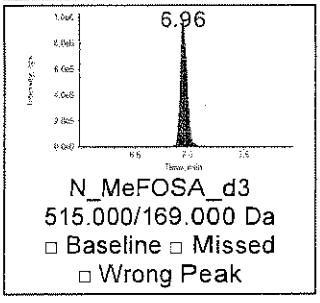
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

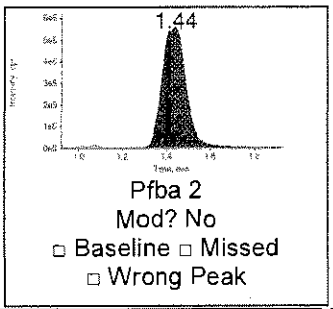


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

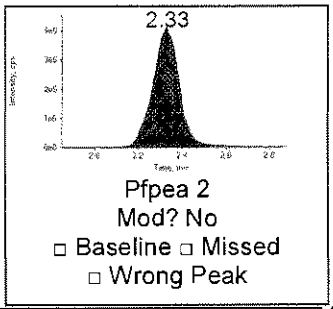


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

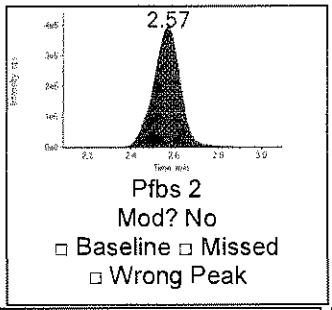
Ion Ratio Confirmation



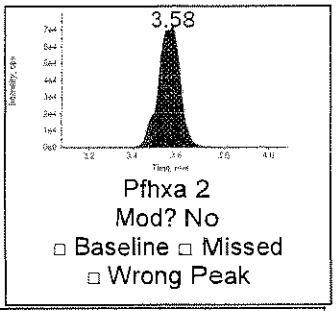
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



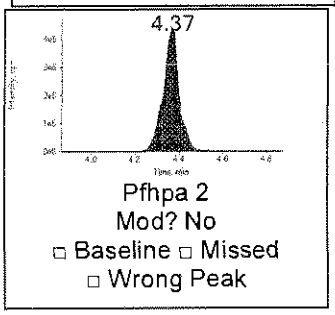
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



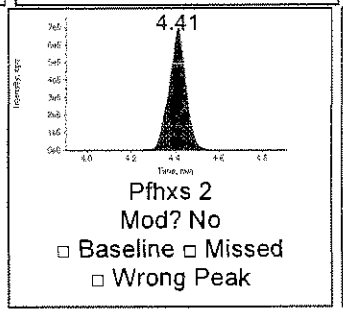
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



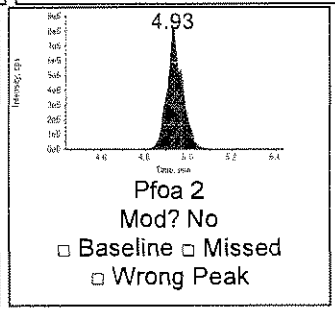
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



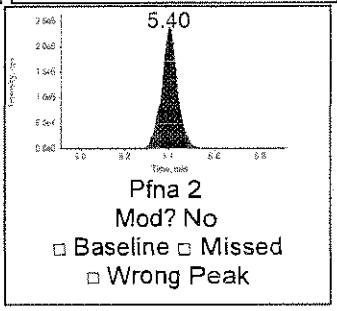
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



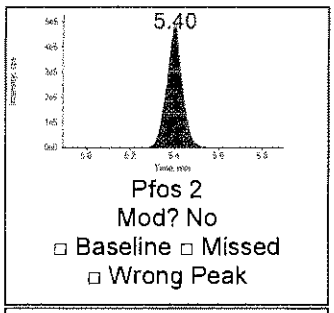
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



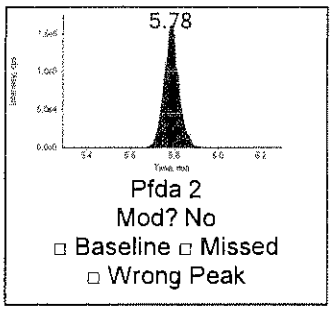
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



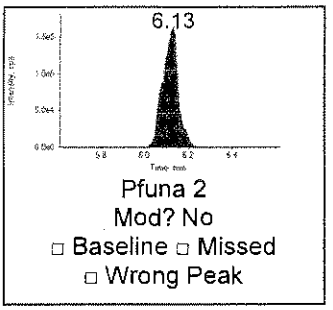
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



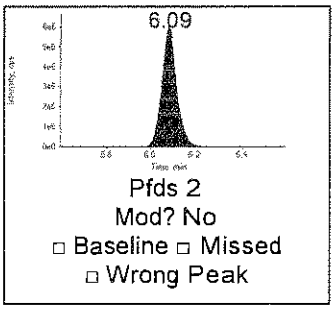
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



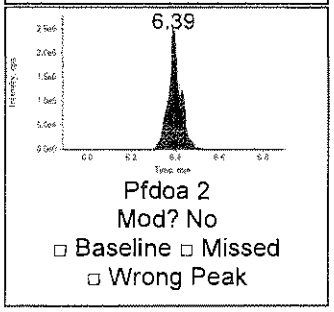
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

4-20-16

Project	Ewan's Projects\PFCs
Data File	041816\2037.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

KQ1602494-8 DMS

Sample Name	KQ1602426-02 DMS	Injection Volume	5
Acquisition Date	4/19/2016 1:53:57 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	34	Weight to Volume	0.00

Results Summary * ONLY

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5700422	1.42 (1.43)	5027426	19.3660	No
Pfpea 1	13C-PFHxA	5710771	2.32 (2.34)	3277351	18.1210	No
* Pfbs 1	18O_PFHS	3039475	2.56 (2.59)	7850453	18.5680	No
Pfhxa 1	13C-PFHxA	5710771	3.56 (3.57)	5500311	19.6170	No
Pfhpa 1	13C-PFHxA	5710771	4.38 (4.37)	5919773	17.8990	No
Pfhxs 1	18O_PFHS	3039475	4.41 (4.41)	8973207	19.9790	No
* Pfoa 1	13C-PFOA	3923492	4.94 (4.94)	2216117	20.9460	No
Pfna 1	13C-PFNA	4884596	5.40 (5.40)	4708202	18.4840	No
* Pfos 1	13C_PFOS	7322345	5.40 (5.40)	7100003	19.5880	No
Pfda 1	13C-PFDA	3397183	5.79 (5.78)	3388587	18.2190	No
Pfuna 1	13C-PFUnA	832667	6.12 (6.12)	2383834	16.0220	No
Pfds 1	13C_PFOS	7322345	6.09 (6.09)	8911067	19.5260	No
Pfdoa 1	13C-PFDoA	55606	6.40 (6.39)	3293144	18.9380	No
S_pfba 1	N_MeFOSA d3	3809014	1.42 (1.43)	5700422	14.1270	No
S_phhxa 1	N_MeFOSA d3	3809014	3.57 (3.58)	5710771	14.9640	No
* S_pfhs 1	N_MeFOSA d3	3809014	4.41 (4.41)	3039475	14.4620	No
* S_pfoa 1	N_MeFOSA d3	3809014	4.94 (4.94)	3923492	13.5390 b	No
S_pfna 1	N_MeFOSA d3	3809014	5.41 (5.38)	4884596	14.4850	No
S_pfda 1	N_MeFOSA d3	3809014	5.78 (5.79)	3397183	13.1130	No
* S_pfos 1	N_MeFOSA d3	3809014	5.40 (5.39)	7322345	16.0460	No

Interim

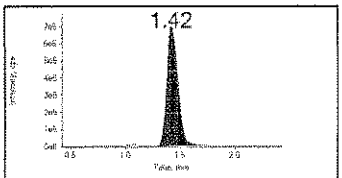
APR 21 2016

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3809014	6.11 (6.11)	832667	12.9050	No
S_pfdoda 1	N_MeFOSA d3	3809014	6.39 (6.40)	55606	14.0080	No

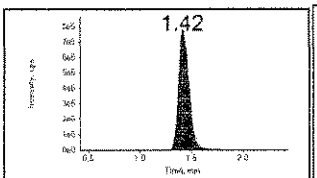
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.42 (1.42)	4534270	No	0.90 (0.89)	YES
Pfpea 2	2.32 (2.36)	3217778	No	0.98 (1.07)	YES
Pfbs 2	2.57 (2.59)	3236671	No	0.41 (0.41)	YES
Pfhxa 2	3.57 (3.58)	528489	No	0.10 (0.09)	YES
Pfhpa 2	4.35 (4.37)	2173420	No	0.37 (0.38)	YES
Pfhxs 2	4.41 (4.41)	3619759	No	0.40 (0.39)	YES
Pfoa 2	4.93 (4.94)	3811565	No	1.72 (1.93)	YES
Pfna 2	5.41 (5.41)	1260918	No	0.27 (0.27)	YES
Pfos 2	5.40 (5.39)	2385943	No	0.34 (0.34)	YES
Pfda 2	5.79 (5.79)	744754	No	0.22 (0.21)	YES
Pfuna 2	6.13 (6.11)	806294	No	0.34 (0.28)	YES
Pfds 2	6.09 (6.09)	2814803	No	0.32 (0.32)	YES
Pfdoa 2	6.39 (6.39)	954473	No	0.29 (0.30)	YES

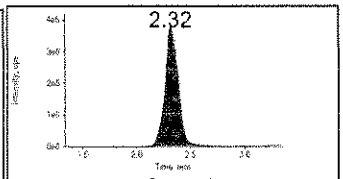
Quantitative Peak Review KQ1602426-02 K1602494-008 DMS



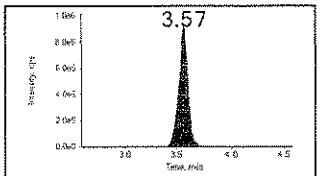
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



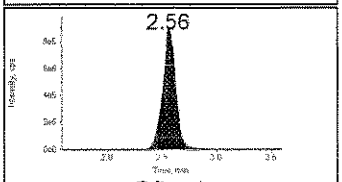
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



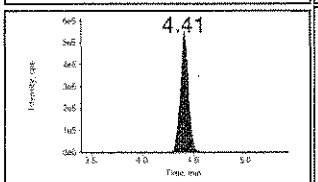
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



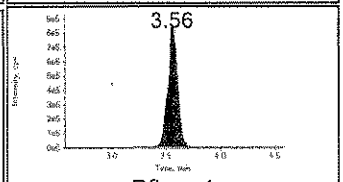
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



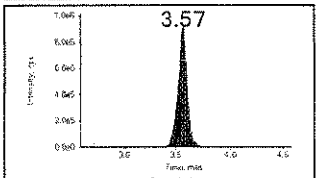
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



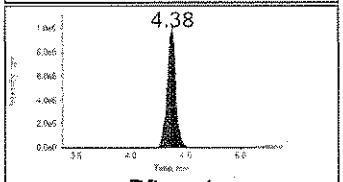
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



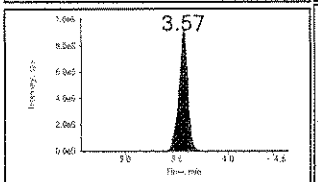
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



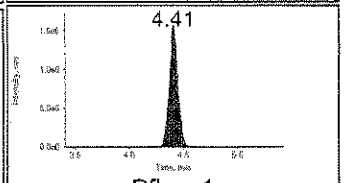
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



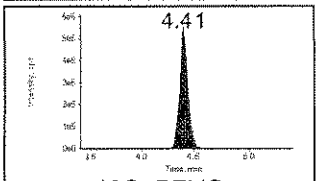
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



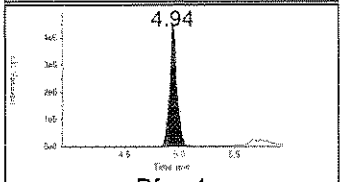
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



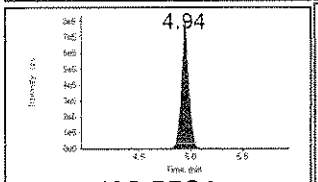
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



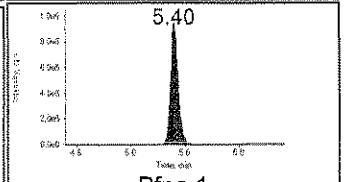
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



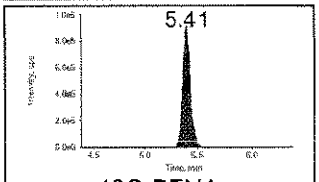
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



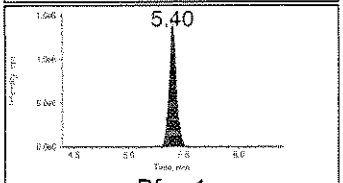
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



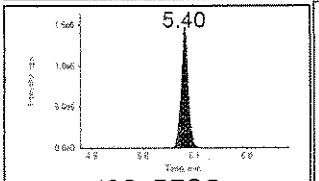
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



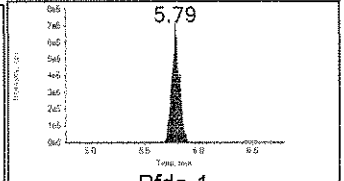
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



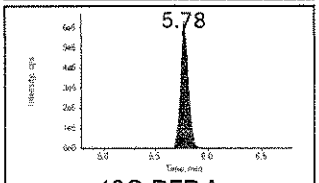
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



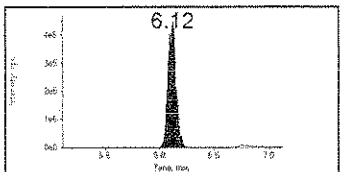
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



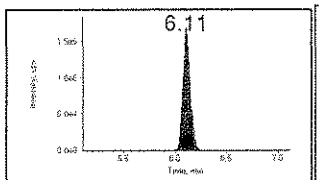
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



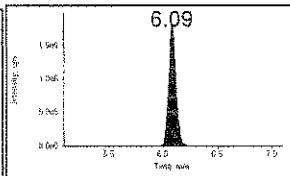
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



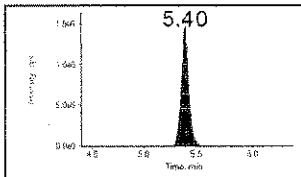
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



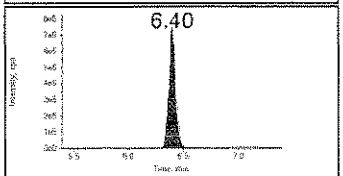
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



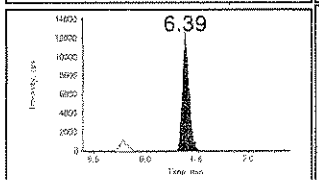
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



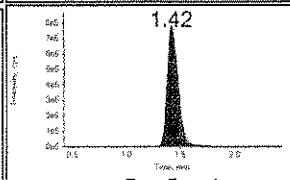
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



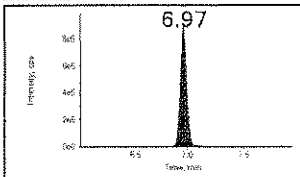
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



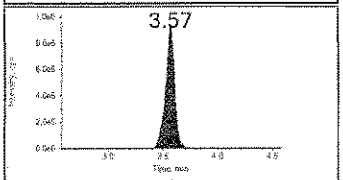
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



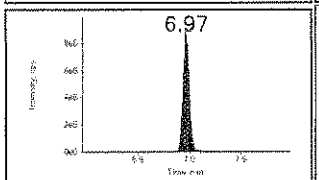
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



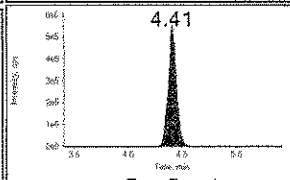
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



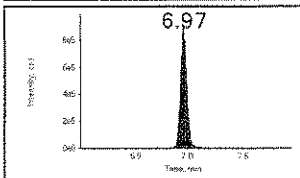
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



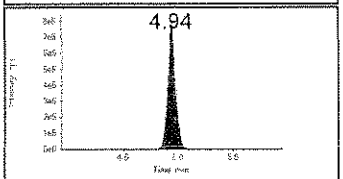
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



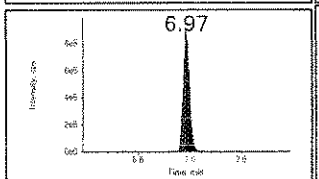
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



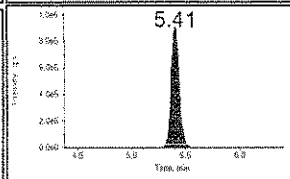
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



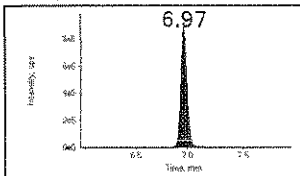
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



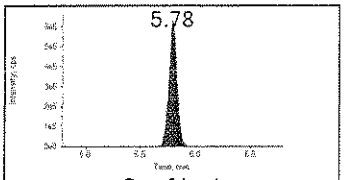
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



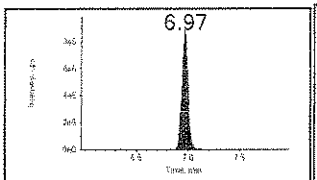
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



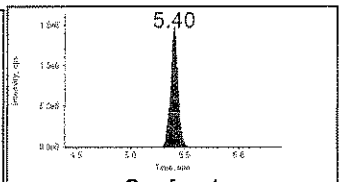
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



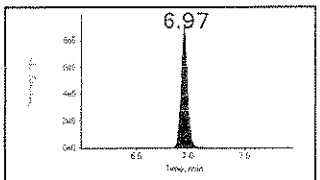
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



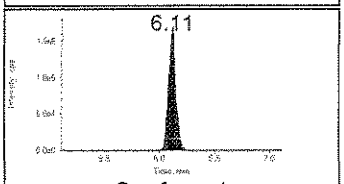
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



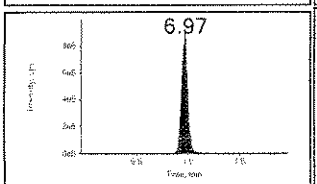
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



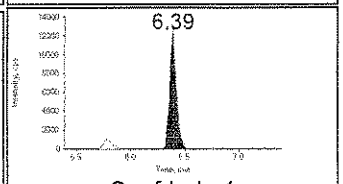
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



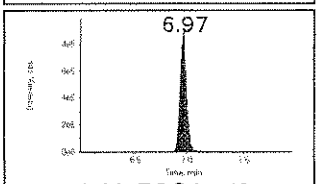
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

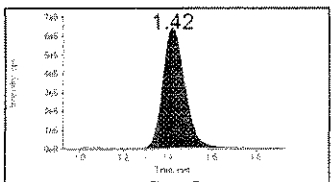


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

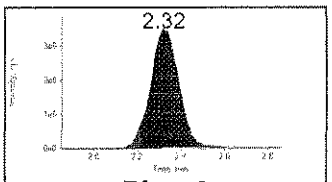


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

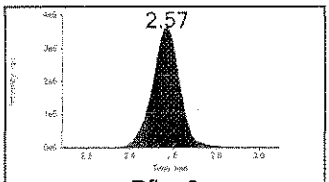
Ion Ratio Confirmation



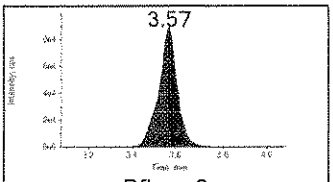
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



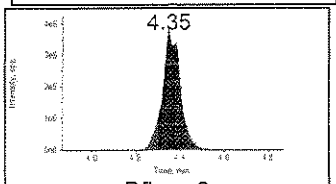
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



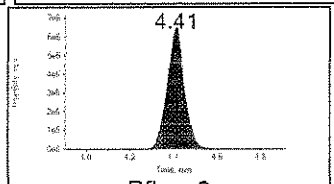
Pfbs 2
Mod? No
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□ Wrong Peak



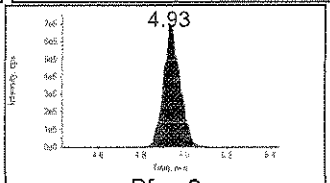
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



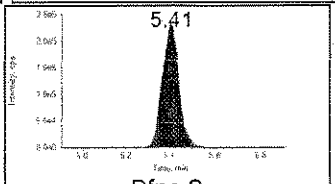
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



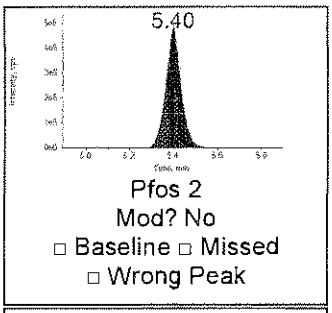
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



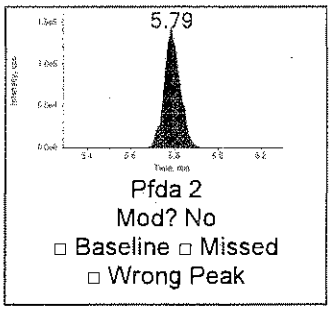
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



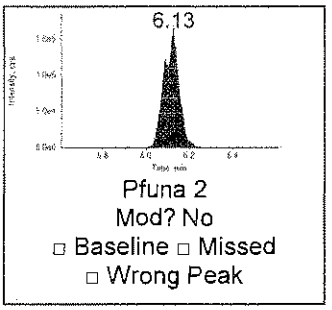
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



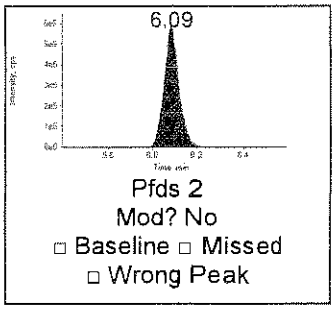
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



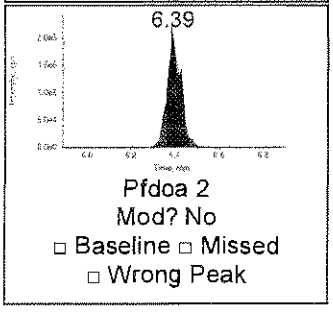
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

4/20/16

Project	Ewan's Projects\PFCs
Data File	041816\2023.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	KQ1602426-03 LCS	Injection Volume	5
Acquisition Date	4/18/2016 11:32:23 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	22	Weight to Volume	0.00

Results Summary

forms

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5427862	1.42 (1.43)	4201726	16.9980	No
Pfpea 1	13C-PFHxA	5859008	2.32 (2.34)	2720418	14.6610	No
Pfbs 1	18O_PFHS	3588053	2.56 (2.59)	8466715	16.9640	No
Pfhxa 1	13C-PFHxA	5859008	3.58 (3.57)	4433425	15.4120	No
Pfhpa 1	13C-PFHxA	5859008	4.36 (4.37)	5250535	15.4740	No
Pfhxs 1	18O_PFHS	3588053	4.42 (4.41)	8664824	16.3430	No
Pfoa 1	13C-PFOA	3953947	4.95 (4.94)	1956014	18.3460	No
Pfna 1	13C-PFNA	4433690	5.40 (5.40)	4068007	17.5950	No
Pfos 1	13C_PFOS	8041380	5.40 (5.40)	6517120	16.3720	No
Pfda 1	13C-PFDA	3354970	5.80 (5.78)	3221249	17.5370	No
Pfuna 1	13C-PFUnA	889222	6.11 (6.12)	2268357	14.2760	No
Pfds 1	13C_PFOS	8041380	6.09 (6.09)	8468250	16.8970	No
Pfdoa 1	13C-PFDoA	53841	6.39 (6.39)	2699548	16.0330	No
S_pfba 1	N_MeFOSA d3	3893250	1.43 (1.43)	5427862	13.1610	No
S_phhxa 1	N_MeFOSA d3	3893250	3.57 (3.58)	5859008	15.0200	No
S_pfhs 1	N_MeFOSA d3	3893250	4.41 (4.41)	3588053	16.7030	No
S_pfoa 1	N_MeFOSA d3	3893250	4.95 (4.94)	3953947	13.3490	No
S_pfna 1	N_MeFOSA d3	3893250	5.40 (5.38)	4433690	12.8640	No
S_pfda 1	N_MeFOSA d3	3893250	5.78 (5.79)	3354970	12.6700	No
S_pfos 1	N_MeFOSA d3	3893250	5.40 (5.39)	8041380	17.2400	No

Interim limits

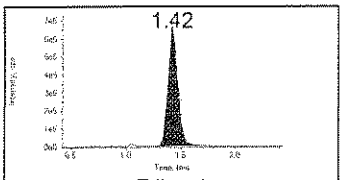
APR 21 2016

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3893250	6.11 (6.11)	889222	13.4830	No
S_pfdoda 1	N_MeFOSA d3	3893250	6.41 (6.40)	53841	13.2700	No

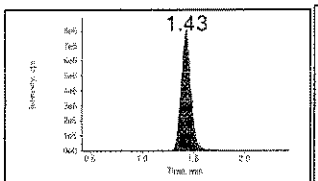
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	1.43 (1.43)	3640525	No	0.87 (0.89)	YES
Pfpea 2	2.32 (2.36)	2869969	No	1.05 (1.07)	YES
Pfbs 2	2.57 (2.59)	3550498	No	0.42 (0.41)	YES
Pfhxa 2	3.57 (3.58)	476348	No	0.11 (0.09)	YES
Pfhpa 2	4.38 (4.37)	1920835	No	0.37 (0.38)	YES
Pfhxs 2	4.42 (4.41)	3535995	No	0.41 (0.39)	YES
Pfoa 2	4.95 (4.94)	3539562	No	1.81 (1.93)	YES
Pfna 2	5.41 (5.41)	1081220	No	0.27 (0.27)	YES
Pfos 2	5.40 (5.39)	2246568	No	0.34 (0.34)	YES
Pfda 2	5.77 (5.79)	675902	No	0.21 (0.21)	YES
Pfuna 2	6.11 (6.11)	728026	No	0.32 (0.28)	YES
Pfds 2	6.09 (6.09)	2673941	No	0.32 (0.32)	YES
Pfdoa 2	6.41 (6.39)	851635	No	0.32 (0.30)	YES

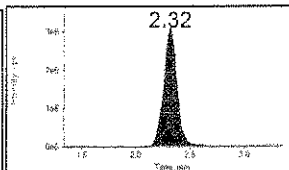
Quantitative Peak Review KQ1602426-03 LCS



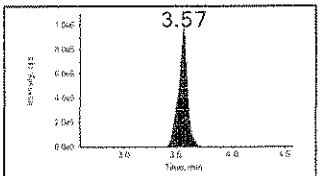
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



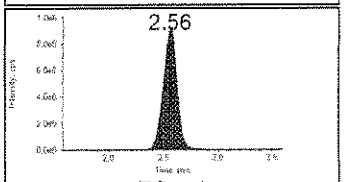
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



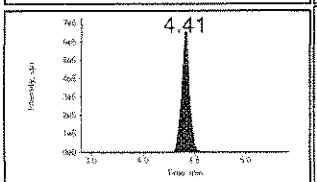
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



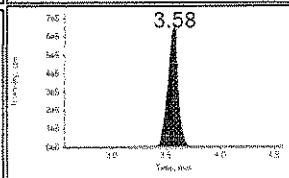
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



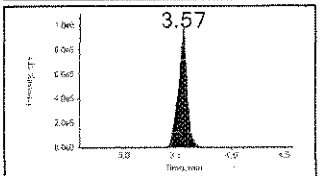
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



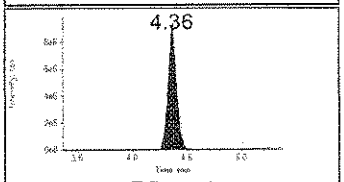
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



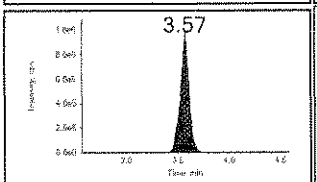
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



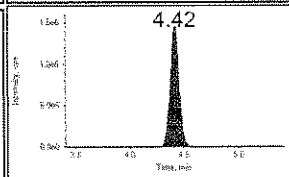
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



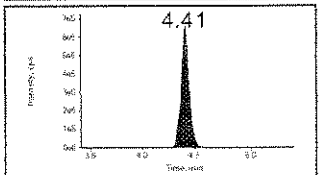
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



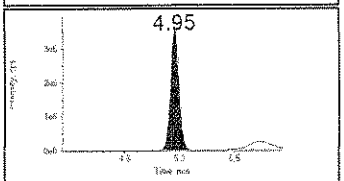
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



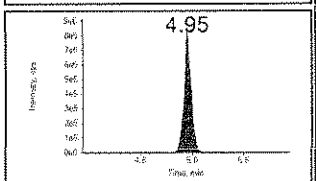
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



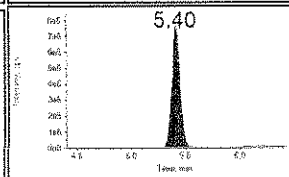
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



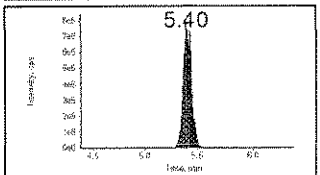
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



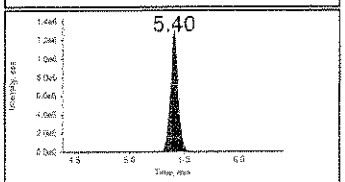
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



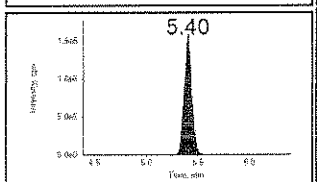
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



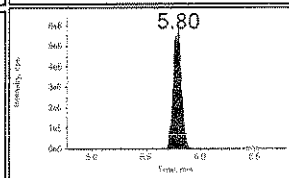
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



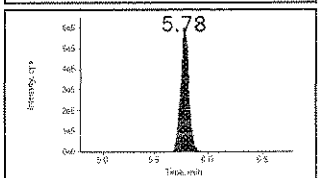
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



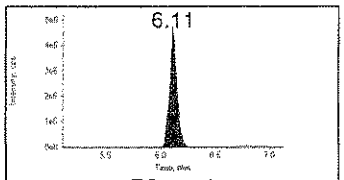
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



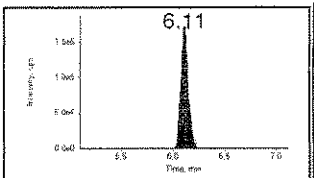
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



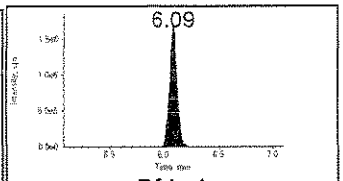
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



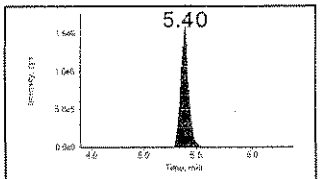
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



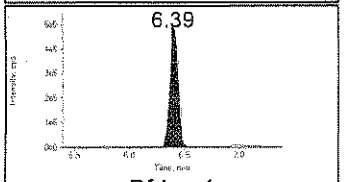
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



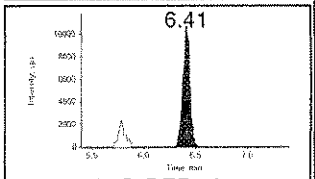
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



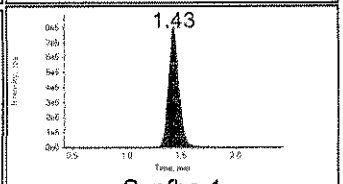
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



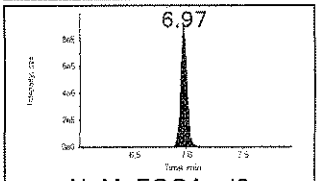
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



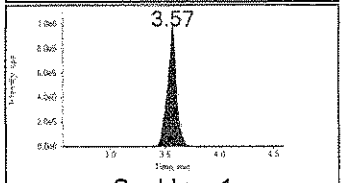
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



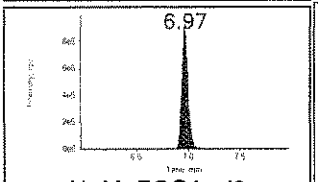
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



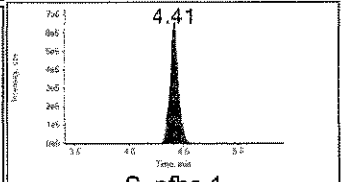
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



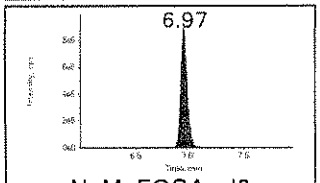
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



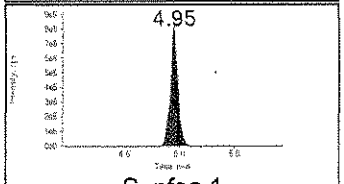
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



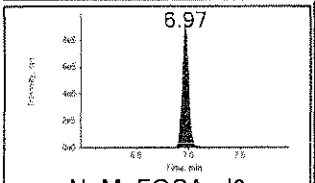
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



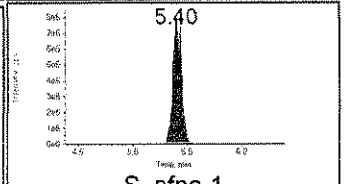
N_MeFOSA_d3
515.000/169.000 Da
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□ Wrong Peak



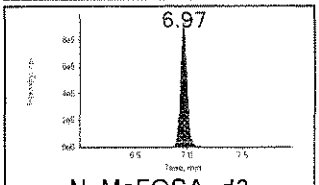
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



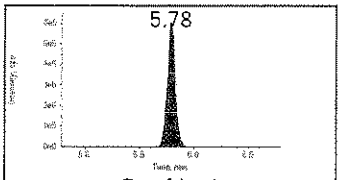
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



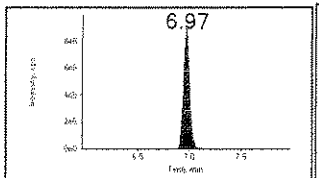
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



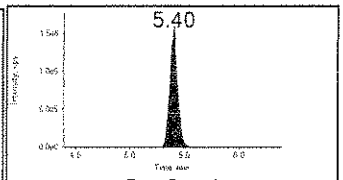
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



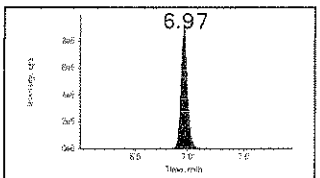
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



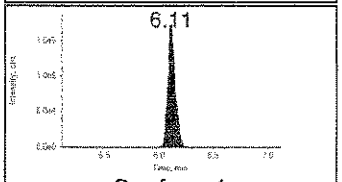
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



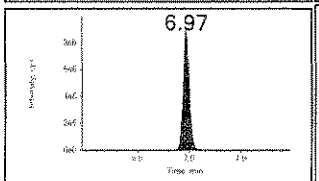
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



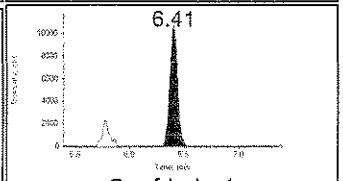
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



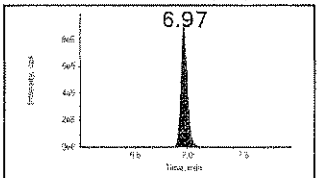
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

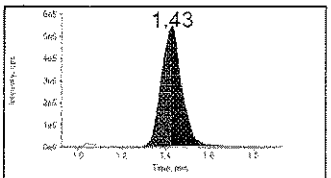


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

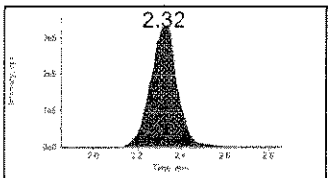


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

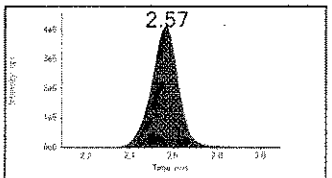
Ion Ratio Confirmation



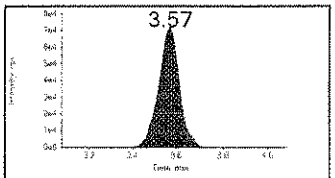
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



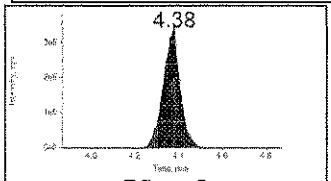
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



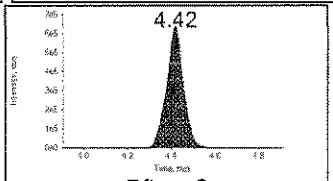
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



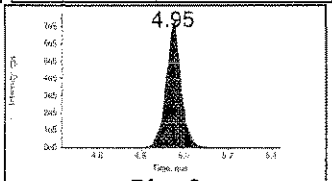
Pfhxa 2
Mod? No
□ Baseline □ Missed
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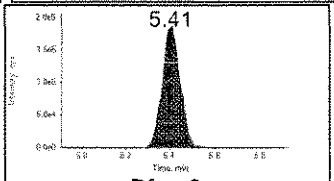
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



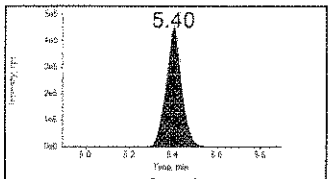
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



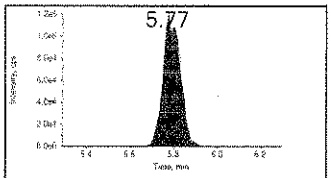
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



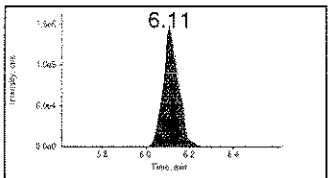
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



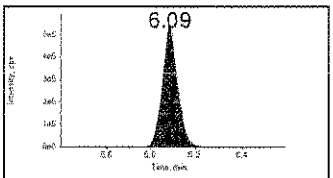
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



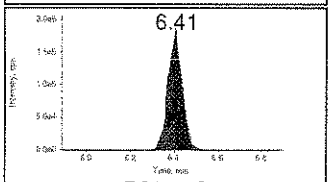
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1022.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	KQ1602477-01 LLS	Injection Volume	10
Acquisition Date	3/17/2016 10:39:18 PM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	16	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	2766390	2.59 (2.60)	2328721	4.9890	No
Pfpea 1	13c_pfhxa	3167041	5.09 (5.13)	2144435	5.1390	No
Pfbs 1	18o-pfhs	1155632	5.54 (5.54)	3913024	4.8880	No
Pfhxa 1	13c_pfhxa	3167041	6.64 (6.68)	2914427	4.8980	No
Pfhpa 1	13c_pfhxa	3167041	7.64 (7.63)	2993334	4.8430	No
Pfhxs 1	18o-pfhs	1155632	7.72 (7.72)	3159985	4.8600	No
Pfoa 1	13c-pfoa	1963332	8.37 (8.36)	1035334	4.7080	No
Pfna 1	13c-pfna	2121186	8.96 (8.96)	1930840	4.9250	No
Pfos 1	13c-pfos	2281221	8.97 (9.00)	2001577	4.9590	No
Pfda 1	13c-pfda	1162733	9.45 (9.45)	1172930	5.0420	No
Pfuna 1	13c-pfuna	315037	9.87 (9.87)	758005	4.2350	No
Pfds 1	13c-pfos	2281221	9.85 (9.85)	2025993	4.5190	No
Pfdoa 1	13c-pfdoda	18720	10.20 (10.30)	1018253	4.3570	No
Fosa 1	d5-NEtFOSA	415799	9.96 (10.00)	2021498	5.8060	No
Pfteda 1	13c-pfdoda	18720	10.80 (10.90)	464832	5.4860	No
PFHpS 1	18o-pfhs	1155632	8.40 (8.40)	615460	4.7340	No
NMeFOSE 1	d7-NMeFOSE	899569	10.80 (10.80)	865529	5.0930	No
NMeFOSA 1	d7-NMeFOSE	899569	10.80 (10.80)	284301	4.5430	No
NEtFOSE 1	d9-EtFOSE	968556	11.00 (11.10)	1047251	4.7740	No
NEtFOSA 1	d5-NEtFOSA	415799	11.00 (11.00)	375426	5.0570	No

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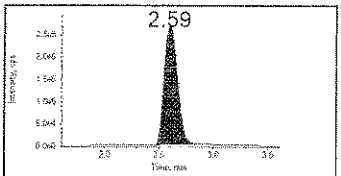
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	550427	11.00 (11.10)	968556	3.4480	No
d5-NEtFOSA 1	N_mefosa_d3	550427	11.00 (11.10)	415799	2.9500	No
d7-NMeFOSE 1	N_mefosa_d3	550427	10.80 (10.80)	899569	3.4520	No
13C_PFBA 1	N_mefosa_d3	550427	2.59 (2.60)	2766390	3.9910	No
13C_PFHXA 1	N_mefosa_d3	550427	6.64 (6.68)	3167041	4.1900	No
13C-PFOA 1	N_mefosa_d3	550427	8.37 (8.43)	1963332	4.0080	No
13C-PFNA 1	N_mefosa_d3	550427	8.96 (9.05)	2121186	3.9450	No
13C-PFOS 1	N_mefosa_d3	550427	8.96 (9.03)	2281221	4.0320	No
13C-PFDA 1	N_mefosa_d3	550427	9.45 (9.52)	1162733	3.7100	No
13C-PFUNA 1	N_mefosa_d3	550427	9.87 (9.93)	315037	4.0530	No
18O-PFHxS 1	N_mefosa_d3	550427	7.72 (7.75)	1155632	3.9020	No
13C-PFDoA 1	N_mefosa_d3	550427	10.20 (10.30)	18720	3.5890	No
PFTrDA 1	13c-pfdoda	18720	10.50 (10.60)	935415	4.6840	No
6_2-FTS 1	13C2-6_2-FTS	60149	8.32 (8.35)	429532	4.7290	No
8_2-FTS 1	13C2-6_2-FTS	60149	9.43 (9.45)	369345	4.5500	No
13C2-6_2-FTS 1	N_mefosa_d3	550427	8.32 (8.36)	60149	3.9550	No

IRC Summary

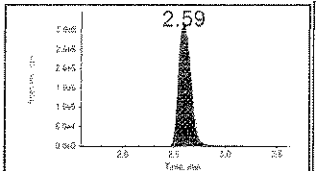
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	2.59 (2.66)	2322982	No	1.00 (0.94)	YES
Pfpea 2	5.09 (5.18)	2143103	No	1.00 (1.01)	YES
Pfbs 2	5.53 (5.63)	1665450	No	0.43 (0.43)	YES
Pfhxa 2	6.64 (6.73)	255976	No	0.09 (0.09)	YES
Pfhpa 2	7.64 (7.68)	1172838	No	0.39 (0.42)	YES
Pfhxs 2	7.72 (7.81)	1237683	No	0.39 (0.41)	YES
Pfoa 2	8.37 (8.47)	1941021	No	1.87 (1.86)	YES
Pfna 2	8.96 (9.07)	629543	No	0.33 (0.32)	YES

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	8.97 (8.96)	684714	No	0.34 (0.36)	YES
Pfda 2	9.45 (9.45)	373102	No	0.32 (0.31)	YES
Pfuna 2	9.87 (9.88)	338263	No	0.45 (0.46)	YES
Pfds 2	9.84 (9.84)	673977	No	0.33 (0.34)	YES
Pfdoa 2	10.20 (10.20)	346113	No	0.34 (0.35)	YES
Fosa 2	9.96 (10.00)	48094	No	0.02 (0.02)	YES
Pfteda 2	10.80 (10.90)	163786	No	0.35 (0.36)	YES
PFHpS 2	8.40 (8.50)	253535	No	0.41 (0.43)	YES
NMeFOSE 2	10.80 (10.80)	6684	No	0.01 (0.01)	YES
NMeFOSA 2	10.80 (10.80)	271611	No	0.96 (1.05)	YES
NEtFOSE 2	11.00 (11.10)	4373	No	0.00 (0.00)	YES
NEtFOSA 2	11.00 (11.10)	255063	No	0.68 (0.68)	YES
PFTrDA 2	10.50 (10.60)	256774	No	0.27 (0.33)	YES
6_2-FTS 2	8.32 (8.39)	572714	No	1.33 (1.30)	YES
8_2-FTS 2	9.43 (9.50)	37685	No	0.10 (0.10)	YES

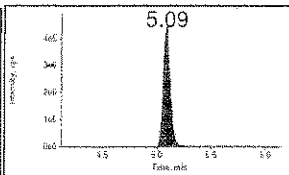
Quantitative Peak Review KQ1602477-01 LCS



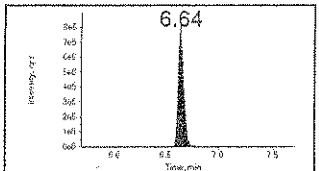
Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



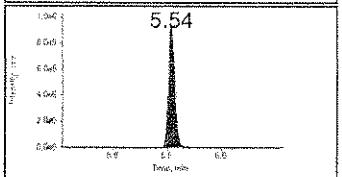
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



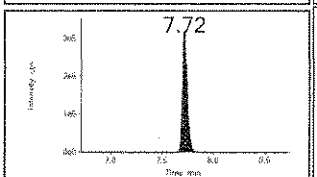
Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



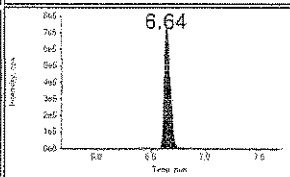
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



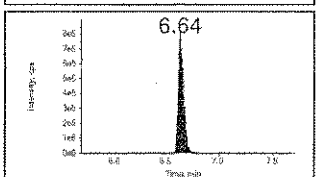
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



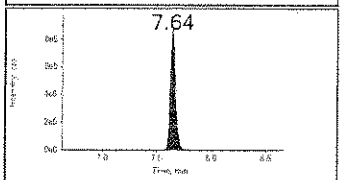
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



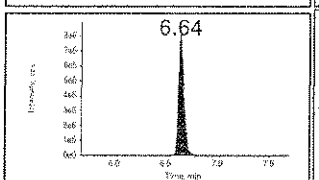
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



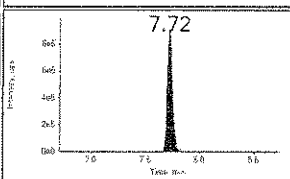
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



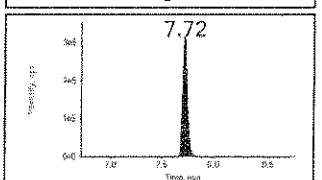
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



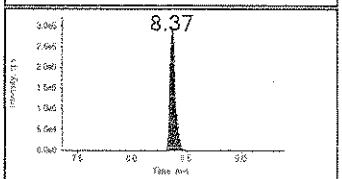
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



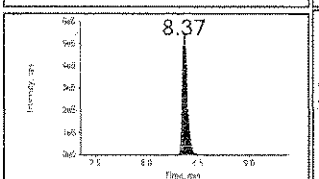
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



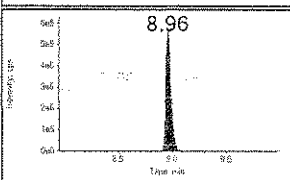
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



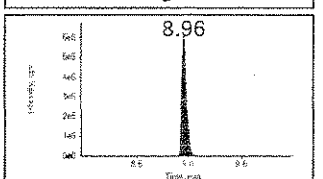
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



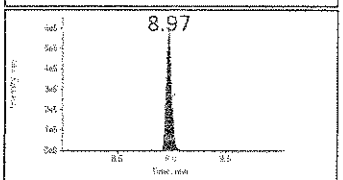
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



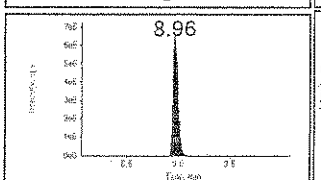
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



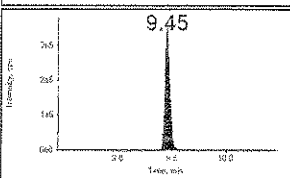
13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



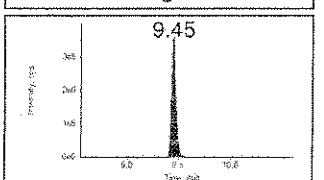
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



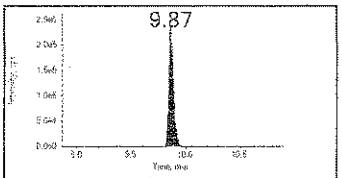
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



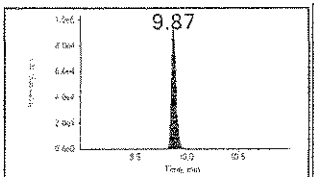
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



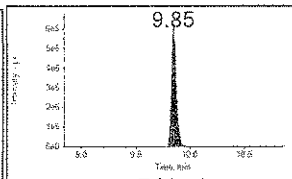
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



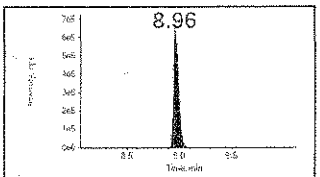
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



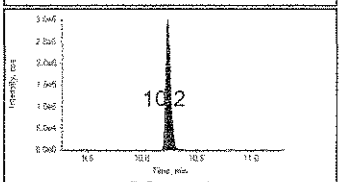
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



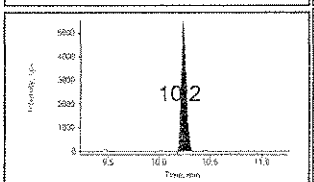
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



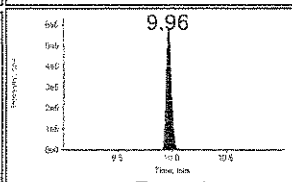
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



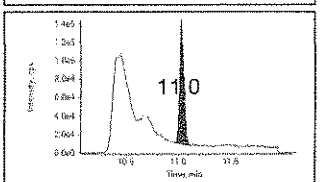
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



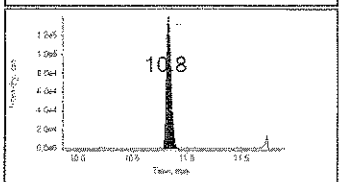
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



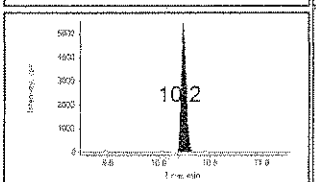
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



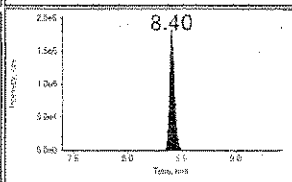
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



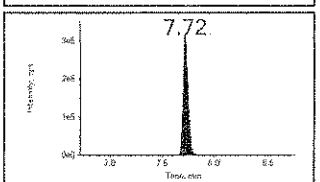
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



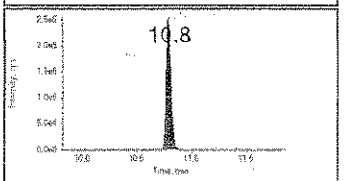
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



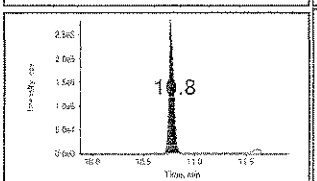
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



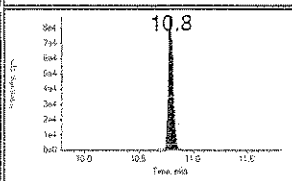
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



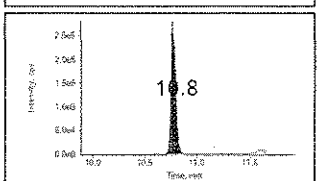
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



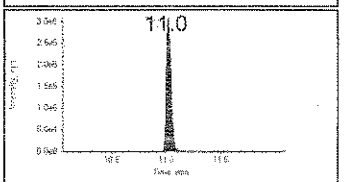
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



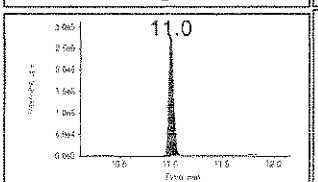
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



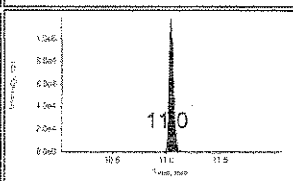
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



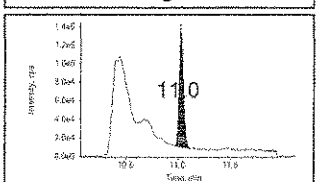
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



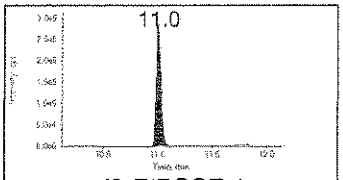
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



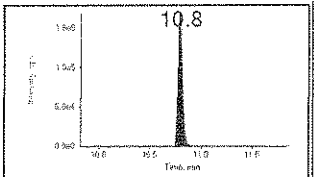
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



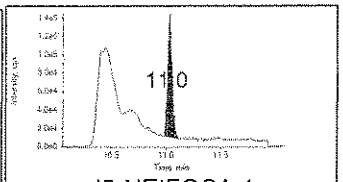
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



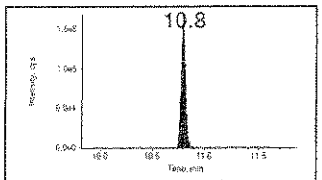
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



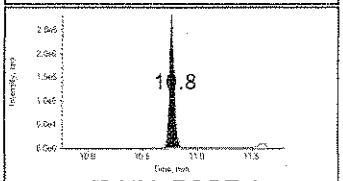
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



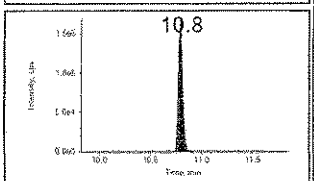
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



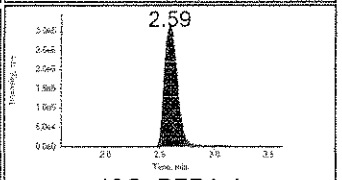
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



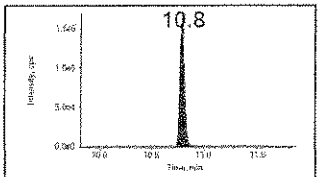
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



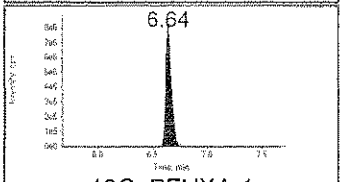
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



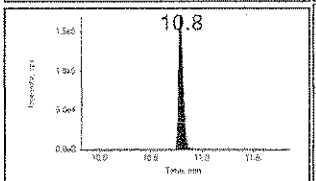
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



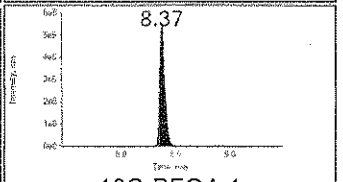
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



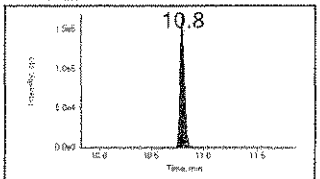
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



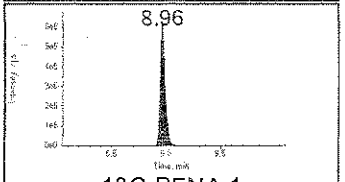
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



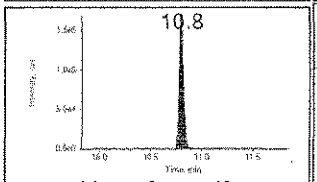
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



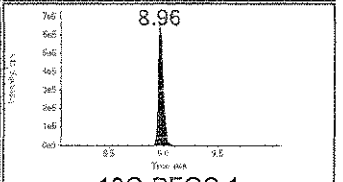
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



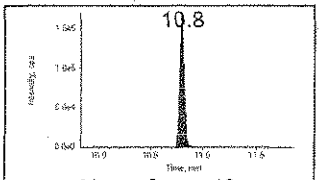
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



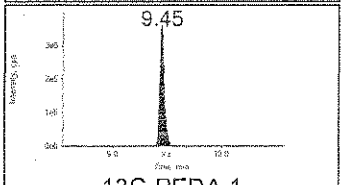
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



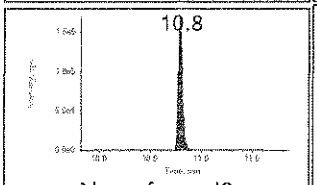
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



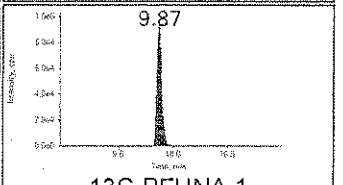
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



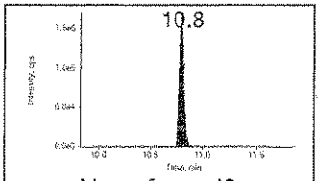
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



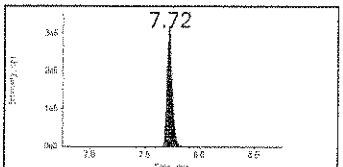
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



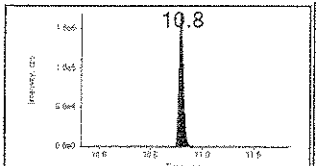
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



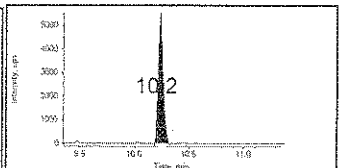
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



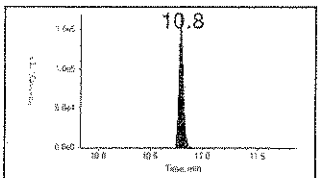
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



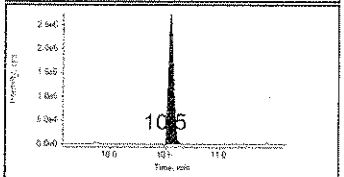
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



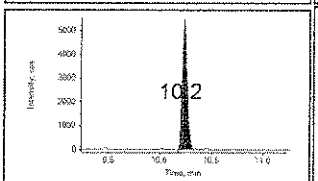
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



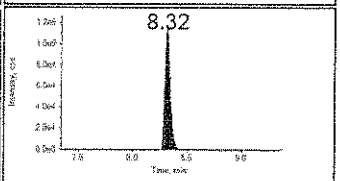
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



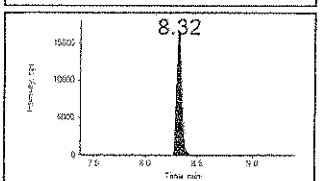
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



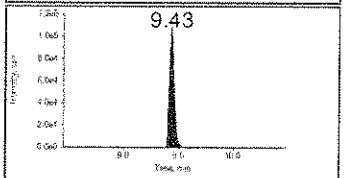
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



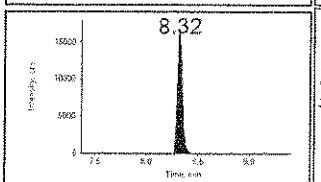
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



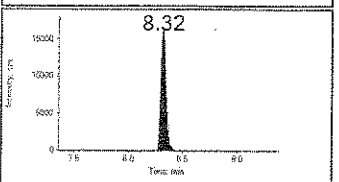
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



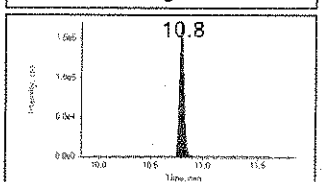
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

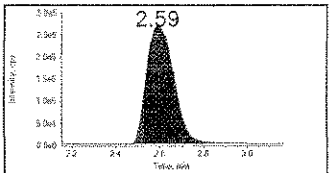


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

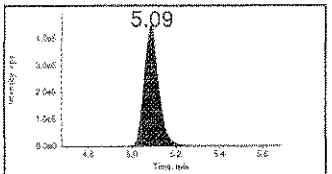


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

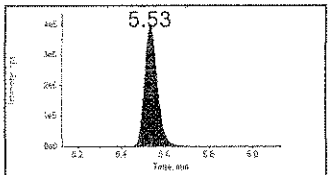
Ion Ratio Confirmation



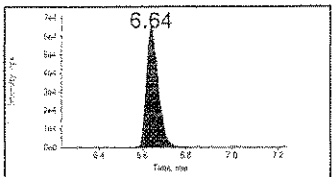
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



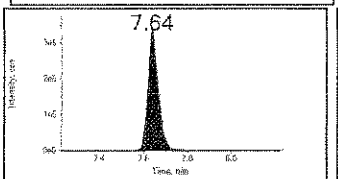
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



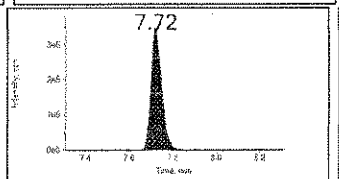
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



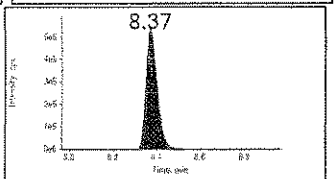
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



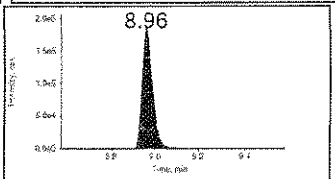
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



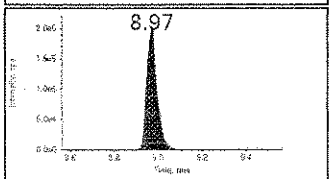
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



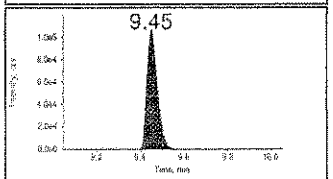
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



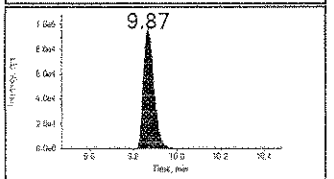
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



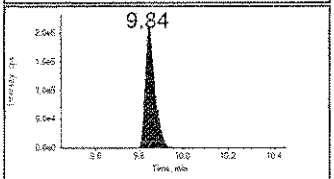
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



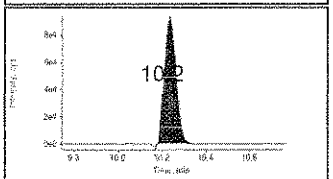
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



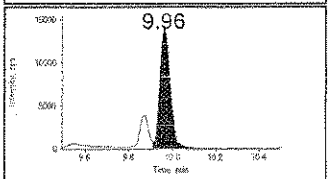
Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



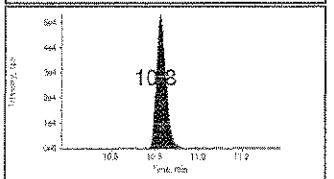
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



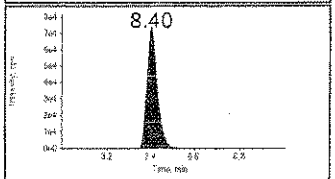
Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



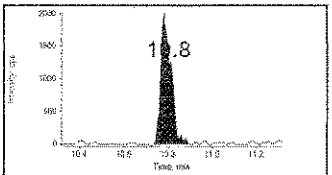
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



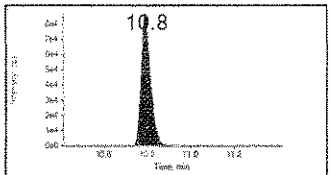
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



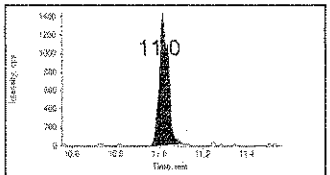
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



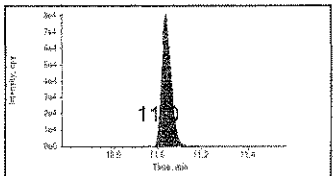
NMeFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



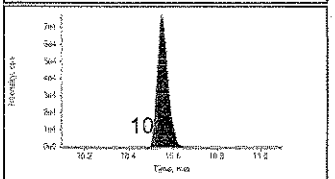
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



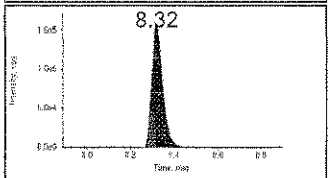
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



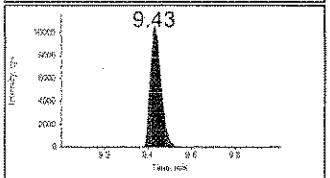
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1023.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	KQ1602477-02 DUP	Injection Volume	10
Acquisition Date	3/17/2016 10:57:37 PM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	17	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	2726395	2.60 (2.60)	2230740	4.8500	No
Pfpea 1	13c_pfhxa	3150879	5.08 (5.13)	2053505	4.9460	No
Pfbs 1	18o-pfhs	1162264	5.53 (5.54)	3708994	4.6070	No
Pfhxa 1	13c_pfhxa	3150879	6.63 (6.68)	2817130	4.7590	No
Pfhpa 1	13c_pfhxa	3150879	7.63 (7.63)	2863719	4.6570	No
Pfhxs 1	18o-pfhs	1162264	7.71 (7.72)	3113284	4.7610	No
Pfoa 1	13c-pfoa	2018682	8.37 (8.36)	988689	4.3730	No
Pfna 1	13c-pfna	2127170	8.95 (8.96)	1819400	4.6280	No
Pfos 1	13c-pfos	2287876	8.97 (9.00)	1926590	4.7590	No
Pfda 1	13c-pfda	1227696	9.45 (9.45)	1094059	4.4540	No
Pfuna 1	13c-pfuna	297461	9.87 (9.87)	733632	4.3410	No
Pfds 1	13c-pfos	2287876	9.85 (9.85)	1951045	4.3390	No
Pfdoa 1	13c-pfdoda	18267	10.20 (10.30)	978220	4.2890	No
Fosa 1	d5-NEtFOSA	424662	9.96 (10.00)	2054031	5.7760	No
Pfteda 1	13c-pfdoda	18267	10.80 (10.90)	420916	5.0910	No
PFHpS 1	18o-pfhs	1162264	8.40 (8.40)	648736	4.9610	No
NMeFOSE 1	d7-NMeFOSE	896625	10.80 (10.80)	862596	5.0920	No
NMeFOSA 1	d7-NMeFOSE	896625	10.80 (10.80)	279282	4.4770	No
NEtFOSE 1	d9-EtFOSE	949484	11.00 (11.10)	983663	4.5740	No
NEtFOSA 1	d5-NEtFOSA	424662	11.00 (11.00)	375987	4.9580	No

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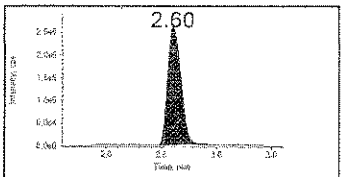
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	550957	11.00 (11.10)	949484	3.3760	No
d5-NEtFOSA 1	N_mefosa_d3	550957	11.00 (11.10)	424662	3.0100	No
d7-NMeFOSE 1	N_mefosa_d3	550957	10.80 (10.80)	896625	3.4370	No
13C_PFBA 1	N_mefosa_d3	550957	2.60 (2.60)	2726395	3.9300	No
13C_PFHXA 1	N_mefosa_d3	550957	6.63 (6.68)	3150879	4.1640	No
13C-PFOA 1	N_mefosa_d3	550957	8.37 (8.43)	2018682	4.1170	No
13C-PFNA 1	N_mefosa_d3	550957	8.96 (9.05)	2127170	3.9520	No
13C-PFOS 1	N_mefosa_d3	550957	8.96 (9.03)	2287876	4.0400	No
13C-PFDA 1	N_mefosa_d3	550957	9.45 (9.52)	1227696	3.9130	No
13C-PFUNA 1	N_mefosa_d3	550957	9.87 (9.93)	297461	3.8240	No
18O-PFHxS 1	N_mefosa_d3	550957	7.71 (7.75)	1162264	3.9200	No
13C-PFDoA 1	N_mefosa_d3	550957	10.20 (10.30)	18267	3.4990	No
PFTrDA 1	13c-pfdoda	18267	10.60 (10.60)	898573	4.6110	No
6_2-FTS 1	13C2-6_2-FTS	60147	8.32 (8.35)	411643	4.5320	No
8_2-FTS 1	13C2-6_2-FTS	60147	9.43 (9.45)	362704	4.4630	No
13C2-6_2-FTS 1	N_mefosa_d3	550957	8.31 (8.36)	60147	3.9510	No

IRC Summary

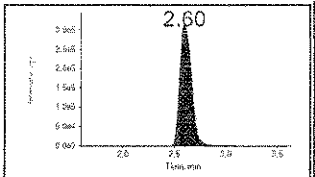
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	2.60 (2.66)	2224539	No	1.00 (0.94)	YES
Pfpea 2	5.08 (5.18)	2035022	No	0.99 (1.01)	YES
Pfbs 2	5.53 (5.63)	1581233	No	0.43 (0.43)	YES
Pfhxa 2	6.63 (6.73)	247649	No	0.09 (0.09)	YES
Pfhpa 2	7.63 (7.67)	1177674	No	0.41 (0.42)	YES
Pfhxs 2	7.71 (7.80)	1235505	No	0.40 (0.41)	YES
Pfoa 2	8.37 (8.47)	1840986	No	1.86 (1.86)	YES
Pfna 2	8.96 (9.07)	591272	No	0.32 (0.32)	YES

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	8.96 (8.97)	662738	No	0.34 (0.36)	YES
Pfda 2	9.45 (9.45)	338909	No	0.31 (0.31)	YES
Pfuna 2	9.87 (9.88)	337892	No	0.46 (0.46)	YES
Pfds 2	9.85 (9.84)	650628	No	0.33 (0.34)	YES
Pfdoa 2	10.20 (10.20)	344099	No	0.35 (0.35)	YES
Fosa 2	9.96 (10.00)	46858	No	0.02 (0.02)	YES
Pfteda 2	10.80 (10.90)	152525	No	0.36 (0.36)	YES
PFHpS 2	8.40 (8.49)	256169	No	0.39 (0.43)	YES
NMeFOSE 2	10.80 (10.80)	7686	No	0.01 (0.01)	YES
NMeFOSA 2	10.80 (10.80)	262395	No	0.94 (1.05)	YES
NEtFOSE 2	11.00 (11.10)	3856	No	0.00 (0.00)	YES
NEtFOSA 2	11.00 (11.10)	257471	No	0.68 (0.68)	YES
PFTrDA 2	10.60 (10.60)	264006	No	0.29 (0.33)	YES
6_2-FTS 2	8.31 (8.39)	553939	No	1.35 (1.30)	YES
8_2-FTS 2	9.43 (9.50)	38344	No	0.11 (0.10)	YES

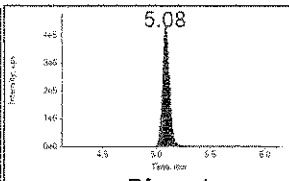
Quantitative Peak Review **KQ1602477-02 DLCS**



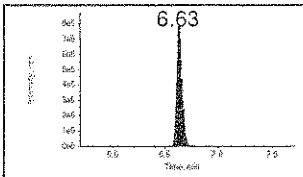
Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



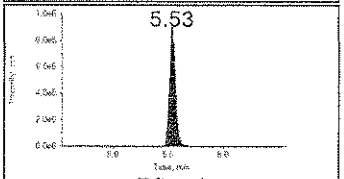
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



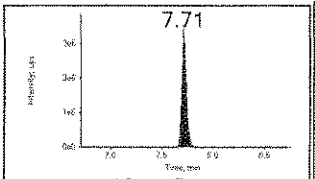
Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



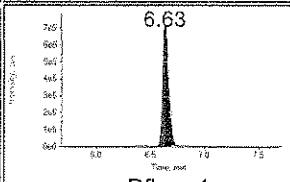
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



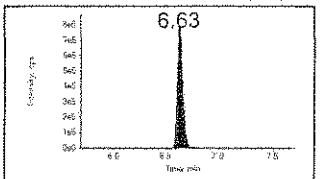
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



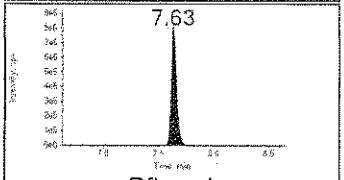
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



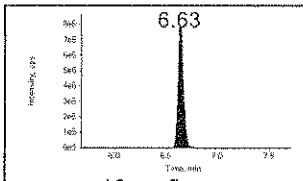
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



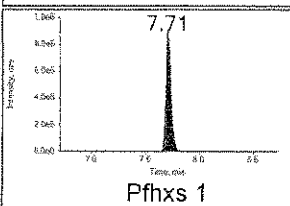
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



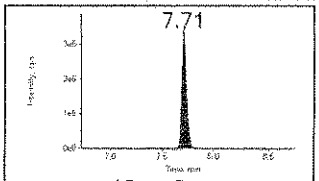
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



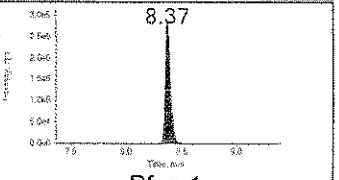
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



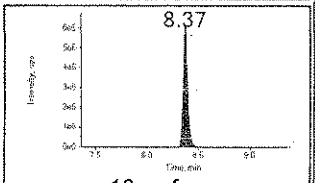
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



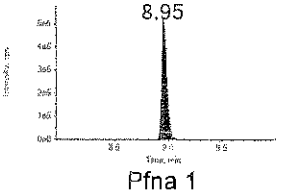
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



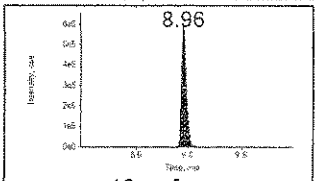
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



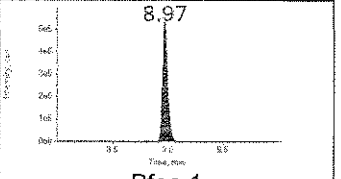
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



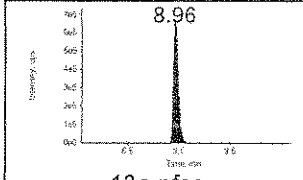
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



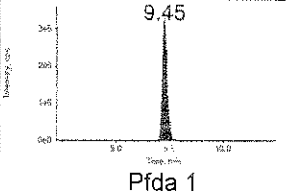
13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



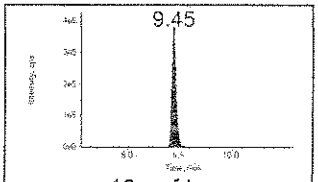
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



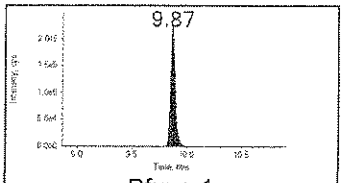
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



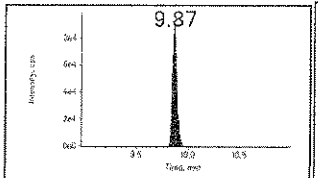
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



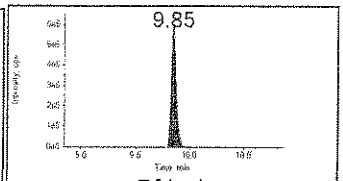
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



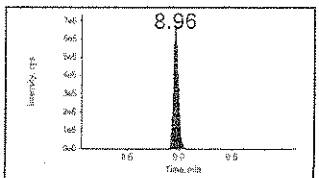
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



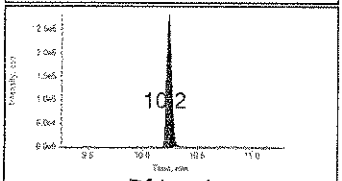
13c-pfuna
565.000/520.000 Da
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□ Wrong Peak



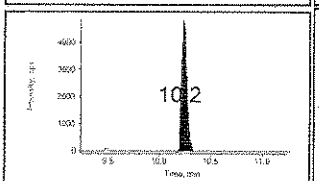
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



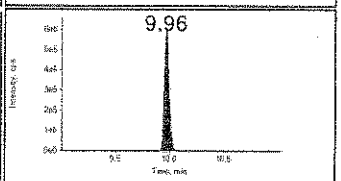
13c-pfos
503.000/80.000 Da
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□ Wrong Peak



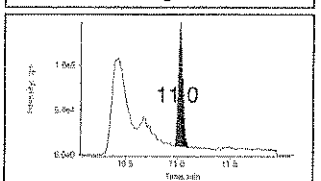
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



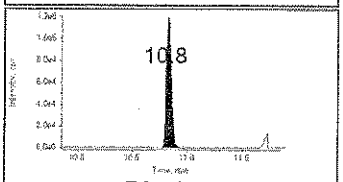
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



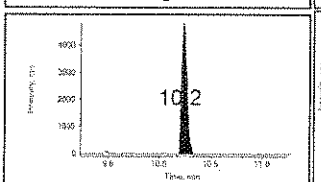
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



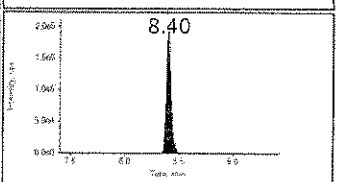
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



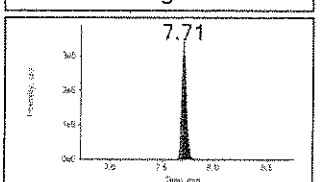
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



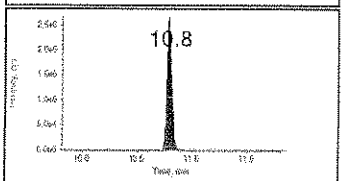
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



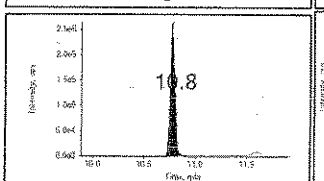
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



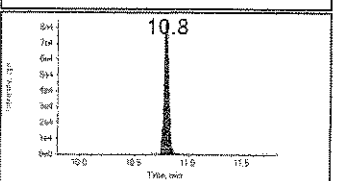
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



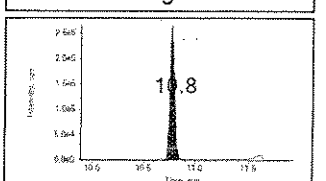
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



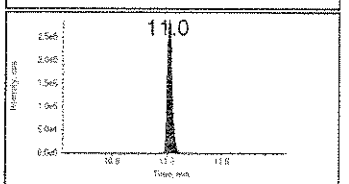
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



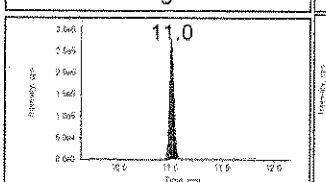
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



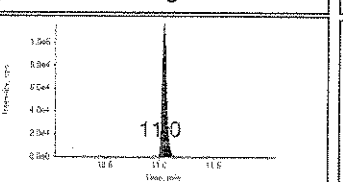
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



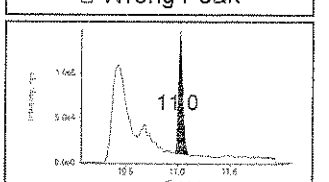
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



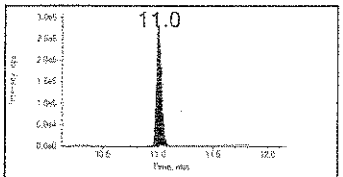
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



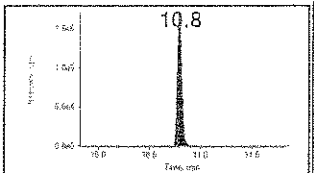
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



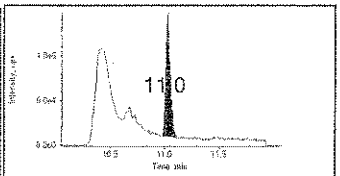
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



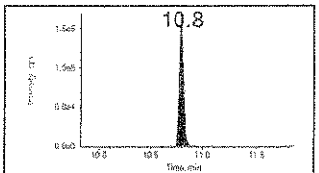
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



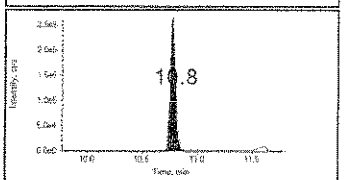
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



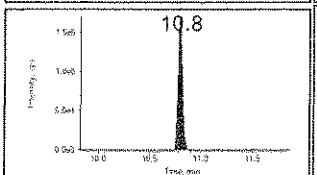
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



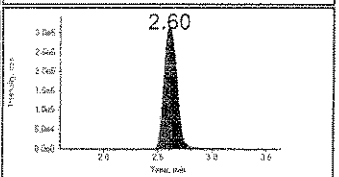
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



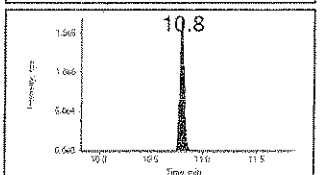
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



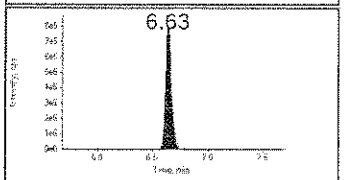
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



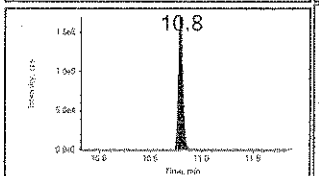
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



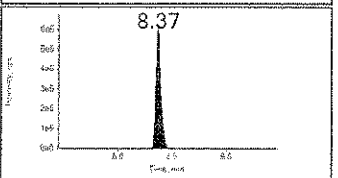
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



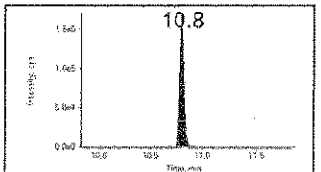
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



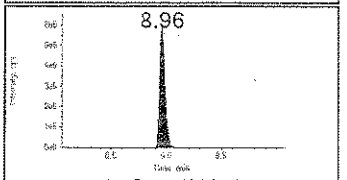
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



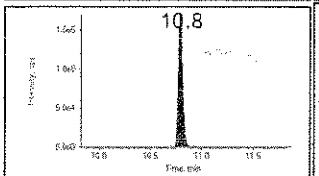
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



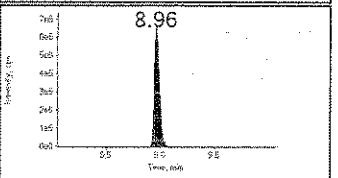
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



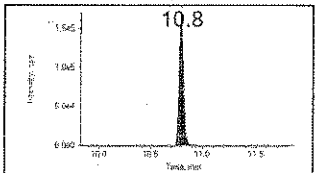
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



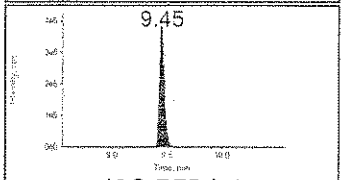
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



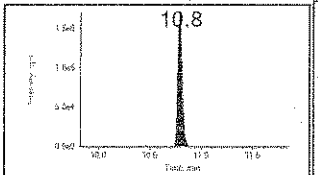
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



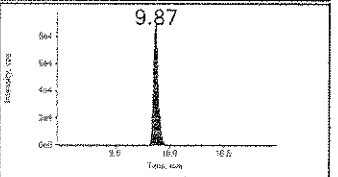
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



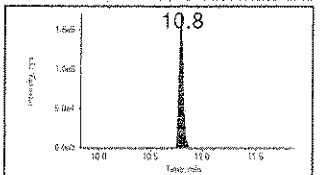
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



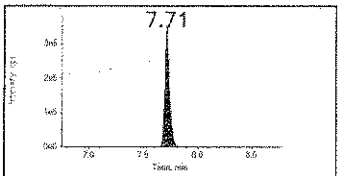
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



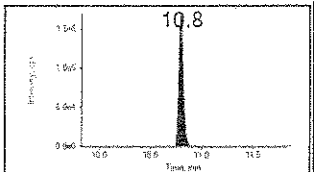
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



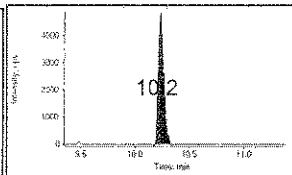
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



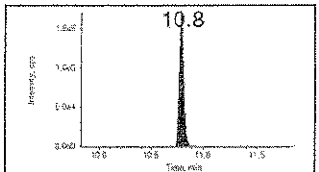
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



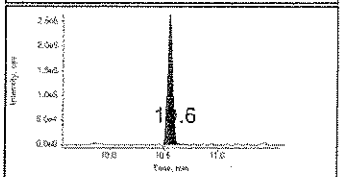
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



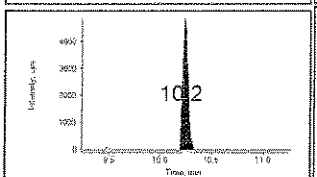
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



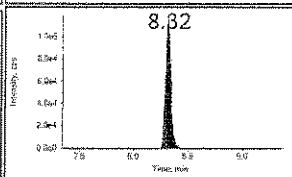
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



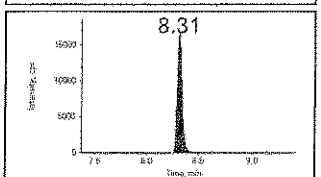
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



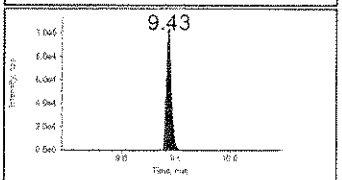
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



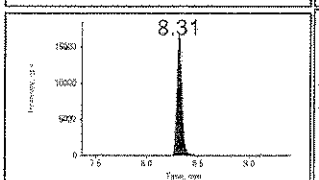
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



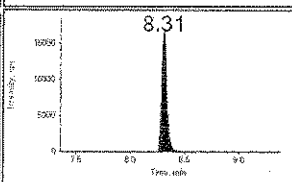
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



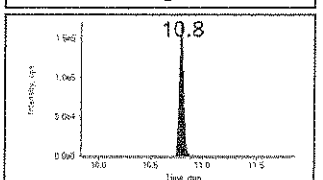
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

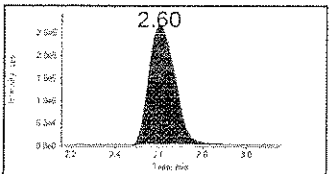


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

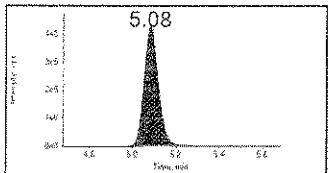


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

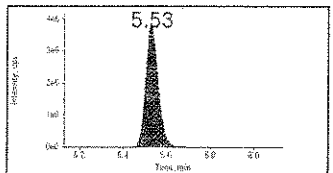
Ion Ratio Confirmation



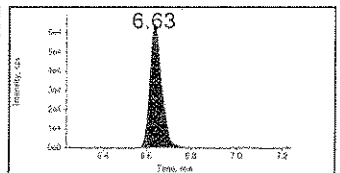
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



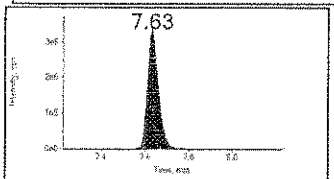
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



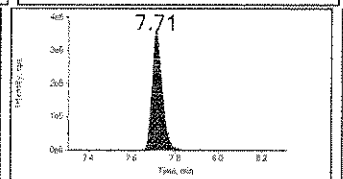
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



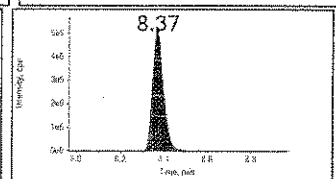
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



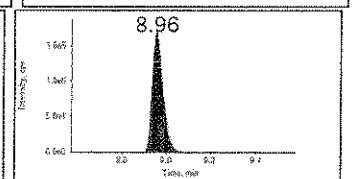
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



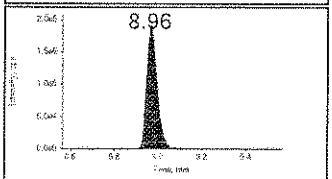
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



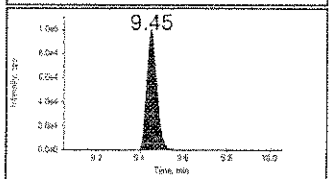
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



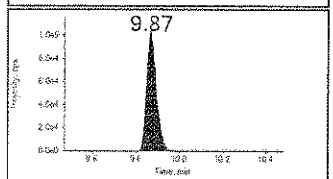
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



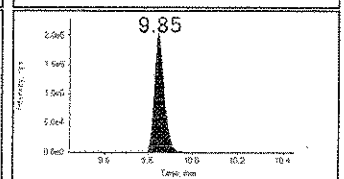
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



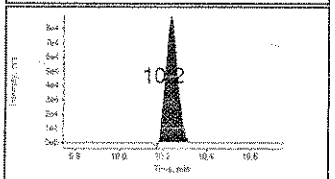
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



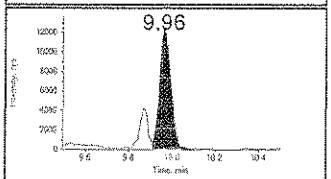
Pfuna 2
Mod? No
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□ Wrong Peak



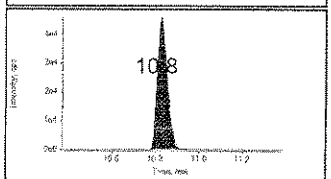
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



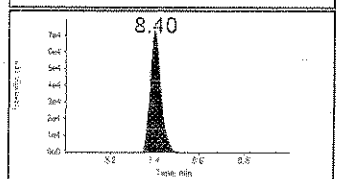
Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



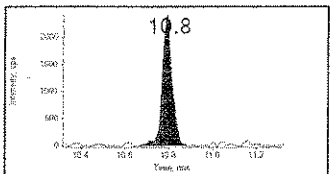
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



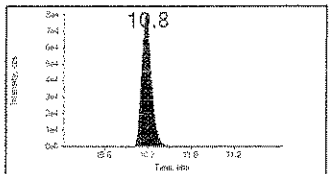
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



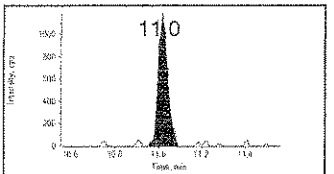
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



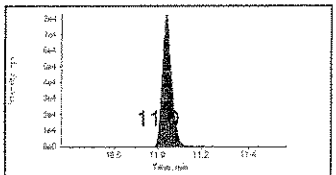
NMeFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



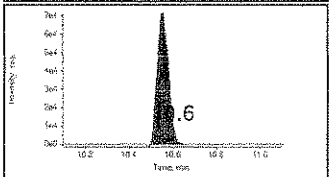
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



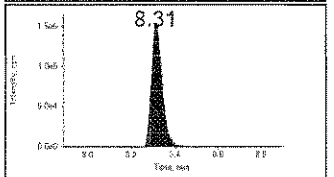
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



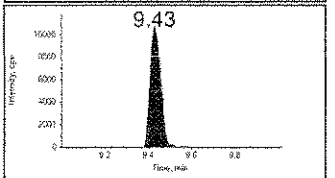
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Date:03/17/16

ALS Environmental

ICAL Date: 03/17/16

Cal. Std. xp: 4/14/16

1st Review: MH

Injection Log

ICAL ID: KC16 00032

2nd Review: MAR 2 2 2016

LCMS02 - API 5000

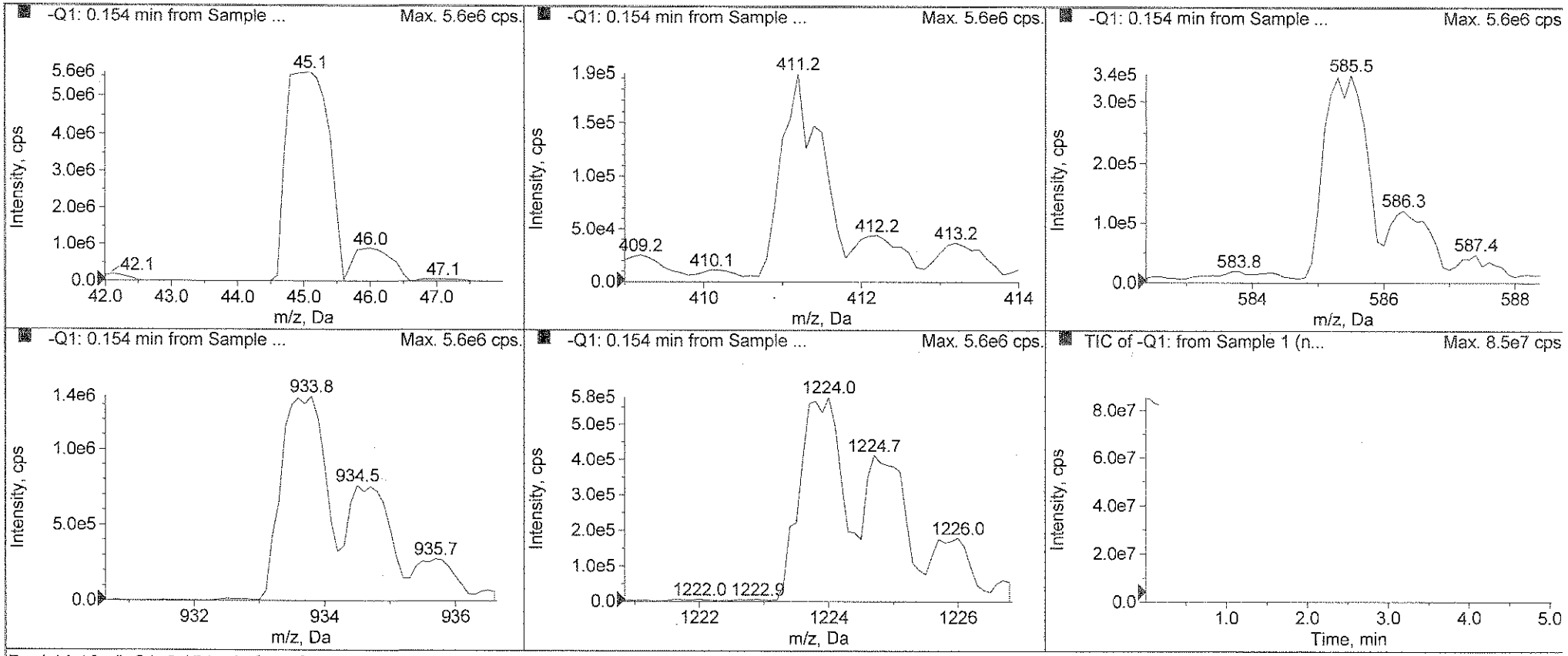
LIMS ID: 488491

Column: Kinetex EVO C18 100x4.6mm s/n: H15-022943

Mobile Phases A: 5mM Am.Ace. In water 15-OLC-01-31E B: 5mM Am.Ace. In MeOH 15-OLC-01-30F

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments
1	IB		031716\1007.wiff	PFC_090315 schedule mrm.dam	1x	✓	
2	PFC 0.02ppb	15-OLC-02-35A	031716\1008.wiff	PFC_090315 schedule mrm.dam	1x	✓	
3	PFC 0.05ppb	15-OLC-02-35B	031716\1009.wiff	PFC_090315 schedule mrm.dam	1x	✓	
4	PFC 0.10ppb	15-OLC-02-35C	031716\1010.wiff	PFC_090315 schedule mrm.dam	1x	✓	
5	PFC 0.25ppb	15-OLC-02-35D	031716\1011.wiff	PFC_090315 schedule mrm.dam	1x	✓	
6	PFC 0.50ppb	15-OLC-02-35E	031716\1012.wiff	PFC_090315 schedule mrm.dam	1x	✓	
7	PFC 1.0ppb	15-OLC-02-35F	031716\1013.wiff	PFC_090315 schedule mrm.dam	1x	✓	
8	PFC 5.0ppb	15-OLC-02-35G	031716\1014.wiff	PFC_090315 schedule mrm.dam	1x	✓	
9	PFC 10ppb	15-OLC-02-35H	031716\1015.wiff	PFC_090315 schedule mrm.dam	1x	✓	
10	PFC 20ppb	15-OLC-02-35I	031716\1016.wiff	PFC_090315 schedule mrm.dam	1x	✓	
11	PFC 50ppb	15-OLC-02-35J	031716\1017.wiff	PFC_090315 schedule mrm.dam	1x	✓	
12	IB		031716\1018.wiff	PFC_090315 schedule mrm.dam	1x	✓	
13	PFC 2ppb ICV	15-OLC-02-35M	031716\1019.wiff	PFC_090315 schedule mrm.dam	1x	✓	
14	IB		031716\1020.wiff	PFC_090315 schedule mrm.dam	1x	✓	
15	KQ1602477-03	MB	031716\1021.wiff	PFC_090315 schedule mrm.dam	1x	✓	
16	KQ1602477-01	LCS	031716\1022.wiff	PFC_090315 schedule mrm.dam	1x	✓	
17	KQ1602477-02	DLCS	031716\1023.wiff	PFC_090315 schedule mrm.dam	1x	✓	
18	K1602419-001		031716\1024.wiff	PFC_090315 schedule mrm.dam	1x	✓	
19	K1602423-001		031716\1025.wiff	PFC_090315 schedule mrm.dam	1x	✓	
20	K1602494-009		031716\1026.wiff	PFC_090315 schedule mrm.dam	1x	✓	
21	K1602533-006		031716\1027.wiff	PFC_090315 schedule mrm.dam	1x	✓	
22	K1602533-007		031716\1028.wiff	PFC_090315 schedule mrm.dam	1x	✓	
23	K1602533-008		031716\1029.wiff	PFC_090315 schedule mrm.dam	1x	✓	
24	K1602533-009		031716\1030.wiff	PFC_090315 schedule mrm.dam	1x	✓	
25	PFC 1.0ppb	15-OLC-02-35L	031716\1031.wiff	PFC_090315 schedule mrm.dam	1x	✓	
26	IB		031716\1032.wiff	PFC_090315 schedule mrm.dam	1x	✓	
27	K1602533-010		031716\1033.wiff	PFC_090315 schedule mrm.dam	1x	✓	
28	K1602533-013		031716\1034.wiff	PFC_090315 schedule mrm.dam	1x	✓	
29	K1602627-007		031716\1035.wiff	PFC_090315 schedule mrm.dam	1x	✓	
30	K1602627-008		031716\1036.wiff	PFC_090315 schedule mrm.dam	1x	✓	
31	K1602627-009		031716\1037.wiff	PFC_090315 schedule mrm.dam	1x	✓	
32	K1602627-010		031716\1038.wiff	PFC_090315 schedule mrm.dam	1x	✓	
33	K1602627-011		031716\1039.wiff	PFC_090315 schedule mrm.dam	1x	✓	
34	K1602627-012		031716\1040.wiff	PFC_090315 schedule mrm.dam	1x	✓	
35	K1602627-013		031716\1041.wiff	PFC_090315 schedule mrm.dam	1x	✓	
36	K1602627-014		031716\1042.wiff	PFC_090315 schedule mrm.dam	1x	✓	
37	PFC 1.0ppb	15-OLC-02-35L	031716\1043.wiff	PFC_090315 schedule mrm.dam	1x	✓	
38	IB		031716\1044.wiff	PFC_090315 schedule mrm.dam	1x	✓	

J:\LCMS02\PFCs\031716\031716_INJLOG

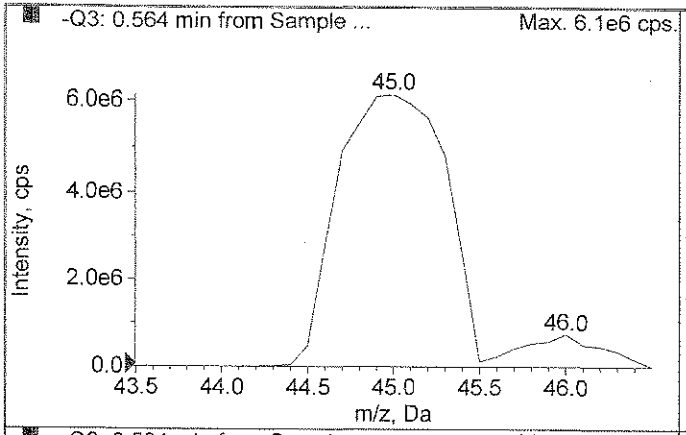


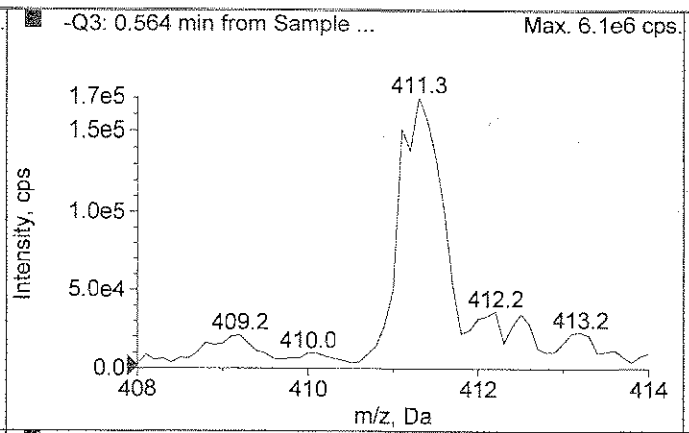
Peak List for " -Q1: 0.154 min from Sample 1 (neg Q1 3-17-16) of neg Q1 3-17-16.wiff (Turbo Spray)"

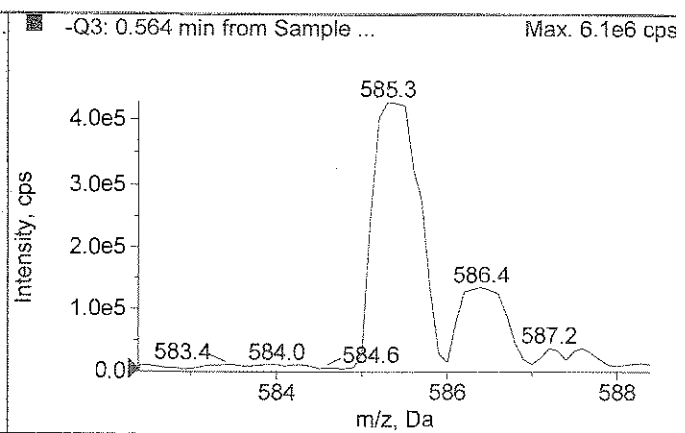
	Target Mass (Da)	Found At (Da)	Intensity (cps)	Width (Da)	Mass Shift (Da)
1	44.9980	45.0527	5.6022e6	0.7739	-0.0547
2	411.2590	411.2404	1.9430e5	0.6493	0.0186
3	585.3850	585.4025	3.4340e5	0.7672	-0.0175
4	933.6360	933.6755	1.3558e6	0.7549	-0.0395
5	1223.8450	1223.8765	5.7840e5	0.6952	-0.0315

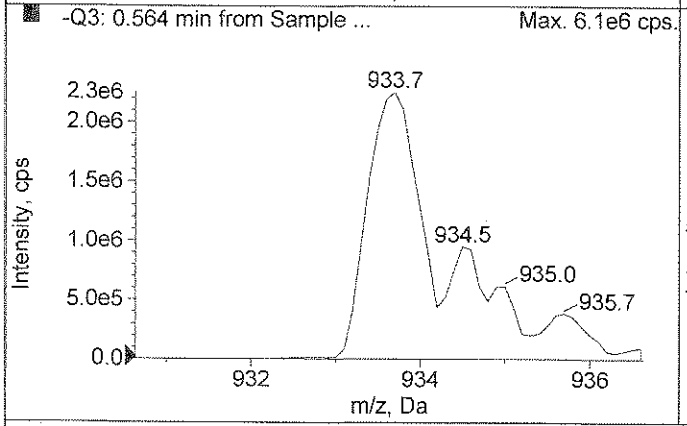
All Mass shift < 0.5 ea.

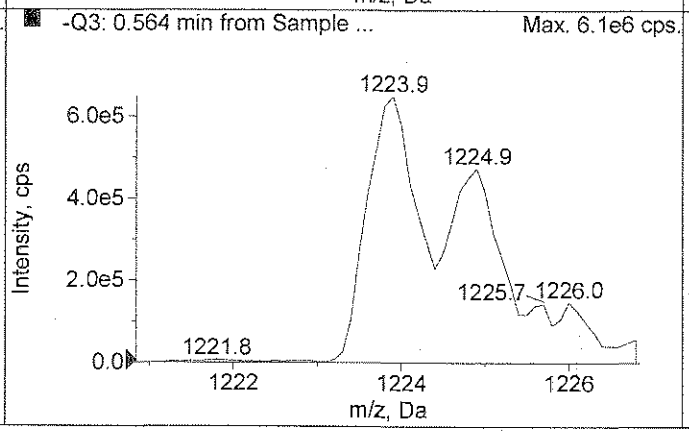
MAR 2 2 2016

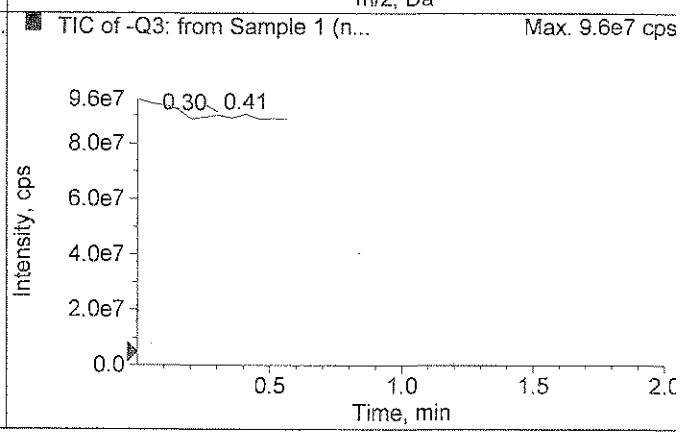












Peak List for " -Q3: 0.564 min from Sample 1 (neg Q3 3-17-16) of neg Q3 3-17-16.wiff (Turbo Spray)"

	Target Mass (Da)	Found At (Da)	Intensity (cps)	Width (Da)	Mass Shift (Da)
1	44.9980	44.9989	6.1299e6	0.7665	-8.5637e-4
2	411.2590	411.3097	1.7030e5	0.5984	-0.0507
3	585.3850	585.3908	4.2780e5	0.6596	-5.7915e-3
4	933.6360	933.6713	2.2521e6	0.7107	-0.0353
5	1223.8450	1223.8725	6.4910e5	0.7224	-0.0275

All mass shift < 0.5 Da.

3/17/16

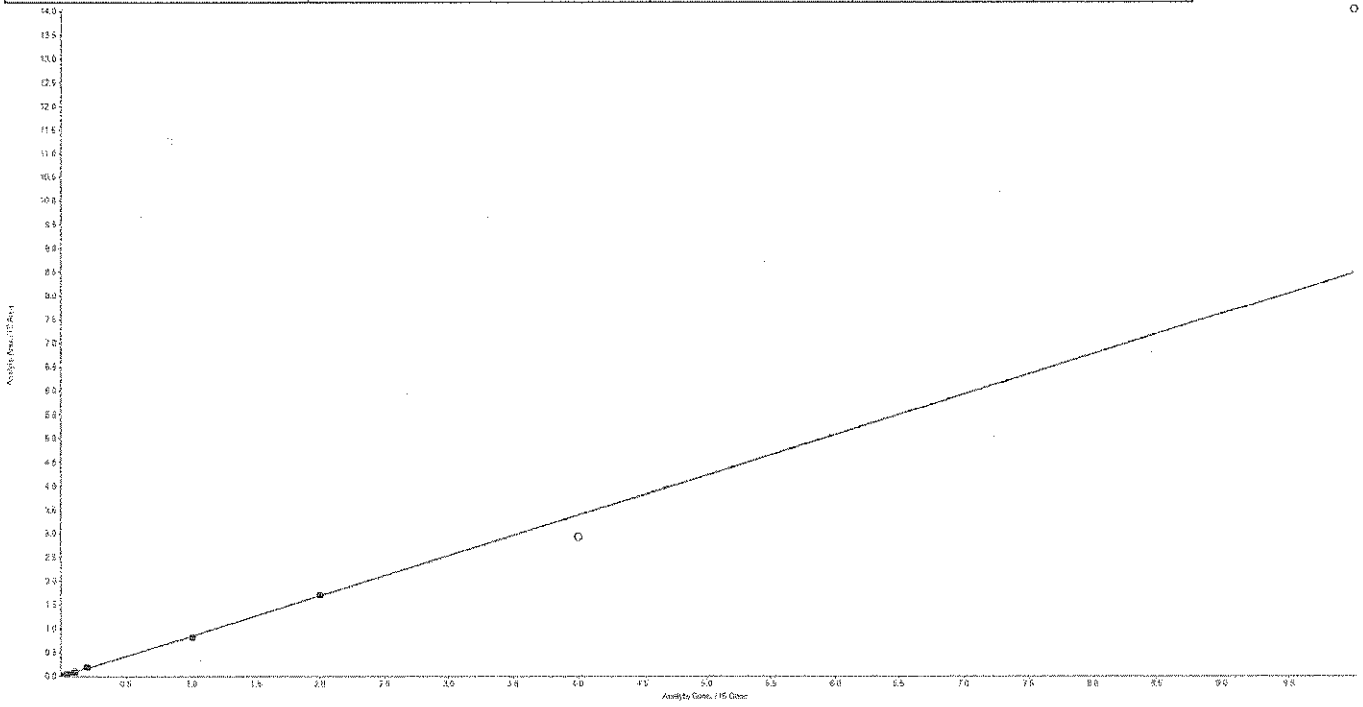
MAR 2 2 2016

Analyte Name: Pfba 1
Internal Standard: 13c_pfba

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.847 x + -0.00377 (r = 0.9996)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.053	107	NaN	NaN
0.1	0.094	94	NaN	NaN
0.25	0.241	97	NaN	NaN
0.5	0.480	96	NaN	NaN
1	1.088	109	NaN	NaN
5	4.886	98	NaN	NaN
10	10.058	101	NaN	NaN



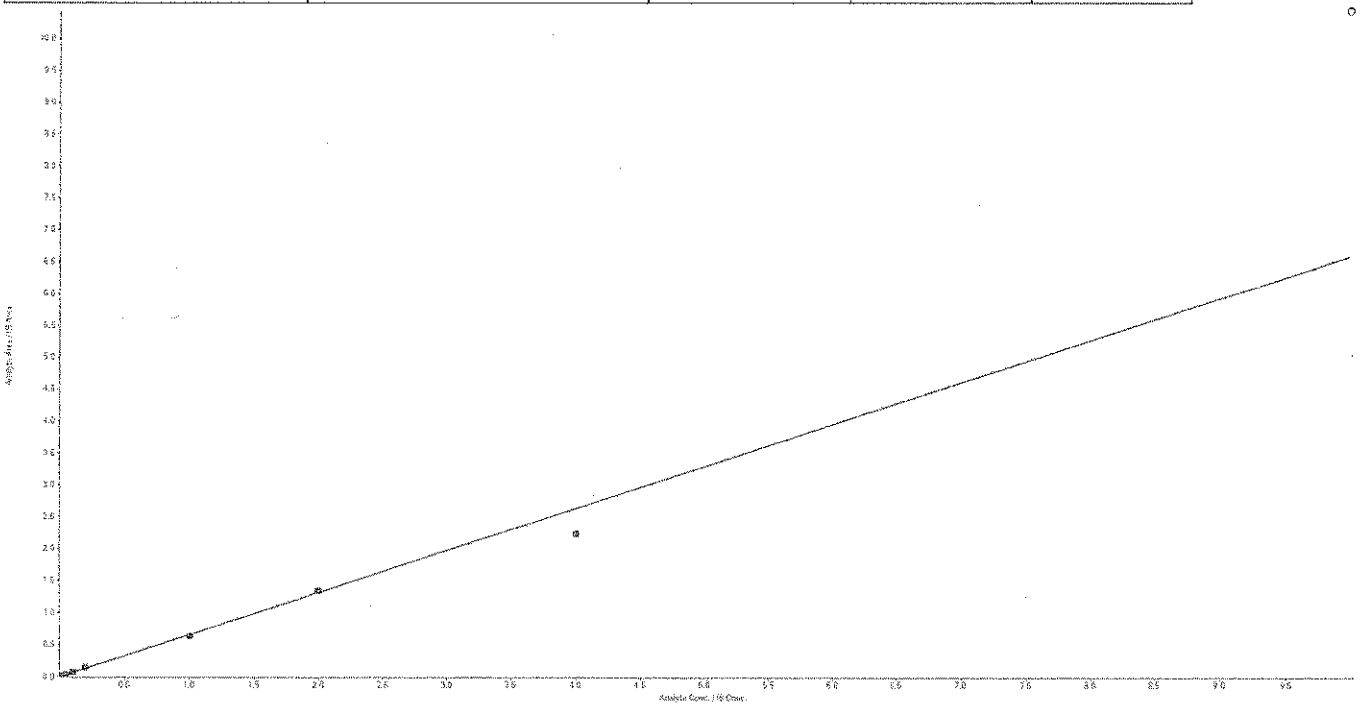
MAR 2 2 2016

Analyte Name: Pfpea 1
Internal Standard: 13c_pfhxa

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.659 x (std. dev. = 0.0536)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.021	106	NaN	NaN
0.05	0.055	110	NaN	NaN
0.1	0.092	92	NaN	NaN
0.25	0.246	98	NaN	NaN
0.5	0.495	99	NaN	NaN
1	1.096	110	NaN	NaN
5	4.874	97	NaN	NaN
10	10.194	102	NaN	NaN
20	16.978	85	NaN	NaN



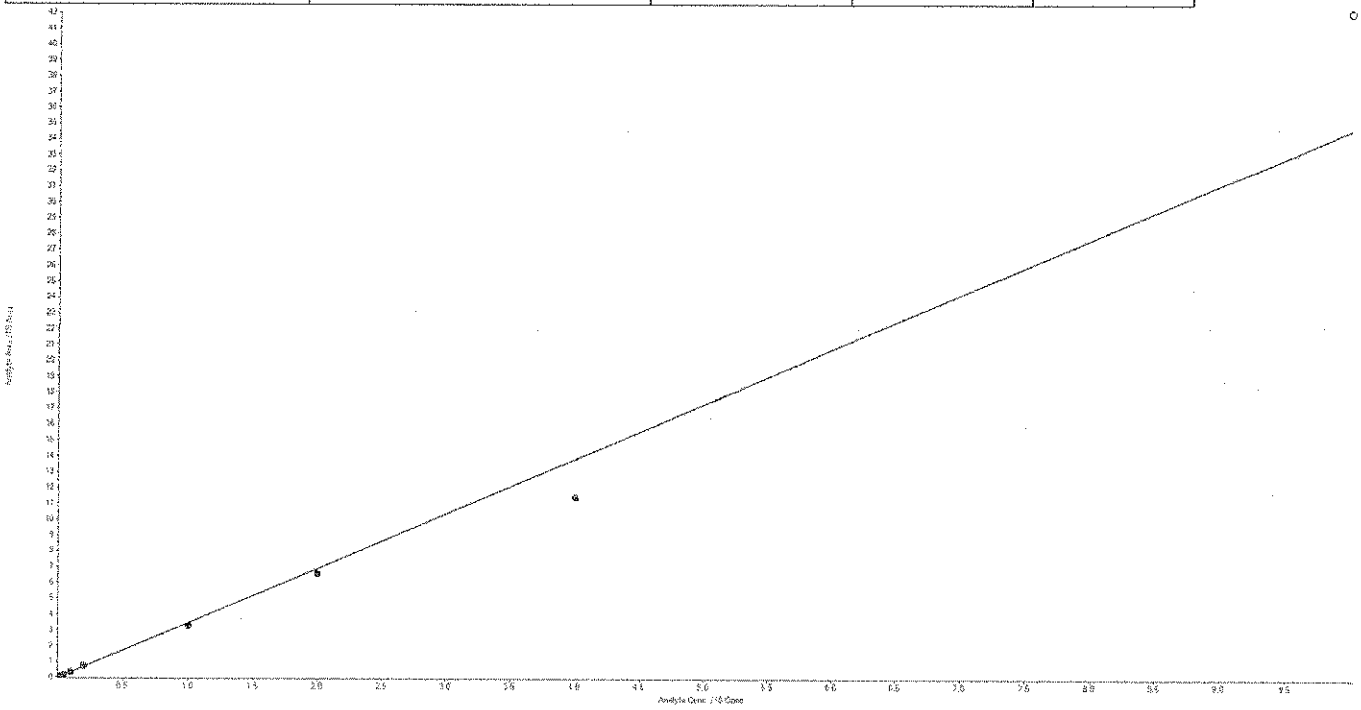
MAR 2 2016

Analyte Name: Pfbs 1
Internal Standard: 18o-pfhs

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 3.46 x (std. dev. = 0.354)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.023	117	NaN	NaN
0.05	0.056	112	NaN	NaN
0.1	0.096	96	NaN	NaN
0.25	0.246	98	NaN	NaN
0.5	0.487	97	NaN	NaN
1	1.060	106	NaN	NaN
5	4.739	95	NaN	NaN
10	9.546	95	NaN	NaN
20	16.533	83	NaN	NaN



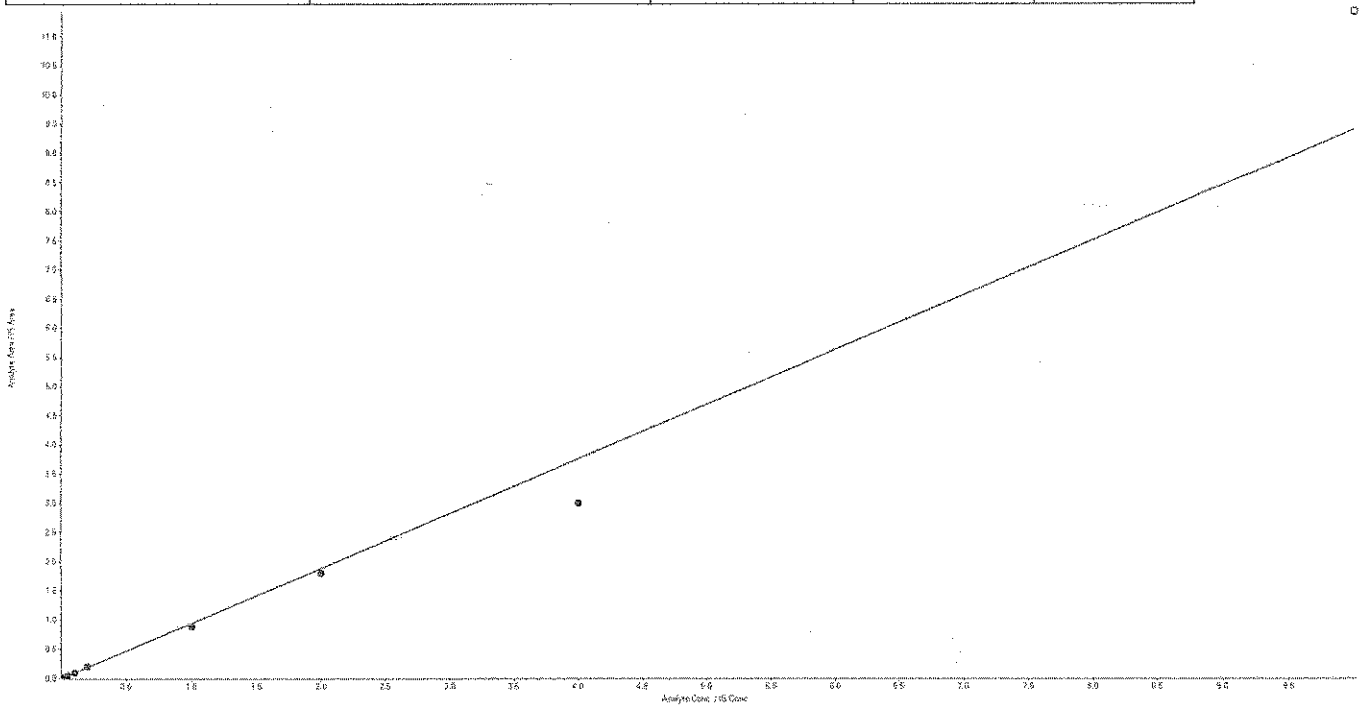
MAR 22 2016

Analyte Name: Pfhxa 1
Internal Standard: 13c_pfhxa

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.939 x (std. dev. = 0.119)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.062	125	NaN	NaN
0.1	0.102	102	NaN	NaN
0.25	0.249	100	NaN	NaN
0.5	0.493	99	NaN	NaN
1	1.064	106	NaN	NaN
5	4.700	94	NaN	NaN
10	9.523	95	NaN	NaN
20	15.928	80	NaN	NaN



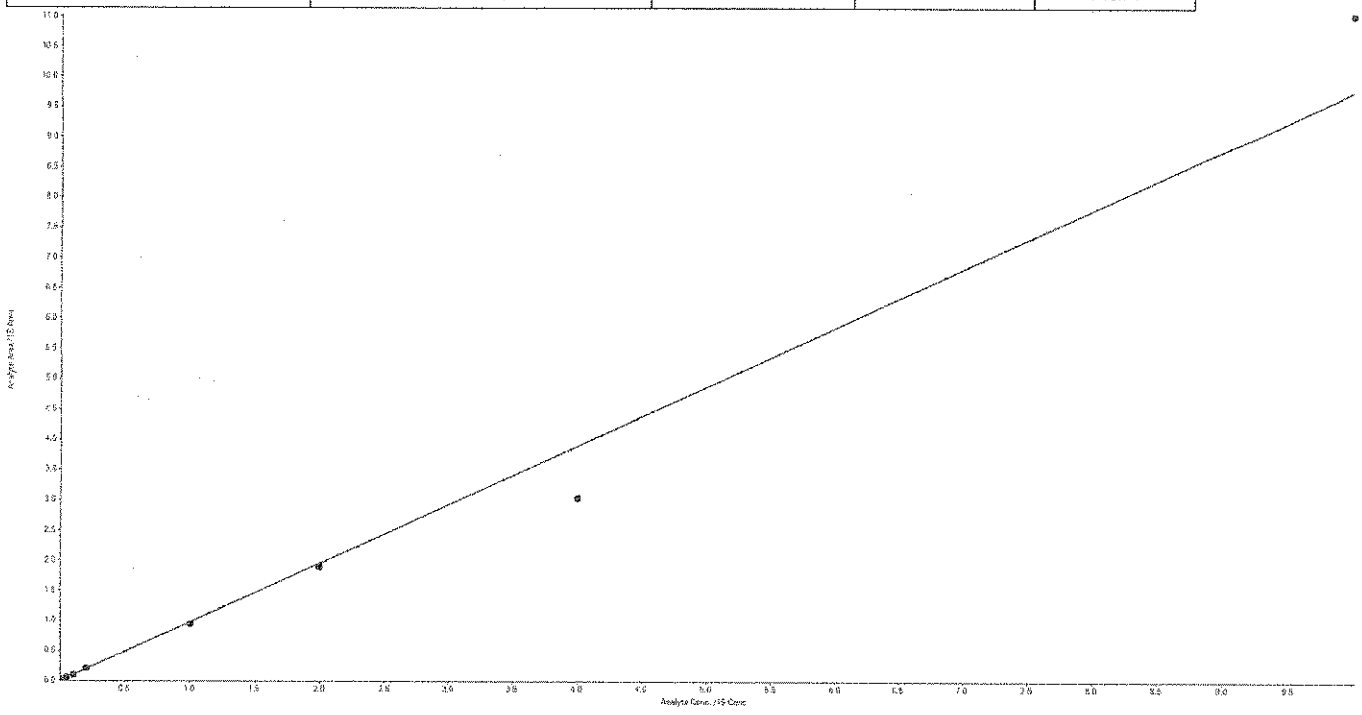
MAR 2 2 2016

Analyte Name: Pfhpa 1
Internal Standard: 13c_pfhxa

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.976 x (std. dev. = 0.125)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.025	125	NaN	NaN
0.05	0.050	101	NaN	NaN
0.1	0.091	91	NaN	NaN
0.25	0.239	96	NaN	NaN
0.5	0.484	97	NaN	NaN
1	1.070	107	NaN	NaN
5	4.832	97	NaN	NaN
10	9.649	96	NaN	NaN
20	15.589	78	NaN	NaN
50	56.470	113	NaN	NaN



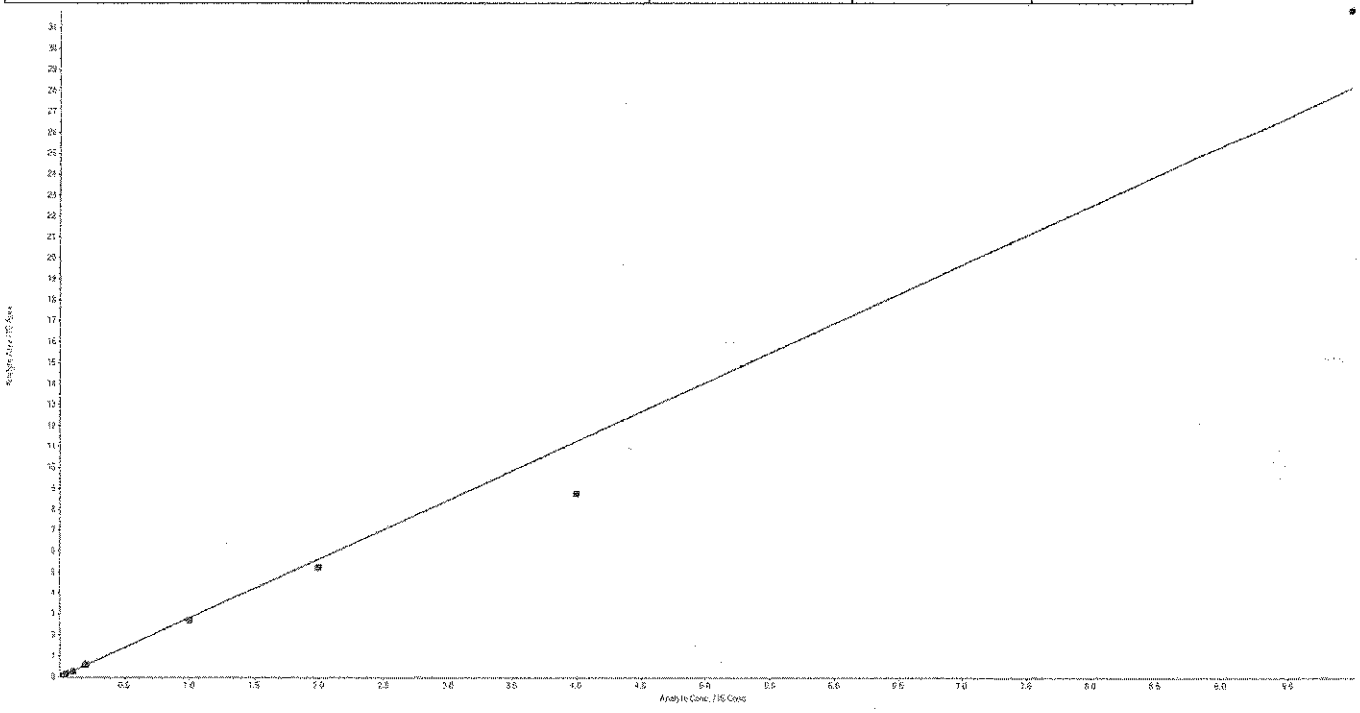
MAR 2 2016

Analyte Name: Pfhxs 1
Internal Standard: 18o-pfhs

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.81 x (std. dev. = 0.326)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.1	0.113	113	NaN	NaN
0.25	0.265	106	NaN	NaN
0.5	0.490	98	NaN	NaN
1	1.038	104	NaN	NaN
5	4.786	96	NaN	NaN
10	9.315	93	NaN	NaN
20	15.574	78	NaN	NaN
50	56.515	113	NaN	NaN



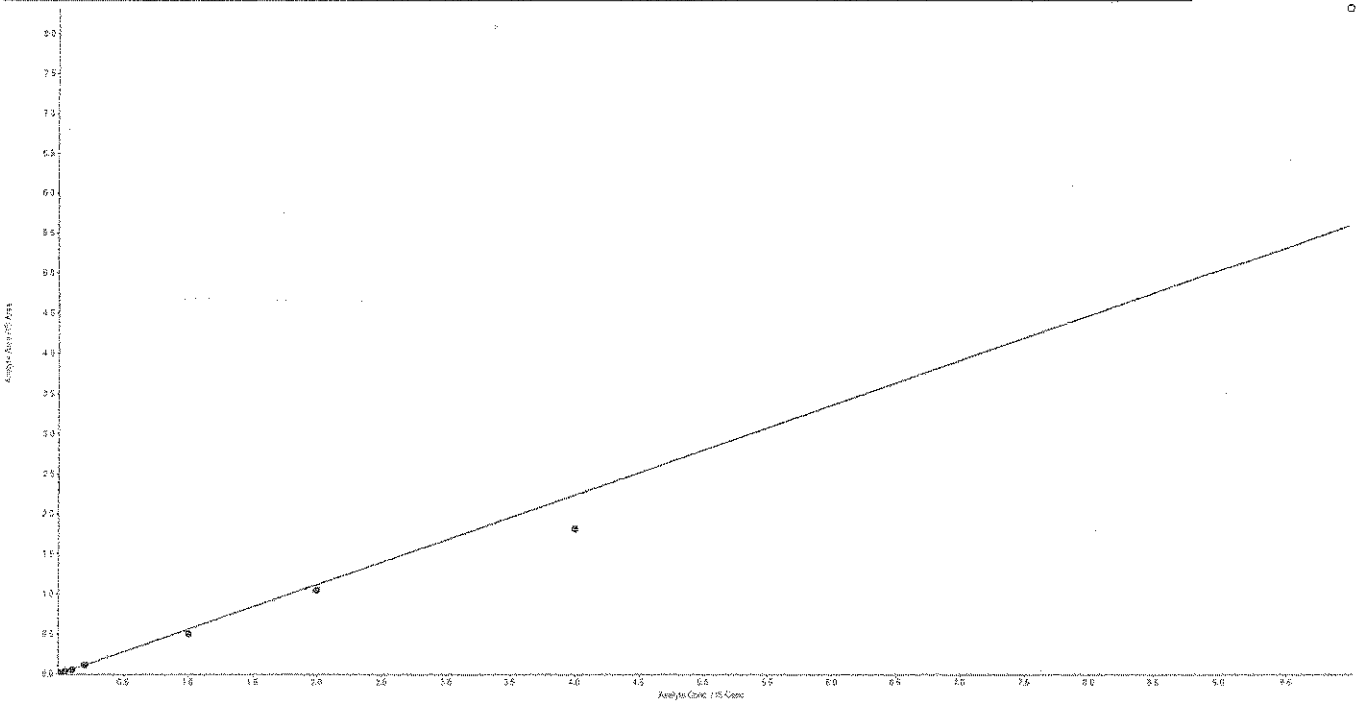
MAR 27 2016

Analyte Name: Pfoa 1
Internal Standard: 13c-pfoa

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.56 x (std. dev. = 0.0788)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.064	129	NaN	NaN
0.1	0.103	103	NaN	NaN
0.25	0.254	102	NaN	NaN
0.5	0.490	98	NaN	NaN
1	1.044	104	NaN	NaN
5	4.468	89	NaN	NaN
10	9.345	93	NaN	NaN
20	16.196	81	NaN	NaN

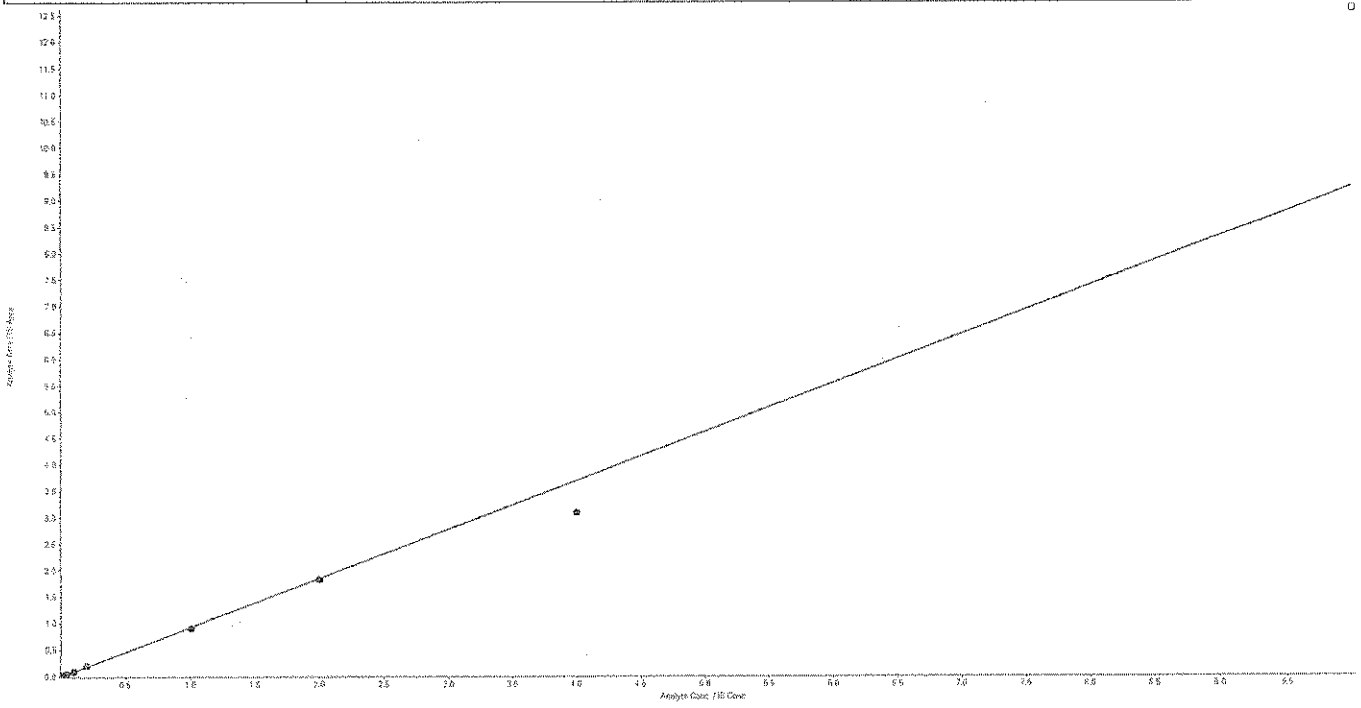


Analyte Name: Pfna 1
Internal Standard: 13c-pfna

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.924 x (std. dev. = 0.0807)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.056	112	NaN	NaN
0.1	0.101	101	NaN	NaN
0.25	0.244	98	NaN	NaN
0.5	0.502	100	NaN	NaN
1	1.095	109	NaN	NaN
5	4.855	97	NaN	NaN
10	9.874	99	NaN	NaN
20	16.696	83	NaN	NaN



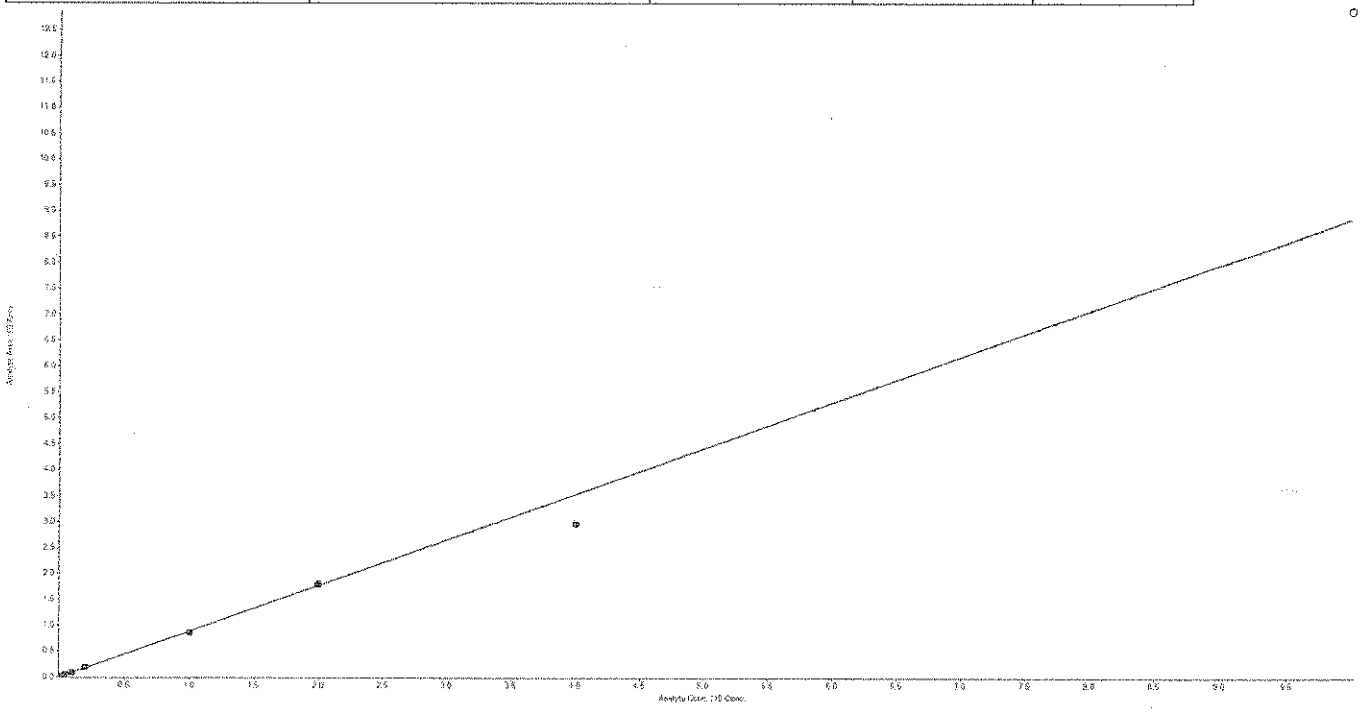
MAR 2 2016

Analyte Name: Pfos 1
Internal Standard: 13c-pfos

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.885 x (std. dev. = 0.0685)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.022	110	NaN	NaN
0.05	0.051	103	NaN	NaN
0.1	0.097	97	NaN	NaN
0.25	0.253	101	NaN	NaN
0.5	0.485	97	NaN	NaN
1	1.086	109	NaN	NaN
5	4.864	97	NaN	NaN
10	10.226	102	NaN	NaN
20	16.756	84	NaN	NaN



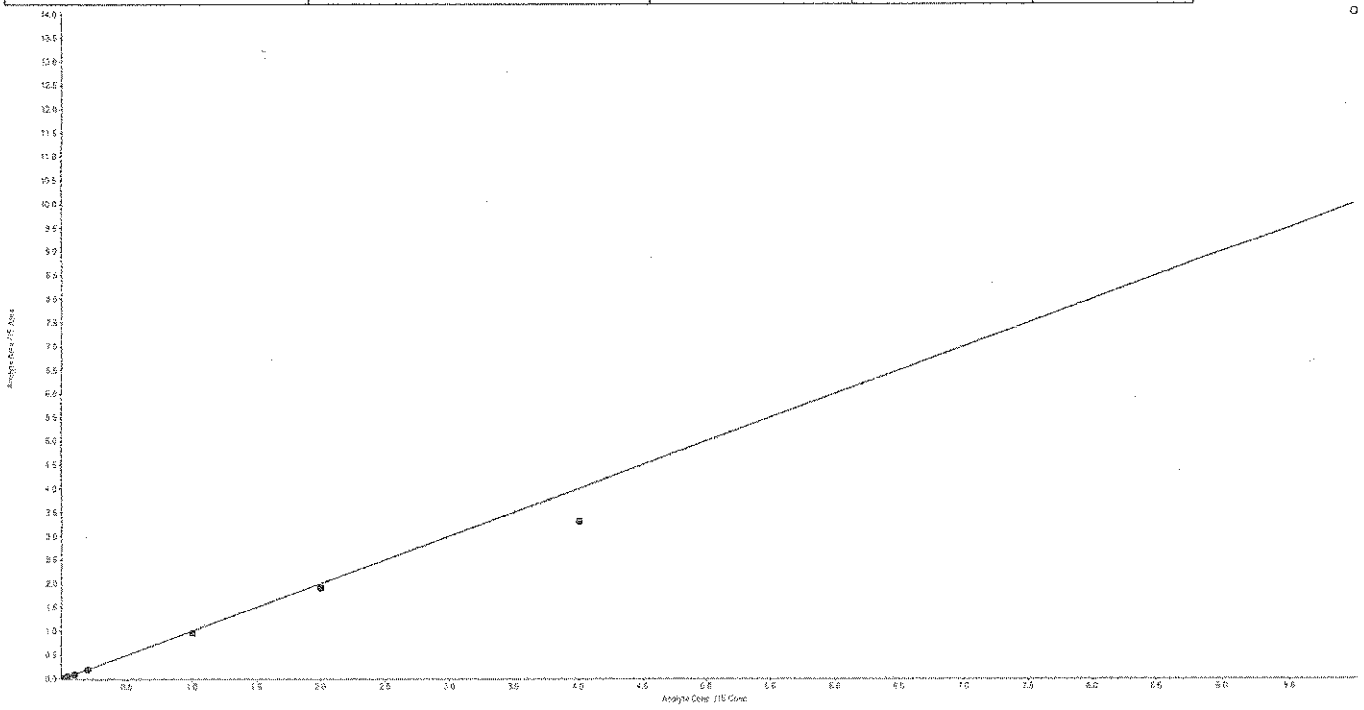
MAR 2016

Analyte Name: Pfda 1
Internal Standard: 13c-pfda

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 1 x (std. dev. = 0.129)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.064	128	NaN	NaN
0.1	0.099	99	NaN	NaN
0.25	0.253	101	NaN	NaN
0.5	0.487	97	NaN	NaN
1	1.015	102	NaN	NaN
5	4.730	95	NaN	NaN
10	9.490	95	NaN	NaN
20	16.511	83	NaN	NaN



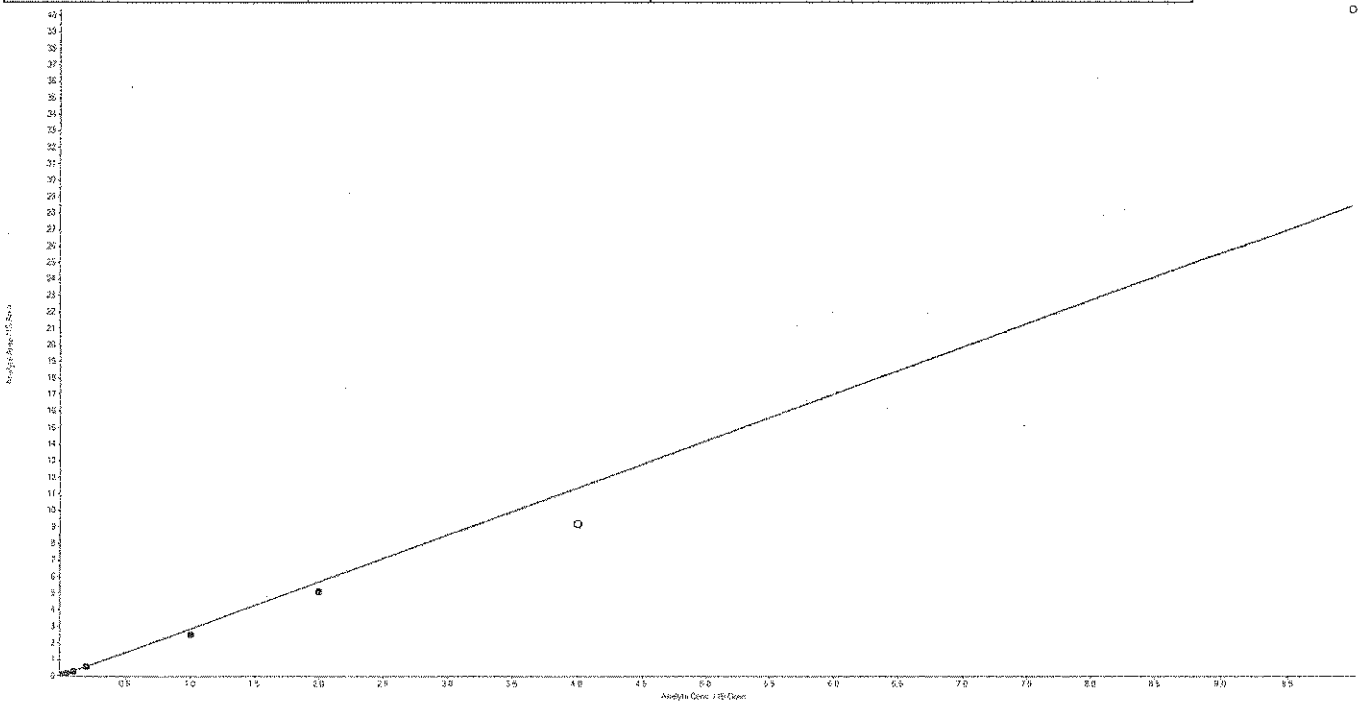
MAR 22 2016

Analyte Name: Pfuna 1
Internal Standard: 13c-pfuna

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.84 x (std. dev. = 0.398)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.065	130	NaN	NaN
0.1	0.097	97	NaN	NaN
0.25	0.236	94	NaN	NaN
0.5	0.495	99	NaN	NaN
1	1.018	102	NaN	NaN
5	4.405	88	NaN	NaN
10	8.964	90	NaN	NaN



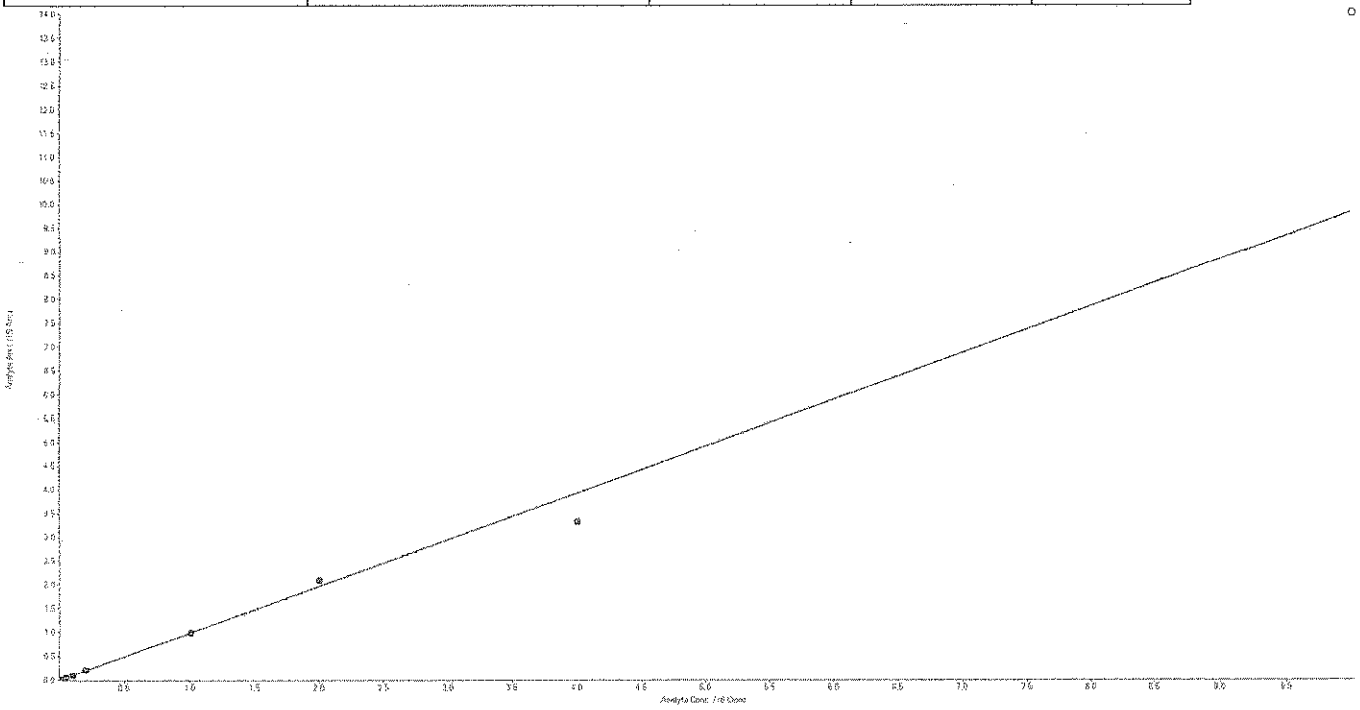
MAR 22 2016

Analyte Name: Pfds 1
Internal Standard: 13c-pfos

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.983 x (std. dev. = 0.0705)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.020	98	NaN	NaN
0.05	0.051	103	NaN	NaN
0.1	0.101	101	NaN	NaN
0.25	0.260	104	NaN	NaN
0.5	0.473	95	NaN	NaN
1	1.091	109	NaN	NaN
5	5.060	101	NaN	NaN
10	10.578	106	NaN	NaN
20	16.917	85	NaN	NaN



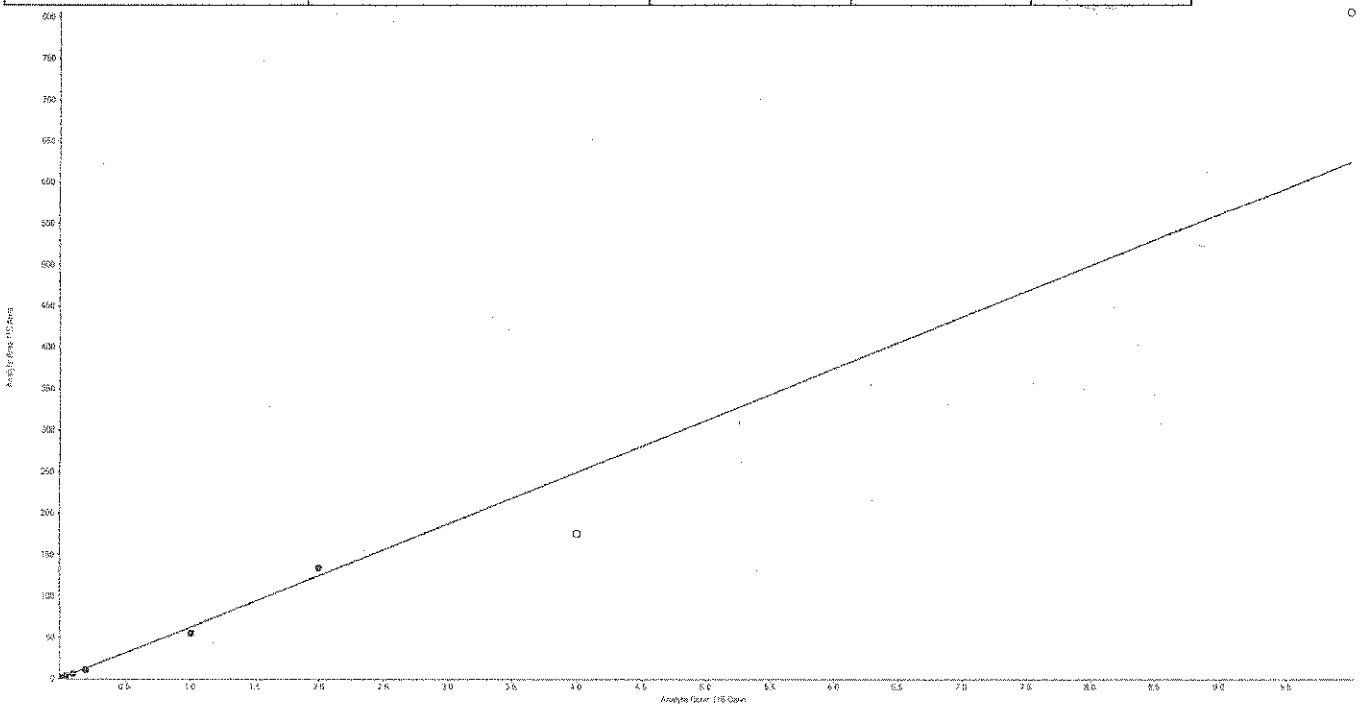
MAR 2 2016

Analyte Name: Pfdoa 1
Internal Standard: 13c-pfdoda

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 62.4 x (std. dev. = 8.22)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.062	124	NaN	NaN
0.1	0.094	94	NaN	NaN
0.25	0.263	105	NaN	NaN
0.5	0.468	94	NaN	NaN
1	0.872	87	NaN	NaN
5	4.413	88	NaN	NaN
10	10.717	107	NaN	NaN



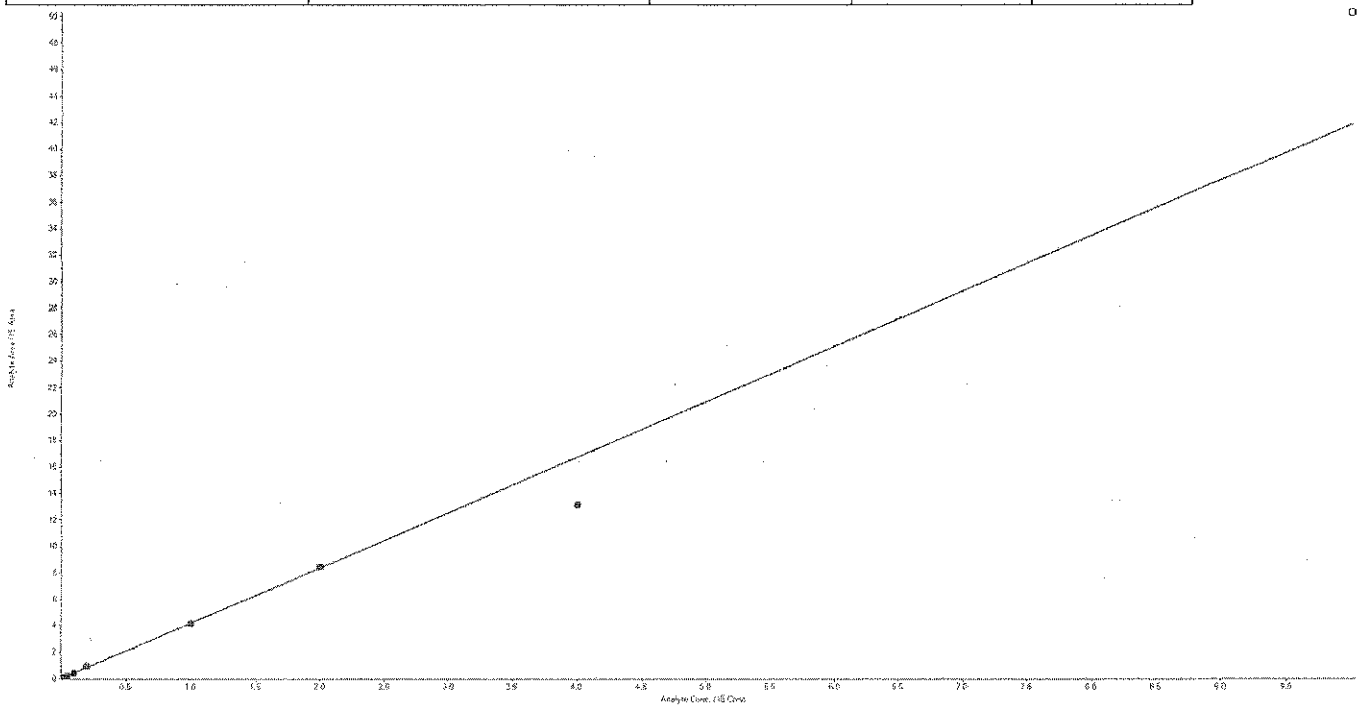
MAR 22 2016

Analyte Name: Fosa 1
Internal Standard: d5-NEtFOSA

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 4.19 x (std. dev. = 0.471)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.058	115	NaN	NaN
0.1	0.100	100	NaN	NaN
0.25	0.237	95	NaN	NaN
0.5	0.490	98	NaN	NaN
1	1.126	113	NaN	NaN
5	4.990	100	NaN	NaN
10	10.089	101	NaN	NaN
20	15.684	78	NaN	NaN



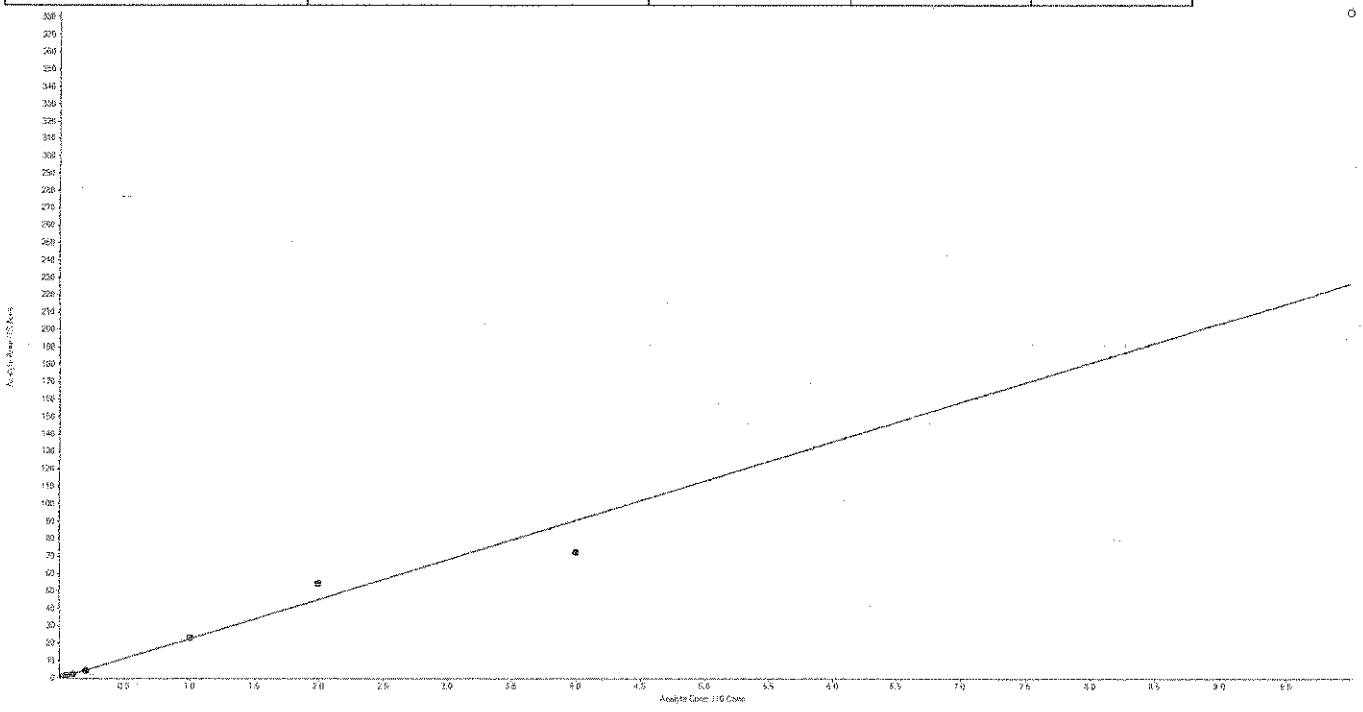
MAR 22 2016

Analyte Name: Pfteda 1
Internal Standard: 13c-pfdoda

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 22.6 x (std. dev. = 3.01)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.1	0.096	96	NaN	NaN
0.25	0.279	112	NaN	NaN
0.5	0.457	91	NaN	NaN
1	0.967	97	NaN	NaN
5	5.183	104	NaN	NaN
10	12.026	120	NaN	NaN
20	16.000	80	NaN	NaN



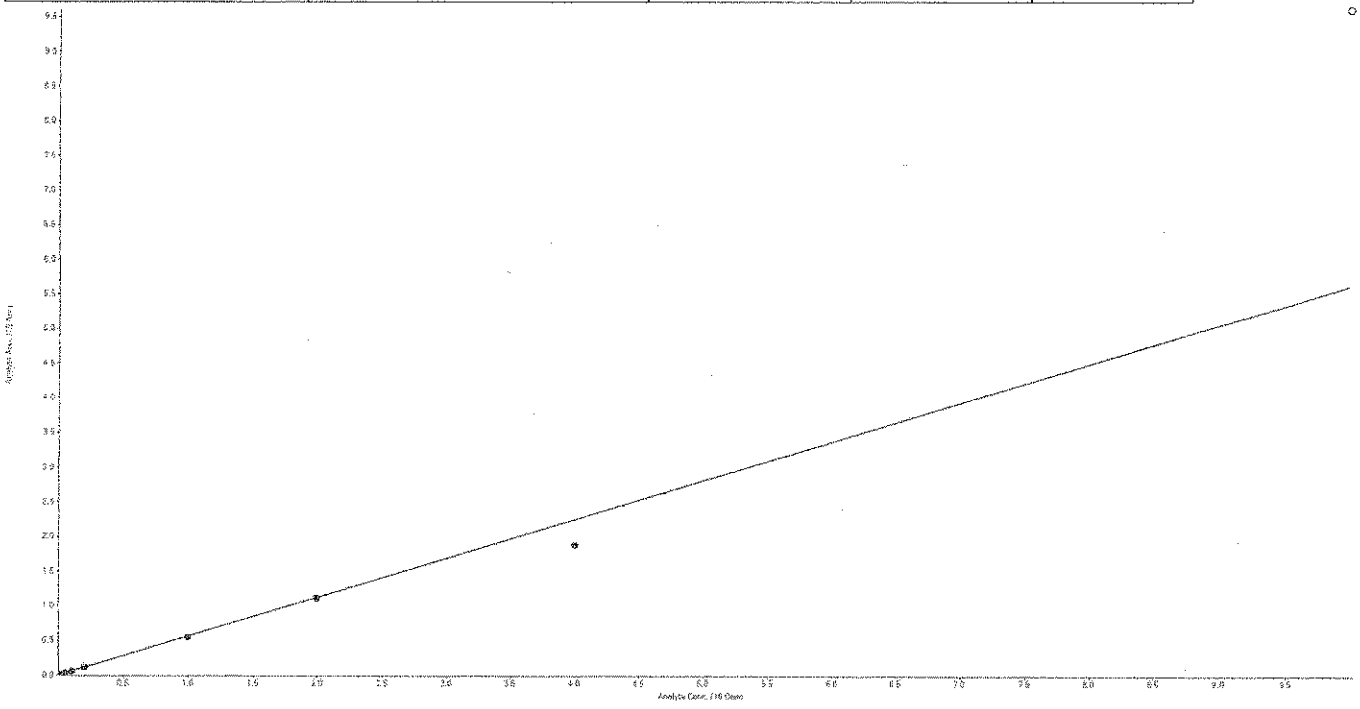
MAR 22 2016

Analyte Name: PFHpS 1
Internal Standard: 18o-pfhs

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.563 x (std. dev. = 0.0472)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.021	105	NaN	NaN
0.05	0.057	114	NaN	NaN
0.1	0.095	95	NaN	NaN
0.25	0.259	104	NaN	NaN
0.5	0.486	97	NaN	NaN
1	1.054	105	NaN	NaN
5	4.885	98	NaN	NaN
10	9.844	98	NaN	NaN
20	16.713	84	NaN	NaN



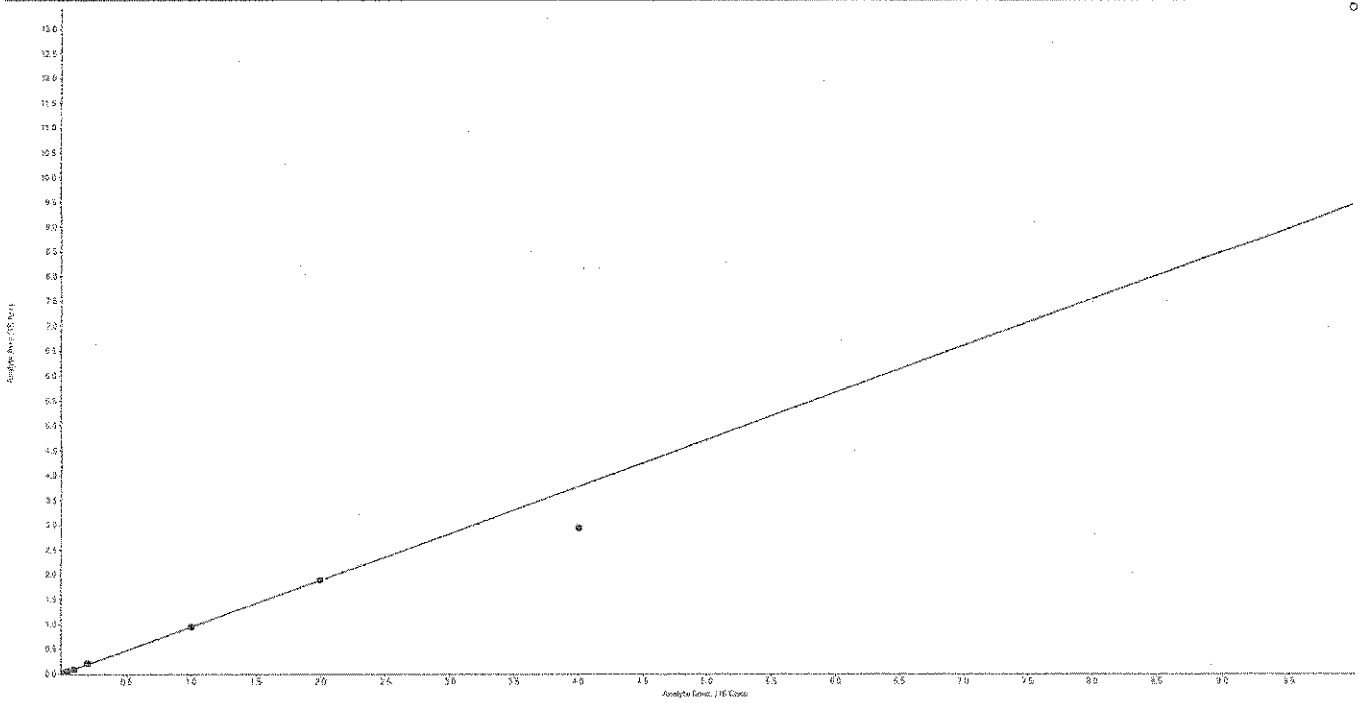
MAR 2 2016

Analyte Name: NMeFOSE 1
Internal Standard: d7-NMeFOSE

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.945 x (std. dev. = 0.0974)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.021	104	NaN	NaN
0.05	0.054	109	NaN	NaN
0.1	0.105	105	NaN	NaN
0.25	0.237	95	NaN	NaN
0.5	0.478	96	NaN	NaN
1	1.144	114	NaN	NaN
5	4.989	100	NaN	NaN
10	10.050	101	NaN	NaN
20	15.606	78	NaN	NaN



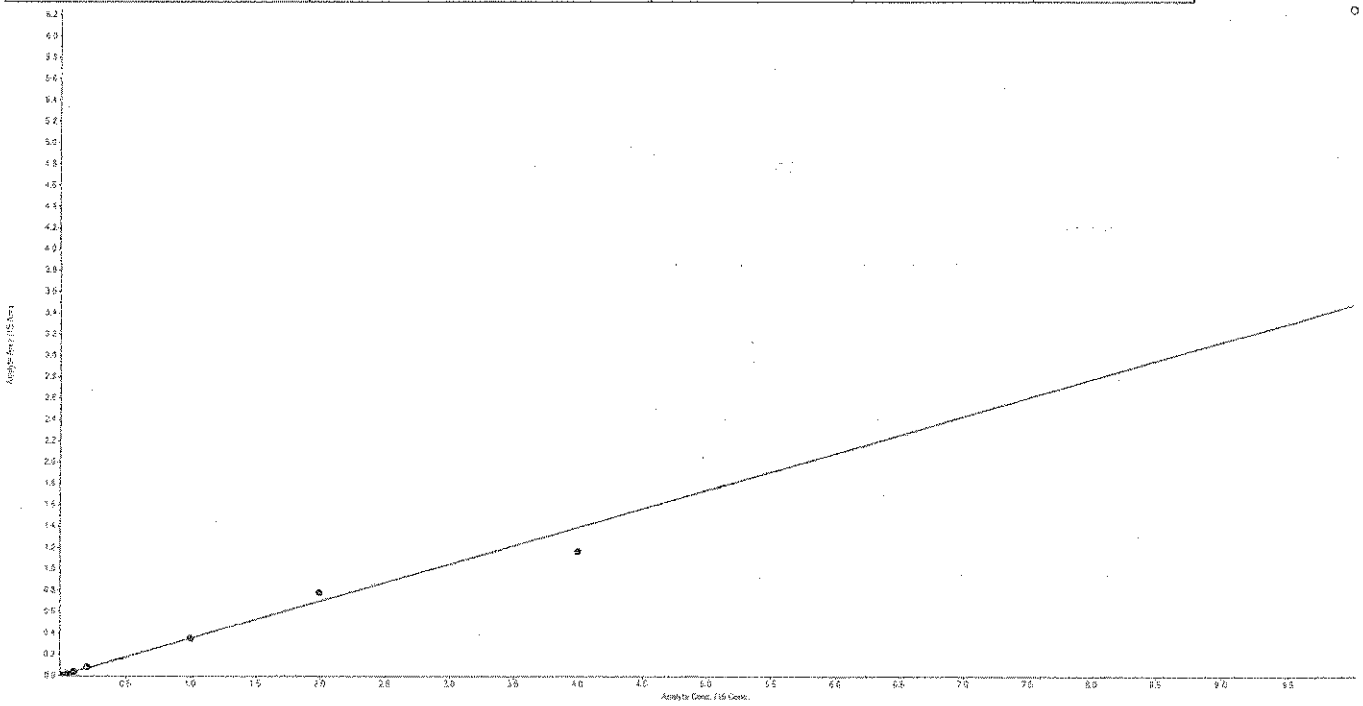
MAR 23 2016

Analyte Name: NMeFOSA 1
Internal Standard: d7-NMeFOSE

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.348 x (std. dev. = 0.037)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.017	84	NaN	NaN
0.05	0.053	105	NaN	NaN
0.1	0.105	105	NaN	NaN
0.25	0.250	100	NaN	NaN
0.5	0.491	98	NaN	NaN
1	1.142	114	NaN	NaN
5	4.945	99	NaN	NaN
10	11.118	111	NaN	NaN
20	16.693	83	NaN	NaN

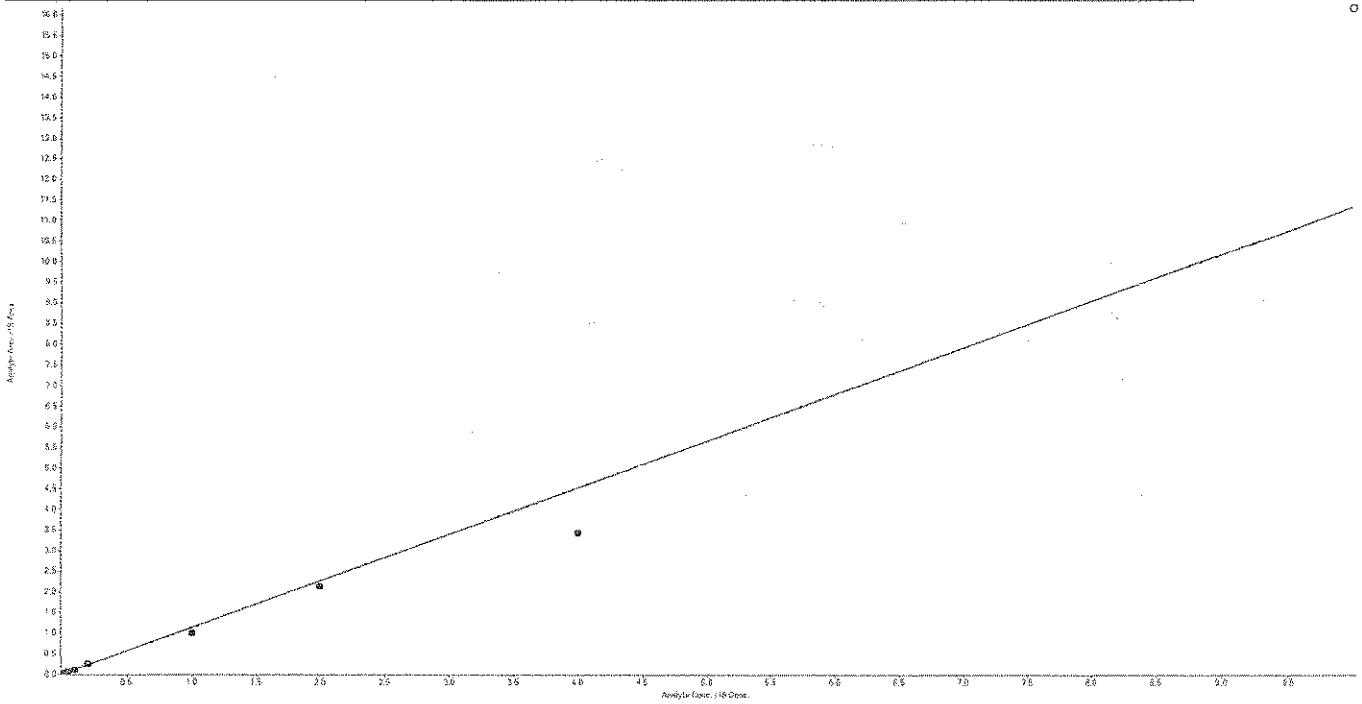


Analyte Name: NEtFOSE 1
Internal Standard: d9-EtFOSE

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 1.13 x (std. dev. = 0.159)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.02	0.025	126	NaN	NaN
0.05	0.049	98	NaN	NaN
0.1	0.098	98	NaN	NaN
0.25	0.268	107	NaN	NaN
0.5	0.504	101	NaN	NaN
1	1.110	111	NaN	NaN
5	4.437	89	NaN	NaN
10	9.430	94	NaN	NaN
20	15.175	76	NaN	NaN



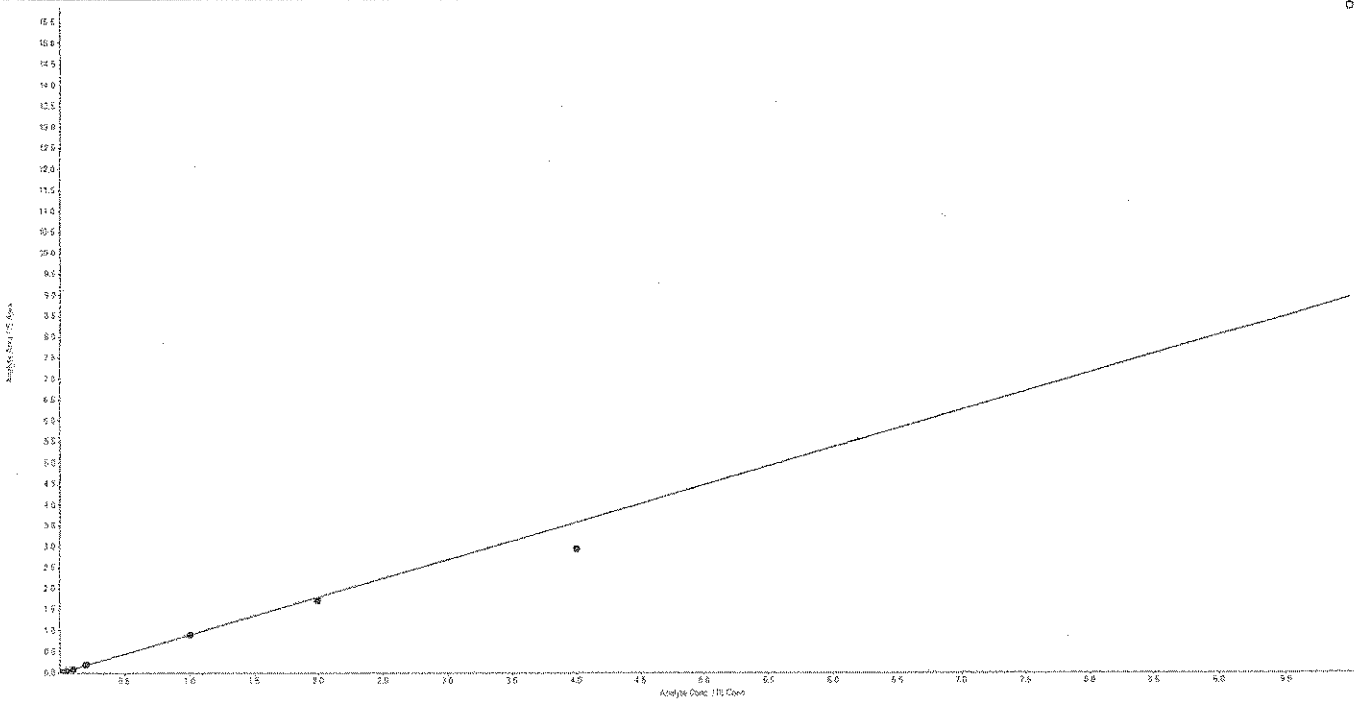
MAR 2 2016

Analyte Name: NEtFOSA 1
Internal Standard: d5-NEtFOSA

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.893 x (std. dev. = 0.0897)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.057	115	NaN	NaN
0.1	0.096	96	NaN	NaN
0.25	0.247	99	NaN	NaN
0.5	0.502	100	NaN	NaN
1	1.119	112	NaN	NaN
5	5.019	100	NaN	NaN
10	9.514	95	NaN	NaN
20	16.476	82	NaN	NaN



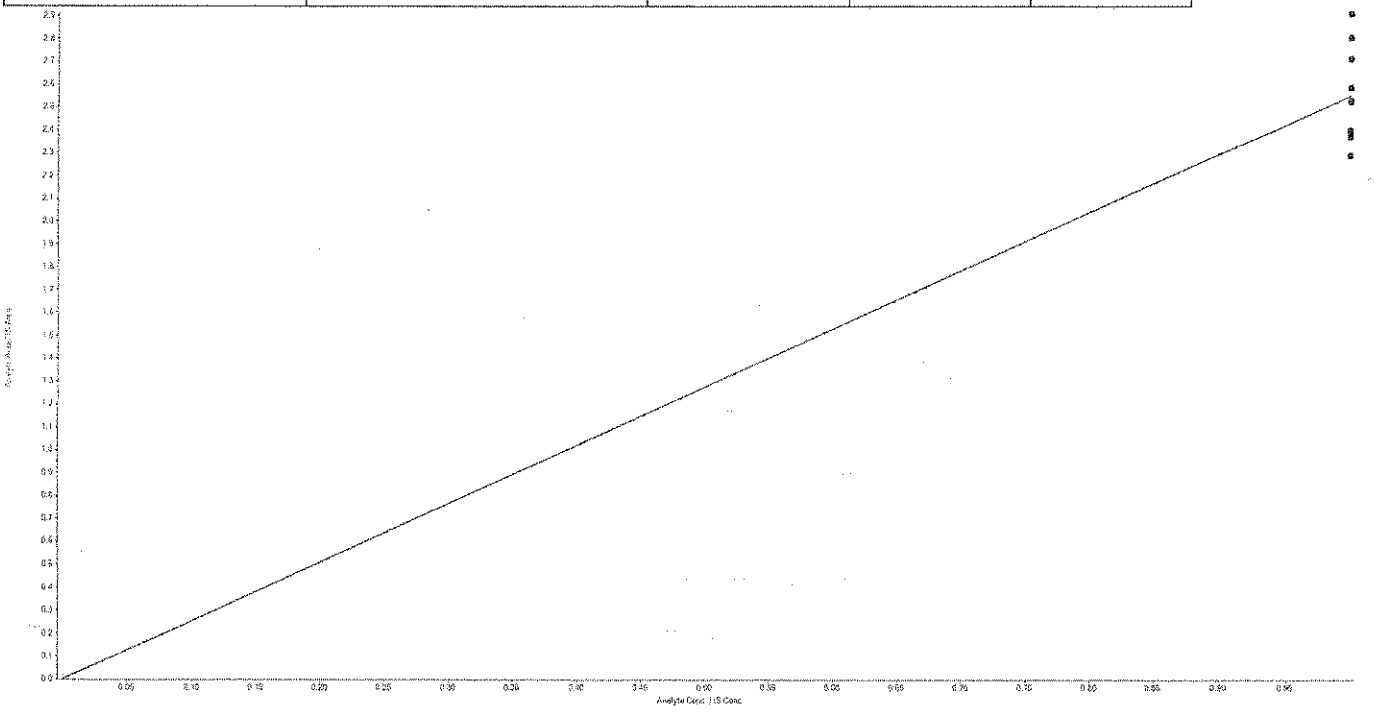
MAR 2 2016

Analyte Name: d9-EtFOSE 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.55 x (std. dev. = 0.203)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.40	8.0



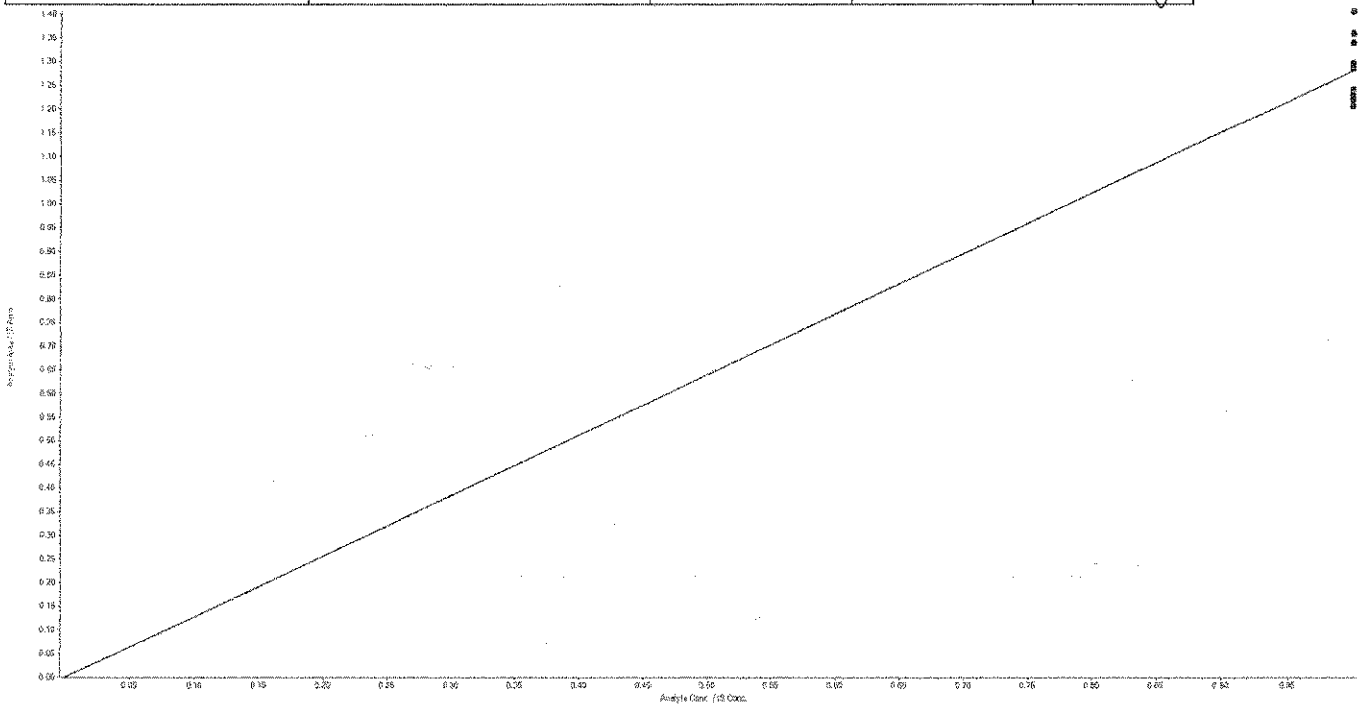
MAR 22 2016

Analyte Name: d5-NEtFOSA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 1.28 x (std. dev. = 0.0683)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.27	5.3



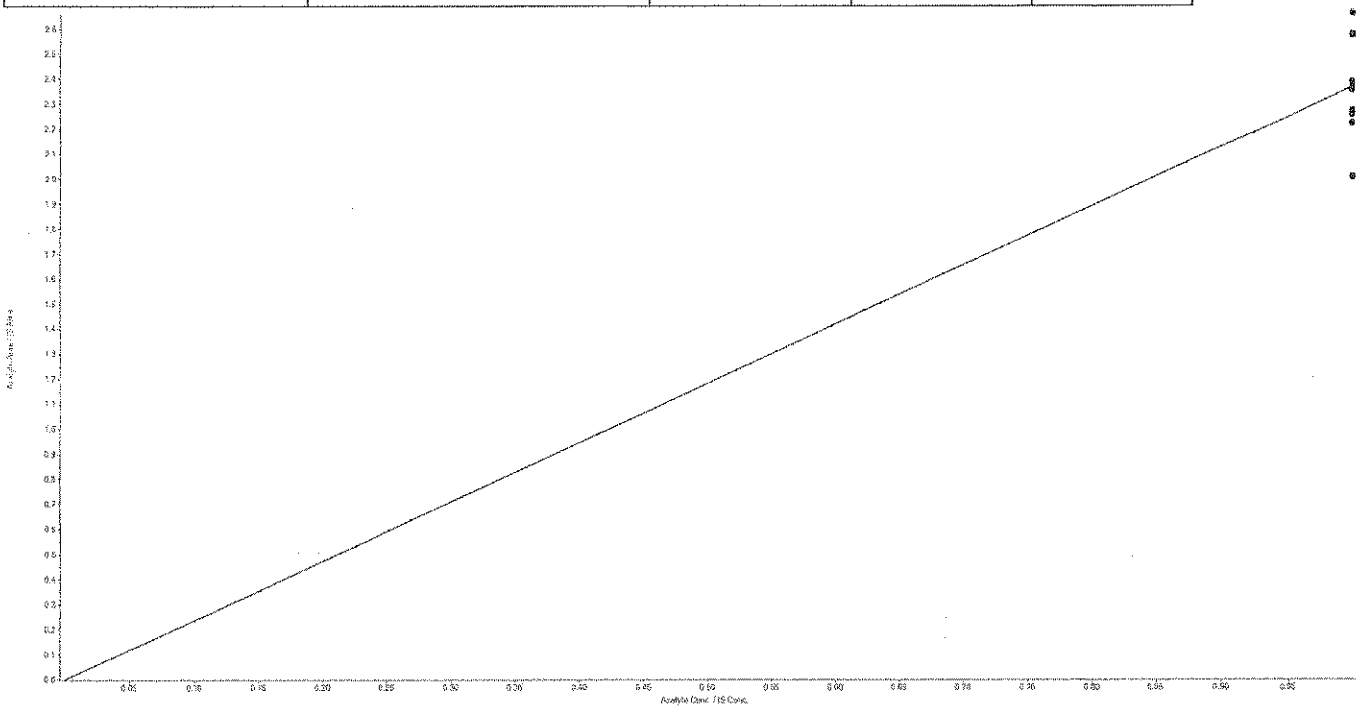
MAR 22 2016

Analyte Name: d7-NMeFOSE 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.37 x (std. dev. = 0.196)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.41	8.3



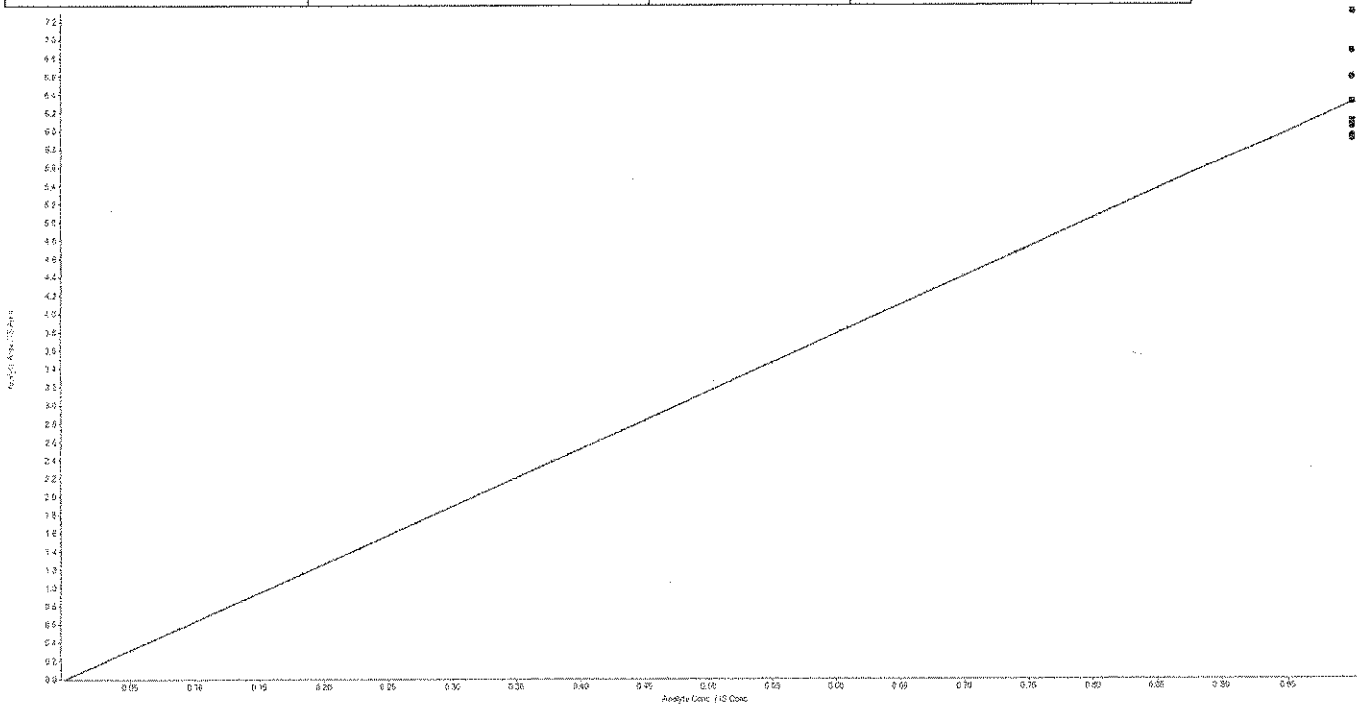
MAR 22 2016

Analyte Name: 13C_PFBA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 6.3 x (std. dev. = 0.47)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.37	7.5



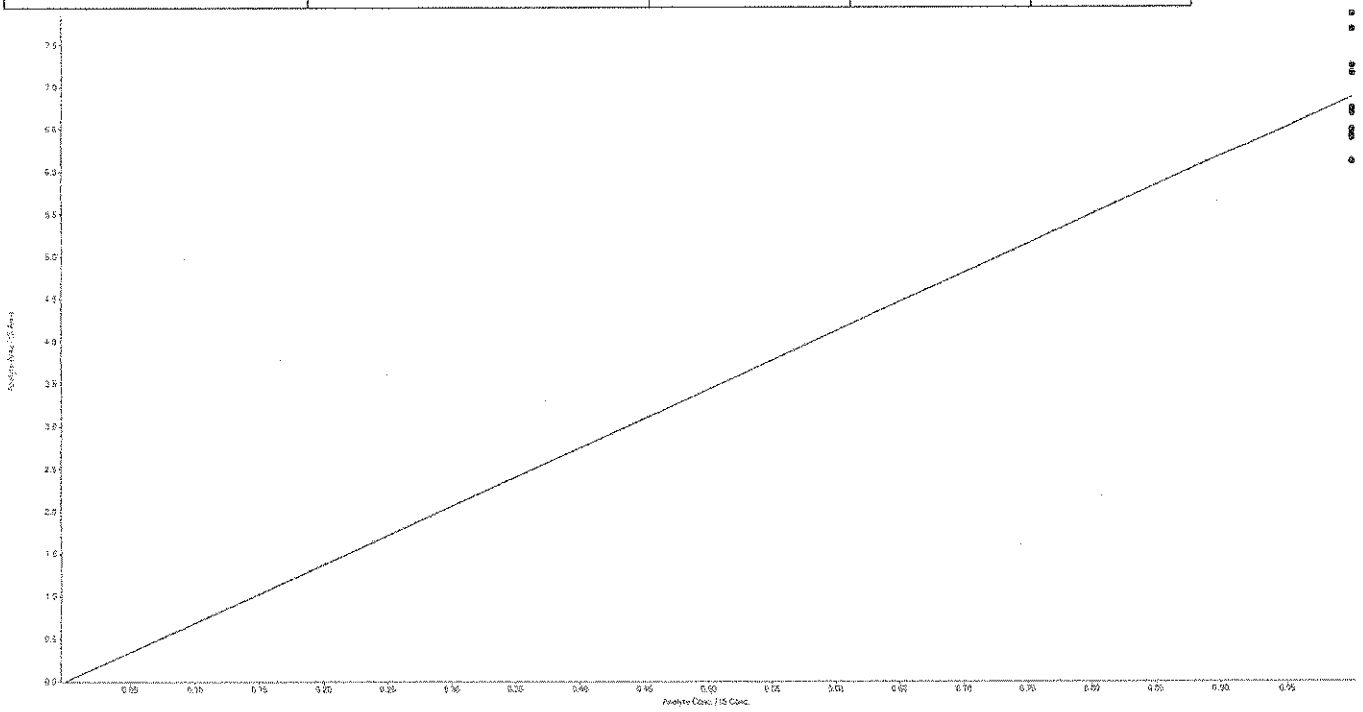
MAR 22 2016

Analyte Name: 13C_PFHXA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 6.87 x (std. dev. = 0.582)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.42	8.5



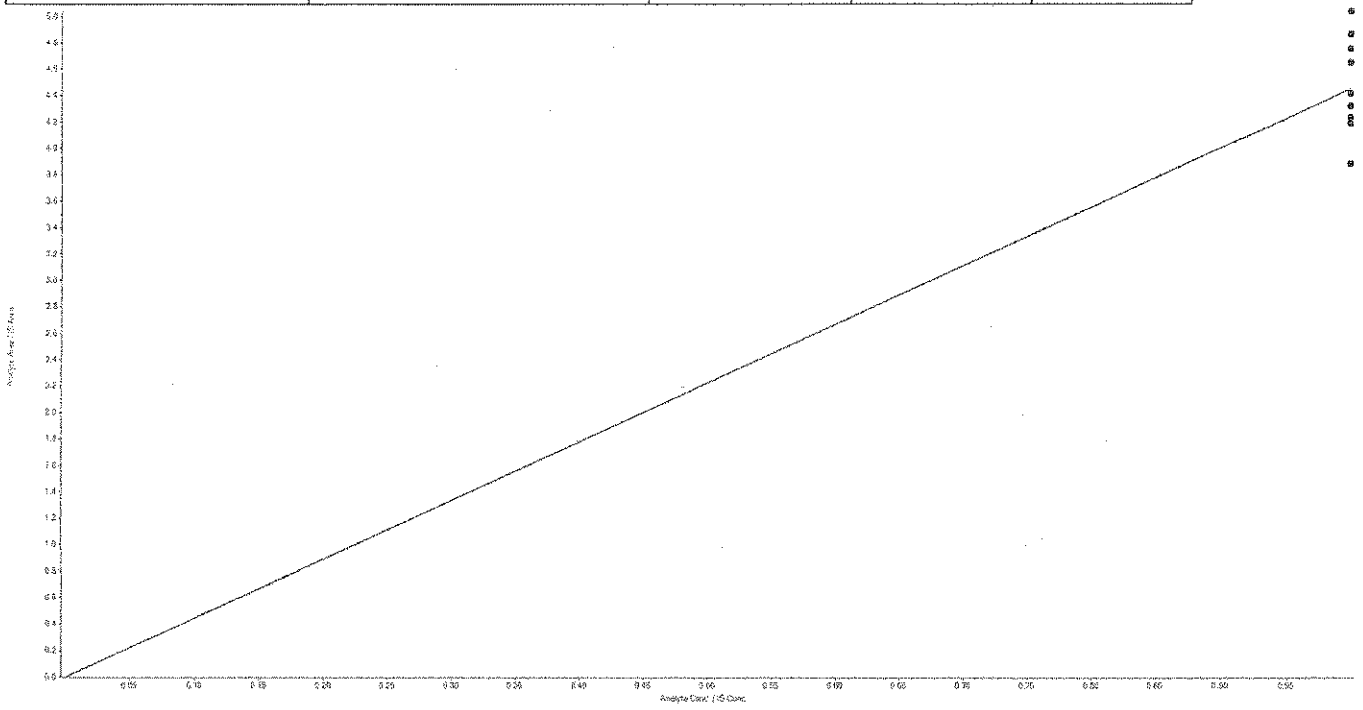
MAR 22 2016

Analyte Name: 13C-PFOA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 4.45 x (std. dev. = 0.36)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.40	8.1



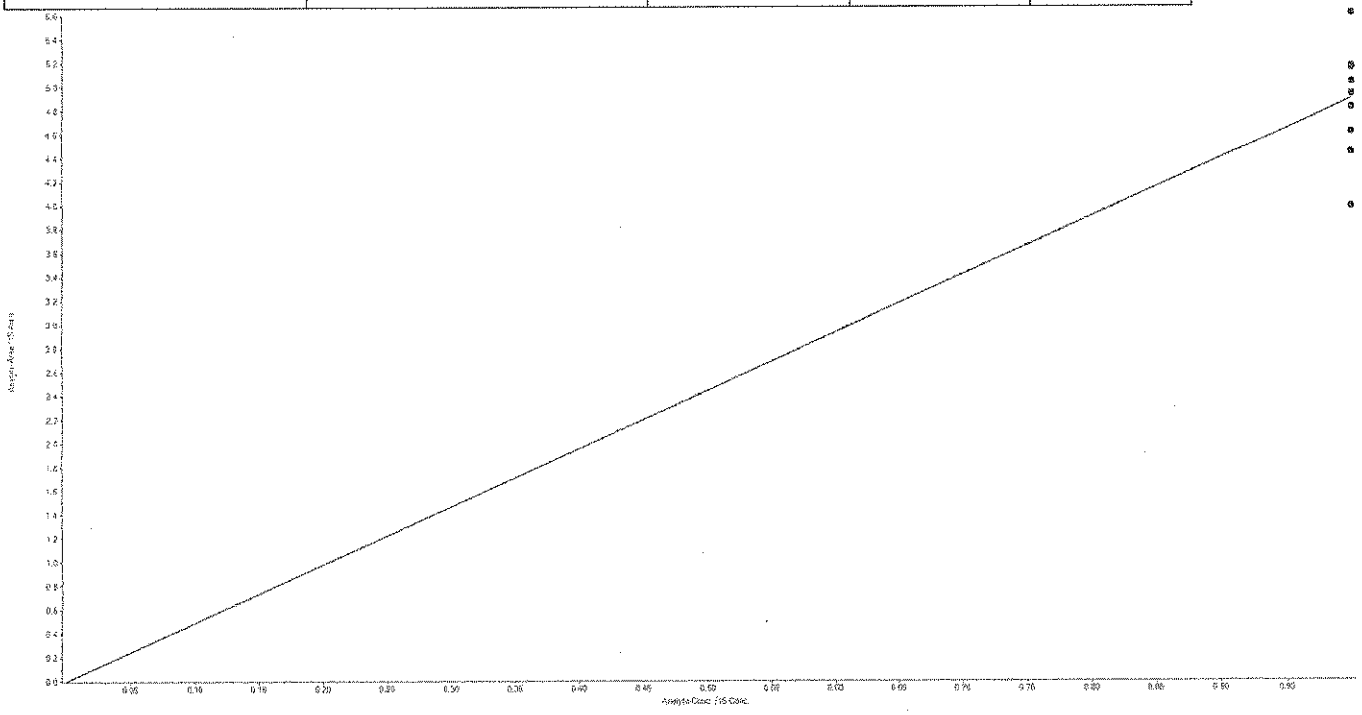
MAR 22 2016

Analyte Name: 13C-PFNA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 4.88 x (std. dev. = 0.455)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.47	9.3



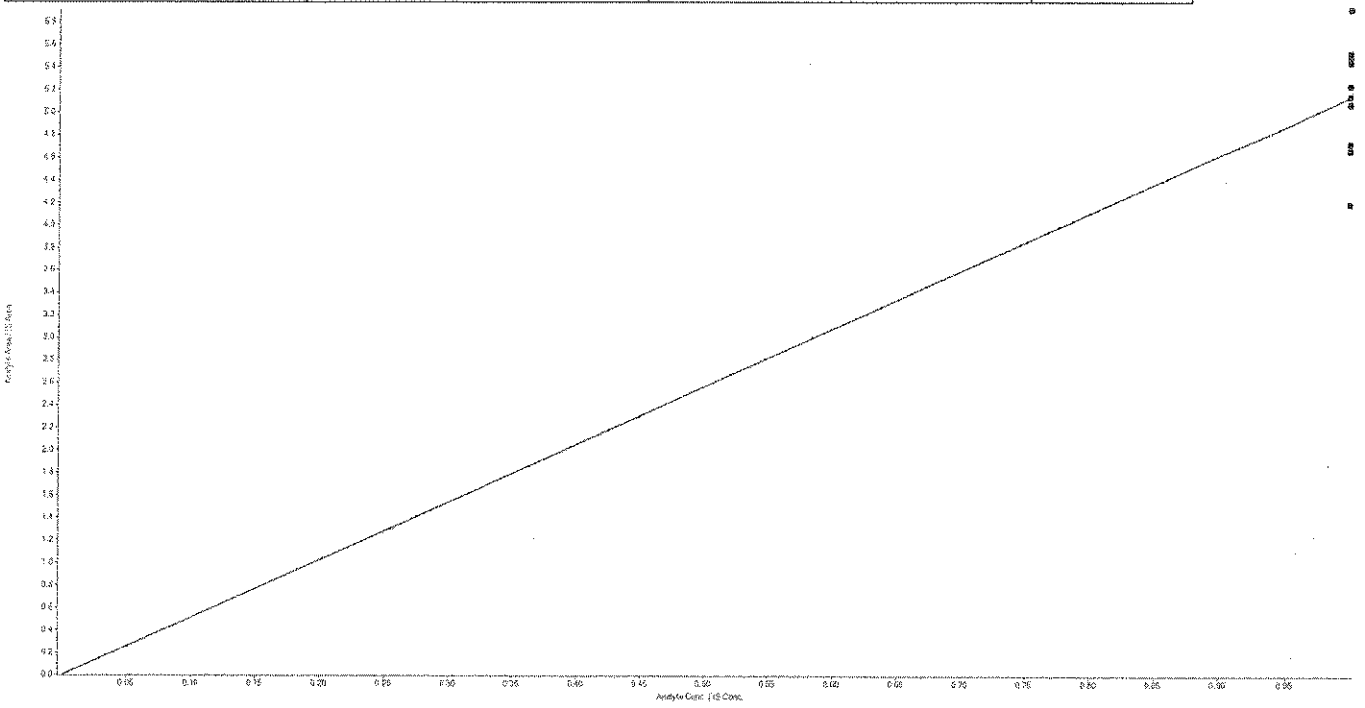
MAR 22 2016

Analyte Name: 13C-PFOS 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 5.14 x (std. dev. = 0.503)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.49	9.8



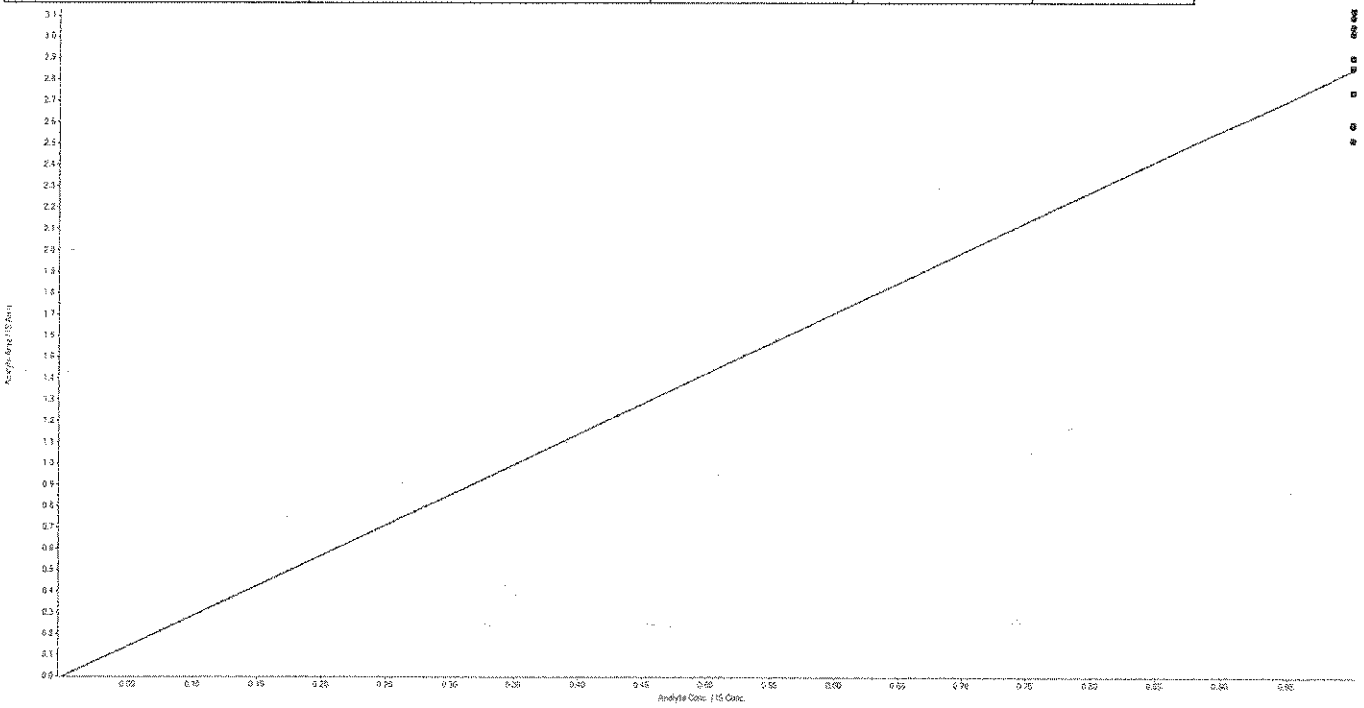
MAR 2 2016

Analyte Name: 13C-PFDA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.85 x (std. dev. = 0.227)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.40	8.0



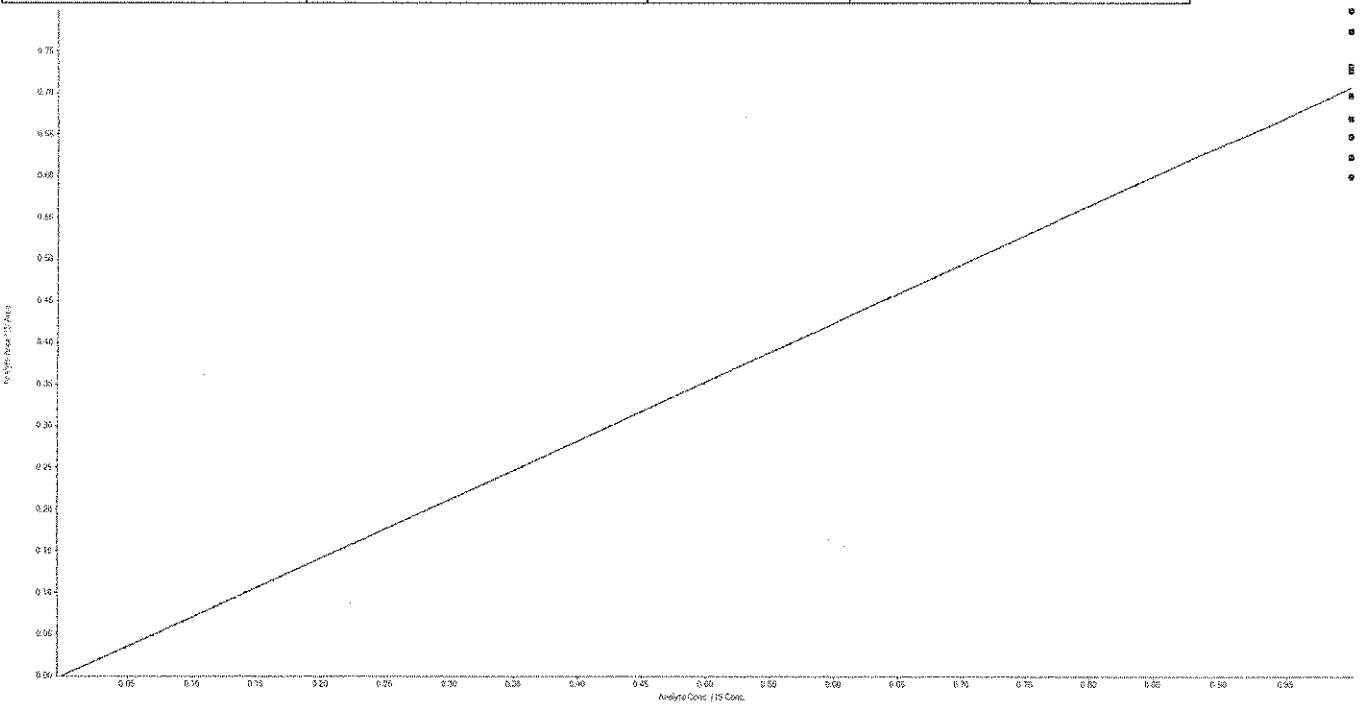
MAR 2 2 2016

Analyte Name: 13C-PFUNA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.706 x (std. dev. = 0.0715)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.51	10.1



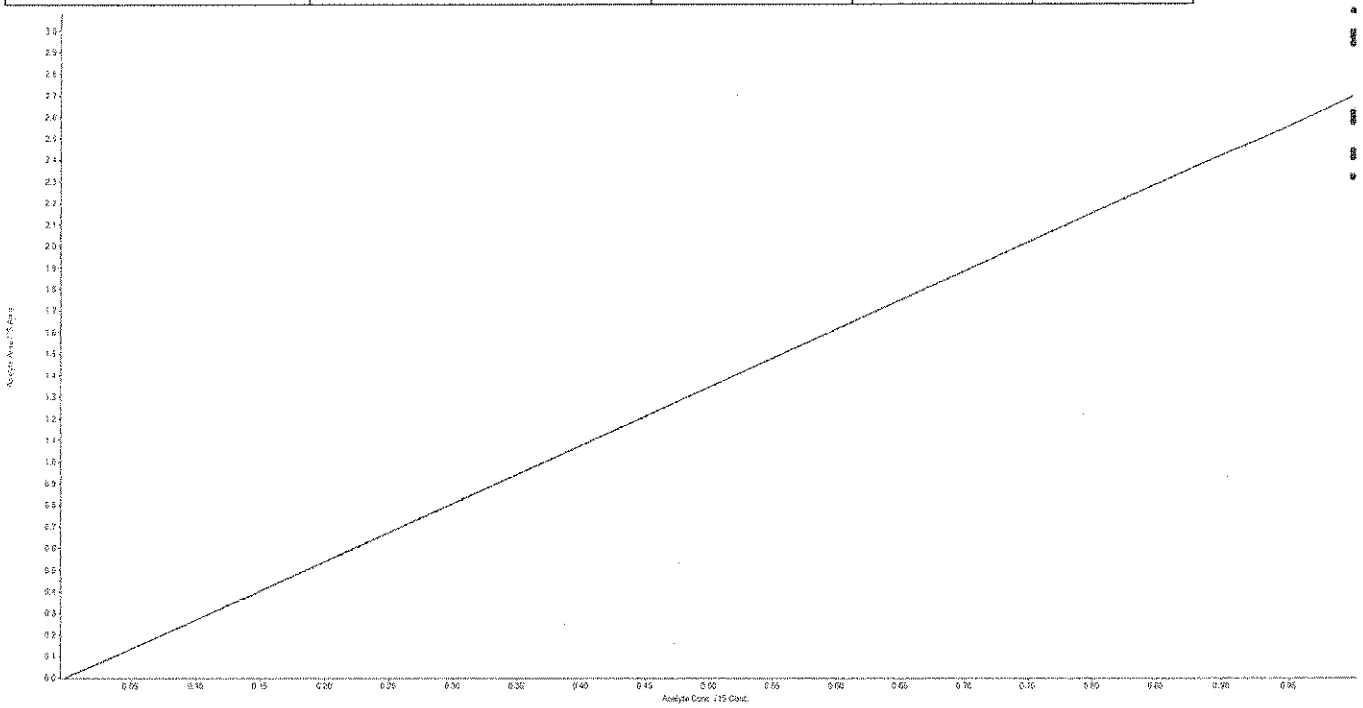
MAR 21 2016

Analyte Name: 18O-PFHxS 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.69 x (std. dev. = 0.279)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.52	10.4



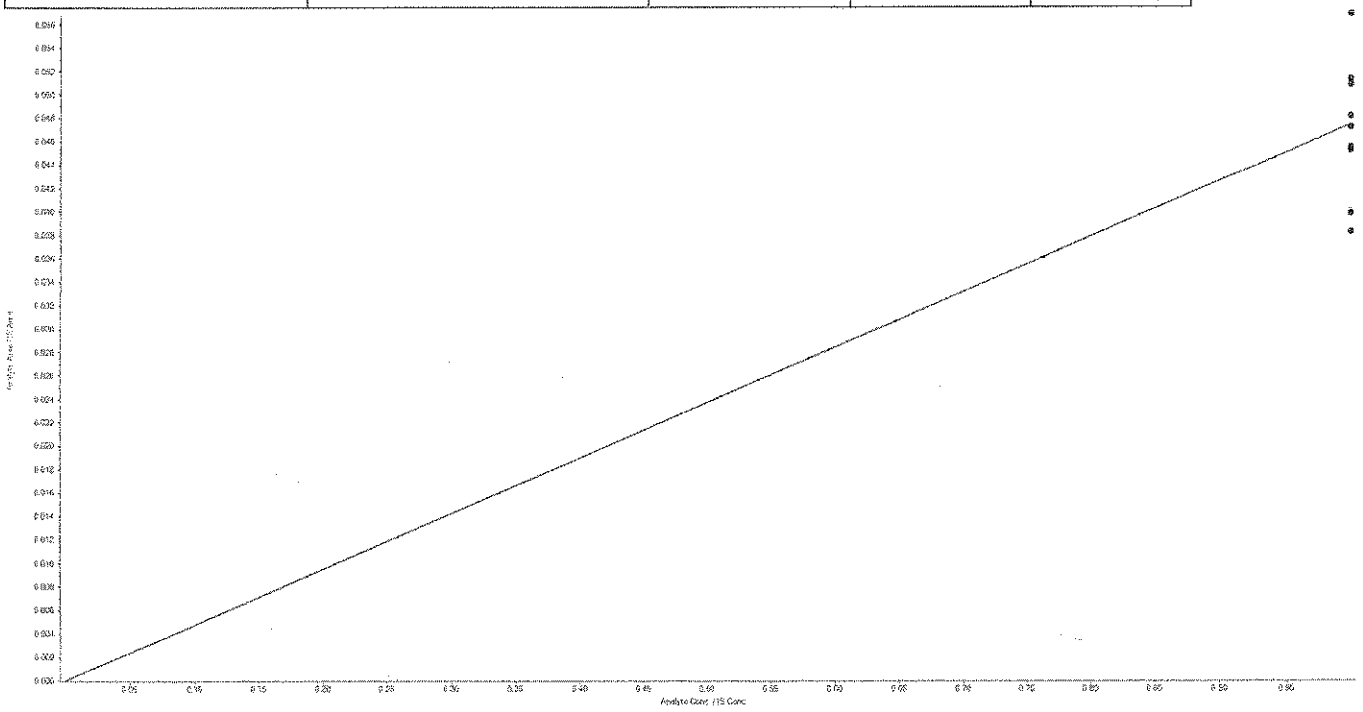
MSP2236

Analyte Name: 13C-PFDoA 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.0474 x (std. dev. = 0.00557)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.59	11.8



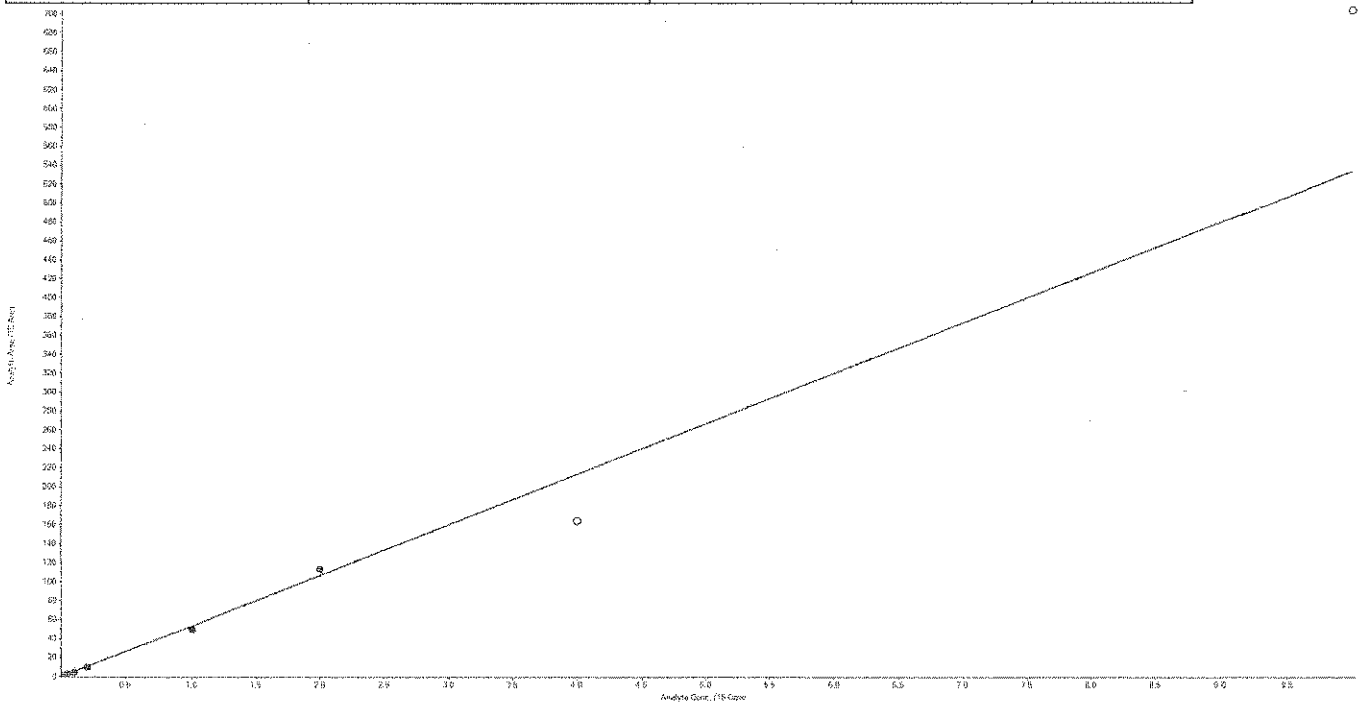
MAR 22 2016

Analyte Name: PFTrDA 1
Internal Standard: 13c-pfdoda

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 53.3 x (std. dev. = 8.41)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.065	129	NaN	NaN
0.1	0.089	89	NaN	NaN
0.25	0.271	109	NaN	NaN
0.5	0.415	83	NaN	NaN
1	0.916	92	NaN	NaN
5	4.649	93	NaN	NaN
10	10.581	106	NaN	NaN



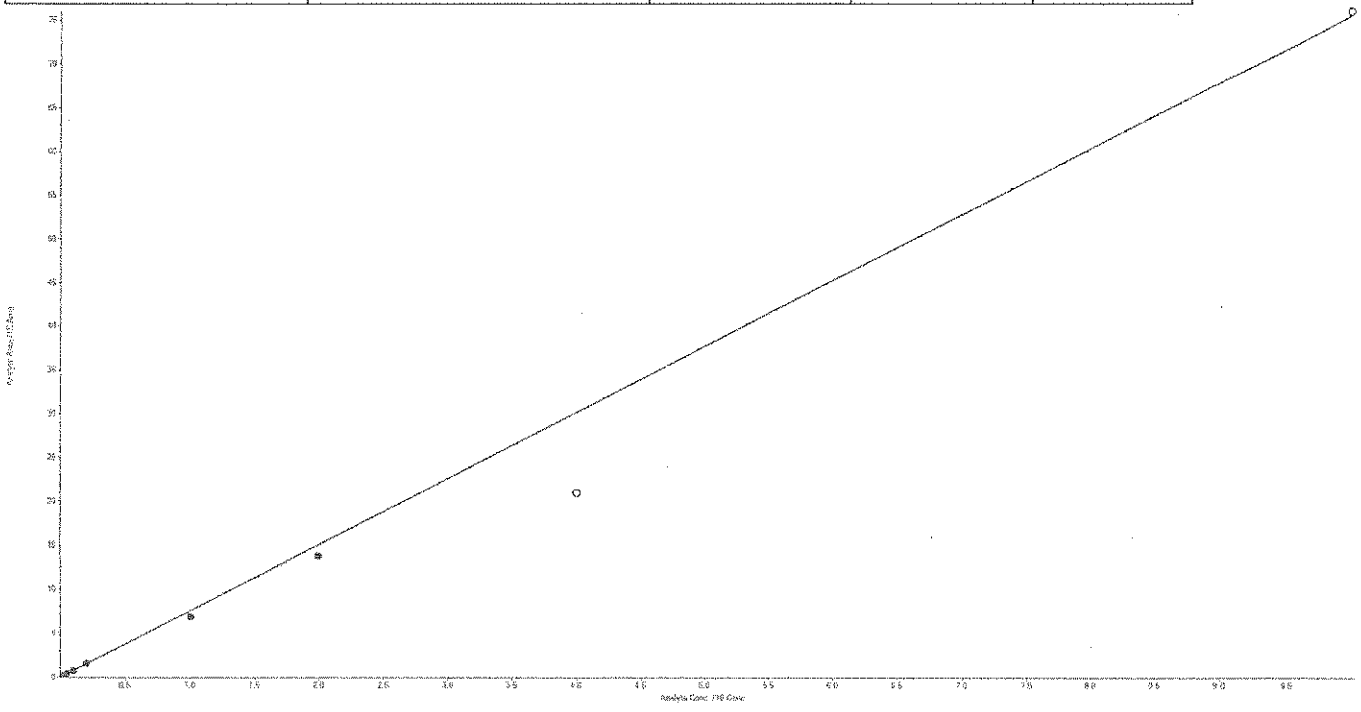
MAR 22 2016

Analyte Name: 6_2-FTS 1
Internal Standard: 13C2-6_2-FTS

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 7.55 x (std. dev. = 0.72)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.059	117	NaN	NaN
0.1	0.106	106	NaN	NaN
0.25	0.233	93	NaN	NaN
0.5	0.490	98	NaN	NaN
1	1.032	103	NaN	NaN
5	4.559	91	NaN	NaN
10	9.133	91	NaN	NaN



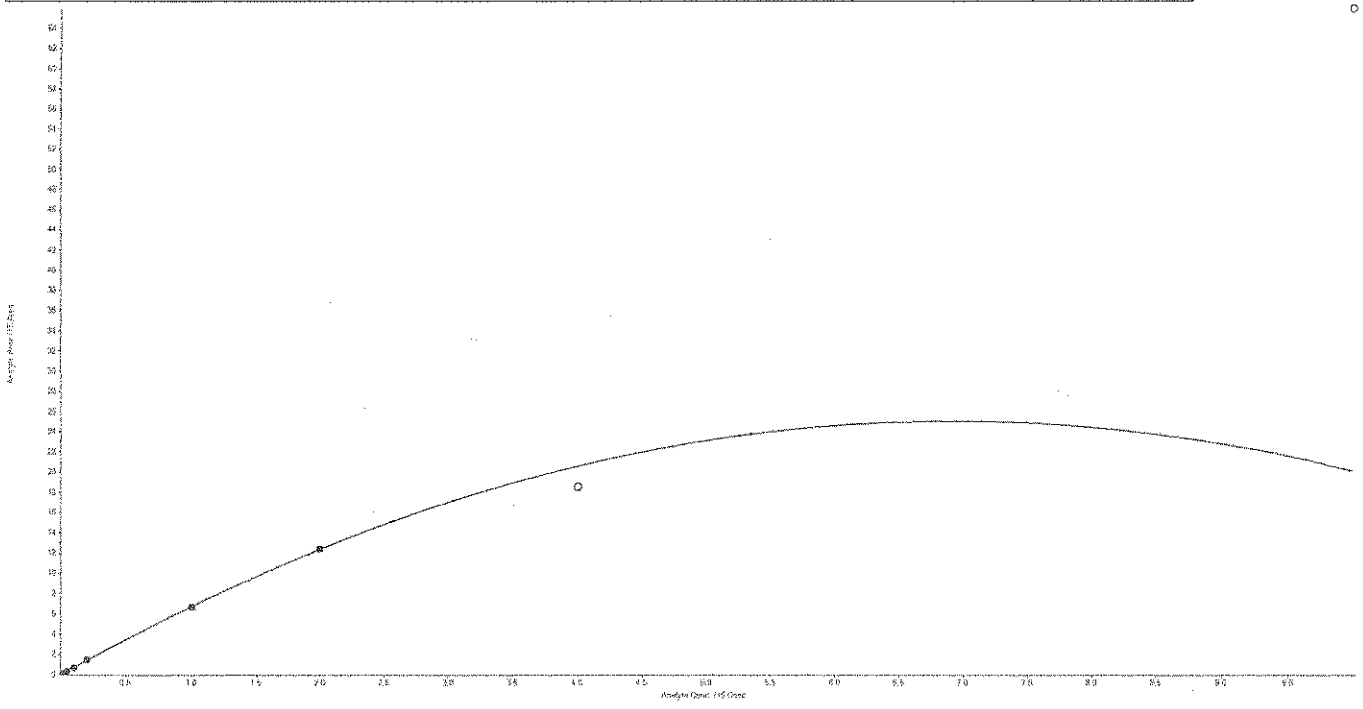
MAR 22 2016

Analyte Name: 8_2-FTS 1
Internal Standard: 13C2-6_2-FTS

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = -0.524 x^2 + 7.25 x + -0.0237 (r = 0.9997)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.05	0.054	107	NaN	NaN
0.1	0.099	99	NaN	NaN
0.25	0.235	94	NaN	NaN
0.5	0.470	94	NaN	NaN
1	1.064	106	NaN	NaN
5	4.963	99	NaN	NaN
10	10.016	100	NaN	NaN



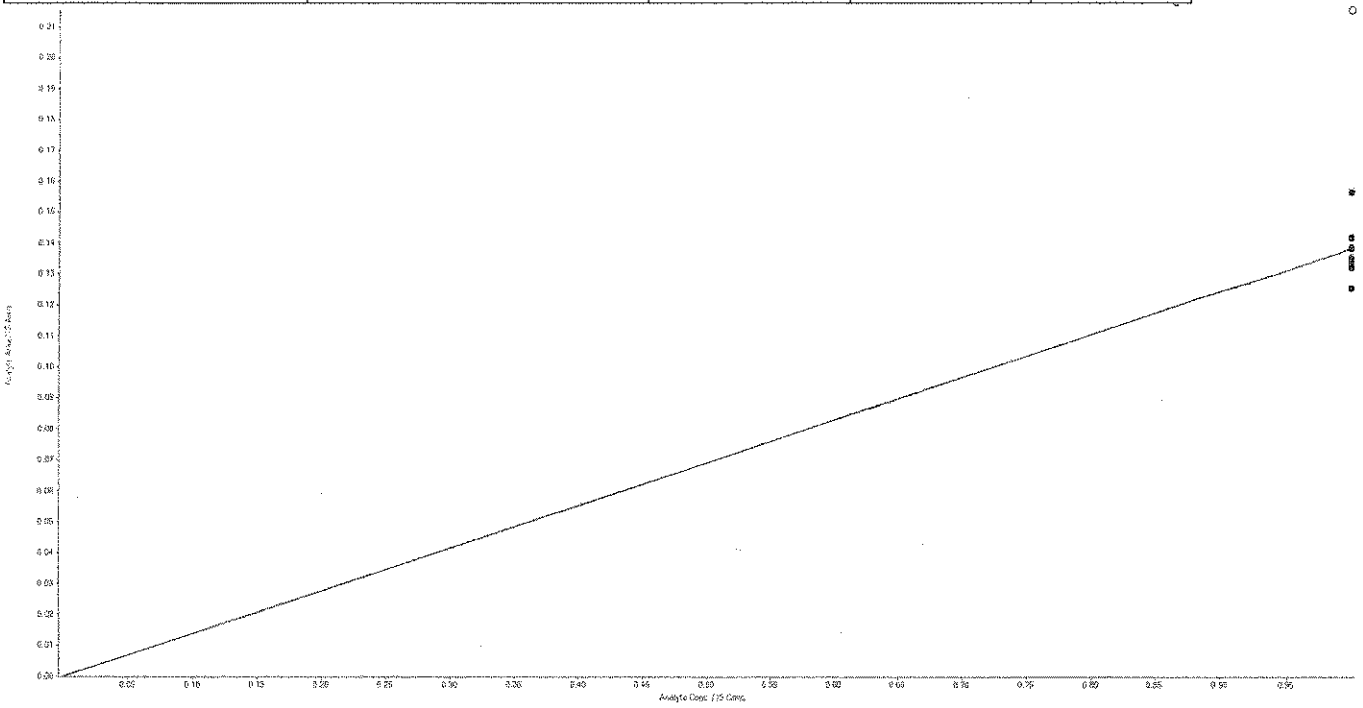
MAR 22 2016

Analyte Name: 13C2-6_2-FTS 1
Internal Standard: N_mefosa_d3

Data File	031716\1007.wiff	**Result Table**	031716.rdb
Acquisition Date	3/17/2016 6:04:28 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.138 x (std. dev. = 0.00855)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
5	5.000	100	0.31	6.2



MAR 2 2016

Project	Ewan's Projects\PFCs
Data File	031716\1007.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	10
Acquisition Date	3/17/2016 6:04:28 PM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	2	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	3017531	0.00 (2.60)	0	N/A	Yes
Pfpea 1	13c_pfhxa	3357855	0.00 (5.13)	0	N/A	No
Pfbs 1	18o-pfhs	1314809	0.00 (5.54)	0	N/A	No
Pfhxa 1	13c_pfhxa	3357855	6.69 (6.68)	5761	0.0090	No
Pfhpa 1	13c_pfhxa	3357855	0.00 (7.63)	0	N/A	No
Pfhxs 1	18o-pfhs	1314809	7.78 (7.72)	13840	0.0190	No
Pfoa 1	13c-pfoa	2250943	8.44 (8.36)	4656	0.0180	No
Pfna 1	13c-pfna	2527550	9.02 (8.96)	5263	0.0110	No
Pfos 1	13c-pfos	2644792	9.04 (9.00)	407	0.0010	No
Pfda 1	13c-pfda	1282220	9.50 (9.45)	3507	0.0140	No
Pfuna 1	13c-pfuna	336914	9.91 (9.87)	4976	0.0260	No
Pfds 1	13c-pfos	2644792	0.00 (9.85)	0	N/A	No
Pfdoa 1	13c-pfdoda	19511	0.00 (10.30)	0	N/A	Yes
Fosa 1	d5-NEtFOSA	598747	10.00 (10.00)	1521	0.0030	No
Pfteda 1	13c-pfdoda	19511	0.00 (10.90)	0	N/A	Yes
PFHpS 1	18o-pfhs	1314809	0.00 (8.40)	0	N/A	No
NMeFOSE 1	d7-NMeFOSE	1041386	0.00 (10.80)	0	N/A	No
NMeFOSA 1	d7-NMeFOSE	1041386	0.00 (10.80)	0	N/A	No
NEtFOSE 1	d9-EtFOSE	1104787	0.00 (11.10)	0	N/A	Yes
NEtFOSA 1	d5-NEtFOSA	598747	0.00 (11.00)	0	N/A	No

MAR 2 2 2016

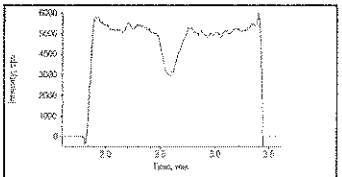
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	550688	11.00 (11.10)	1104787	3.9310	No
d5-NEtFOSA 1	N_mefosa_d3	550688	11.10 (11.10)	598747	4.2470	No
d7-NMeFOSE 1	N_mefosa_d3	550688	10.80 (10.80)	1041386	3.9940	No
13C_PFBA 1	N_mefosa_d3	550688	2.60 (2.60)	3017531	4.3510	No
13C_PFHXA 1	N_mefosa_d3	550688	6.69 (6.68)	3357855	4.4400	No
13C-PFOA 1	N_mefosa_d3	550688	8.43 (8.47)	2250943	4.5930	No
13C-PFNA 1	N_mefosa_d3	550688	9.02 (9.05)	2527550	4.6990	No
13C-PFOS 1	N_mefosa_d3	550688	9.03 (9.07)	2644792	4.6730	No
13C-PFDA 1	N_mefosa_d3	550688	9.51 (9.57)	1282220	4.0890	No
13C-PFUNA 1	N_mefosa_d3	550688	9.93 (9.98)	336914	4.3330	No
18O-PFHxS 1	N_mefosa_d3	550688	7.79 (7.75)	1314809	4.4370	No
13C-PFDoA 1	N_mefosa_d3	550688	10.30 (10.40)	19511	3.7390	No
PFTrDA 1	13c-pfdoda	19511	0.00 (10.60)	0	N/A	Yes
6_2-FTS 1	13C2-6_2-FTS	72565	0.00 (8.35)	0	N/A	No
8_2-FTS 1	13C2-6_2-FTS	72565	0.00 (9.45)	0	N/A	Yes
13C2-6_2-FTS 1	N_mefosa_d3	550688	8.38 (8.36)	72565	4.7690	No

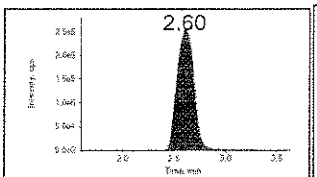
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	2.78 (2.66)	11736	No	0.00 (0.94)	No
Pfpea 2	0.00 (5.18)	0	No	0.00 (1.01)	No
Pfbs 2	0.00 (5.63)	0	No	0.00 (0.43)	No
Pfhxa 2	0.00 (6.73)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (7.74)	0	No	0.00 (0.42)	No
Pfhxs 2	7.78 (7.88)	4867	No	0.35 (0.41)	YES
Pfoa 2	8.44 (8.54)	5877	No	1.26 (1.86)	No
Pfna 2	9.04 (9.13)	2294	No	0.44 (0.32)	No

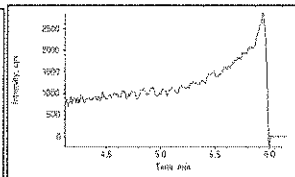
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	0.00 (9.03)	0	No	0.00 (0.36)	No
Pfda 2	0.00 (9.51)	0	No	0.00 (0.31)	No
Pfuna 2	0.00 (9.94)	0	No	0.00 (0.46)	No
Pfds 2	0.00 (9.91)	0	No	0.00 (0.34)	No
Pfdoa 2	0.00 (10.20)	0	Yes	0.00 (0.35)	No
Fosa 2	0.00 (10.00)	0	No	0.00 (0.02)	No
Pfteda 2	0.00 (10.90)	0	No	0.00 (0.36)	No
PFHpS 2	0.00 (8.57)	0	No	0.00 (0.43)	No
NMeFOSE 2	0.00 (10.80)	0	No	0.00 (0.01)	No
NMeFOSA 2	0.00 (10.90)	0	No	0.00 (1.05)	No
NEtFOSE 2	0.00 (11.10)	0	No	0.00 (0.00)	No
NEtFOSA 2	0.00 (11.10)	0	No	0.00 (0.68)	No
PFTrDA 2	0.00 (10.60)	0	No	0.00 (0.33)	No
6_2-FTS 2	0.00 (8.39)	0	No	0.00 (1.30)	No
8_2-FTS 2	0.00 (9.50)	0	Yes	0.00 (0.10)	No

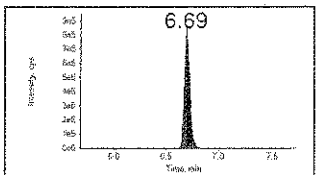
Quantitative Peak Review IB *No data for Sample ID*


Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

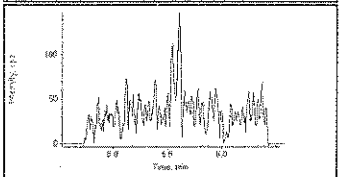


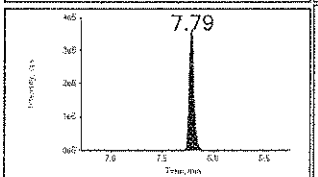
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

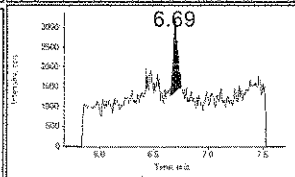


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

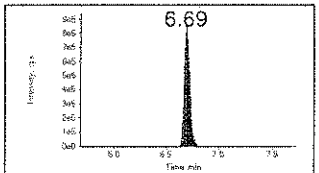

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



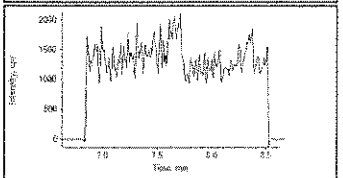
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

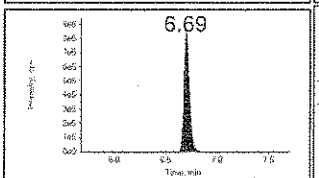


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

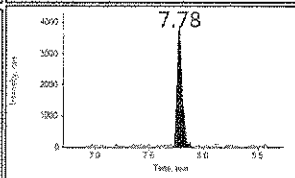


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

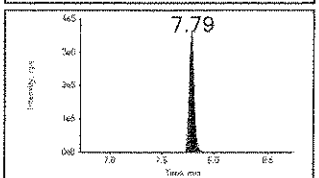

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



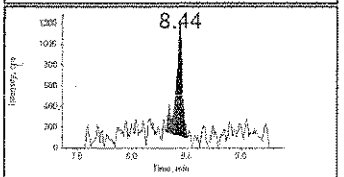
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



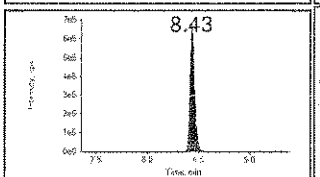
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



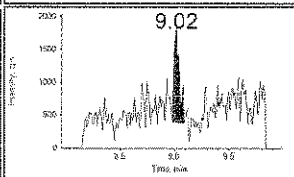
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



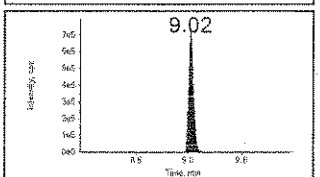
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



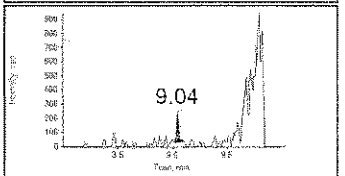
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



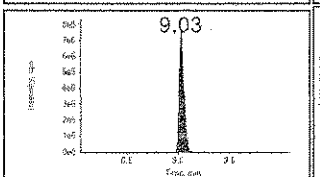
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



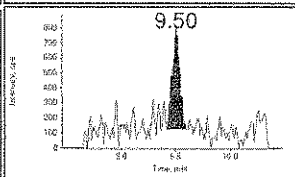
13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



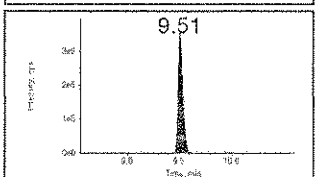
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



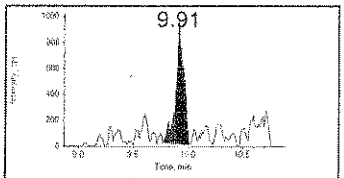
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



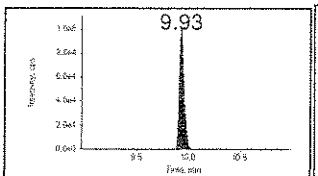
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



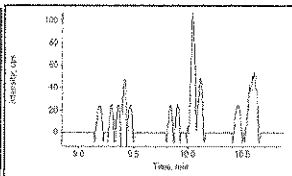
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



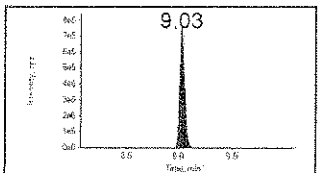
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



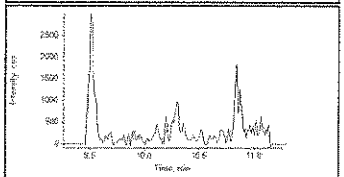
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



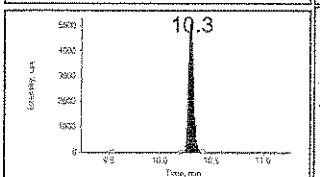
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



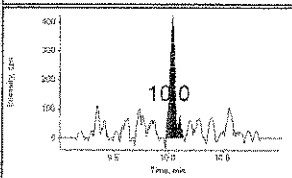
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



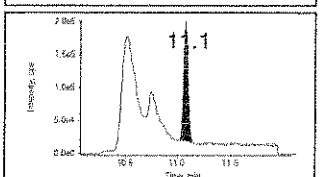
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



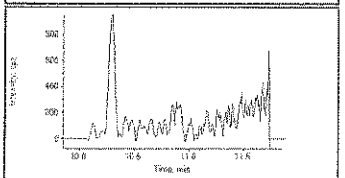
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



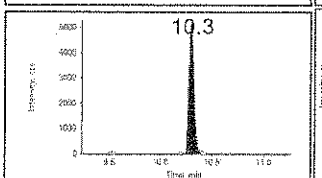
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



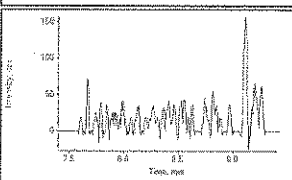
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



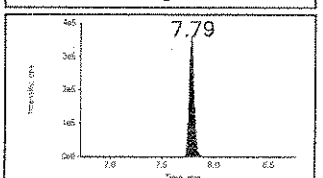
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



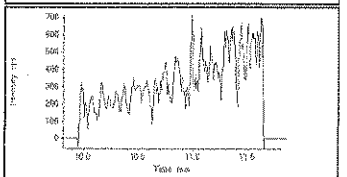
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



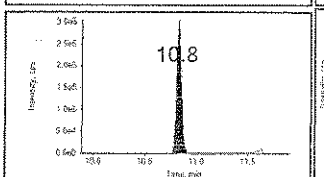
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



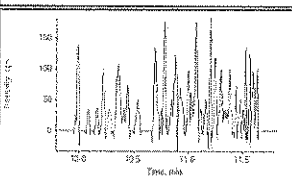
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



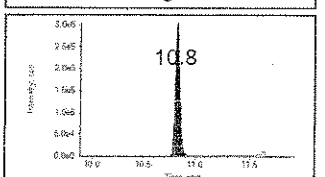
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



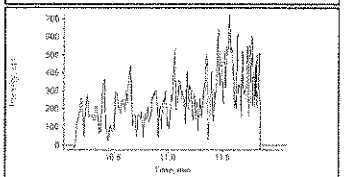
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



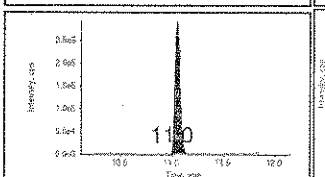
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



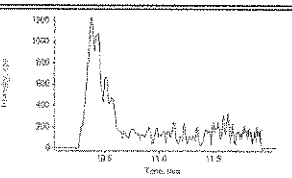
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



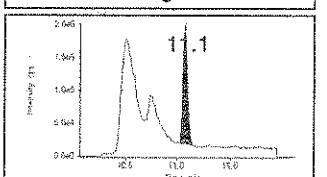
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



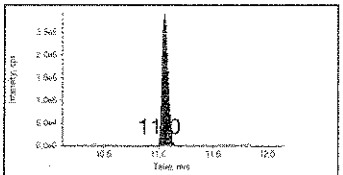
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



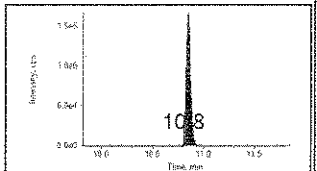
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



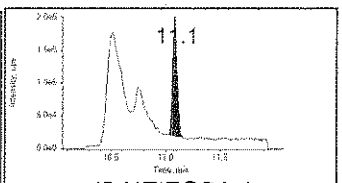
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



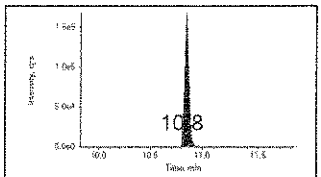
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



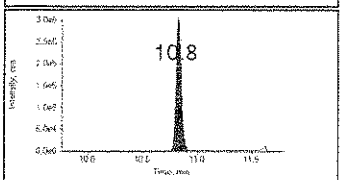
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



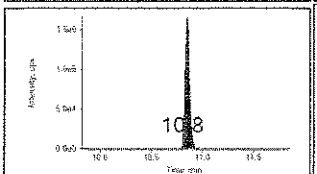
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



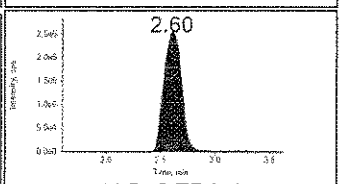
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



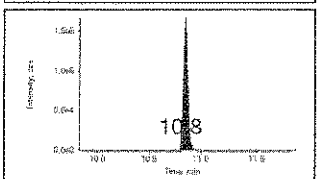
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



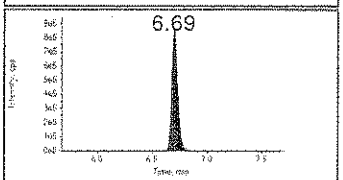
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



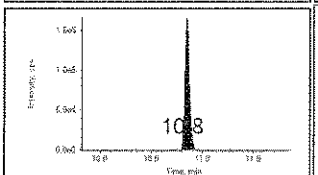
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



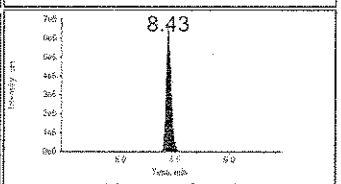
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



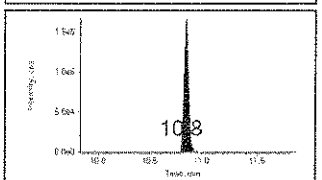
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



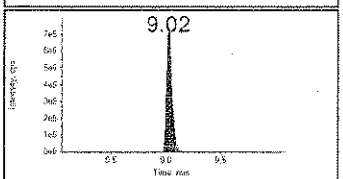
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



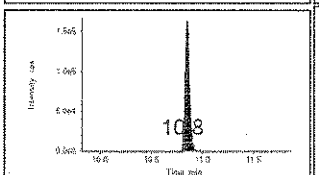
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



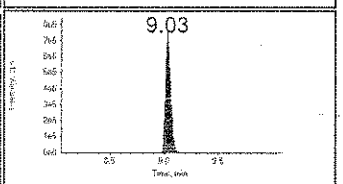
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



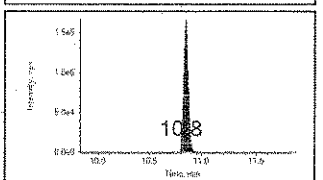
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



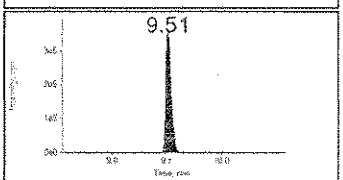
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



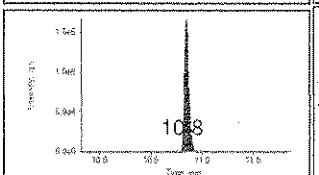
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



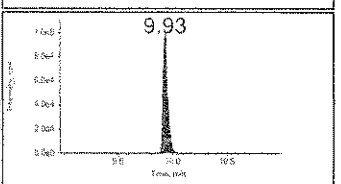
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



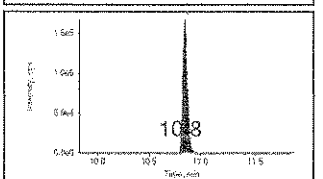
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



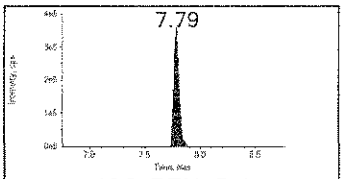
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



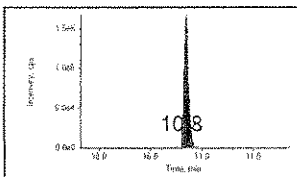
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



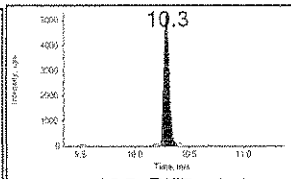
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



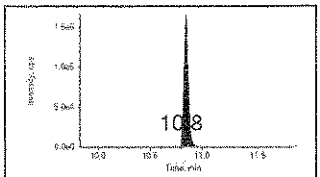
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



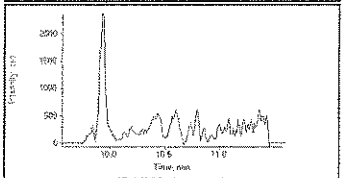
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



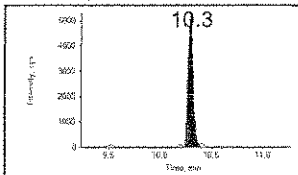
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



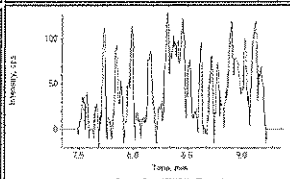
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



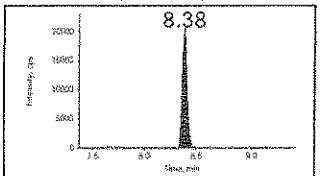
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



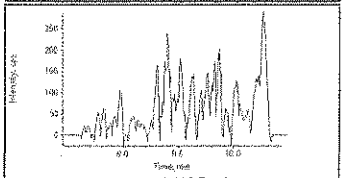
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



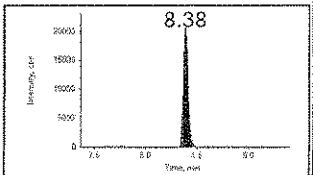
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



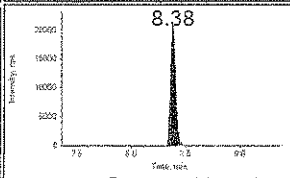
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



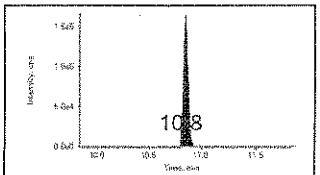
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

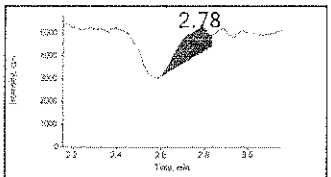


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

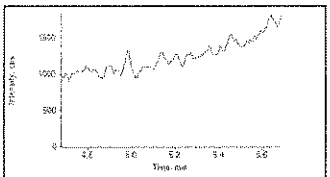


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

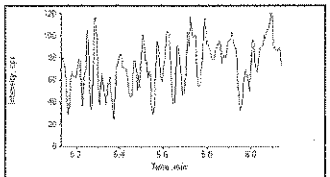
Ion Ratio Confirmation



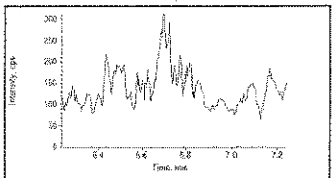
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



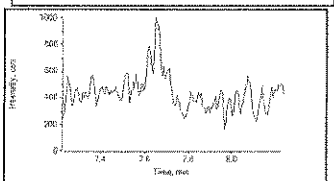
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



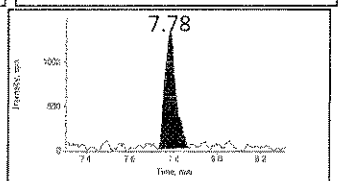
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



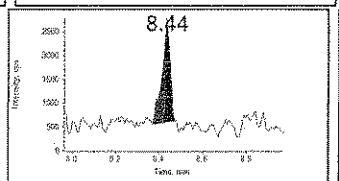
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



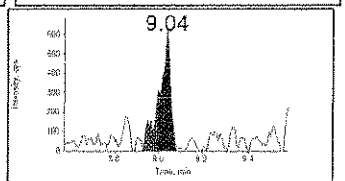
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



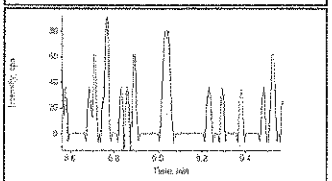
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



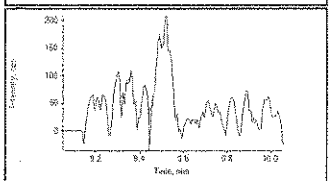
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



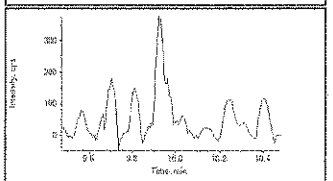
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



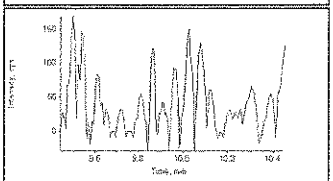
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



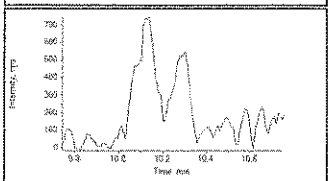
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



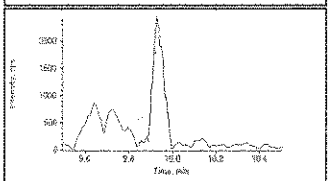
Pfuna 2
Mod? No
☑ Baseline □ Missed
□ Wrong Peak



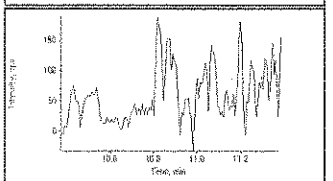
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



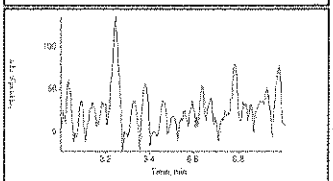
Pfdoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



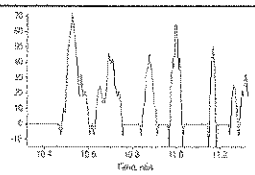
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



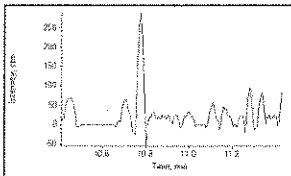
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



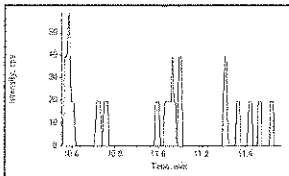
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



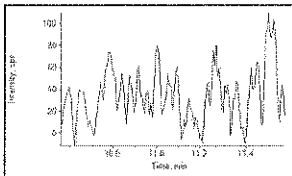
NMeFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



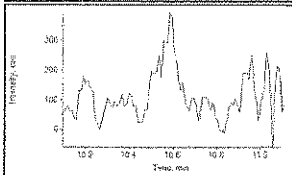
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



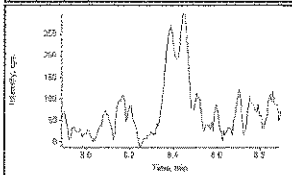
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



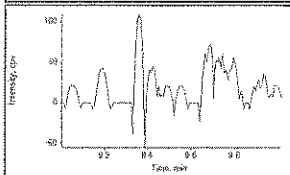
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1008.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 0.02ppb	Injection Vial	3
Acquisition Date	3/17/2016 6:22:49 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35A	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	0.00 (2.60)	13c_pfba	3256359	0	0.02	N/A	0	Yes
Pfpea 1	5.10 (5.13)	13c_pfhxa	3507237	9833	0.02	0.0210	106	No
Pfbs 1	5.56 (5.54)	18o-pfhs	1323640	21441	0.02	0.0230	117	No
Pfhxa 1	6.68 (6.68)	13c_pfhxa	3507237	18260	0.02	0.0280	139	No
Pfhpa 1	7.68 (7.63)	13c_pfhxa	3507237	17118	0.02	0.0250	125	No
Pfhxs 1	7.76 (7.72)	18o-pfhs	1323640	29142	0.02	0.0390	196	No
Pfoa 1	8.42 (8.36)	13c-pfoa	2300293	9817	0.02	0.0380	191	No
Pfna 1	9.02 (8.96)	13c-pfna	2643430	17632	0.02	0.0360	180	No
Pfos 1	9.01 (9.00)	13c-pfos	2829854	11038	0.02	0.0220	110	No
Pfda 1	9.50 (9.45)	13c-pfda	1424941	9561	0.02	0.0340	168	No
Pfuna 1	9.93 (9.87)	13c-pfuna	355886	7296	0.02	0.0360	180	No
Pfds 1	9.90 (9.85)	13c-pfos	2829854	10862	0.02	0.0200	98	No
Pfdoa 1	10.30 (10.30)	13c-pfdoda	21020	8015	0.02	0.0310	153	No
Fosa 1	10.00 (10.00)	d5-NEtFOSA	670812	13297	0.02	0.0240	118	No
Pfteda 1	10.90 (10.90)	13c-pfdoda	21020	3530	0.02	0.0370	186	No
PFHpS 1	8.47 (8.40)	18o-pfhs	1323640	3122	0.02	0.0210	105	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1250474	4894	0.02	0.0210	104	No

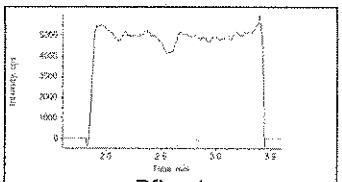
MAR 2 2016

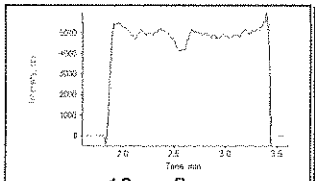
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1250474	1463	0.02	0.0170	84	No
NEtFOSE 1	11.10 (11.10)	d9-EtFOSE	1258676	7165	0.02	0.0250	126	No
NEtFOSA 1	11.10 (11.00)	d5-NEtFOSA	670812	3383	0.02	0.0280	141	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	549794	1258676	5.00	4.4850	90	No
d5-NEtFOSA 1	11.10 (11.10)	N_mefosa_d3	549794	670812	5.00	4.7650	95	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	549794	1250474	5.00	4.8040	96	No
13C_PFBA 1	2.60 (2.60)	N_mefosa_d3	549794	3256359	5.00	4.7030	94	No
13C_PFHXA 1	6.67 (6.68)	N_mefosa_d3	549794	3507237	5.00	4.6450	93	No
13C-PFOA 1	8.42 (8.46)	N_mefosa_d3	549794	2300293	5.00	4.7020	94	No
13C-PFNA 1	9.01 (9.05)	N_mefosa_d3	549794	2643430	5.00	4.9220	98	No
13C-PFOS 1	9.02 (9.06)	N_mefosa_d3	549794	2829854	5.00	5.0080	100	No
13C-PFDA 1	9.50 (9.56)	N_mefosa_d3	549794	1424941	5.00	4.5510	91	No
13C-PFUNA 1	9.92 (9.97)	N_mefosa_d3	549794	355886	5.00	4.5840	92	No
18O-PFHxS 1	7.76 (7.75)	N_mefosa_d3	549794	1323640	5.00	4.4740	90	No
13C-PFDoA 1	10.30 (10.40)	N_mefosa_d3	549794	21020	5.00	4.0350	81	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	21020	8086	0.02	0.0360	180	No
6_2-FTS 1	8.37 (8.35)	13C2-6_2-FTS	72613	3053	0.02	0.0280	139	No
8_2-FTS 1	9.49 (9.45)	13C2-6_2-FTS	72613	1581	0.02	0.0310	157	No
13C2-6_2-FTS 1	8.37 (8.36)	N_mefosa_d3	549794	72613	5.00	4.7800	96	No

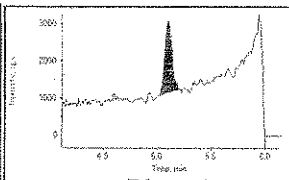
IRC Summary

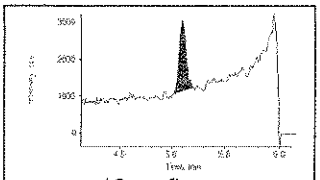
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.68 (2.66)	6436	No	0.00
Pfpea 2	5.09 (5.18)	10462	No	1.06
Pfbs 2	5.56 (5.63)	9029	No	0.42
Pfhxa 2	6.67 (6.73)	2115	No	0.12
Pfhpa 2	7.69 (7.72)	6010	No	0.35
Pfhxs 2	7.76 (7.85)	11429	No	0.39
Pfoa 2	8.42 (8.52)	17628	No	1.80
Pfna 2	9.01 (9.12)	4713	No	0.27
Pfos 2	9.02 (9.02)	4055	No	0.37
Pfda 2	9.50 (9.50)	2264	No	0.24
Pfuna 2	9.92 (9.93)	3187	No	0.44
Pfds 2	9.89 (9.90)	4140	No	0.38
Pfdoa 2	10.30 (10.20)	4317	No	0.54
Fosa 2	0.00 (10.00)	0	No	0.00
Pfteda 2	10.90 (10.90)	1079	No	0.31
PFHpS 2	8.45 (8.54)	1911	No	0.61
NMeFOSE 2	10.90 (10.80)	186	No	0.04
NMeFOSA 2	10.80 (10.80)	2383	No	1.63
NEtFOSE 2	0.00 (11.10)	0	No	0.00
NEtFOSA 2	11.10 (11.10)	2130	No	0.63
PFTrDA 2	10.60 (10.60)	3548	No	0.44
6_2-FTS 2	8.37 (8.39)	4146	No	1.36
8_2-FTS 2	0.00 (9.50)	0	Yes	0.00

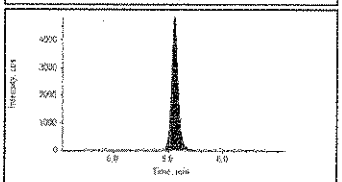
Quantitative Peak Review PFC 0.02ppb 15-OLC-02-35A

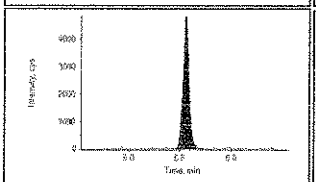

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

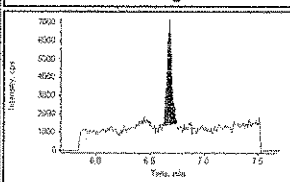

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

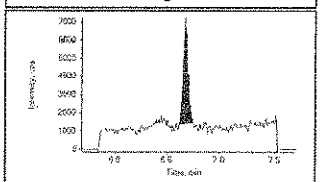

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

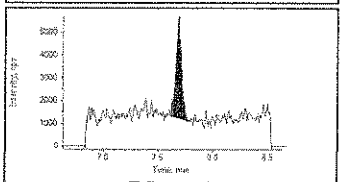

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

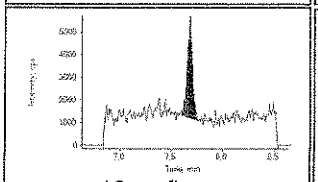

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

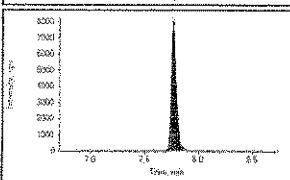

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

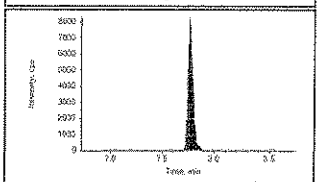

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

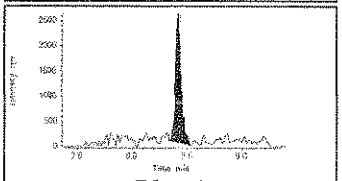

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

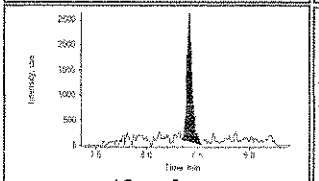

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

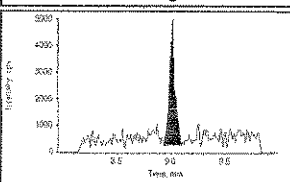

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

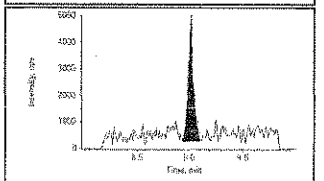

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

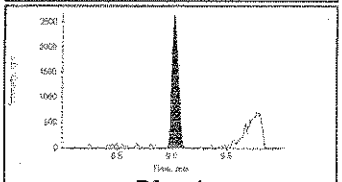

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

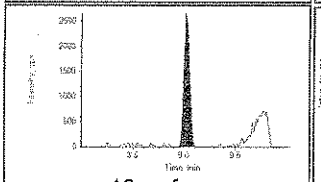

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

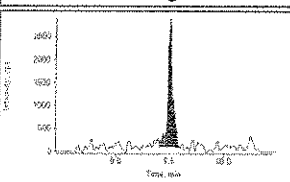

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

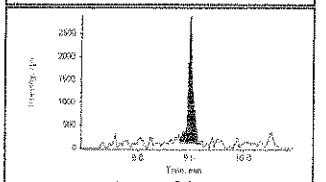

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

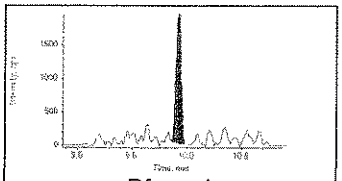

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

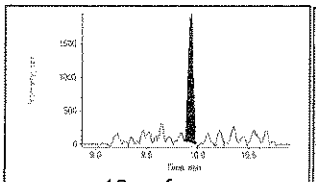

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

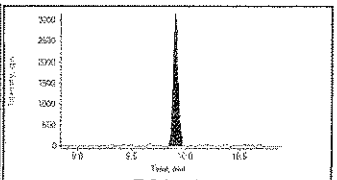

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

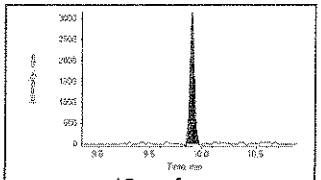

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

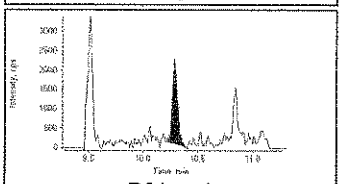

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

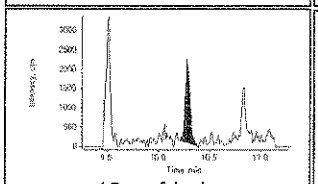

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

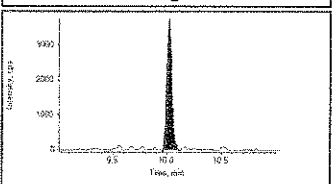

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

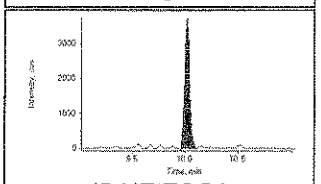

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

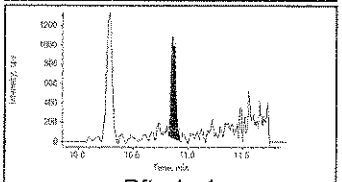

13c-pfos
503.000/80.000 Da
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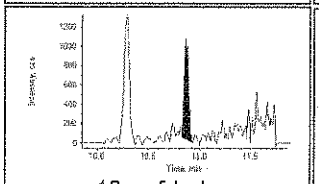

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

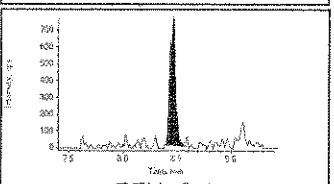

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

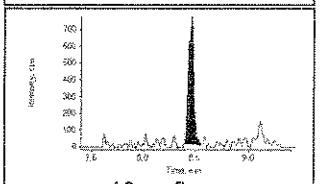

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

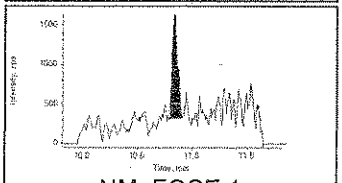

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
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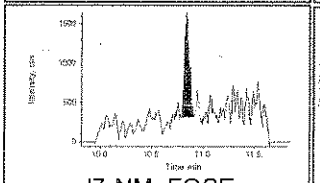

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

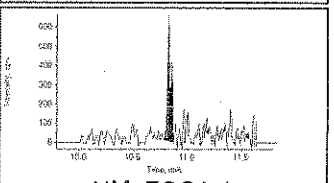

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

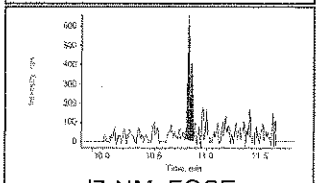

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

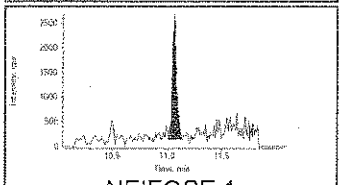

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

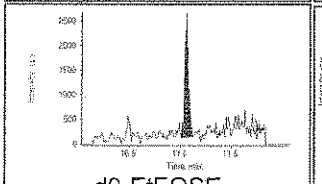

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

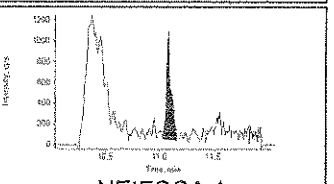

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

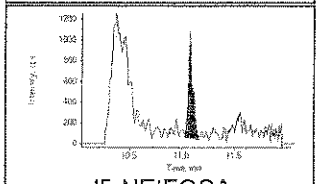

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

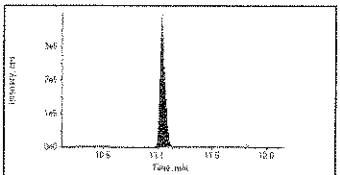

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

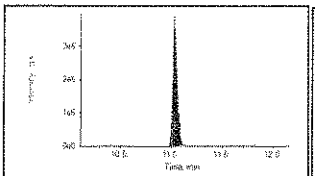

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

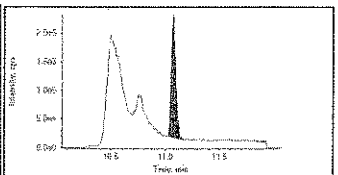

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

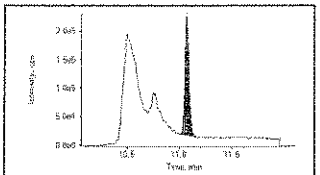

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

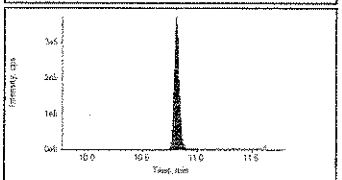

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

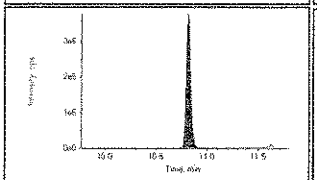

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

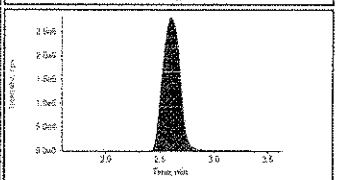

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

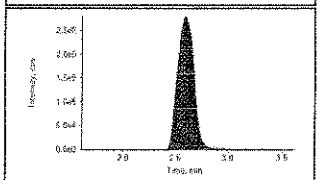

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

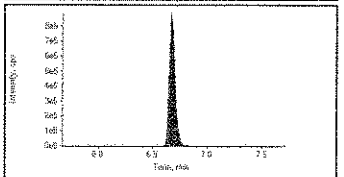

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

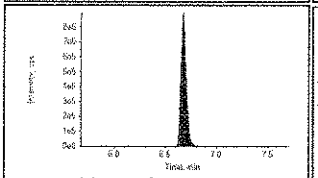

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

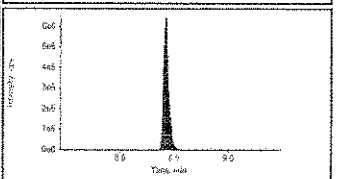

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

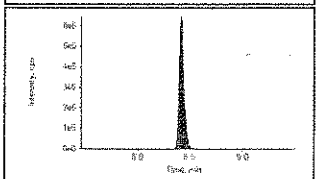

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

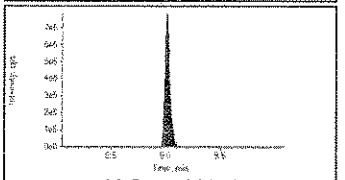

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

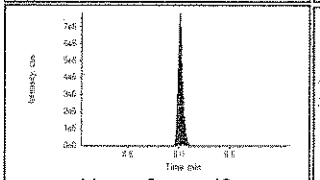

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

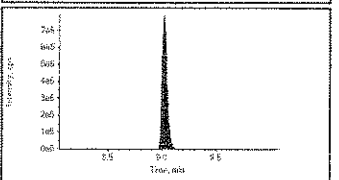

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

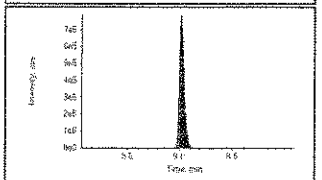

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

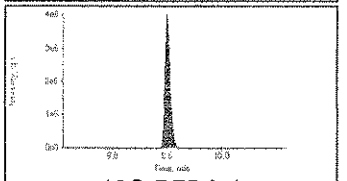

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

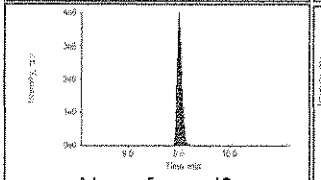

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

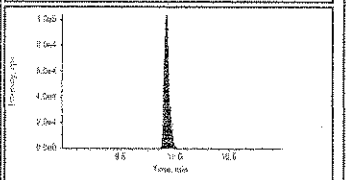

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

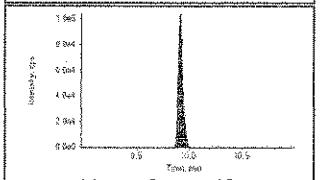

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

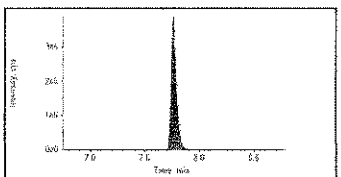

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

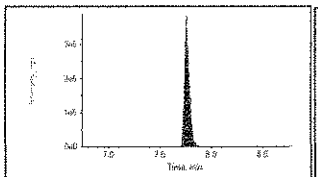

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

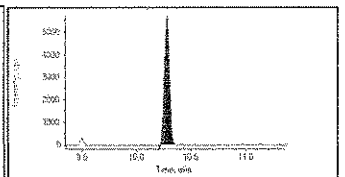

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



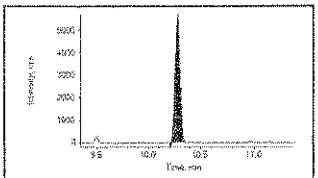
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



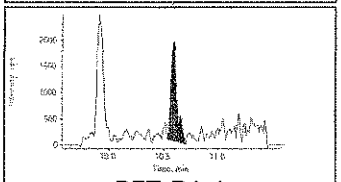
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



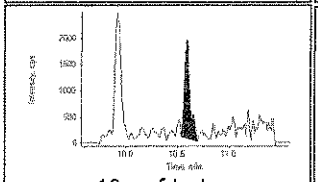
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



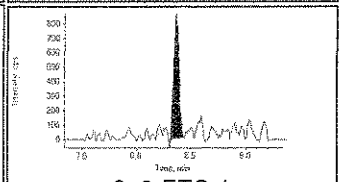
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



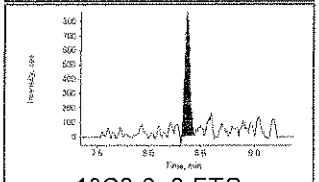
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



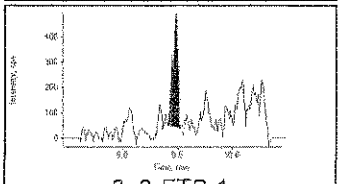
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



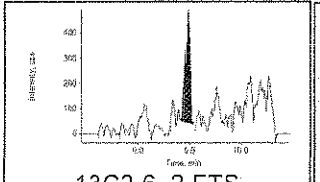
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



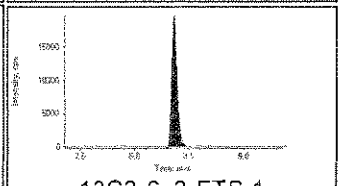
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



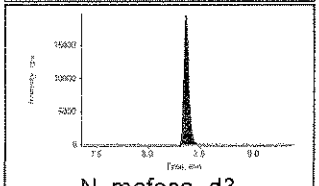
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

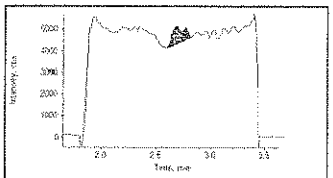


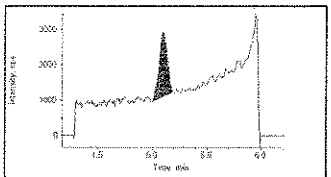
13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

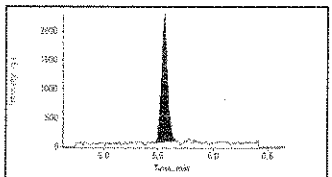


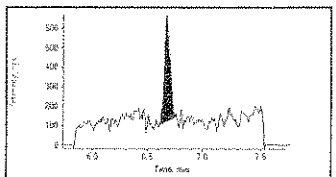
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

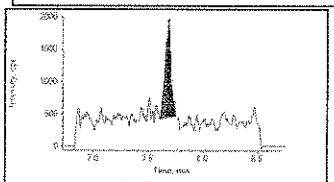
Ion Ratio Confirmation

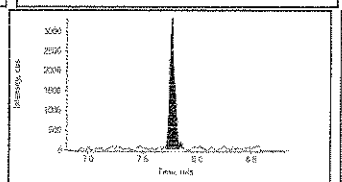

Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

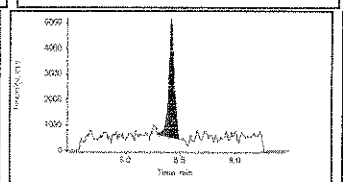

Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

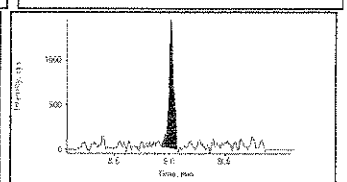

Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

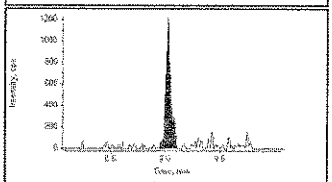

Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

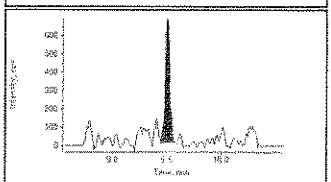

Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

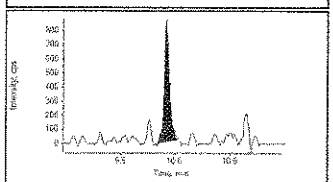

Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

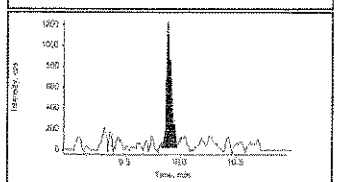

Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

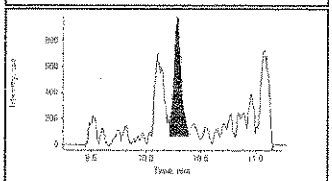

Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

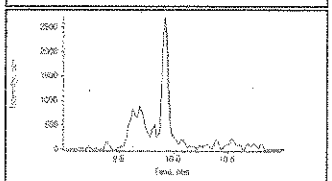

Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

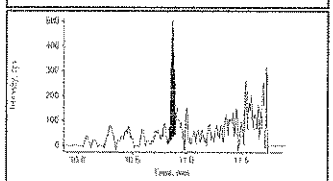

Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

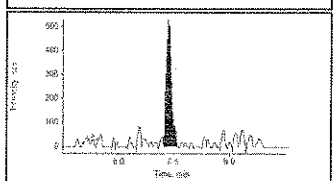

Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

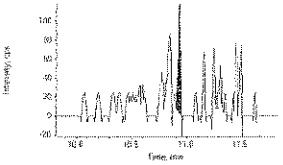

Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

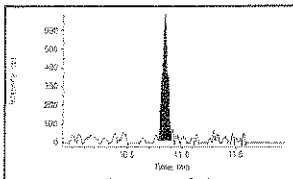

Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

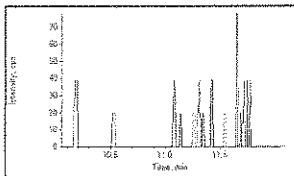

PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



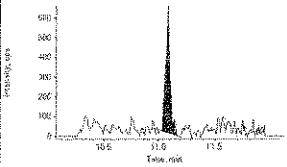
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



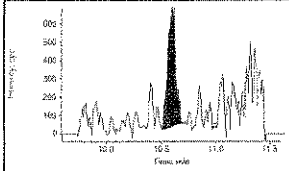
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



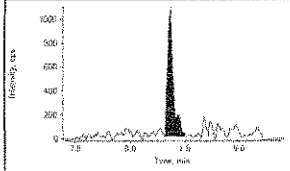
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



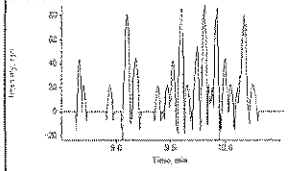
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1009.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 0.05ppb	Injection Vial	4
Acquisition Date	3/17/2016 6:41:09 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35B	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.65 (2.60)	13c_pfba	3230446	17042	0.05	0.0530	107	No
Pfpea 1	5.09 (5.13)	13c_pfhxa	3475391	25143	0.05	0.0550	110	No
Pfbs 1	5.55 (5.54)	18o-pfhs	1367752	53026	0.05	0.0560	112	No
Pfhxa 1	6.65 (6.68)	13c_pfhxa	3475391	40699	0.05	0.0620	125	No
Pfhpa 1	7.66 (7.63)	13c_pfhxa	3475391	34187	0.05	0.0500	101	No
Pfhxs 1	7.74 (7.72)	18o-pfhs	1367752	53935	0.05	0.0700	140	No
Pfoa 1	8.40 (8.36)	13c-pfoa	2151514	15523	0.05	0.0640	129	No
Pfna 1	8.99 (8.96)	13c-pfna	2480622	25774	0.05	0.0560	112	No
Pfos 1	9.00 (9.00)	13c-pfos	2619088	23782	0.05	0.0510	103	No
Pfda 1	9.48 (9.45)	13c-pfda	1384571	17760	0.05	0.0640	128	No
Pfuna 1	9.90 (9.87)	13c-pfuna	353833	13043	0.05	0.0650	130	No
Pfds 1	9.89 (9.85)	13c-pfos	2619088	26422	0.05	0.0510	103	No
Pfdoa 1	10.30 (10.30)	13c-pfdoda	20882	16196	0.05	0.0620	124	No
Fosa 1	10.00 (10.00)	d5-NEtFOSA	622454	30011	0.05	0.0580	115	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	20882	8006	0.05	0.0850	169	No
PFHpS 1	8.43 (8.40)	18o-pfhs	1367752	8759	0.05	0.0570	114	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1178801	12126	0.05	0.0540	109	No

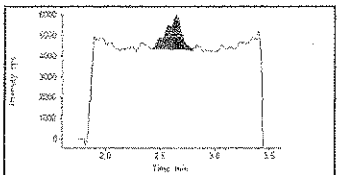
MAR 2 2 2016

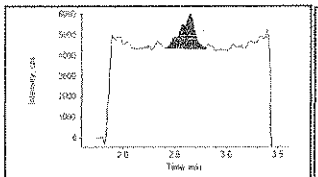
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1178801	4310	0.05	0.0530	105	No
NEtFOSE 1	11.10 (11.10)	d9-EtFOSE	1288696	14311	0.05	0.0490	98	No
NEtFOSA 1	11.10 (11.00)	d5-NEtFOSA	622454	6373	0.05	0.0570	115	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	442930	1288696	5.00	5.7000	114	No
d5-NEtFOSA 1	11.10 (11.10)	N_mefosa_d3	442930	622454	5.00	5.4890	110	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	442930	1178801	5.00	5.6210	112	No
13C_PFBA 1	2.58 (2.60)	N_mefosa_d3	442930	3230446	5.00	5.7920	116	No
13C_PFHXA 1	6.65 (6.68)	N_mefosa_d3	442930	3475391	5.00	5.7140	114	No
13C-PFOA 1	8.40 (8.45)	N_mefosa_d3	442930	2151514	5.00	5.4590	109	No
13C-PFNA 1	8.99 (9.05)	N_mefosa_d3	442930	2480622	5.00	5.7330	115	No
13C-PFOS 1	9.00 (9.06)	N_mefosa_d3	442930	2619088	5.00	5.7530	115	No
13C-PFDA 1	9.48 (9.55)	N_mefosa_d3	442930	1384571	5.00	5.4890	110	No
13C-PFUNA 1	9.90 (9.96)	N_mefosa_d3	442930	353833	5.00	5.6570	113	No
18O-PFHxS 1	7.75 (7.75)	N_mefosa_d3	442930	1367752	5.00	5.7390	115	No
13C-PFDoA 1	10.30 (10.30)	N_mefosa_d3	442930	20882	5.00	4.9750	100	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	20882	14391	0.05	0.0650	129	No
6_2-FTS 1	8.35 (8.35)	13C2-6_2-FTS	69297	6127	0.05	0.0590	117	No
8_2-FTS 1	9.46 (9.45)	13C2-6_2-FTS	69297	3742	0.05	0.0540	107	No
13C2-6_2-FTS 1	8.35 (8.36)	N_mefosa_d3	442930	69297	5.00	5.6630	113	No

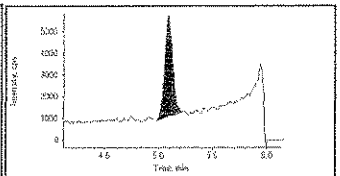
IRC Summary

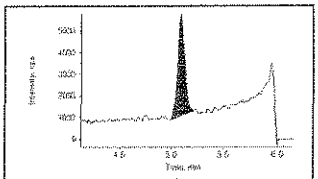
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.63 (2.66)	13658	No	0.80
Pfpea 2	5.10 (5.18)	25316	No	1.01
Pfbs 2	5.54 (5.63)	21900	No	0.41
Pfhxa 2	6.65 (6.73)	3332	No	0.08
Pfhpa 2	7.66 (7.69)	13798	No	0.40
Pfhxs 2	7.74 (7.84)	20973	No	0.39
Pfoa 2	8.40 (8.50)	27937	No	1.80
Pfna 2	9.00 (9.10)	8191	No	0.32
Pfos 2	9.00 (9.00)	9501	No	0.40
Pfda 2	9.48 (9.48)	5645	No	0.32
Pfuna 2	9.90 (9.91)	7556	No	0.58
Pfds 2	9.88 (9.87)	9617	No	0.36
Pfdoa 2	10.30 (10.20)	7397	No	0.46
Fosa 2	0.00 (10.00)	0	No	0.00
Pfteda 2	10.90 (10.90)	2985	No	0.37
PFHpS 2	8.43 (8.53)	3801	No	0.43
NMeFOSE 2	0.00 (10.80)	0	No	0.00
NMeFOSA 2	10.80 (10.80)	4953	No	1.15
NEtFOSE 2	0.00 (11.10)	0	No	0.00
NEtFOSA 2	11.10 (11.10)	3913	No	0.61
PFTrDA 2	10.60 (10.60)	6214	No	0.43
6_2-FTS 2	8.35 (8.39)	7465	No	1.22
8_2-FTS 2	9.46 (9.50)	615	No	0.16

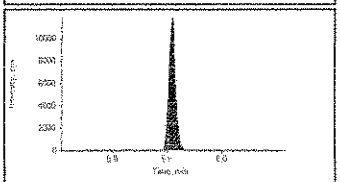
Quantitative Peak Review **PFC 0.05ppb 15-OLC-02-35B**

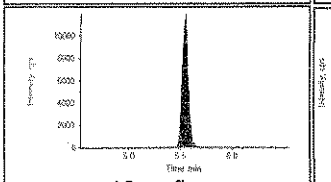

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

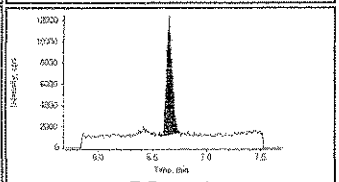

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

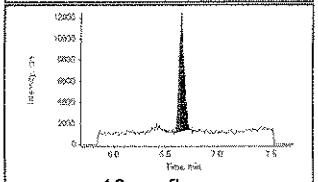

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

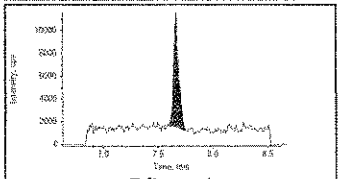

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

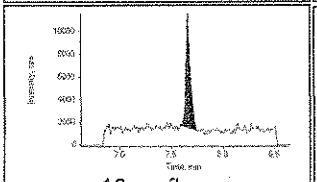

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

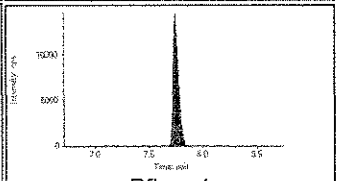

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

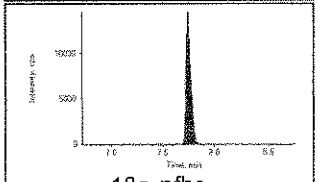

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

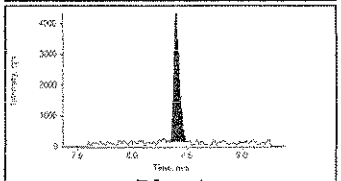

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

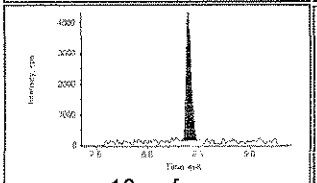

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

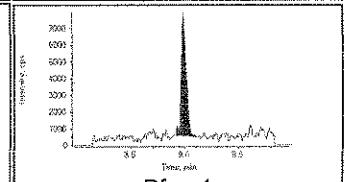

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

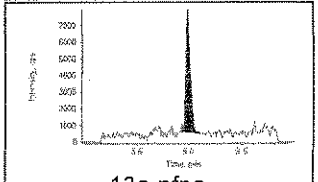

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

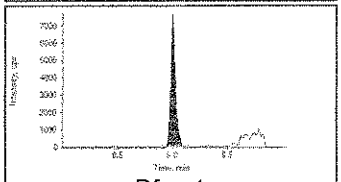

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

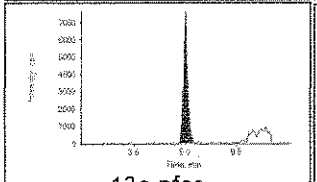

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

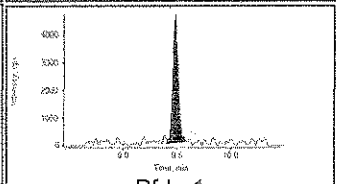

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

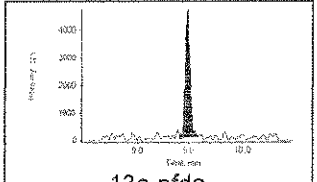

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

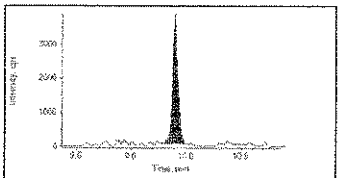

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

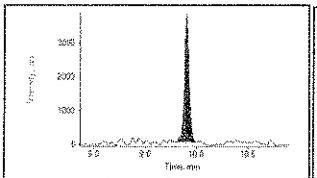

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

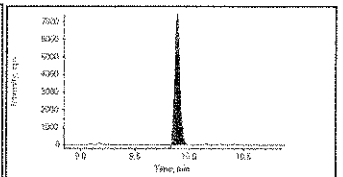

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

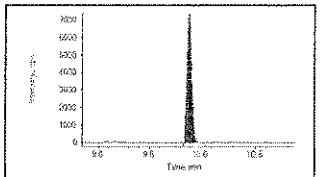

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

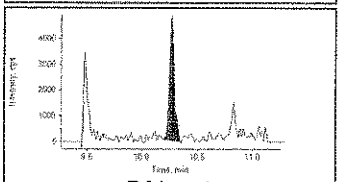

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

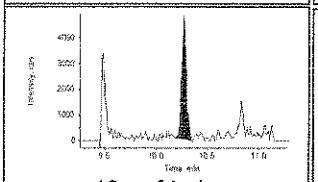

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

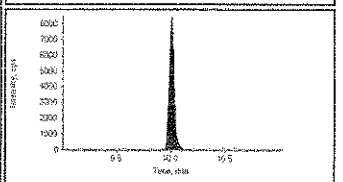

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

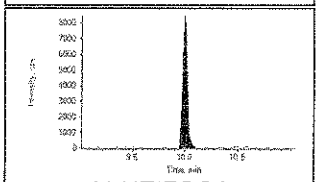

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

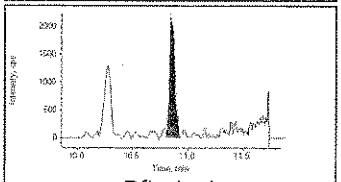

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

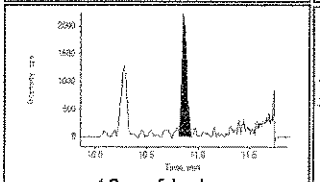

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

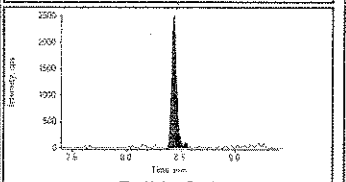

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

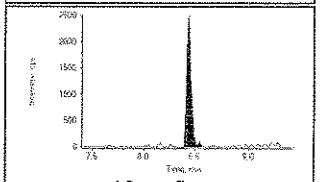

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

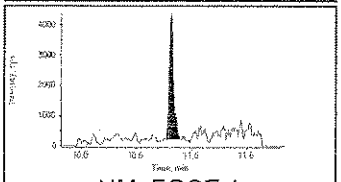

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

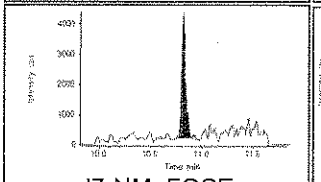

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

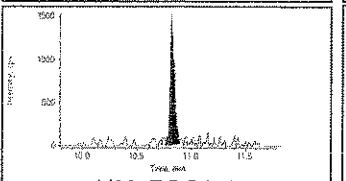

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

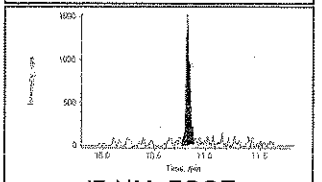

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

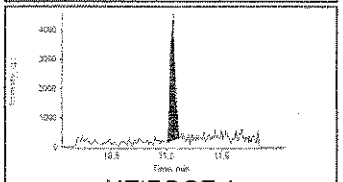

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

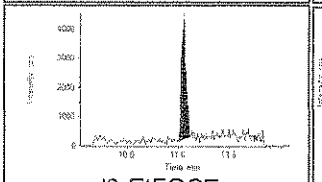

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

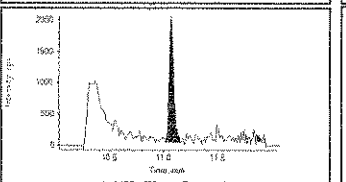

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

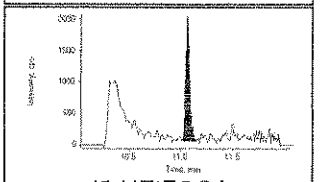

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

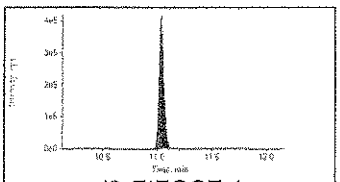

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

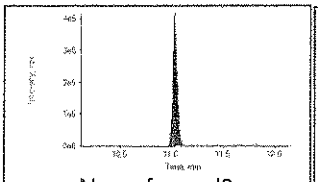

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

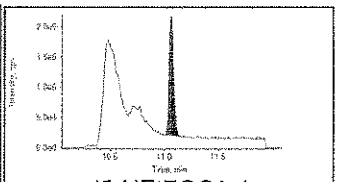

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

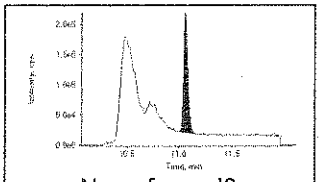

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

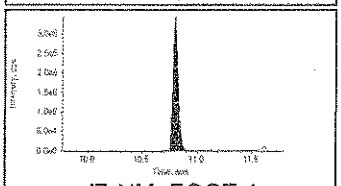

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

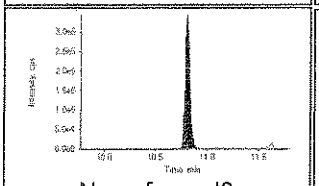

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

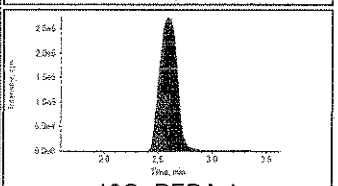

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

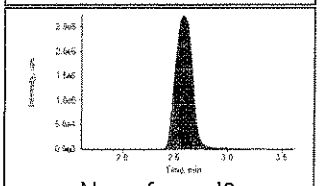

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

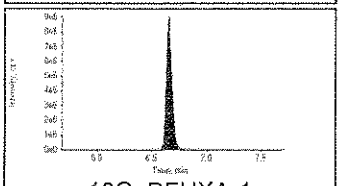

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

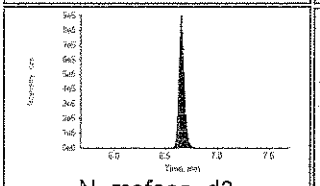

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

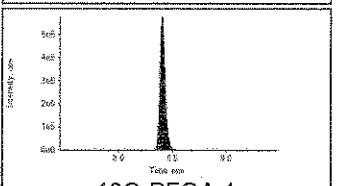

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

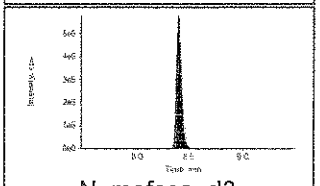

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

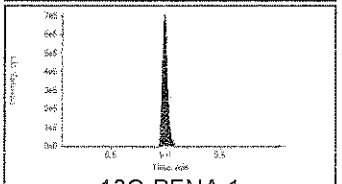

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

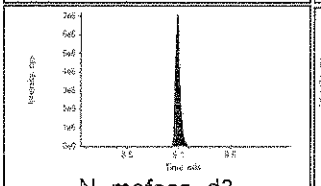

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

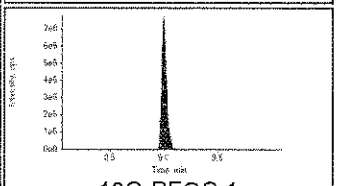

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

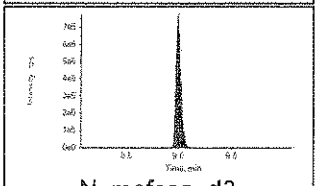

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

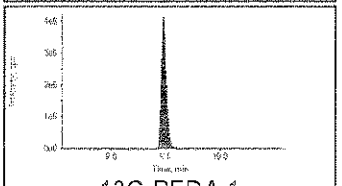

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

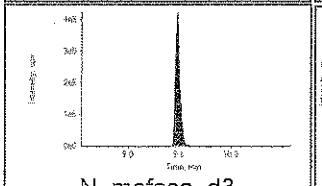

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

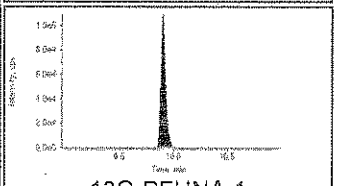

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

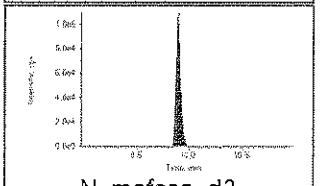

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

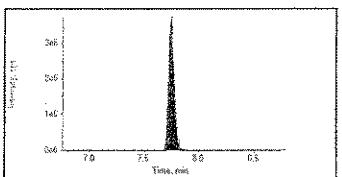

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

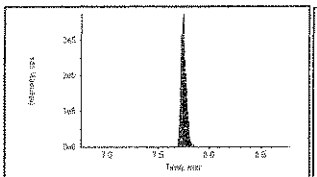

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

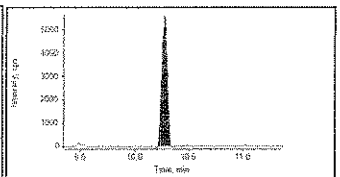

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

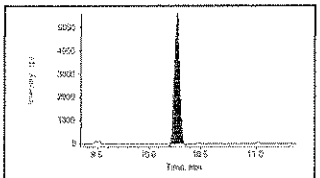

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

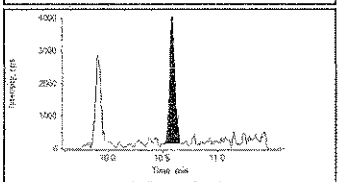

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

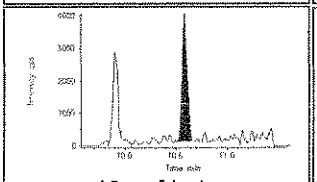

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

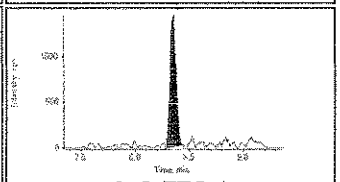

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

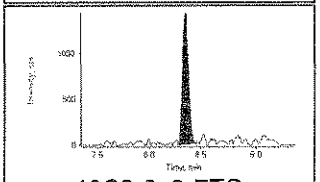

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

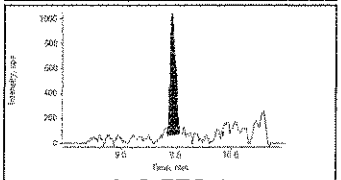

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

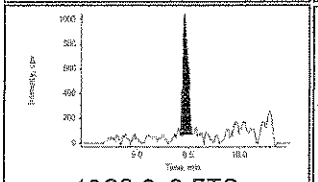

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

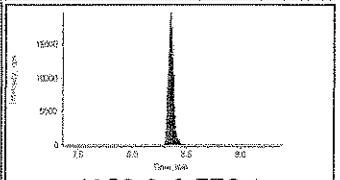

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

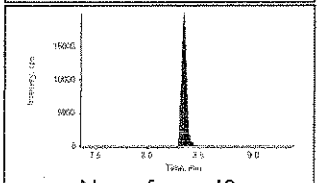

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

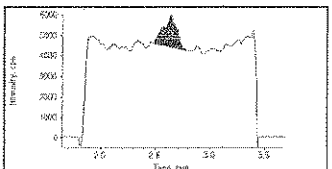

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

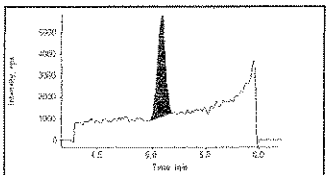

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

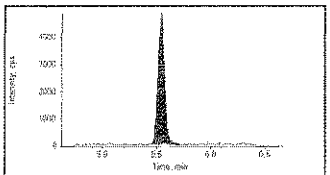
Ion Ratio Confirmation



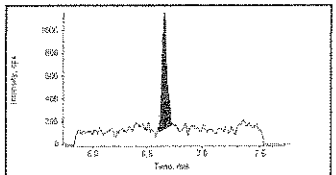
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



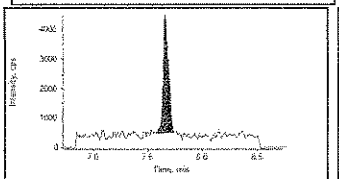
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



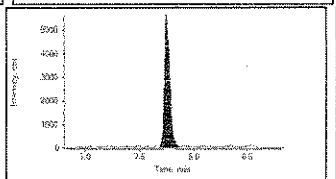
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



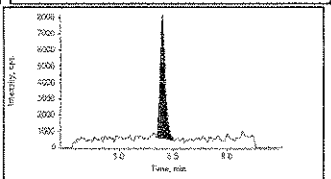
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



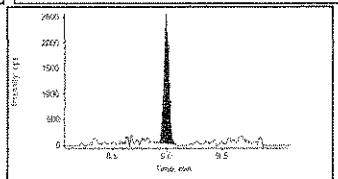
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



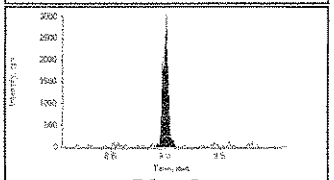
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



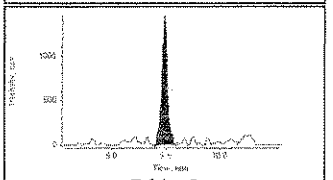
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



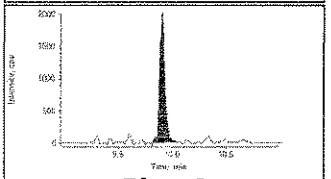
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



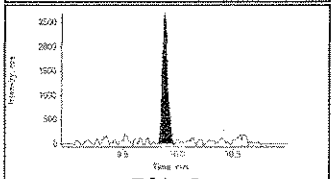
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



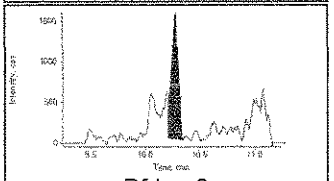
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



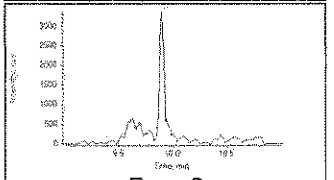
Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



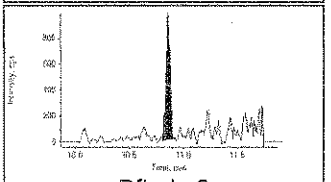
Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



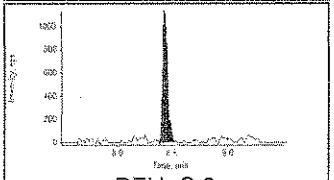
Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



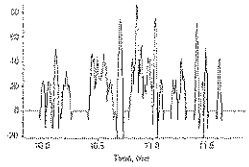
Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



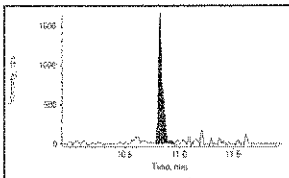
Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



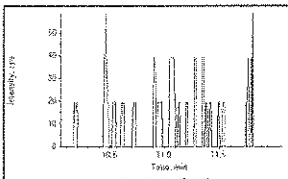
PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



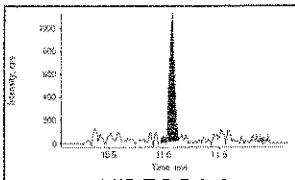
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



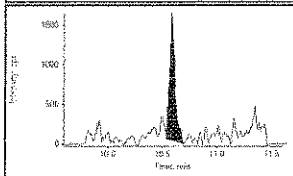
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



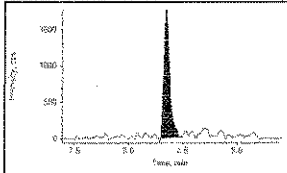
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



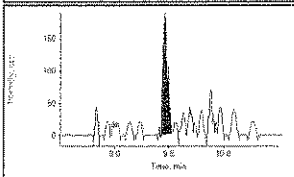
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1010.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 0.10ppb	Injection Vial	5
Acquisition Date	3/17/2016 6:59:25 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35C	Dilution Factor	1.00

Results Summary

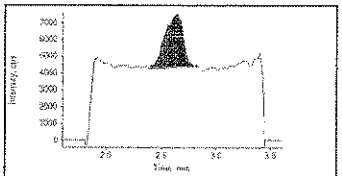
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.64 (2.60)	13c_pfba	3202947	38835	0.10	0.0940	94	No
Pfpea 1	5.10 (5.13)	13c_pfhxa	3556720	43290	0.10	0.0920	92	No
Pfbs 1	5.55 (5.54)	18o-pfhs	1380339	92180	0.10	0.0960	96	No
Pfhxa 1	6.66 (6.68)	13c_pfhxa	3556720	68006	0.10	0.1020	102	No
Pfhpa 1	7.65 (7.63)	13c_pfhxa	3556720	62948	0.10	0.0910	91	No
Pfhxs 1	7.74 (7.72)	18o-pfhs	1380339	87495	0.10	0.1130	113	No
Pfoa 1	8.40 (8.36)	13c-pfoa	2280283	26407	0.10	0.1030	103	No
Pfna 1	8.99 (8.96)	13c-pfna	2602659	48560	0.10	0.1010	101	No
Pfos 1	9.00 (9.00)	13c-pfos	2679020	45987	0.10	0.0970	97	No
Pfda 1	9.48 (9.45)	13c-pfda	1507685	30010	0.10	0.0990	100	No
Pfuna 1	9.91 (9.87)	13c-pfuna	368111	20343	0.10	0.0970	97	No
Pfds 1	9.89 (9.85)	13c-pfos	2679020	52961	0.10	0.1010	101	No
Pfdoa 1	10.30 (10.30)	13c-pfdoda	26820	31598	0.10	0.0940	94	No
Fosa 1	10.00 (10.00)	d5-NEtFOSA	648635	54579	0.10	0.1000	100	No
Pfteda 1	10.90 (10.90)	13c-pfdoda	26820	11676	0.10	0.0960	96	No
PFHpS 1	8.43 (8.40)	18o-pfhs	1380339	14816	0.10	0.0950	95	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1172457	23165	0.10	0.1050	105	No

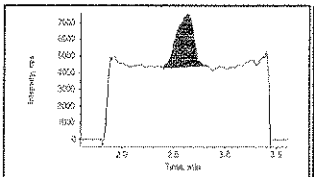
MAR 2 2 2016

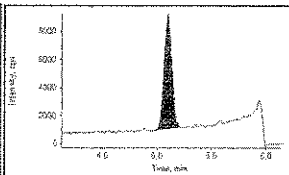
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1172457	8536	0.10	0.1050	105	No
NEtFOSE 1	11.10 (11.10)	d9-EtFOSE	1267822	28272	0.10	0.0980	99	No
NEtFOSA 1	11.10 (11.00)	d5-NEtFOSA	648635	11142	0.10	0.0960	96	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	528211	1267822	5.00	4.7030	94	No
d5-NEtFOSA 1	11.10 (11.10)	N_mefosa_d3	528211	648635	5.00	4.7960	96	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	528211	1172457	5.00	4.6880	94	No
13C_PFBA 1	2.58 (2.60)	N_mefosa_d3	528211	3202947	5.00	4.8150	96	No
13C_PFHXA 1	6.66 (6.68)	N_mefosa_d3	528211	3556720	5.00	4.9030	98	No
13C-PFOA 1	8.40 (8.46)	N_mefosa_d3	528211	2280283	5.00	4.8510	97	No
13C-PFNA 1	8.99 (9.05)	N_mefosa_d3	528211	2602659	5.00	5.0440	101	No
13C-PFOS 1	9.00 (9.06)	N_mefosa_d3	528211	2679020	5.00	4.9350	99	No
13C-PFDA 1	9.48 (9.55)	N_mefosa_d3	528211	1507685	5.00	5.0120	100	No
13C-PFUNA 1	9.90 (9.97)	N_mefosa_d3	528211	368111	5.00	4.9350	99	No
18O-PFHxS 1	7.74 (7.75)	N_mefosa_d3	528211	1380339	5.00	4.8560	97	No
13C-PFDoA 1	10.30 (10.40)	N_mefosa_d3	528211	26820	5.00	5.3580	107	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	26820	25437	0.10	0.0890	89	No
6_2-FTS 1	8.35 (8.35)	13C2-6_2-FTS	66278	10627	0.10	0.1060	106	No
8_2-FTS 1	9.46 (9.45)	13C2-6_2-FTS	66278	7936	0.10	0.0990	99	No
13C2-6_2-FTS 1	8.35 (8.36)	N_mefosa_d3	528211	66278	5.00	4.5410	91	No

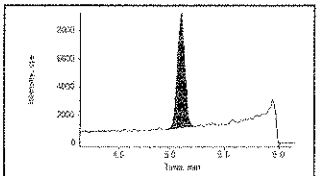
IRC Summary

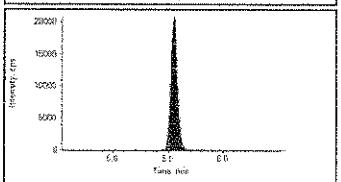
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.62 (2.66)	33739	No	0.87
Pfpea 2	5.10 (5.18)	44181	No	1.02
Pfbs 2	5.55 (5.63)	39792	No	0.43
Pfhxa 2	6.66 (6.73)	5738	No	0.08
Pfhpa 2	7.66 (7.70)	27209	No	0.43
Pfhxs 2	7.74 (7.83)	35411	No	0.40
Pfoa 2	8.40 (8.50)	53969	No	2.04
Pfna 2	8.99 (9.10)	17526	No	0.36
Pfos 2	9.00 (9.00)	15757	No	0.34
Pfda 2	9.49 (9.48)	9414	No	0.31
Pfuna 2	9.91 (9.91)	9373	No	0.46
Pfds 2	9.88 (9.88)	17028	No	0.32
Pfdoa 2	10.30 (10.20)	9427	No	0.30
Fosa 2	0.00 (10.00)	0	No	0.00
Pfteda 2	10.90 (10.90)	3827	No	0.33
PFHpS 2	8.44 (8.52)	6018	No	0.41
NMeFOSE 2	0.00 (10.80)	0	No	0.00
NMeFOSA 2	10.80 (10.80)	9004	No	1.05
NEtFOSE 2	11.10 (11.10)	147	No	0.01
NEtFOSA 2	11.10 (11.10)	8252	No	0.74
PFTrDA 2	10.60 (10.60)	6700	No	0.26
6_2-FTS 2	8.34 (8.39)	14491	No	1.36
8_2-FTS 2	9.47 (9.50)	660	No	0.08

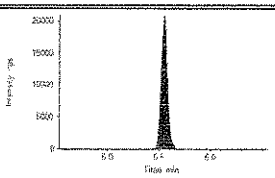

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

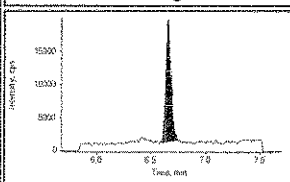

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

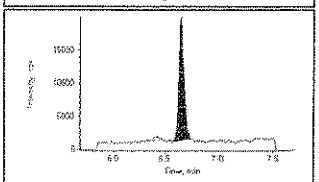

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

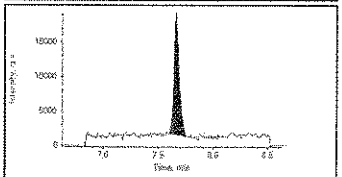

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

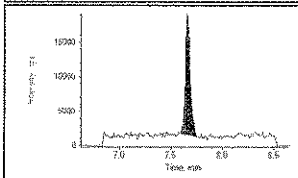

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

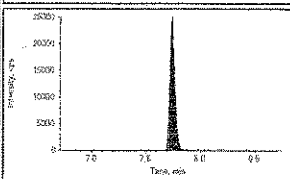

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

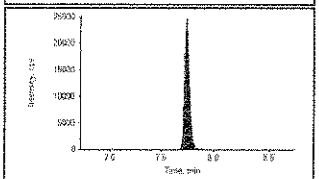

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

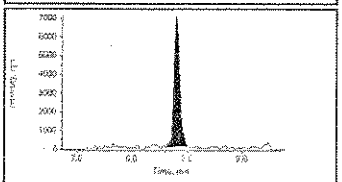

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

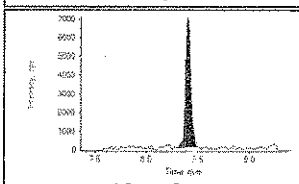

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

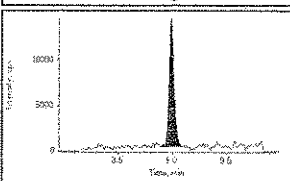

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

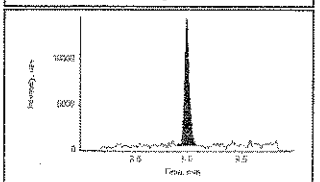

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

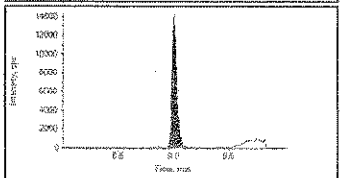

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

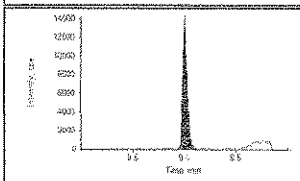

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

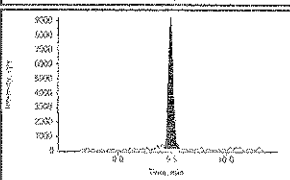

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

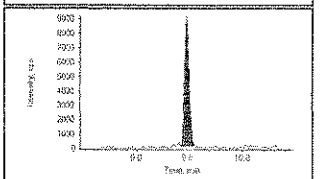

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

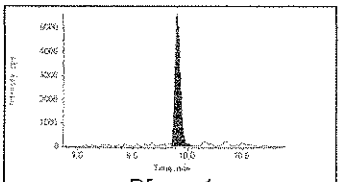

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

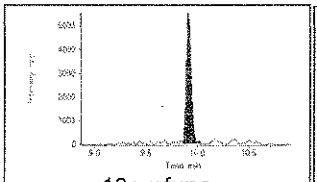

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

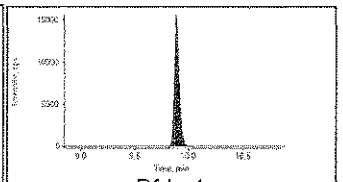

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

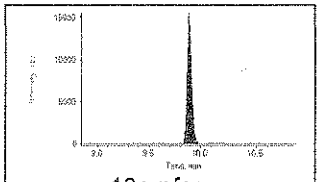

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

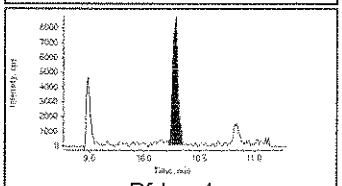

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

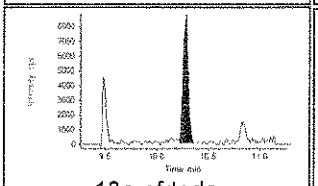

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

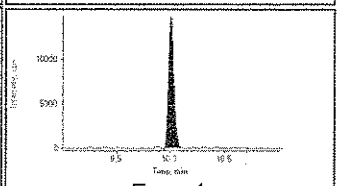

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

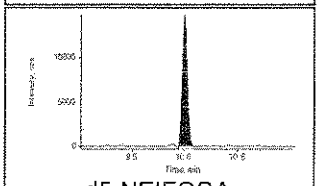

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

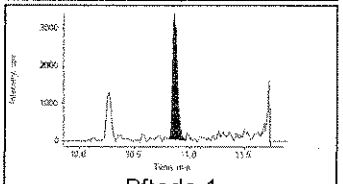

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

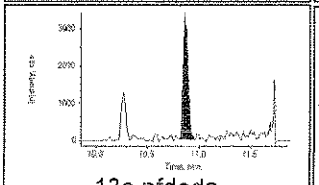

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

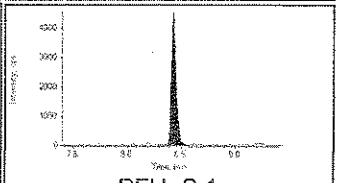

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

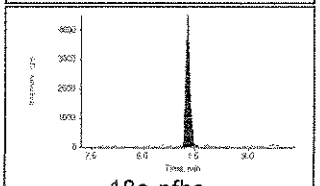

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

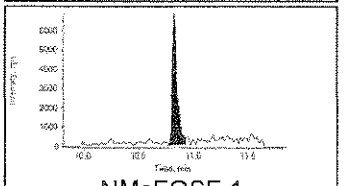

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

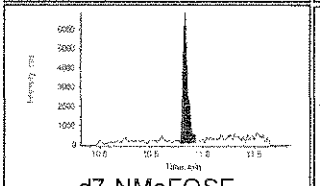

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

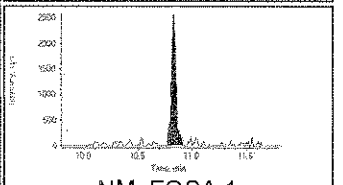

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

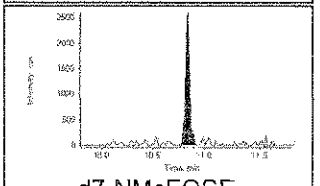

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak


18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

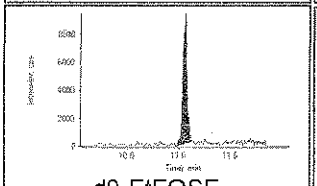

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

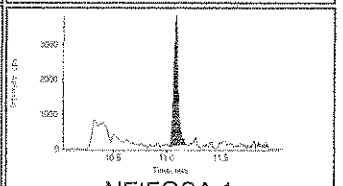

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

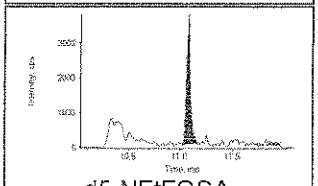

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

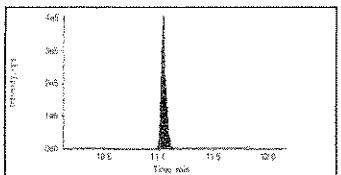

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

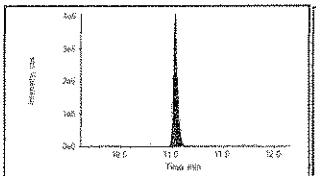

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

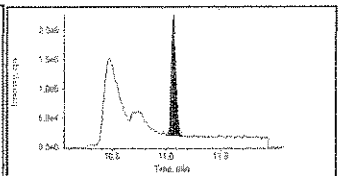

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

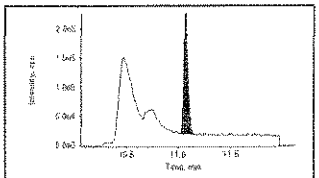

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

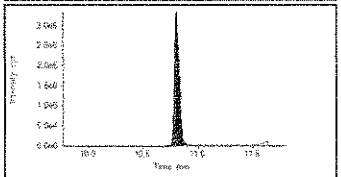

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

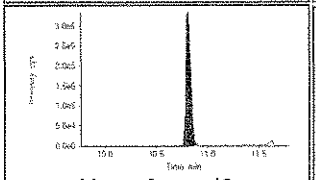

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

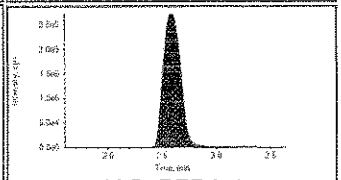

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

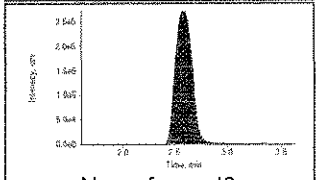

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

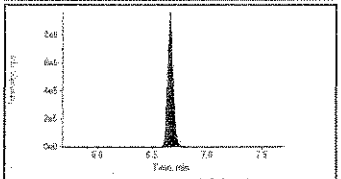

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

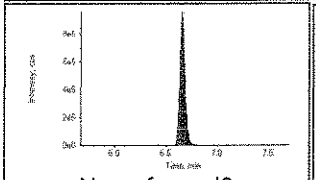

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

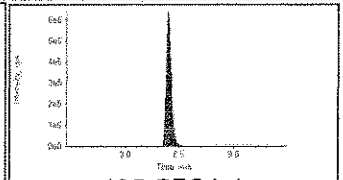

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

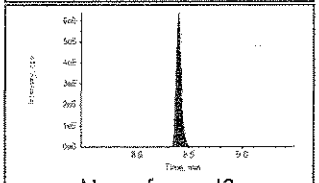

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

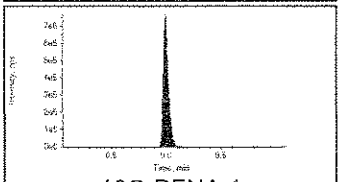

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

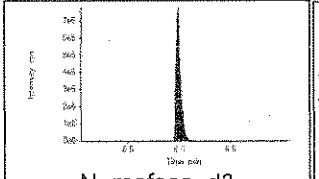

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

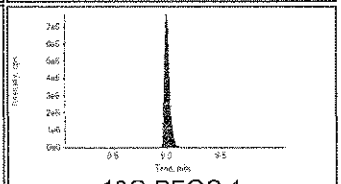

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

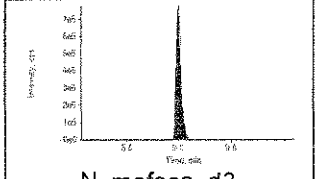

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

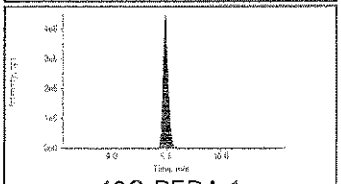

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

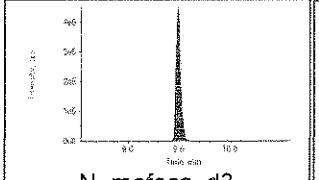

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

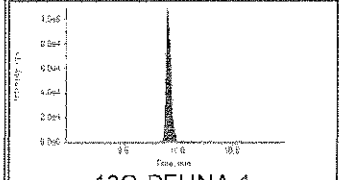

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

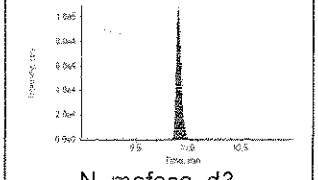

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

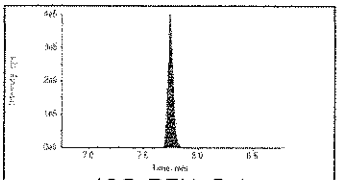

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

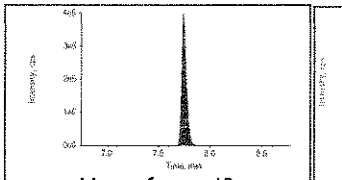

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

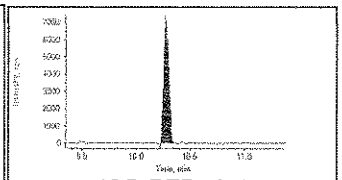

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



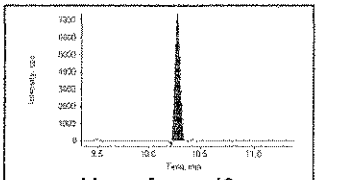
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



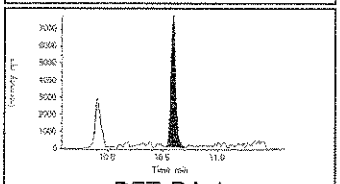
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



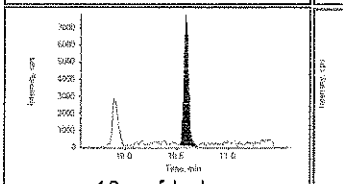
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



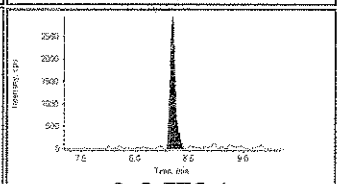
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



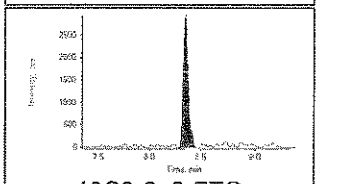
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



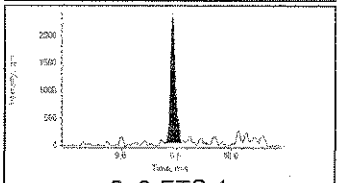
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



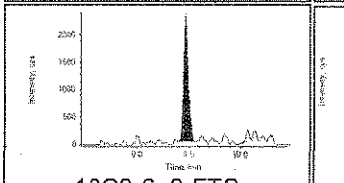
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



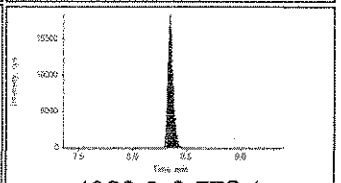
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



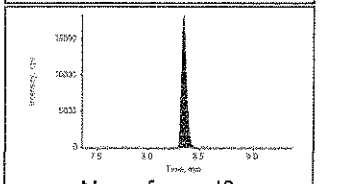
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

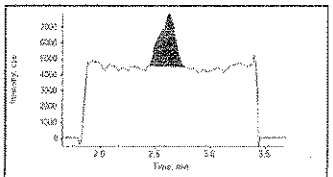


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

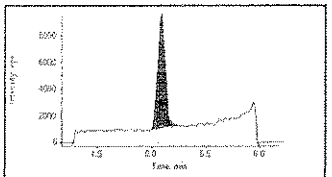


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

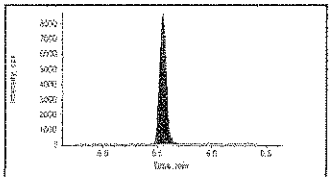
Ion Ratio Confirmation



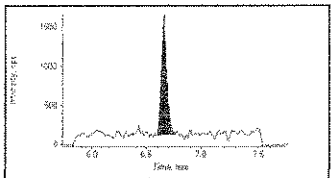
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



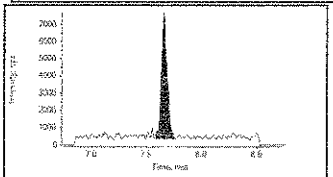
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



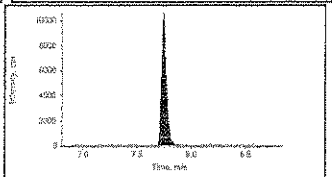
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



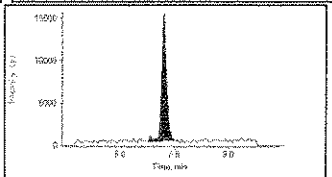
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



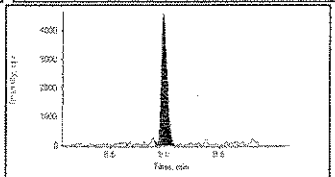
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



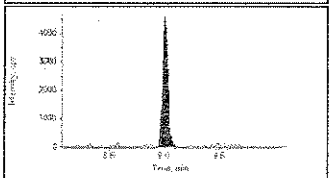
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



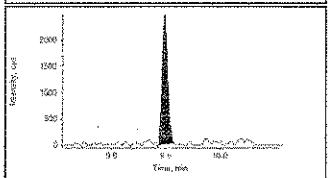
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



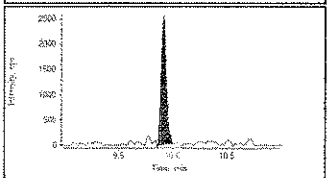
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



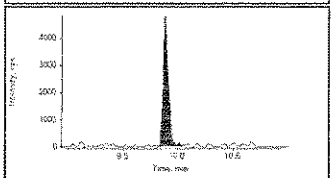
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



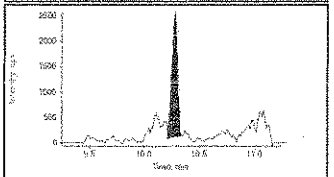
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



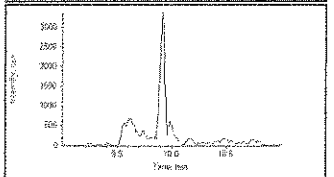
Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



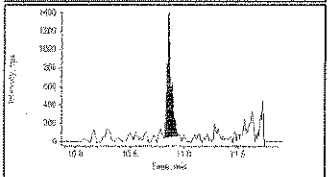
Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



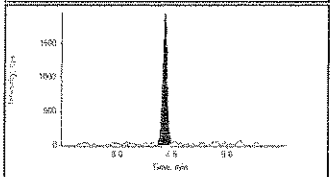
Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



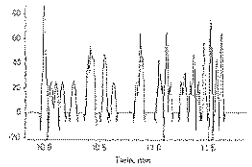
Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



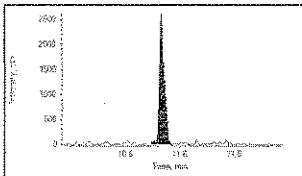
Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



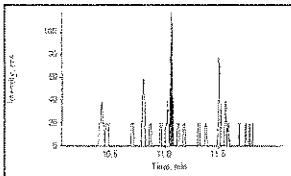
PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



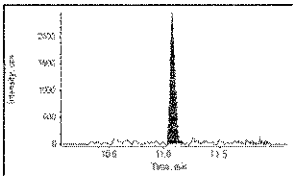
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



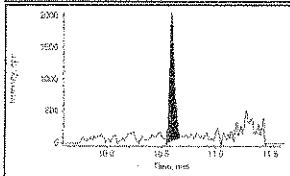
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



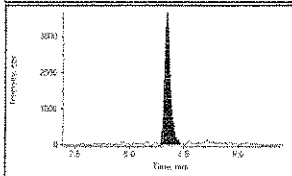
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



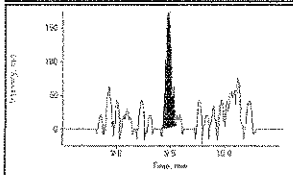
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1011.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 0.25ppb	Injection Vial	6
Acquisition Date	3/17/2016 7:17:43 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35D	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.61 (2.60)	13c_pfba	3246426	120597	0.25	0.2410	97	No
Pfpea 1	5.10 (5.13)	13c_pfhxa	3588776	116388	0.25	0.2460	99	No
Pfbs 1	5.55 (5.54)	18o-pfhs	1392117	236982	0.25	0.2460	98	No
Pfhxa 1	6.67 (6.68)	13c_pfhxa	3588776	168104	0.25	0.2490	100	No
Pfhpa 1	7.67 (7.63)	13c_pfhxa	3588776	167579	0.25	0.2390	96	No
Pfhxs 1	7.75 (7.72)	18o-pfhs	1392117	207294	0.25	0.2650	106	No
Pfoa 1	8.40 (8.36)	13c-pfoa	2374786	67530	0.25	0.2540	102	No
Pfna 1	8.99 (8.96)	13c-pfna	2775315	125068	0.25	0.2440	98	No
Pfos 1	9.00 (9.00)	13c-pfos	2816679	126144	0.25	0.2530	101	No
Pfda 1	9.48 (9.45)	13c-pfda	1561576	79060	0.25	0.2530	101	No
Pfuna 1	9.90 (9.87)	13c-pfuna	393298	52757	0.25	0.2360	94	No
Pfds 1	9.88 (9.85)	13c-pfos	2816679	143791	0.25	0.2600	104	No
Pfdoa 1	10.30 (10.30)	13c-pfdoda	24436	80212	0.25	0.2630	105	No
Fosa 1	10.00 (10.00)	d5-NEtFOSA	667018	132322	0.25	0.2370	95	No
Pfteda 1	10.90 (10.90)	13c-pfdoda	24436	30896	0.25	0.2790	112	No
PFHpS 1	8.43 (8.40)	18o-pfhs	1392117	40562	0.25	0.2590	104	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1284574	57485	0.25	0.2370	95	No

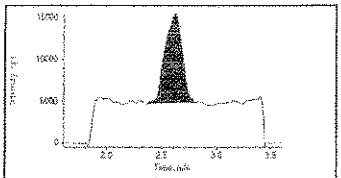
MAY 2 2016

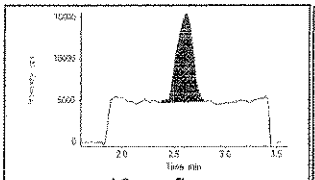
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1284574	22363	0.25	0.2500	100	No
NEtFOSE 1	11.10 (11.10)	d9-EtFOSE	1285774	77965	0.25	0.2680	107	No
NEtFOSA 1	11.10 (11.00)	d5-NEtFOSA	667018	29477	0.25	0.2470	99	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	538054	1285774	5.00	4.6820	94	No
d5-NEtFOSA 1	11.10 (11.10)	N_mefosa_d3	538054	667018	5.00	4.8420	97	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	538054	1284574	5.00	5.0430	101	No
13C_PFBA 1	2.60 (2.60)	N_mefosa_d3	538054	3246426	5.00	4.7910	96	No
13C_PFHXA 1	6.66 (6.68)	N_mefosa_d3	538054	3588776	5.00	4.8570	97	No
13C-PFOA 1	8.40 (8.45)	N_mefosa_d3	538054	2374786	5.00	4.9600	99	No
13C-PFNA 1	8.99 (9.05)	N_mefosa_d3	538054	2775315	5.00	5.2800	106	No
13C-PFOS 1	9.00 (9.05)	N_mefosa_d3	538054	2816679	5.00	5.0930	102	No
13C-PFDA 1	9.48 (9.55)	N_mefosa_d3	538054	1561576	5.00	5.0970	102	No
13C-PFUNA 1	9.90 (9.96)	N_mefosa_d3	538054	393298	5.00	5.1770	104	No
18O-PFHxS 1	7.75 (7.75)	N_mefosa_d3	538054	1392117	5.00	4.8080	96	No
13C-PFDoA 1	10.30 (10.30)	N_mefosa_d3	538054	24436	5.00	4.7920	96	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	24436	70740	0.25	0.2710	109	No
6_2-FTS 1	8.35 (8.35)	13C2-6_2-FTS	76169	26766	0.25	0.2330	93	No
8_2-FTS 1	9.46 (9.45)	13C2-6_2-FTS	76169	24020	0.25	0.2350	94	No
13C2-6_2-FTS 1	8.35 (8.36)	N_mefosa_d3	538054	76169	5.00	5.1240	102	No

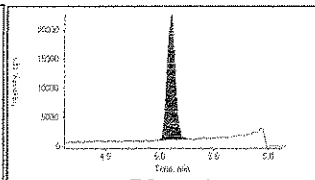
IRC Summary

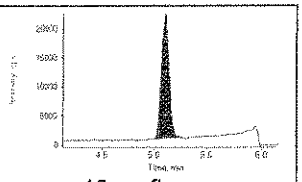
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.62 (2.66)	113839	No	0.94
Pfpea 2	5.10 (5.18)	114248	No	0.98
Pfbs 2	5.55 (5.63)	102173	No	0.43
Pfhxa 2	6.67 (6.73)	15296	No	0.09
Pfhpa 2	7.67 (7.71)	67195	No	0.40
Pfhxs 2	7.75 (7.84)	78288	No	0.38
Pfoa 2	8.40 (8.50)	126619	No	1.88
Pfna 2	8.99 (9.10)	41933	No	0.34
Pfos 2	8.99 (9.00)	44006	No	0.35
Pfda 2	9.48 (9.48)	22727	No	0.29
Pfuna 2	9.90 (9.91)	23126	No	0.44
Pfds 2	9.89 (9.88)	47100	No	0.33
Pfdoa 2	10.30 (10.20)	27723	No	0.35
Fosa 2	10.00 (10.00)	2319	No	0.02
Pfteda 2	10.90 (10.90)	11758	No	0.38
PFHpS 2	8.43 (8.53)	17296	No	0.43
NMeFOSE 2	10.80 (10.80)	442	No	0.01
NMeFOSA 2	10.80 (10.80)	18615	No	0.83
NEtFOSE 2	11.00 (11.10)	254	No	0.00
NEtFOSA 2	11.10 (11.10)	20007	No	0.68
PFTrDA 2	10.60 (10.60)	20976	No	0.30
6_2-FTS 2	8.35 (8.39)	35562	No	1.33
8_2-FTS 2	9.46 (9.50)	2190	No	0.09

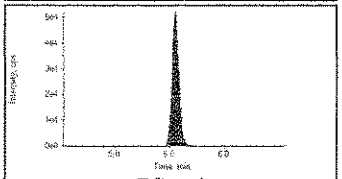
Quantitative Peak Review PFC 0.25ppb 15-OLC-02-35D

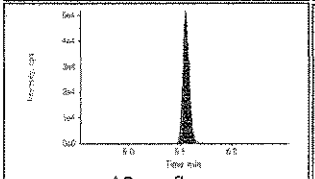

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

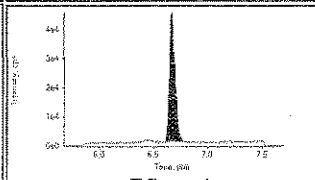

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

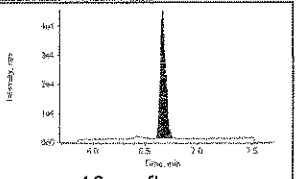

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

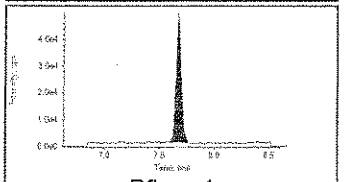

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

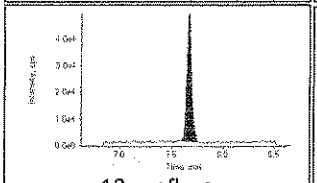

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

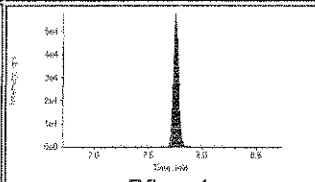

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

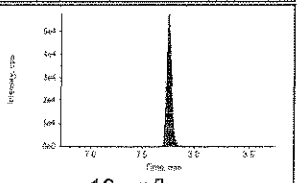

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

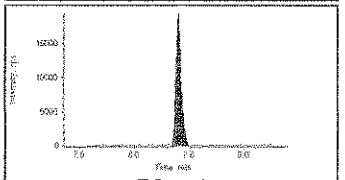

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

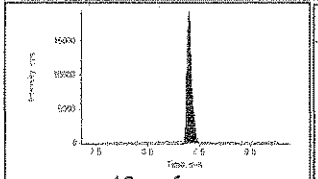

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

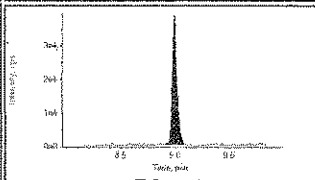

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

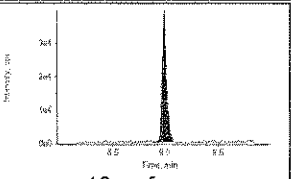

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

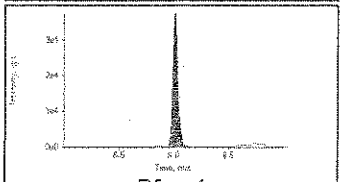

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

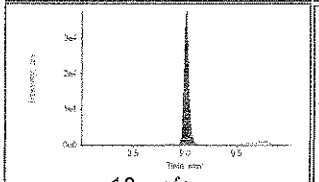

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

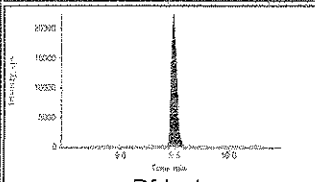

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

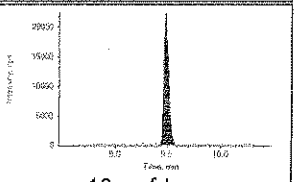

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

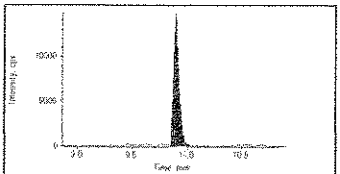

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

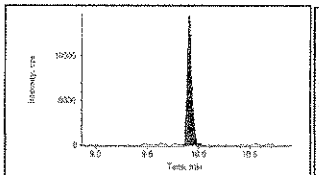

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

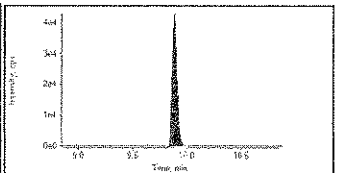

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

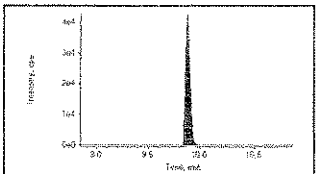

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

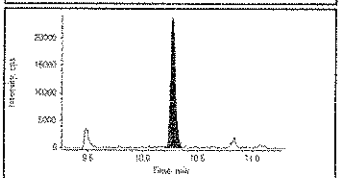

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

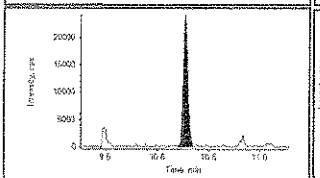

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

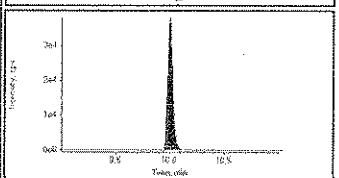

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

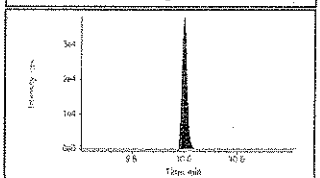

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

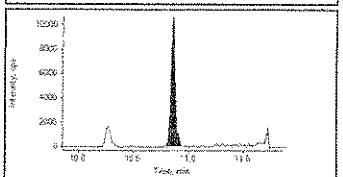

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

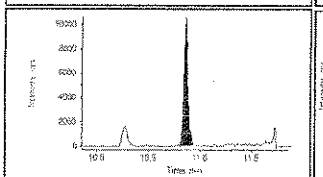

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

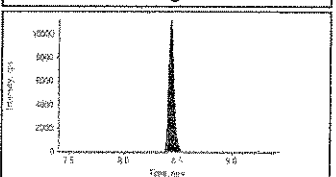

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

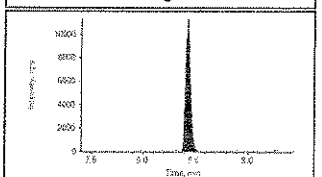

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

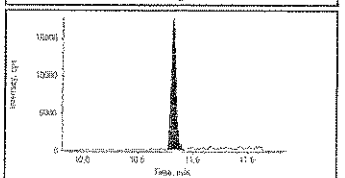

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

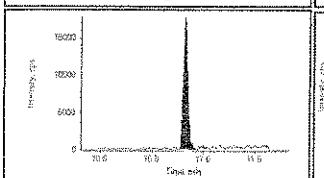

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

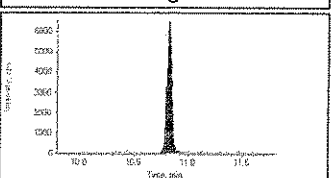

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

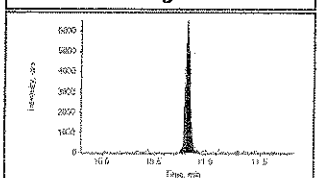

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

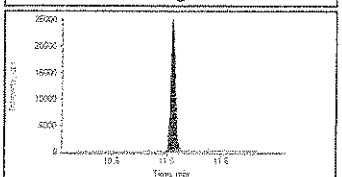

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

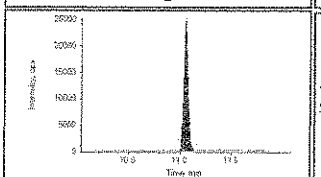

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

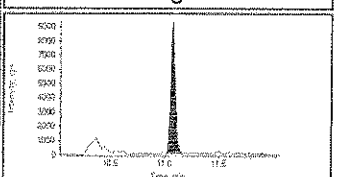

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

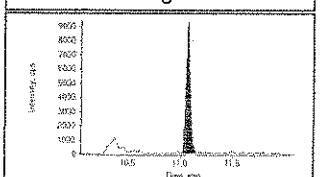

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

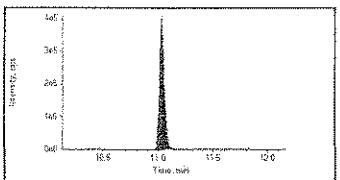

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

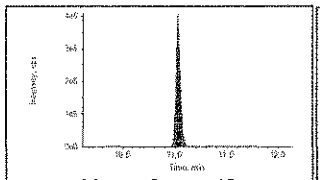

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

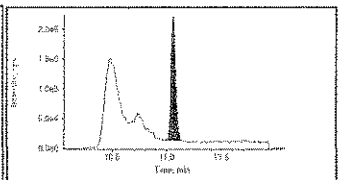

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

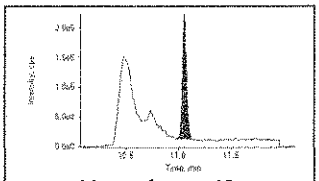

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

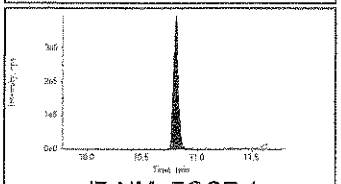

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

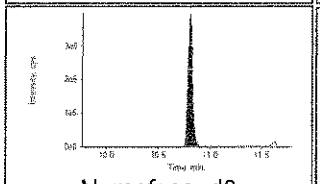

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

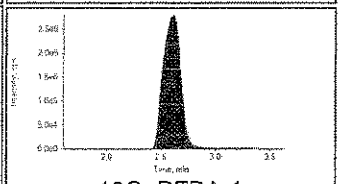

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

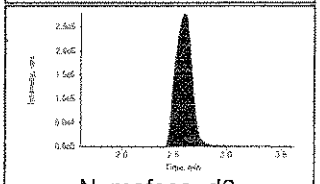

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

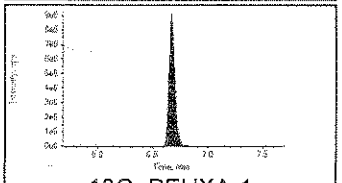

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

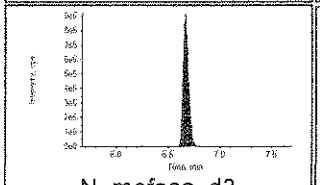

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

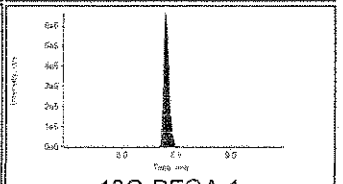

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

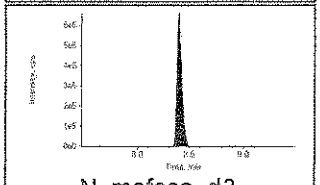

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

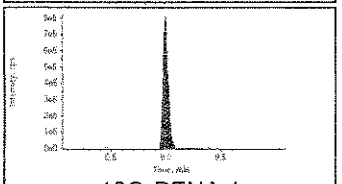

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

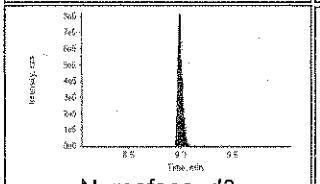

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

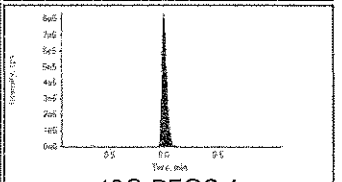

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

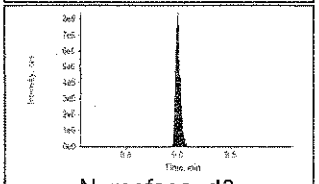

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

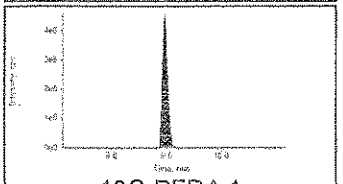

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

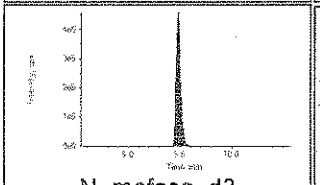

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

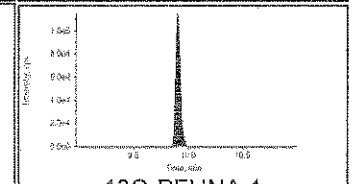

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

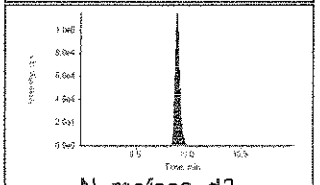

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

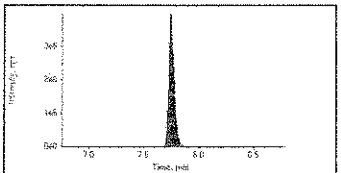
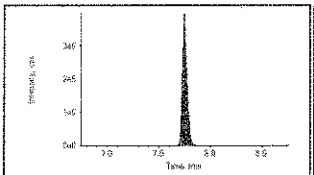
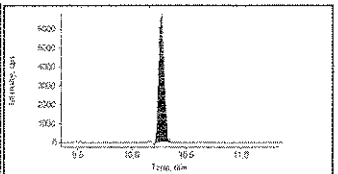
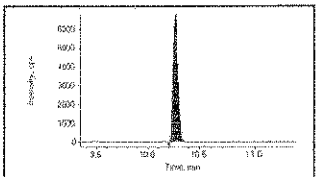
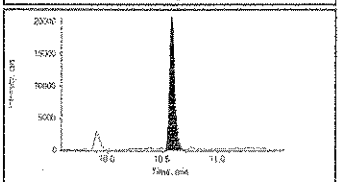
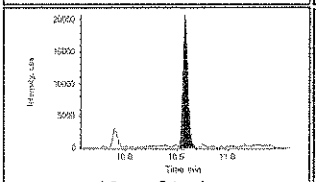
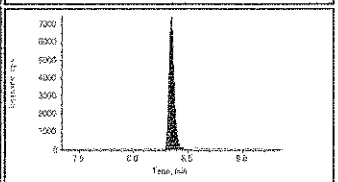
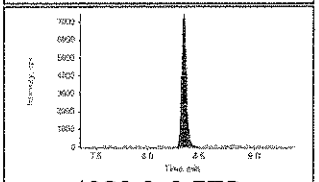
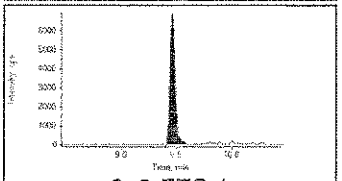
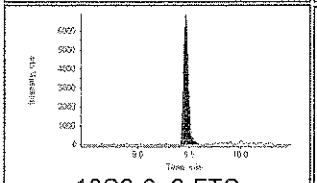
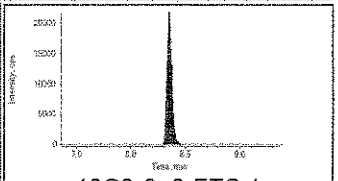
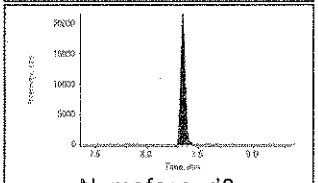

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

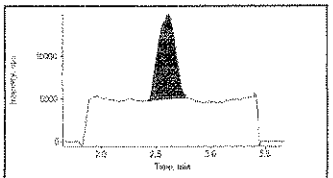

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

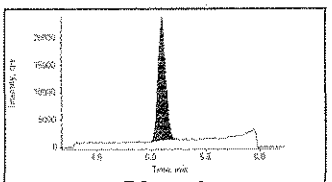

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

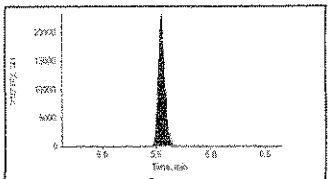

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

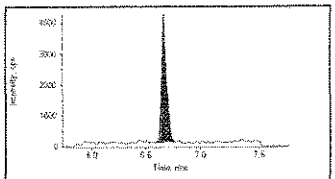
 18O-PFHxS 1 403.000/103.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFDoA 1 615.000/570.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak
 PFTrDA 1 663.000/619.000 Da □ Baseline □ Missed □ Wrong Peak	 13c-pfdoda 615.000/570.000 Da □ Baseline □ Missed □ Wrong Peak	 6_2-FTS 1 427.000/407.000 Da □ Baseline □ Missed □ Wrong Peak	 13C2-6_2-FTS 429.500/409.000 Da □ Baseline □ Missed □ Wrong Peak
 8_2-FTS 1 527.200/507.100 Da □ Baseline □ Missed □ Wrong Peak	 13C2-6_2-FTS 429.500/409.000 Da □ Baseline □ Missed □ Wrong Peak	 13C2-6_2-FTS 1 429.500/409.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak

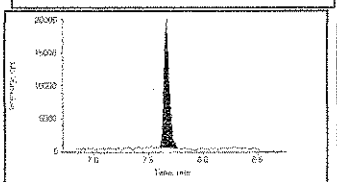
Ion Ratio Confirmation

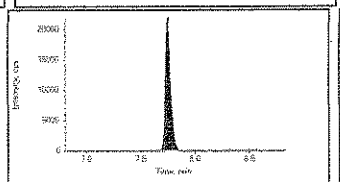

Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

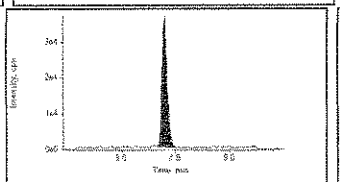

Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

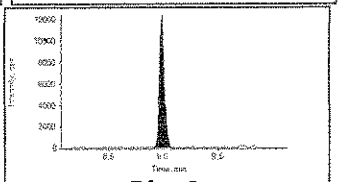

Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

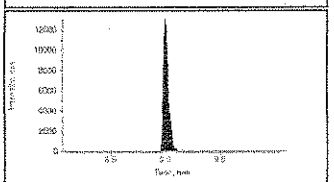

Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

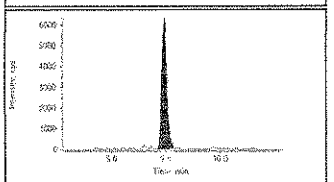

Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

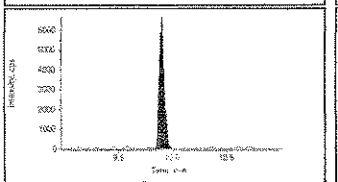

Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

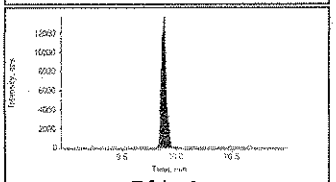

Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

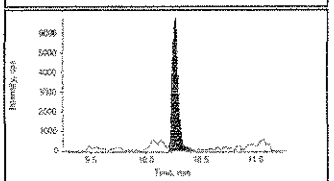

Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

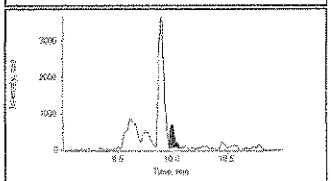

Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

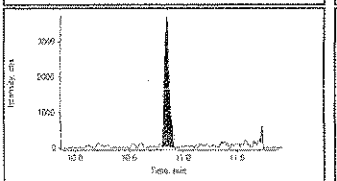

Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

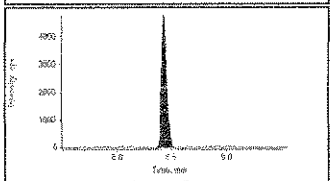

Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

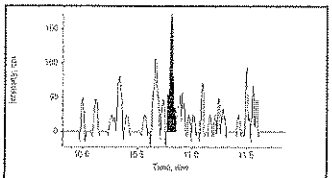

Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

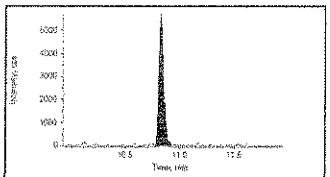

Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

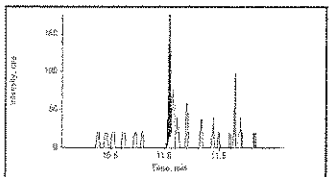

PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



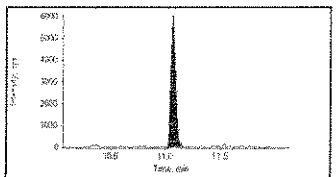
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



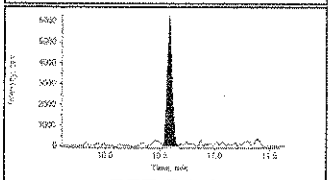
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



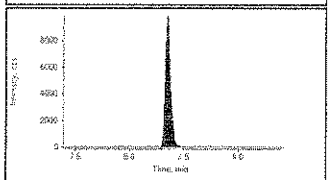
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



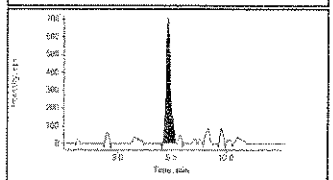
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1012.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 0.50ppb	Injection Vial	7
Acquisition Date	3/17/2016 7:36:04 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35E	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.59 (2.60)	13c_pfba	2968939	230166	0.50	0.4800	96	No
Pfpea 1	5.03 (5.13)	13c_pfhxa	3483729	227336	0.50	0.4950	99	No
Pfbs 1	5.49 (5.54)	18o-pfhs	1429531	482643	0.50	0.4870	98	No
Pfhxa 1	6.62 (6.68)	13c_pfhxa	3483729	322736	0.50	0.4930	99	No
Pfhpa 1	7.64 (7.63)	13c_pfhxa	3483729	328920	0.50	0.4840	97	No
Pfhxs 1	7.72 (7.72)	18o-pfhs	1429531	393733	0.50	0.4900	98	No
Pfoa 1	8.37 (8.36)	13c-pfoa	2264015	124308	0.50	0.4900	98	No
Pfna 1	8.96 (8.96)	13c-pfna	2450366	227183	0.50	0.5020	100	No
Pfos 1	8.97 (9.00)	13c-pfos	2673063	229441	0.50	0.4850	97	No
Pfda 1	9.45 (9.45)	13c-pfda	1470034	143345	0.50	0.4870	98	No
Pfuna 1	9.87 (9.87)	13c-pfuna	353706	99476	0.50	0.4950	99	No
Pfds 1	9.85 (9.85)	13c-pfos	2673063	248456	0.50	0.4730	95	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	24916	145579	0.50	0.4680	94	No
Fosa 1	9.97 (10.00)	d5-NEtFOSA	626160	256763	0.50	0.4900	98	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	24916	51583	0.50	0.4570	92	No
PFHpS 1	8.41 (8.40)	18o-pfhs	1429531	78190	0.50	0.4860	97	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1150767	103851	0.50	0.4780	96	No

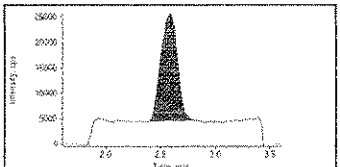
MAR 22 2016

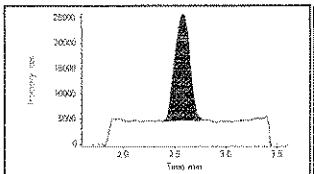
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1150767	39338	0.50	0.4910	98	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1233285	140738	0.50	0.5040	101	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	626160	56105	0.50	0.5020	100	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	487421	1233285	5.00	4.9570	99	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa_d3	487421	626160	5.00	5.0170	100	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	487421	1150767	5.00	4.9870	100	No
13C_PFBA 1	2.57 (2.60)	N_mefosa_d3	487421	2968939	5.00	4.8370	97	No
13C_PFHXA 1	6.62 (6.68)	N_mefosa_d3	487421	3483729	5.00	5.2050	104	No
13C-PFOA 1	8.37 (8.43)	N_mefosa_d3	487421	2264015	5.00	5.2200	104	No
13C-PFNA 1	8.96 (9.05)	N_mefosa_d3	487421	2450366	5.00	5.1460	103	No
13C-PFOS 1	8.97 (9.03)	N_mefosa_d3	487421	2673063	5.00	5.3360	107	No
13C-PFDA 1	9.45 (9.52)	N_mefosa_d3	487421	1470034	5.00	5.2960	106	No
13C-PFUNA 1	9.87 (9.93)	N_mefosa_d3	487421	353706	5.00	5.1390	103	No
18O-PFHxS 1	7.72 (7.75)	N_mefosa_d3	487421	1429531	5.00	5.4500	109	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa_d3	487421	24916	5.00	5.3940	108	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	24916	110223	0.50	0.4150	83	No
6_2-FTS 1	8.32 (8.35)	13C2-6_2-FTS	67584	49983	0.50	0.4900	98	No
8_2-FTS 1	9.43 (9.45)	13C2-6_2-FTS	67584	44144	0.50	0.4700	94	No
13C2-6_2-FTS 1	8.32 (8.36)	N_mefosa_d3	487421	67584	5.00	5.0180	100	No

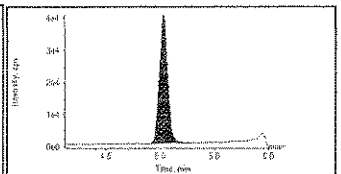
IRC Summary

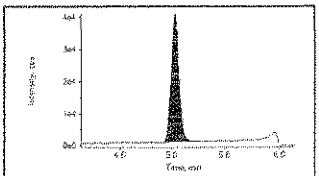
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.58 (2.66)	230061	No	1.00
Pfpea 2	5.03 (5.18)	227860	No	1.00
Pfbs 2	5.49 (5.63)	203283	No	0.42
Pfhxa 2	6.62 (6.73)	27519	No	0.09
Pfhpa 2	7.63 (7.65)	131058	No	0.40
Pfhxs 2	7.72 (7.81)	153942	No	0.39
Pfoa 2	8.37 (8.47)	220415	No	1.77
Pfna 2	8.97 (9.07)	71626	No	0.32
Pfos 2	8.97 (8.97)	80067	No	0.35
Pfda 2	9.45 (9.45)	46288	No	0.32
Pfuna 2	9.87 (9.88)	41662	No	0.42
Pfds 2	9.85 (9.84)	83427	No	0.34
Pfdoa 2	10.20 (10.20)	49759	No	0.34
Fosa 2	9.97 (10.00)	6892	No	0.03
Pfteda 2	10.80 (10.90)	20237	No	0.39
PFHpS 2	8.40 (8.49)	31878	No	0.41
NMeFOSE 2	10.80 (10.80)	975	No	0.01
NMeFOSA 2	10.80 (10.80)	38201	No	0.97
NEtFOSE 2	11.00 (11.10)	590	No	0.00
NEtFOSA 2	11.00 (11.10)	37306	No	0.66
PFTrDA 2	10.60 (10.60)	38420	No	0.35
6_2-FTS 2	8.32 (8.39)	62378	No	1.25
8_2-FTS 2	9.43 (9.50)	4454	No	0.10

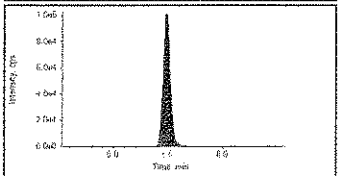
Quantitative Peak Review PFC 0.50ppb 15-OLC-02-35E

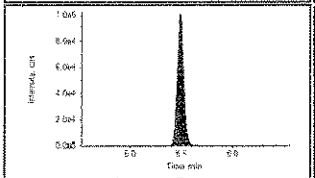

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

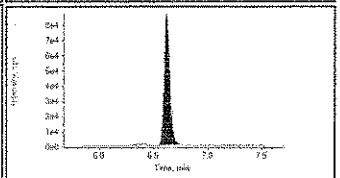

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

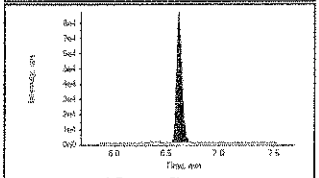

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

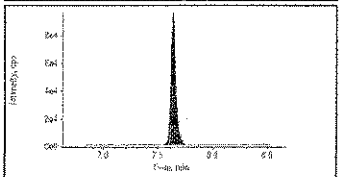

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

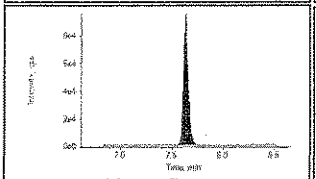

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

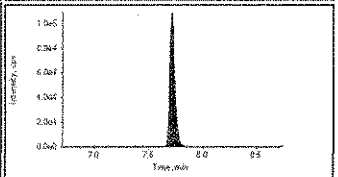

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

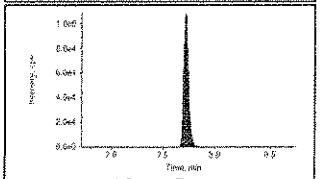

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

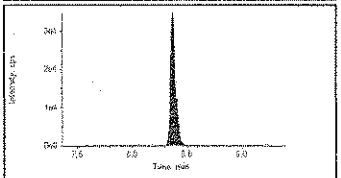

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

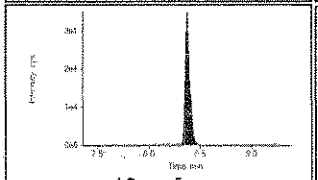

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

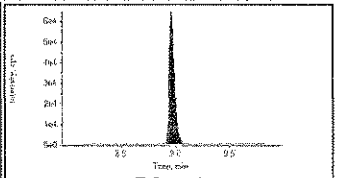

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

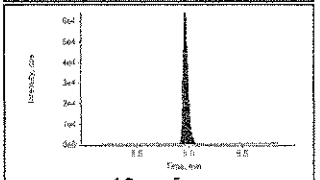

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

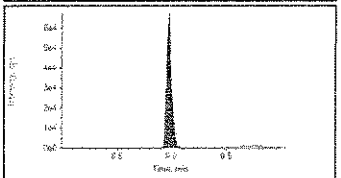

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

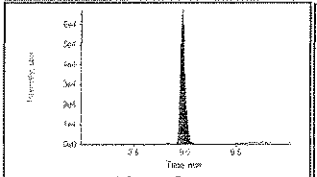

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

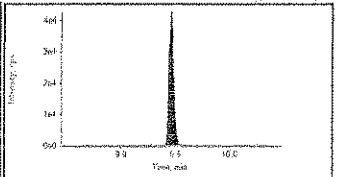

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

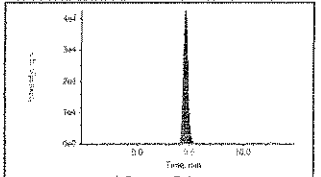

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

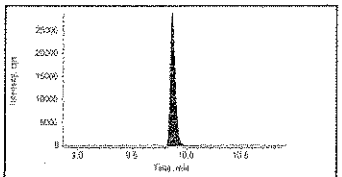

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

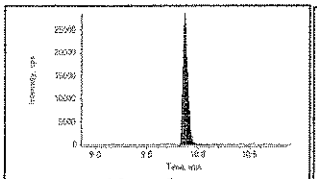

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

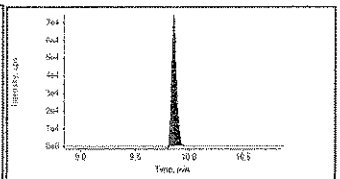

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

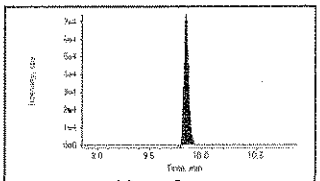

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

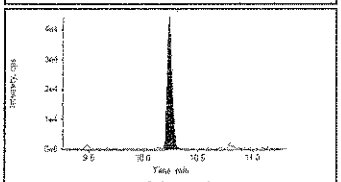

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

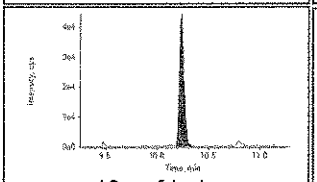

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

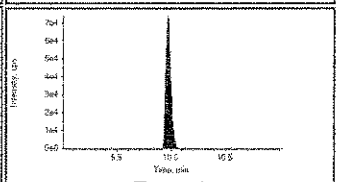

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

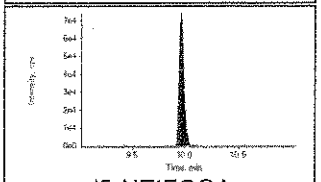

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

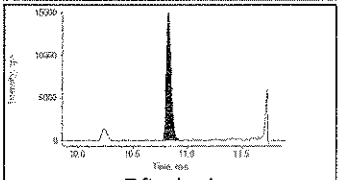

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

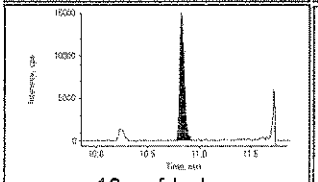

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

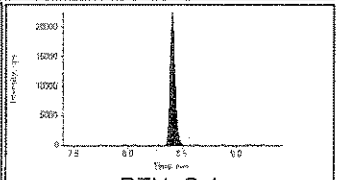

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

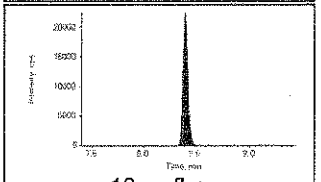

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

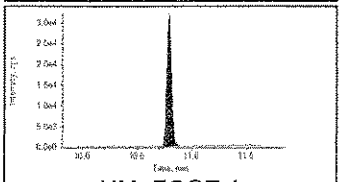

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

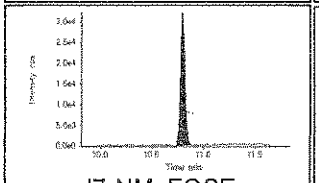

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

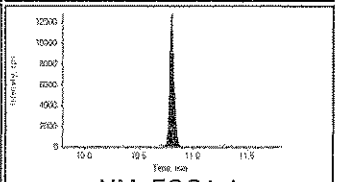

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

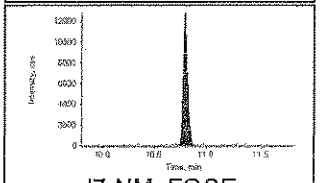

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak


18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

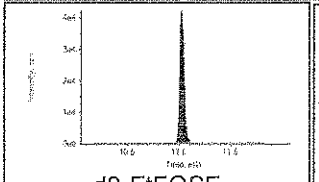

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

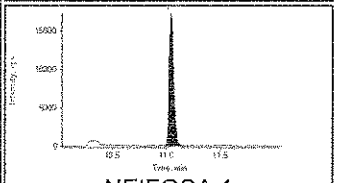

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

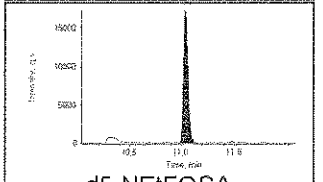

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

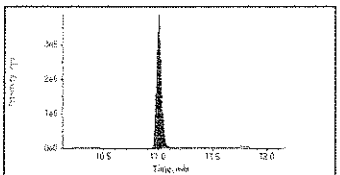

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

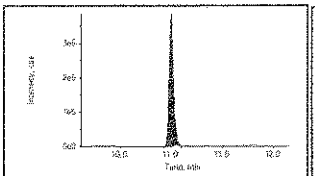

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

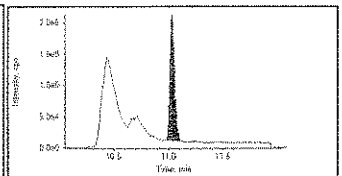

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

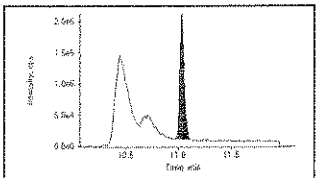

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

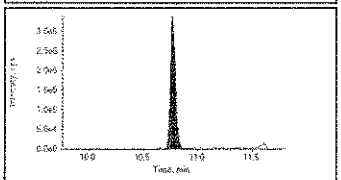

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

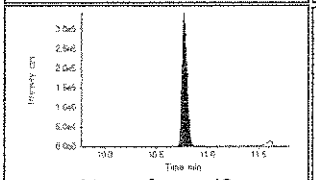

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

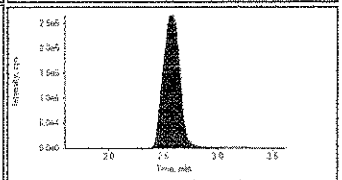

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

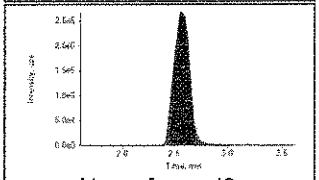

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

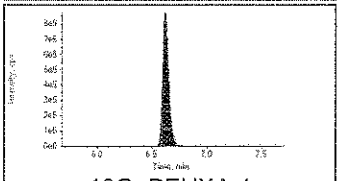

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

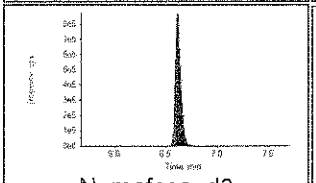

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

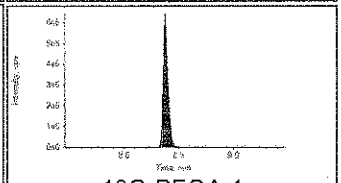

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

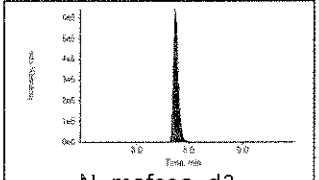

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

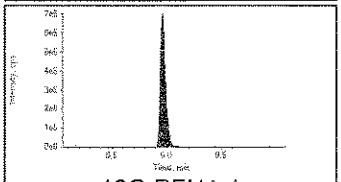

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

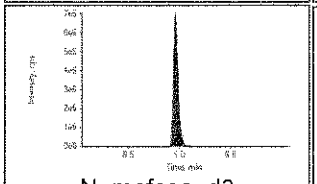

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

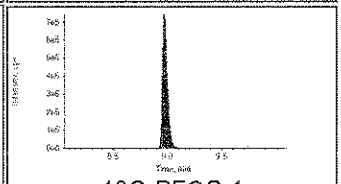

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

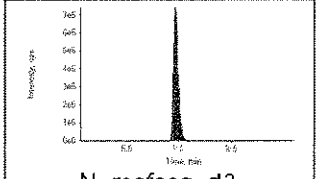

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

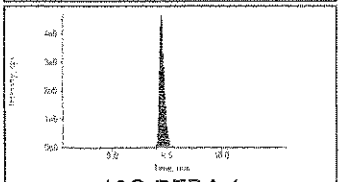

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

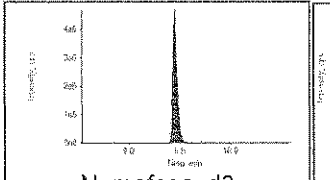

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

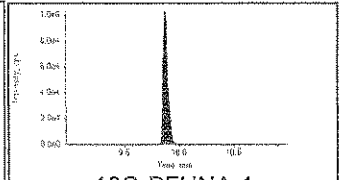

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

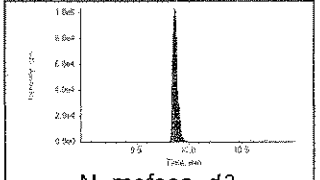

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

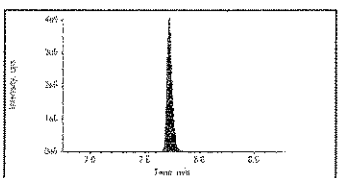

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

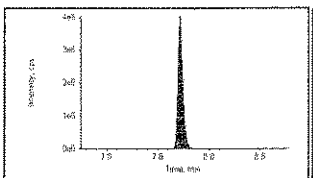

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

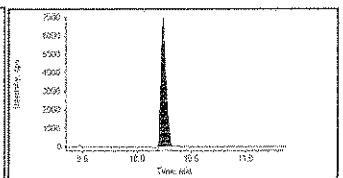

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

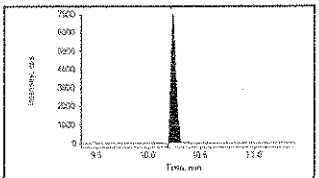

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

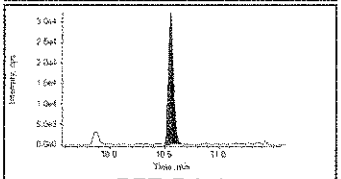

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

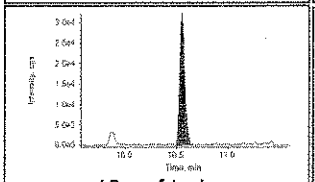

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

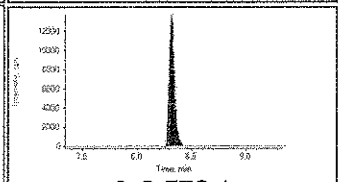

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

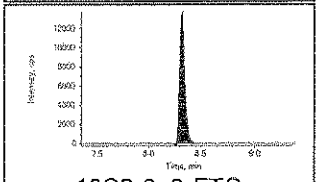

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

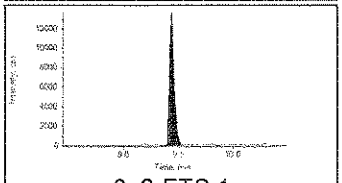

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

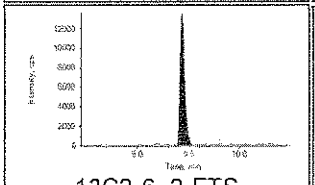

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

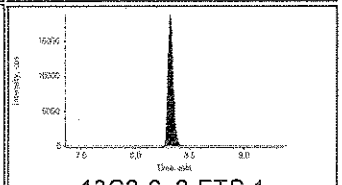

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

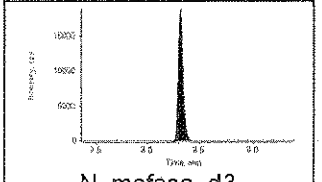

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

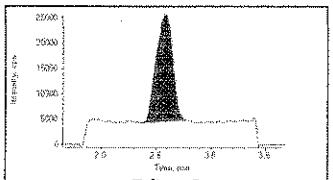

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

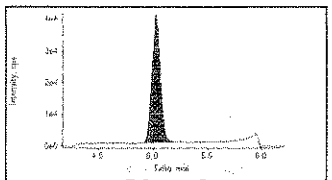

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

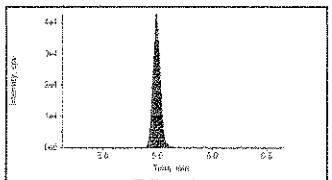
Ion Ratio Confirmation



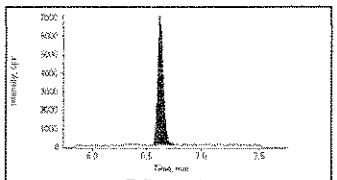
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



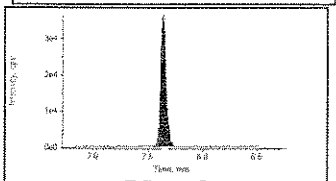
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



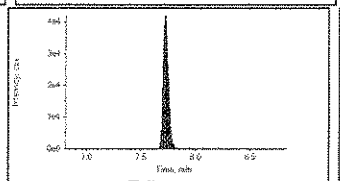
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



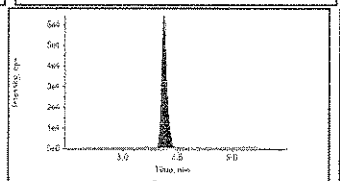
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



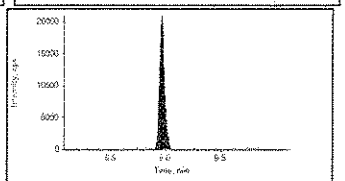
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



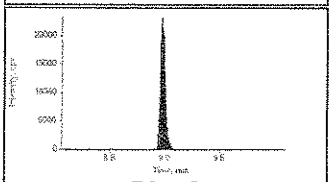
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



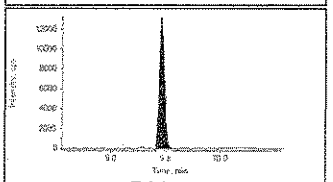
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



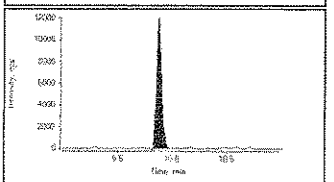
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



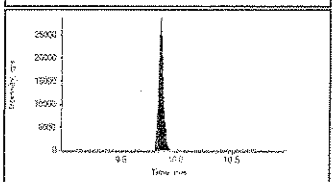
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



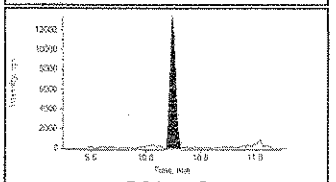
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



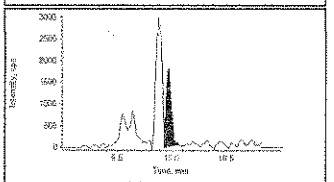
Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



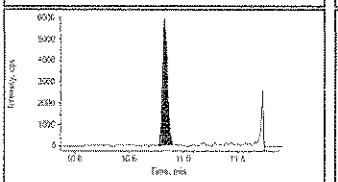
Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



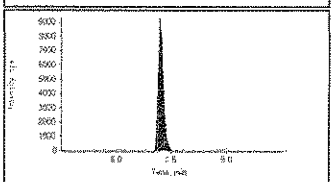
Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



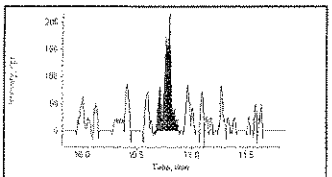
Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



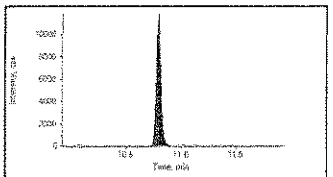
Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



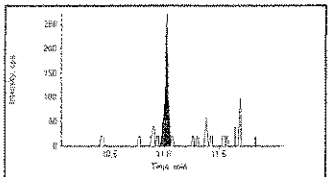
PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



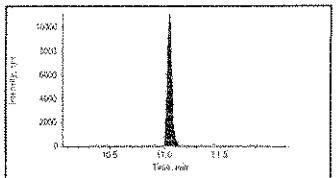
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



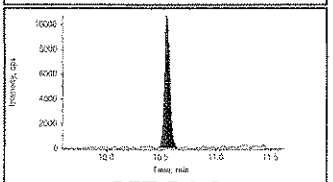
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



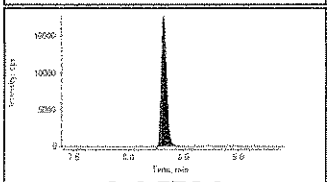
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



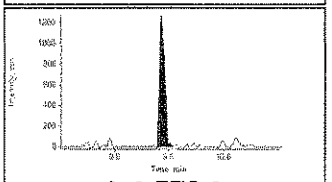
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1013.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 1.0ppb	Injection Vial	8
Acquisition Date	3/17/2016 7:54:23 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35F	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.60 (2.60)	13c_pfba	3299929	595877	1.00	1.0880	109	No
Pfpea 1	5.09 (5.13)	13c_pfhxa	3632091	524630	1.00	1.0960	110	No
Pfbs 1	5.54 (5.54)	18o-pfhs	1489216	1093918	1.00	1.0600	106	No
Pfhxa 1	6.64 (6.68)	13c_pfhxa	3632091	725743	1.00	1.0640	106	No
Pfhpa 1	7.63 (7.63)	13c_pfhxa	3632091	758423	1.00	1.0700	107	No
Pfhxs 1	7.72 (7.72)	18o-pfhs	1489216	869941	1.00	1.0380	104	No
Pfoa 1	8.37 (8.36)	13c-pfoa	2384598	278758	1.00	1.0440	104	No
Pfna 1	8.96 (8.96)	13c-pfna	2582708	522552	1.00	1.0950	109	No
Pfos 1	8.97 (9.00)	13c-pfos	2732736	524953	1.00	1.0860	109	No
Pfda 1	9.45 (9.45)	13c-pfda	1553121	315498	1.00	1.0150	102	No
Pfuna 1	9.87 (9.87)	13c-pfuna	388281	224524	1.00	1.0180	102	No
Pfds 1	9.85 (9.85)	13c-pfos	2732736	585781	1.00	1.0910	109	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	28528	310586	1.00	0.8720	87	No
Fosa 1	9.97 (10.00)	d5-NEtFOSA	650556	613194	1.00	1.1260	113	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	28528	124855	1.00	0.9670	97	No
PFHpS 1	8.40 (8.40)	18o-pfhs	1489216	176558	1.00	1.0540	105	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1181943	255423	1.00	1.1440	114	No

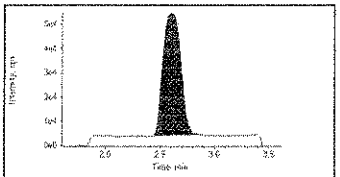
MAR 2 2 2016

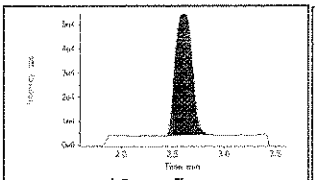
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1181943	93906	1.00	1.1420	114	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1299137	326678	1.00	1.1100	111	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	650556	129966	1.00	1.1190	112	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	502210	1299137	5.00	5.0680	101	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa_d3	502210	650556	5.00	5.0590	101	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	502210	1181943	5.00	4.9710	99	No
13C_PFBA 1	2.61 (2.60)	N_mefosa_d3	502210	3299929	5.00	5.2180	104	No
13C_PFHXA 1	6.64 (6.68)	N_mefosa_d3	502210	3632091	5.00	5.2660	105	No
13C-PFOA 1	8.37 (8.43)	N_mefosa_d3	502210	2384598	5.00	5.3360	107	No
13C-PFNA 1	8.96 (9.05)	N_mefosa_d3	502210	2582708	5.00	5.2650	105	No
13C-PFOS 1	8.97 (9.03)	N_mefosa_d3	502210	2732736	5.00	5.2940	106	No
13C-PFDA 1	9.45 (9.52)	N_mefosa_d3	502210	1553121	5.00	5.4310	109	No
13C-PFUNA 1	9.87 (9.93)	N_mefosa_d3	502210	388281	5.00	5.4750	110	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa_d3	502210	1489216	5.00	5.5110	110	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa_d3	502210	28528	5.00	5.9940	120	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	28528	278932	1.00	0.9160	92	No
6_2-FTS 1	8.32 (8.35)	13C2-6_2-FTS	67956	105932	1.00	1.0320	103	No
8_2-FTS 1	9.44 (9.45)	13C2-6_2-FTS	67956	101627	1.00	1.0640	106	No
13C2-6_2-FTS 1	8.32 (8.36)	N_mefosa_d3	502210	67956	5.00	4.8980	98	No

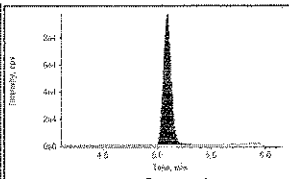
IRC Summary

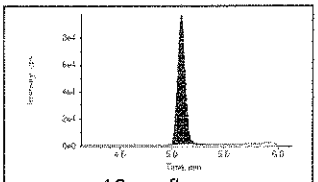
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.61 (2.66)	593026	No	1.00
Pfpea 2	5.09 (5.18)	528168	No	1.01
Pfbs 2	5.53 (5.63)	457952	No	0.42
Pfhxa 2	6.64 (6.73)	64623	No	0.09
Pfhpa 2	7.64 (7.68)	312198	No	0.41
Pfhxs 2	7.71 (7.81)	339606	No	0.39
Pfoa 2	8.37 (8.47)	533410	No	1.91
Pfna 2	8.96 (9.07)	159933	No	0.31
Pfos 2	8.97 (8.97)	181990	No	0.35
Pfda 2	9.45 (9.45)	91636	No	0.29
Pfuna 2	9.87 (9.88)	94013	No	0.42
Pfds 2	9.85 (9.84)	210069	No	0.36
Pfdoa 2	10.20 (10.20)	103260	No	0.33
Fosa 2	9.96 (10.00)	14471	No	0.02
Pfteda 2	10.80 (10.90)	45985	No	0.37
PFHpS 2	8.40 (8.49)	74271	No	0.42
NMeFOSE 2	10.80 (10.80)	1496	No	0.01
NMeFOSA 2	10.80 (10.80)	90070	No	0.96
NEtFOSE 2	11.00 (11.10)	1252	No	0.00
NEtFOSA 2	11.00 (11.10)	85936	No	0.66
PFTrDA 2	10.60 (10.60)	91370	No	0.33
6_2-FTS 2	8.32 (8.39)	137131	No	1.29
8_2-FTS 2	9.44 (9.50)	10803	No	0.11

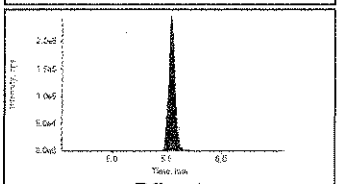
Quantitative Peak Review PFC 1.0ppb 15-OLC-02-35F

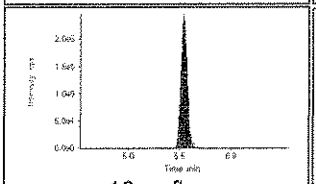

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

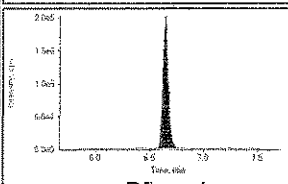

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

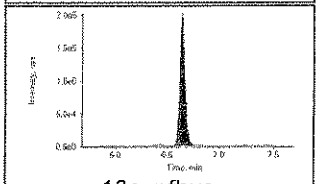

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

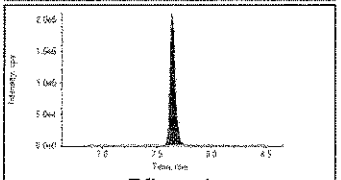

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

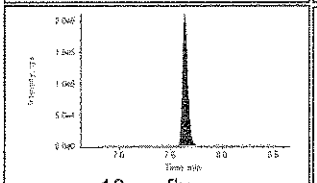

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

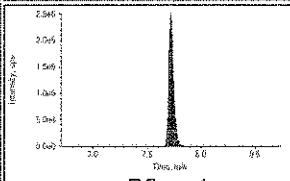

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

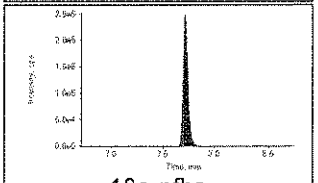

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

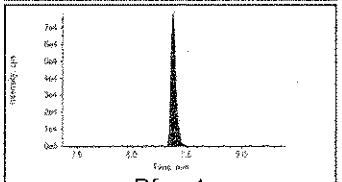

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

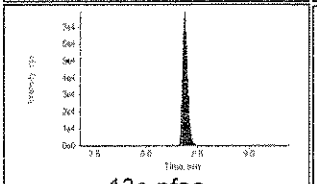

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

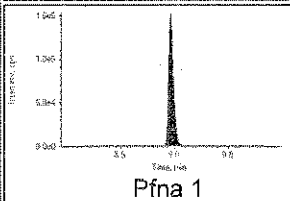

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

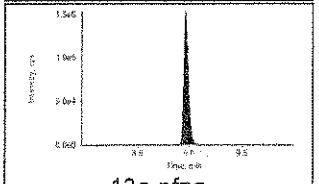

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

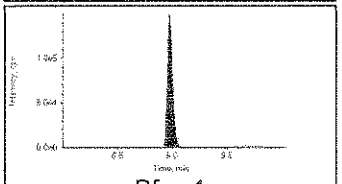

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

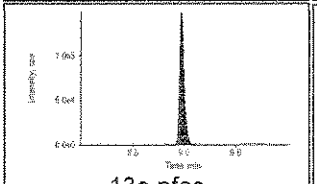

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

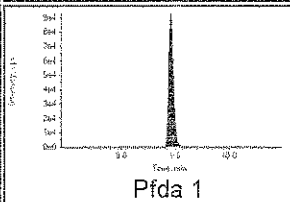

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

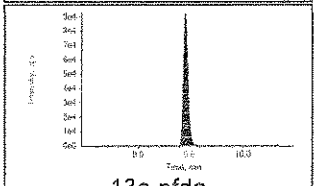

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

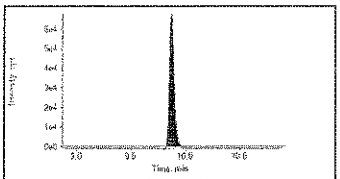

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

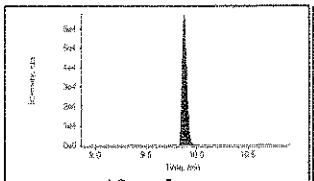

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

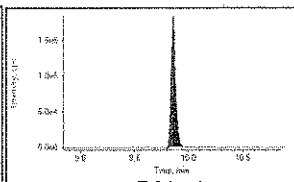

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

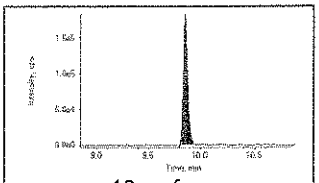

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

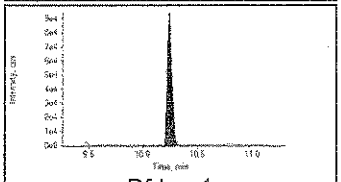

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

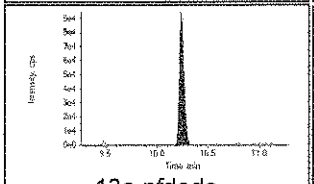

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

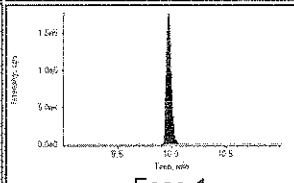

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

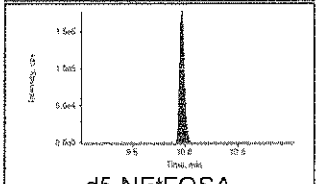

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

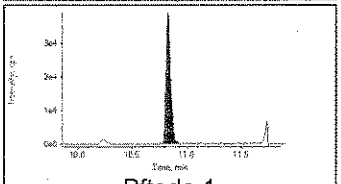

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

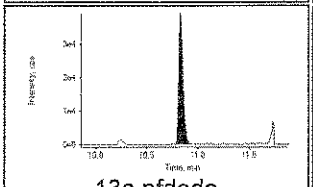

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

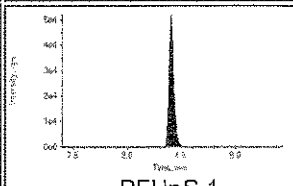

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

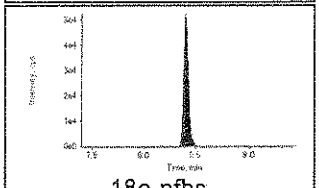

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

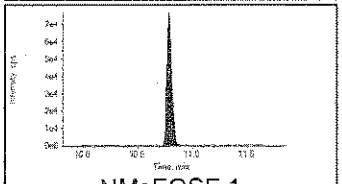

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

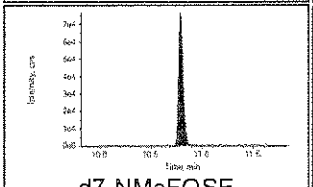

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

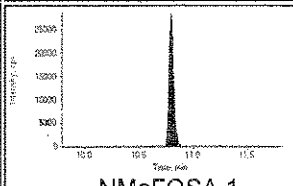

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

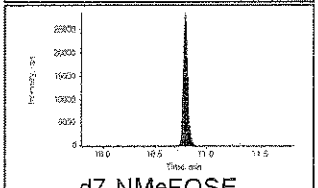

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

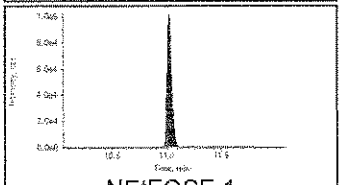

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

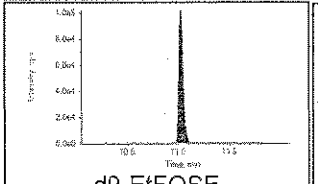

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

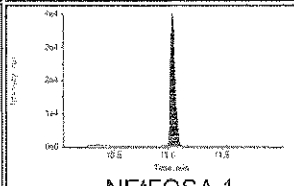

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

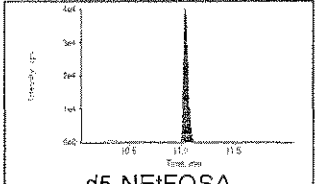

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

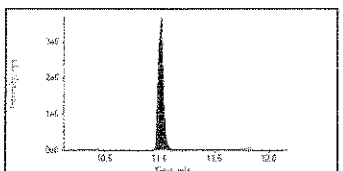

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

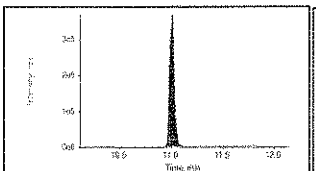

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

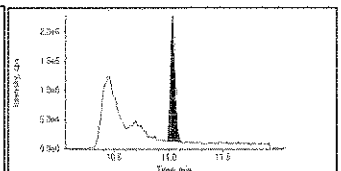

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

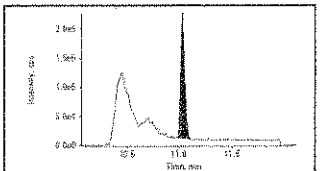

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

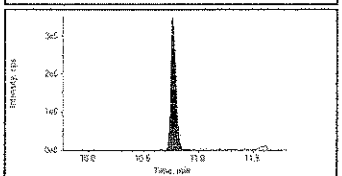

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

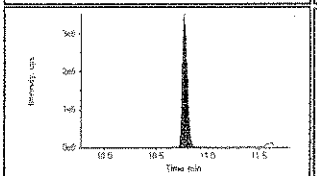

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

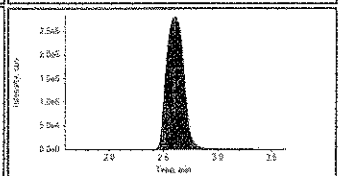

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

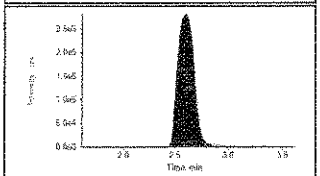

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

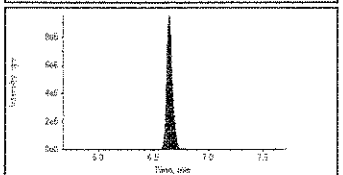

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

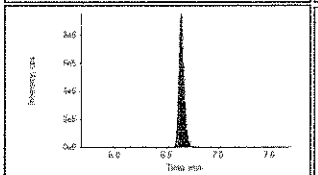

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

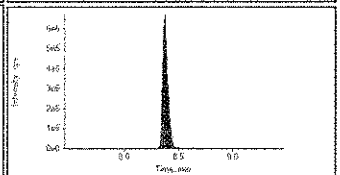

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

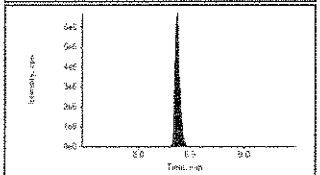

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

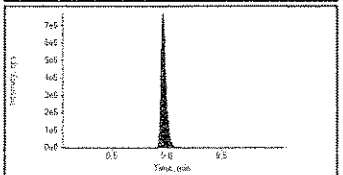

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

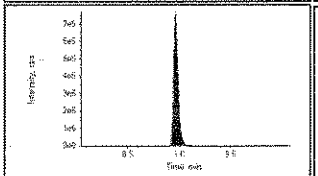

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

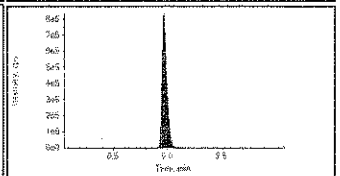

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

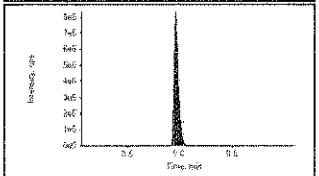

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

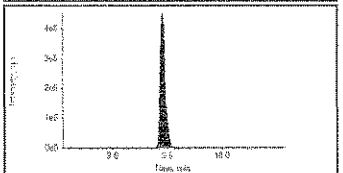

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

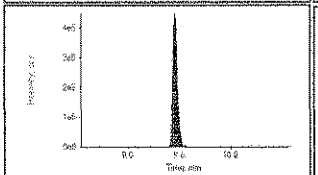

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

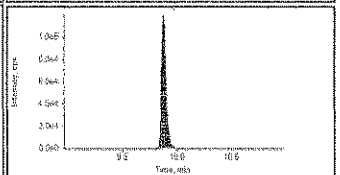

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

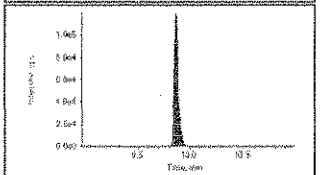

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

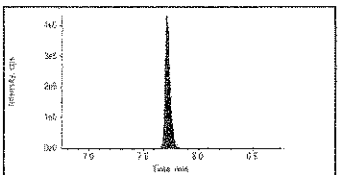

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

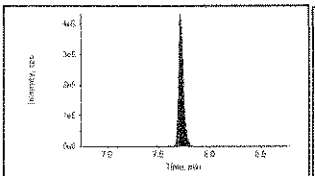

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

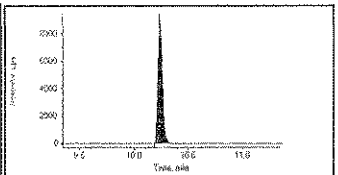

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

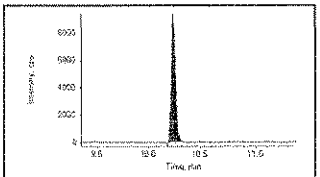

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

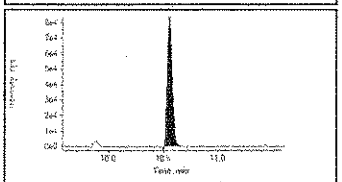

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

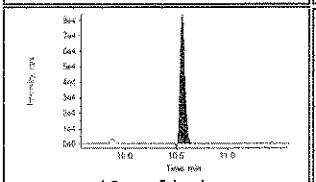

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

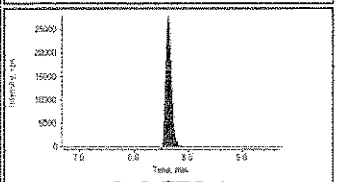

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

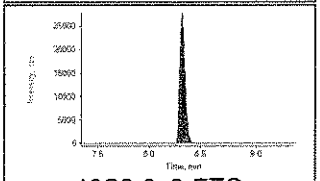

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

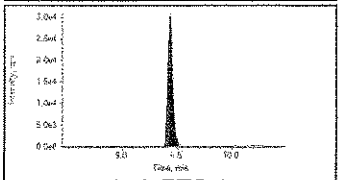

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

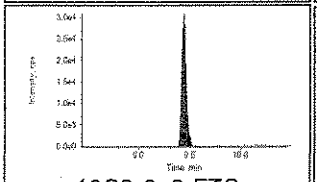

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

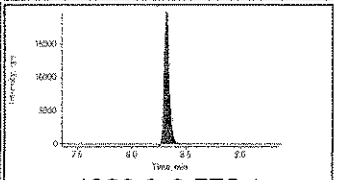

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

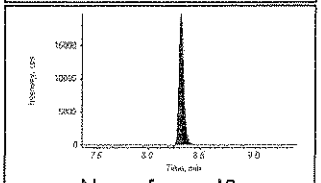

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

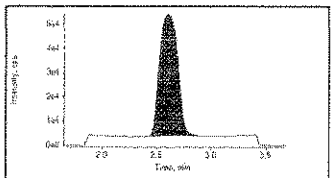

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

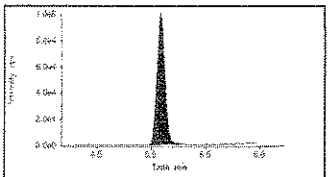

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

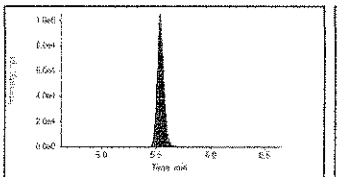
Ion Ratio Confirmation



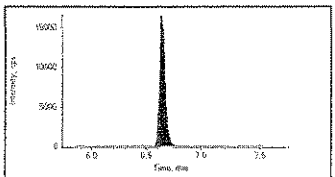
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



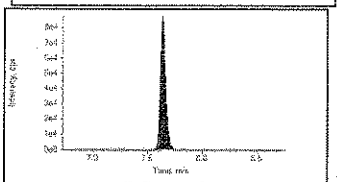
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



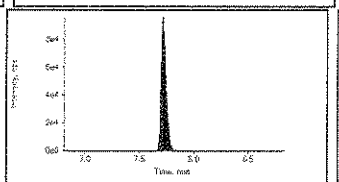
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



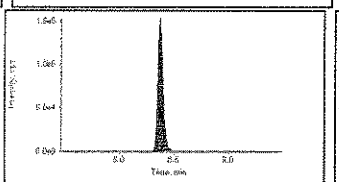
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



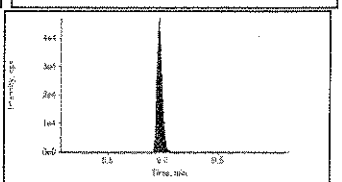
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



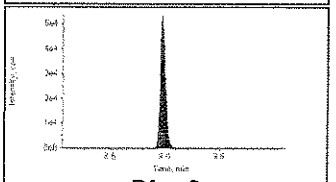
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



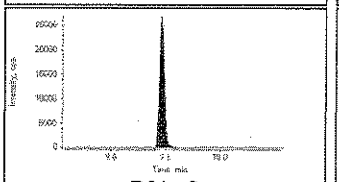
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



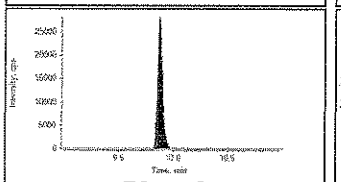
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



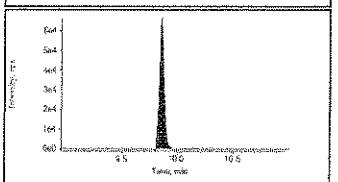
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



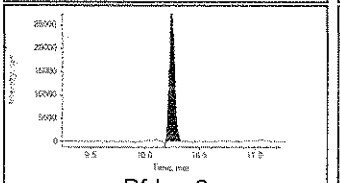
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



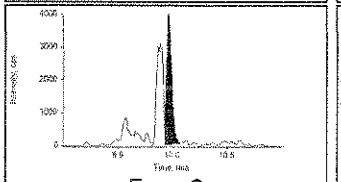
Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



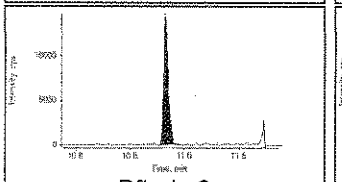
Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



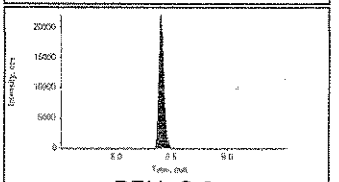
Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



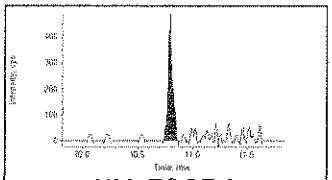
Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



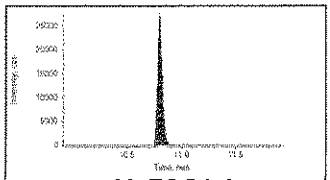
Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



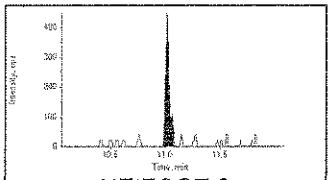
PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



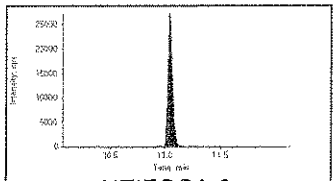
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



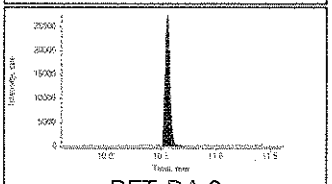
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



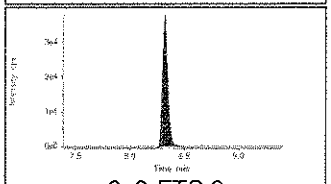
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



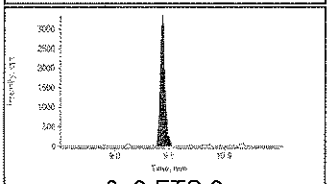
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1014.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 5.0ppb	Injection Vial	9
Acquisition Date	3/17/2016 8:12:40 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35G	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.60 (2.60)	13c_pfba	3309447	2728305	5.00	4.8860	98	No
Pfpea 1	5.08 (5.13)	13c_pfhxa	3699787	2375958	5.00	4.8740	98	No
Pfbs 1	5.53 (5.54)	18o-pfhs	1442618	4735561	5.00	4.7390	95	No
Pfhxa 1	6.63 (6.68)	13c_pfhxa	3699787	3266685	5.00	4.7000	94	No
Pfhpa 1	7.63 (7.63)	13c_pfhxa	3699787	3488841	5.00	4.8320	97	No
Pfhxs 1	7.71 (7.72)	18o-pfhs	1442618	3884768	5.00	4.7860	96	No
Pfoa 1	8.37 (8.36)	13c-pfoa	2428598	1215322	5.00	4.4680	89	No
Pfna 1	8.96 (8.96)	13c-pfna	2490174	2234357	5.00	4.8550	97	No
Pfos 1	8.97 (9.00)	13c-pfos	2665896	2294325	5.00	4.8640	97	No
Pfda 1	9.45 (9.45)	13c-pfda	1471272	1392321	5.00	4.7300	95	No
Pfuna 1	9.87 (9.87)	13c-pfuna	384936	963441	5.00	4.4050	88	No
Pfds 1	9.85 (9.85)	13c-pfos	2665896	2651233	5.00	5.0600	101	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	24723	1362223	5.00	4.4130	88	No
Fosa 1	9.97 (10.00)	d5-NEtFOSA	645938	2699156	5.00	4.9900	100	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	24723	579981	5.00	5.1830	104	No
PFHpS 1	8.40 (8.40)	18o-pfhs	1442618	792757	5.00	4.8850	98	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1241533	1170134	5.00	4.9890	100	No

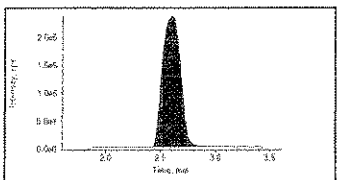
MAR 22 2016

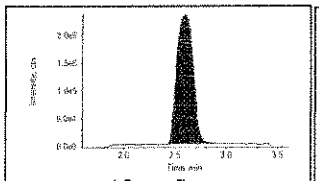
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1241533	427092	5.00	4.9450	99	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1309205	1315503	5.00	4.4370	89	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	645938	578858	5.00	5.0190	100	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	482544	1309205	5.00	5.3160	106	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa_d3	482544	645938	5.00	5.2280	105	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	482544	1241533	5.00	5.4340	109	No
13C_PFBA 1	2.59 (2.60)	N_mefosa_d3	482544	3309447	5.00	5.4460	109	No
13C_PFHXA 1	6.62 (6.68)	N_mefosa_d3	482544	3699787	5.00	5.5830	112	No
13C-PFOA 1	8.37 (8.43)	N_mefosa_d3	482544	2428598	5.00	5.6560	113	No
13C-PFNA 1	8.96 (9.05)	N_mefosa_d3	482544	2490174	5.00	5.2830	106	No
13C-PFOS 1	8.96 (9.03)	N_mefosa_d3	482544	2665896	5.00	5.3750	108	No
13C-PFDA 1	9.45 (9.52)	N_mefosa_d3	482544	1471272	5.00	5.3540	107	No
13C-PFUNA 1	9.87 (9.93)	N_mefosa_d3	482544	384936	5.00	5.6490	113	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa_d3	482544	1442618	5.00	5.5560	111	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa_d3	482544	24723	5.00	5.4070	108	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	24723	1226211	5.00	4.6490	93	No
6_2-FTS 1	8.31 (8.35)	13C2-6_2-FTS	68441	471178	5.00	4.5590	91	No
8_2-FTS 1	9.43 (9.45)	13C2-6_2-FTS	68441	455619	5.00	4.9630	99	No
13C2-6_2-FTS 1	8.31 (8.36)	N_mefosa_d3	482544	68441	5.00	5.1330	103	No

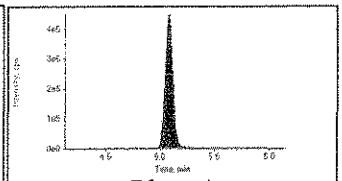
IRC Summary

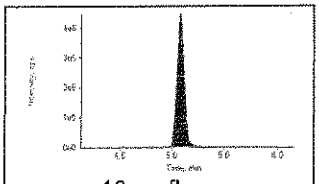
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.60 (2.66)	2733269	No	1.00
Pfpea 2	5.08 (5.18)	2386651	No	1.00
Pfbs 2	5.52 (5.63)	2063983	No	0.44
Pfhxa 2	6.63 (6.73)	287380	No	0.09
Pfhpa 2	7.63 (7.66)	1438418	No	0.41
Pfhxs 2	7.71 (7.80)	1521325	No	0.39
Pfoa 2	8.37 (8.47)	2266494	No	1.86
Pfna 2	8.96 (9.07)	693235	No	0.31
Pfos 2	8.97 (8.97)	794198	No	0.35
Pfda 2	9.45 (9.45)	412863	No	0.30
Pfuna 2	9.87 (9.88)	429290	No	0.45
Pfds 2	9.85 (9.84)	884284	No	0.33
Pfdoa 2	10.20 (10.20)	485081	No	0.36
Fosa 2	9.96 (10.00)	59411	No	0.02
Pfteda 2	10.80 (10.90)	219064	No	0.38
PFHpS 2	8.40 (8.49)	317991	No	0.40
NMeFOSE 2	10.80 (10.80)	9065	No	0.01
NMeFOSA 2	10.80 (10.80)	399190	No	0.93
NEtFOSE 2	11.00 (11.10)	5182	No	0.00
NEtFOSA 2	11.00 (11.10)	391344	No	0.68
PFTrDA 2	10.60 (10.60)	378482	No	0.31
6_2-FTS 2	8.31 (8.39)	625760	No	1.33
8_2-FTS 2	9.43 (9.50)	44793	No	0.10

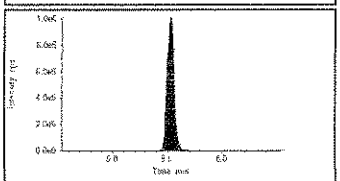
Quantitative Peak Review **PFC 5.0ppb 15-OLC-02-35G**

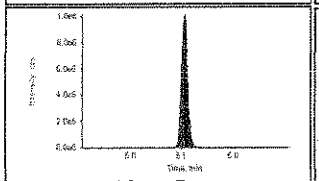

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

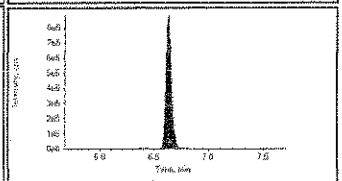

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

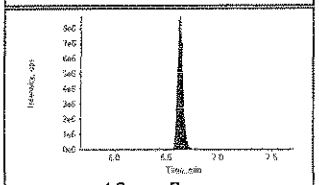

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

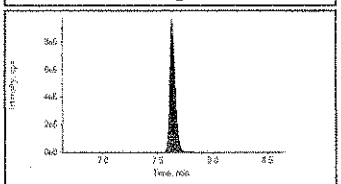

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

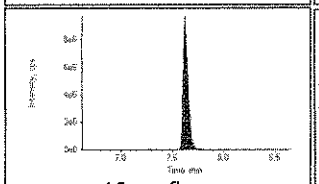

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

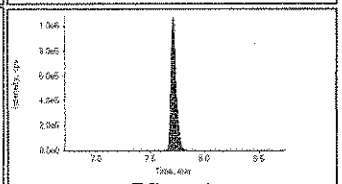

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

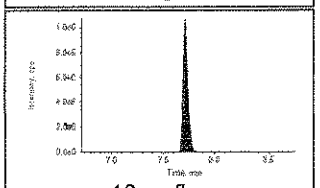

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

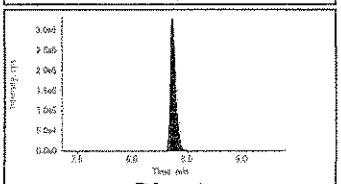

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

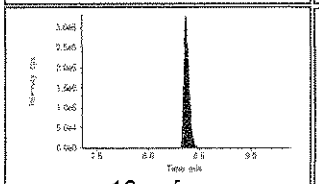

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

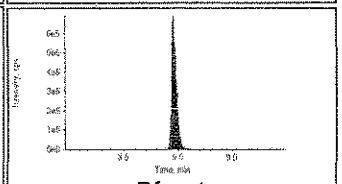

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

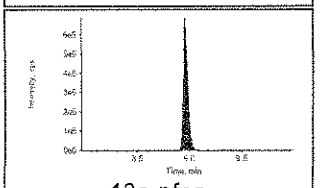

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

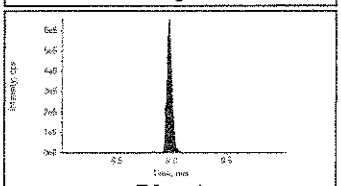

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

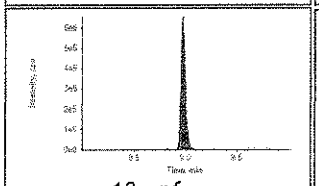

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

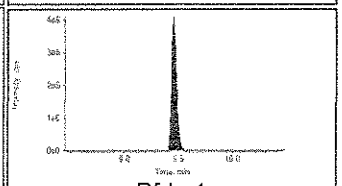

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

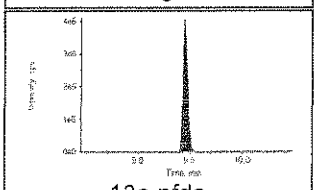

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

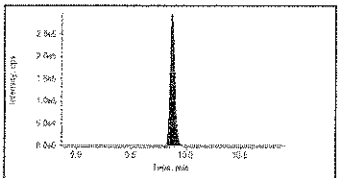

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

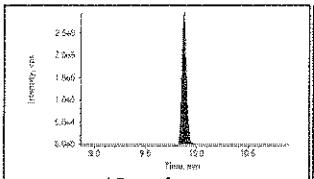

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

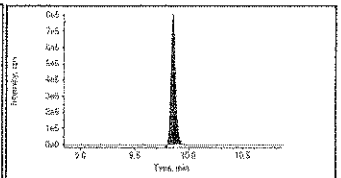

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

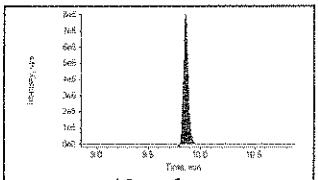

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

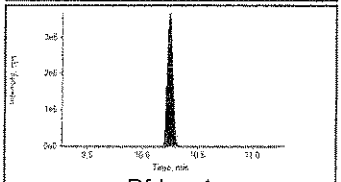

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

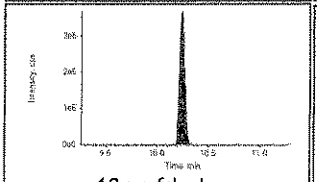

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

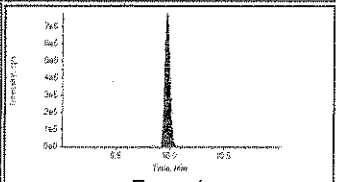

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

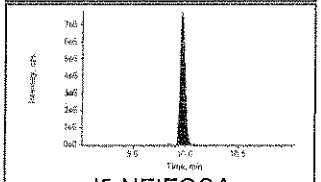

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

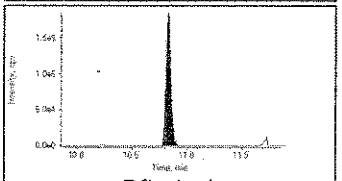

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
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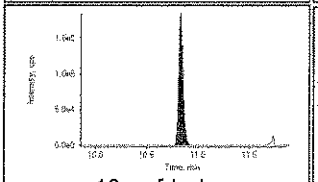

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
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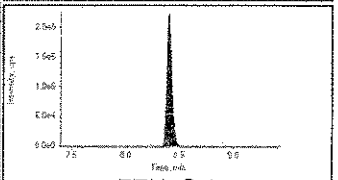

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

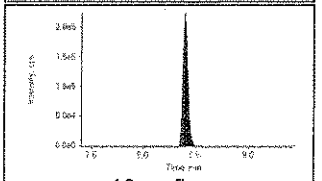

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

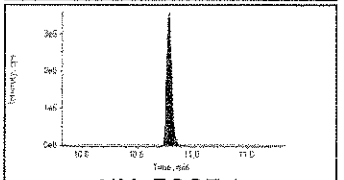

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

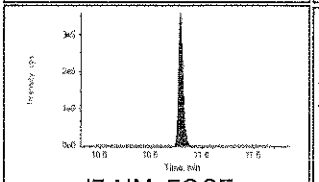

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
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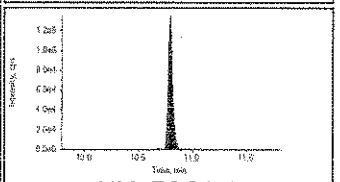

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

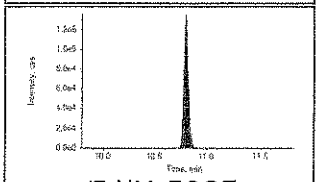

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

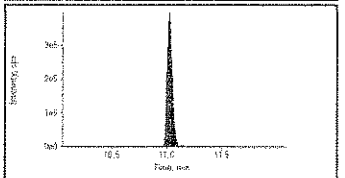

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

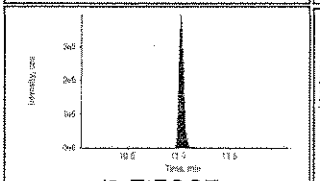

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

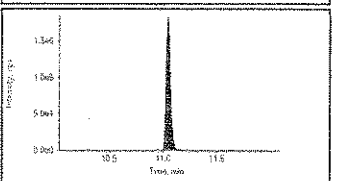

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

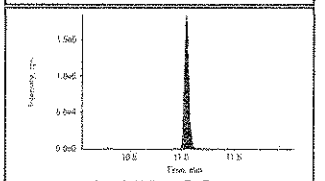

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

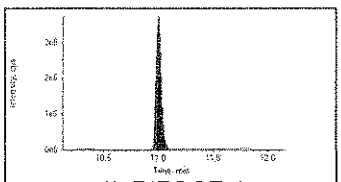

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

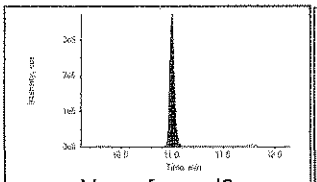

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

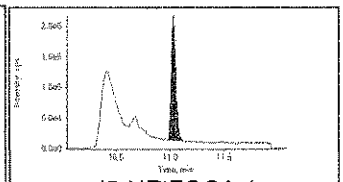

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

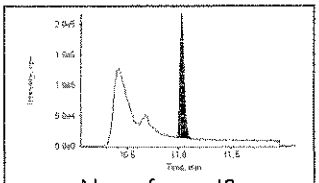

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

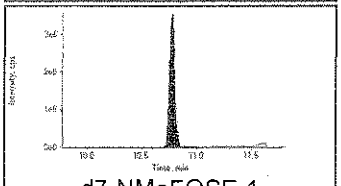

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

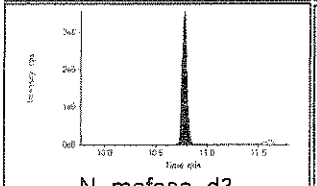

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

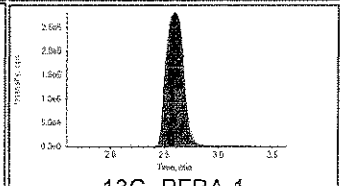

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

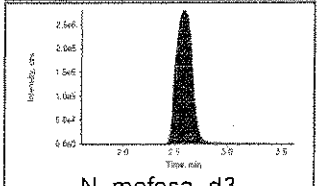

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

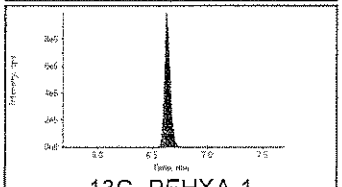

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

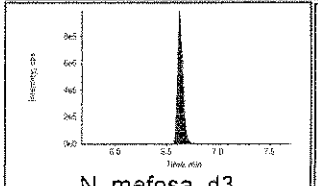

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

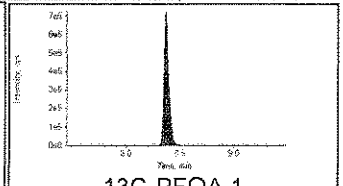

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

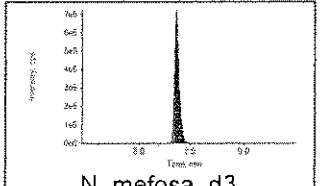

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

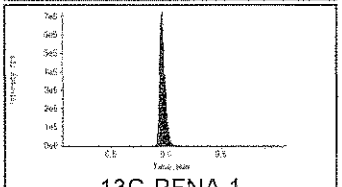

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

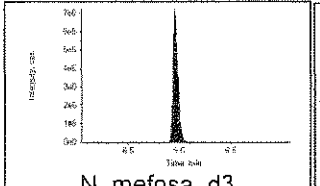

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

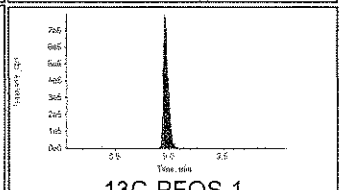

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

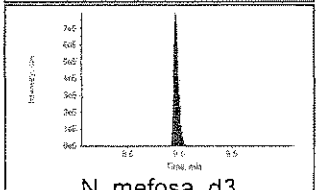

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

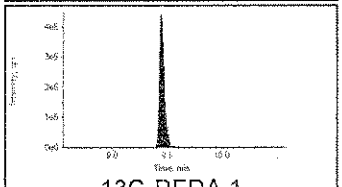

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

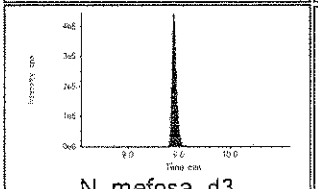

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

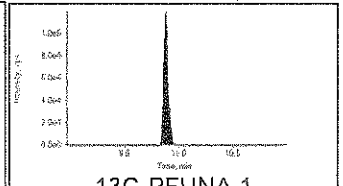

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

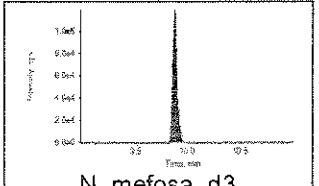

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

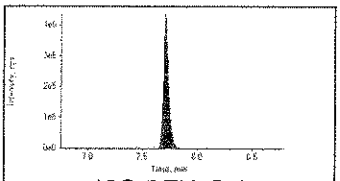

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

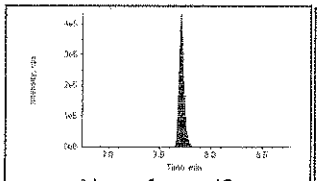

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

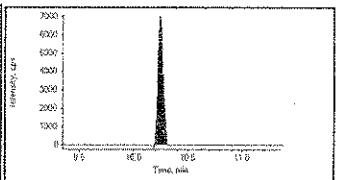

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

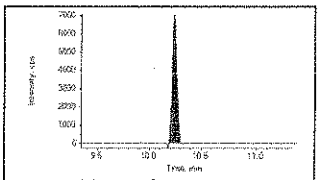

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

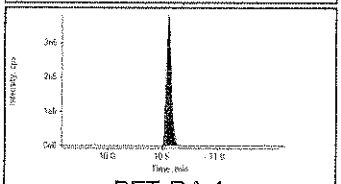

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

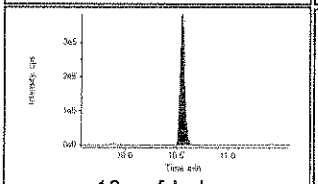

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

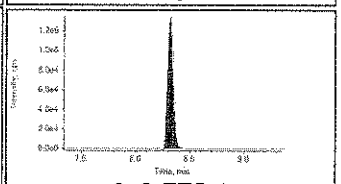

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

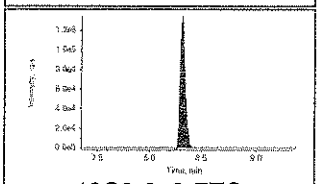

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

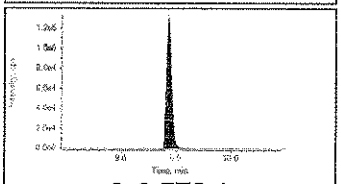

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

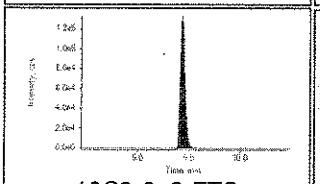

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

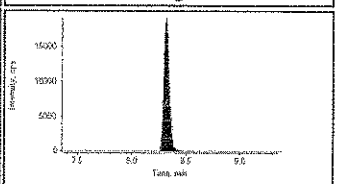

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

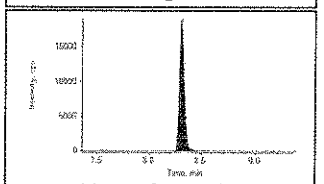

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

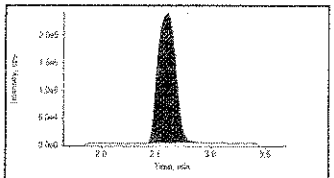

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak

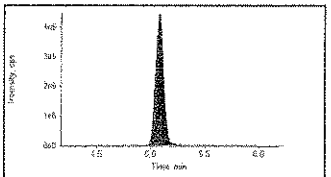

13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

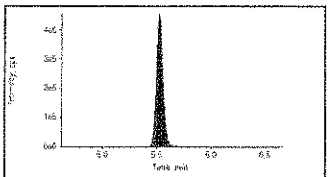

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

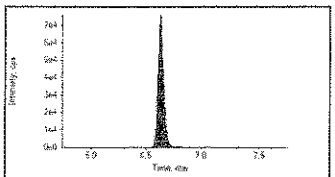

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

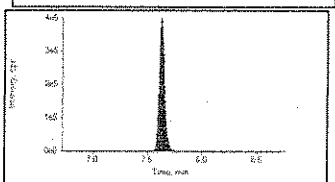
Ion Ratio Confirmation

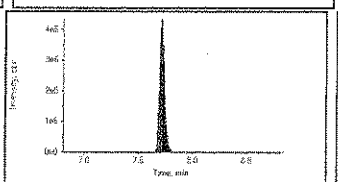

Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

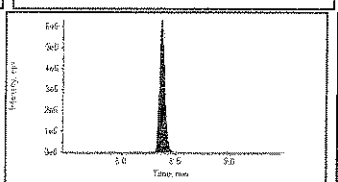

Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

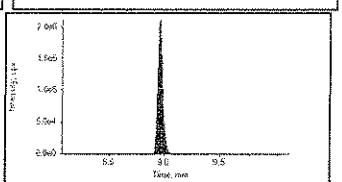

Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

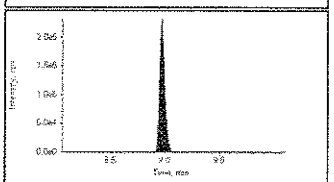

Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

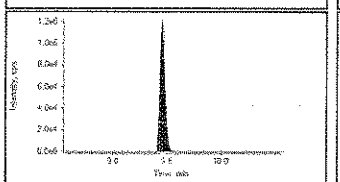

Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

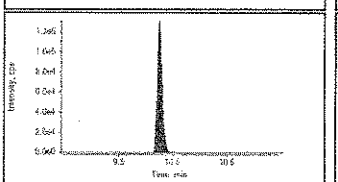

Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

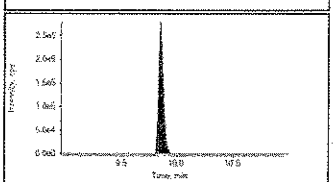

Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

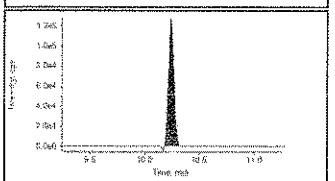

Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

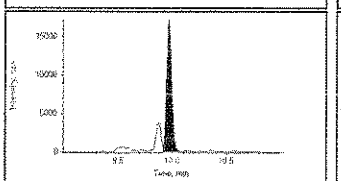

Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

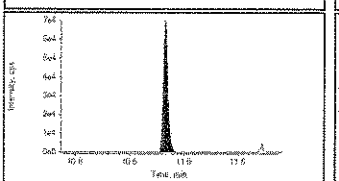

Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

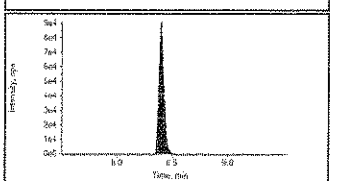

Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

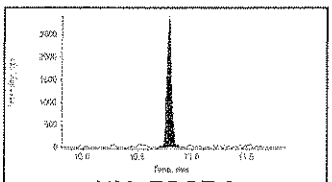

Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

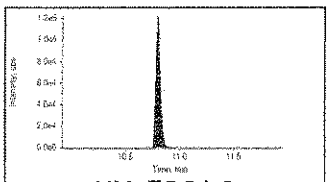

Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

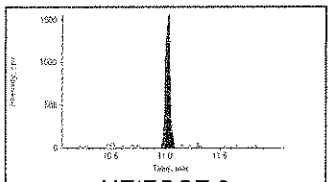

PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



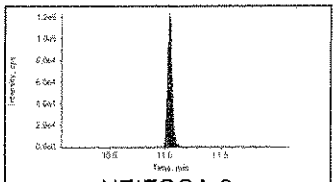
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



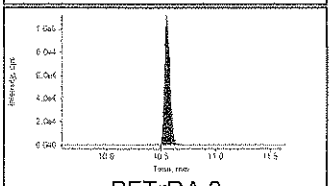
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



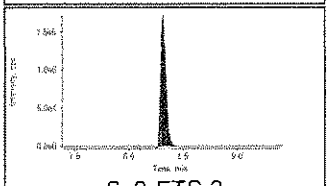
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



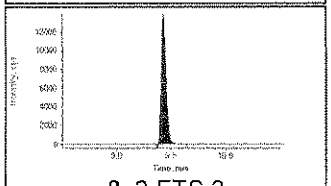
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1015.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 10ppb	Injection Vial	10
Acquisition Date	3/17/2016 8:31:01 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35H	Dilution Factor	1.00

Results Summary

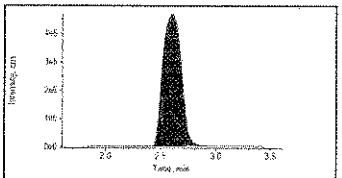
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.59 (2.60)	13c_pfba	3205518	5452300	10.00	10.0580	101	No
Pfpea 1	5.09 (5.13)	13c_pfhxa	3504334	4706844	10.00	10.1940	102	No
Pfbs 1	5.53 (5.54)	18o-pfhs	1391044	9198550	10.00	9.5460	96	No
Pfhxa 1	6.63 (6.68)	13c_pfhxa	3504334	6269752	10.00	9.5230	95	No
Pfhpa 1	7.63 (7.63)	13c_pfhxa	3504334	6598860	10.00	9.6490	97	No
Pfhxs 1	7.71 (7.72)	18o-pfhs	1391044	7290820	10.00	9.3150	93	No
Pfoa 1	8.36 (8.36)	13c-pfoa	2289881	2396817	10.00	9.3450	94	No
Pfna 1	8.96 (8.96)	13c-pfna	2491033	4546150	10.00	9.8740	99	No
Pfos 1	8.96 (9.00)	13c-pfos	2553781	4620873	10.00	10.2260	102	No
Pfda 1	9.45 (9.45)	13c-pfda	1481987	2813952	10.00	9.4900	95	No
Pfuna 1	9.87 (9.87)	13c-pfuna	361635	1841843	10.00	8.9640	90	No
Pfds 1	9.85 (9.85)	13c-pfos	2553781	5309506	10.00	10.5780	106	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	21532	2881077	10.00	10.7170	107	No
Fosa 1	9.97 (10.00)	d5-NEtFOSA	663025	5601648	10.00	10.0890	101	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	21532	1172082	10.00	12.0260	120	No
PFHpS 1	8.40 (8.40)	18o-pfhs	1391044	1540532	10.00	9.8440	98	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1085847	2061767	10.00	10.0500	101	No

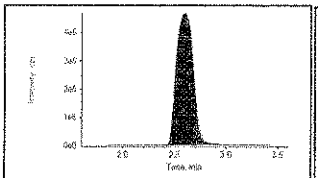
MAR 2 2 2016

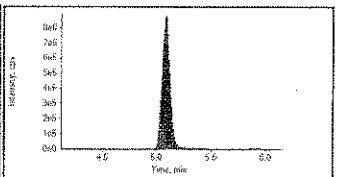
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1085847	839865	10.00	11.1180	111	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1281815	2737442	10.00	9.4300	94	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	663025	1126390	10.00	9.5140	95	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	540969	1281815	5.00	4.6420	93	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa_d3	540969	663025	5.00	4.7870	96	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	540969	1085847	5.00	4.2400	85	No
13C_PFBA 1	2.58 (2.60)	N_mefosa_d3	540969	3205518	5.00	4.7060	94	No
13C_PFHXA 1	6.63 (6.68)	N_mefosa_d3	540969	3504334	5.00	4.7170	94	No
13C-PFOA 1	8.36 (8.43)	N_mefosa_d3	540969	2289881	5.00	4.7570	95	No
13C-PFNA 1	8.96 (9.05)	N_mefosa_d3	540969	2491033	5.00	4.7140	94	No
13C-PFOS 1	8.96 (9.03)	N_mefosa_d3	540969	2553781	5.00	4.5930	92	No
13C-PFDA 1	9.45 (9.52)	N_mefosa_d3	540969	1481987	5.00	4.8110	96	No
13C-PFUNA 1	9.87 (9.94)	N_mefosa_d3	540969	361635	5.00	4.7340	95	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa_d3	540969	1391044	5.00	4.7790	96	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa_d3	540969	21532	5.00	4.2000	84	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	21532	2430645	10.00	10.5810	106	No
6_2-FTS 1	8.31 (8.35)	13C2-6_2-FTS	72366	998186	10.00	9.1330	91	No
8_2-FTS 1	9.43 (9.45)	13C2-6_2-FTS	72366	897177	10.00	10.0160	100	No
13C2-6_2-FTS 1	8.31 (8.36)	N_mefosa_d3	540969	72366	5.00	4.8420	97	No

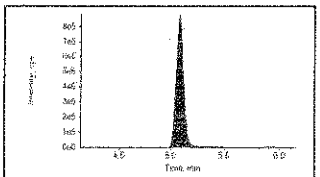
IRC Summary

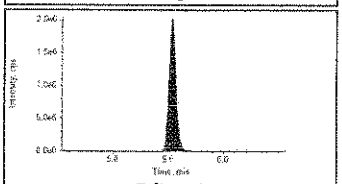
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.58 (2.66)	5464650	No	1.00
Pfpea 2	5.09 (5.18)	4675810	No	0.99
Pfbs 2	5.52 (5.63)	4025647	No	0.44
Pfhxa 2	6.63 (6.73)	563109	No	0.09
Pfhpa 2	7.63 (7.67)	2754681	No	0.42
Pfhxs 2	7.71 (7.80)	2921864	No	0.40
Pfoa 2	8.36 (8.46)	4546784	No	1.90
Pfna 2	8.96 (9.07)	1410752	No	0.31
Pfos 2	8.96 (8.97)	1657011	No	0.36
Pfda 2	9.45 (9.45)	862859	No	0.31
Pfuna 2	9.87 (9.88)	828323	No	0.45
Pfds 2	9.85 (9.84)	1777941	No	0.33
Pfdoa 2	10.20 (10.20)	965444	No	0.34
Fosa 2	9.97 (10.00)	127012	No	0.02
Pfteda 2	10.80 (10.90)	413978	No	0.35
PFHpS 2	8.40 (8.49)	620731	No	0.40
NMeFOSE 2	10.80 (10.80)	18206	No	0.01
NMeFOSA 2	10.80 (10.80)	803673	No	0.96
NEtFOSE 2	11.00 (11.10)	10995	No	0.00
NEtFOSA 2	11.00 (11.10)	776792	No	0.69
PFTrDA 2	10.60 (10.60)	778688	No	0.32
6_2-FTS 2	8.31 (8.39)	1305634	No	1.31
8_2-FTS 2	9.43 (9.50)	93246	No	0.10

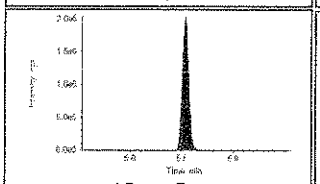

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

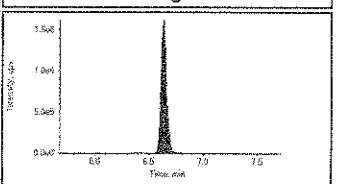

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

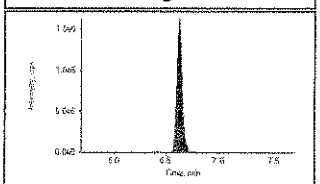

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

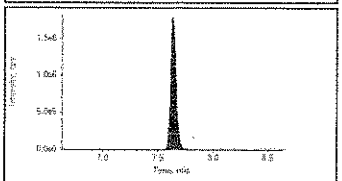

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

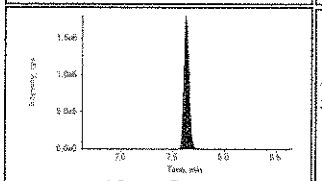

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

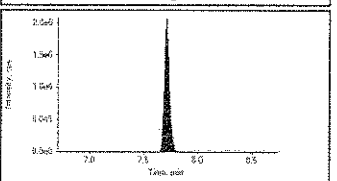

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

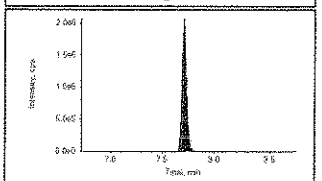

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

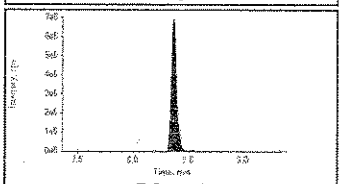

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

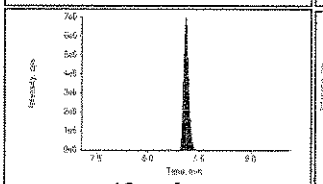

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

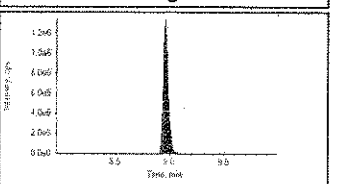

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

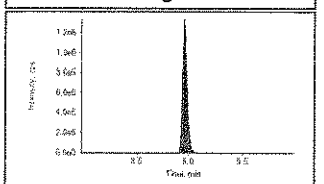

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

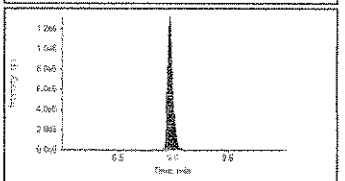

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

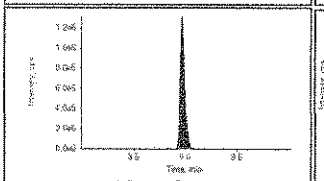

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

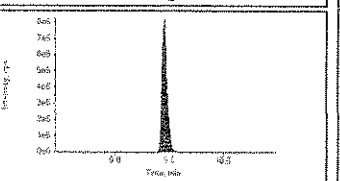

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

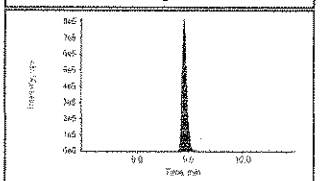

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

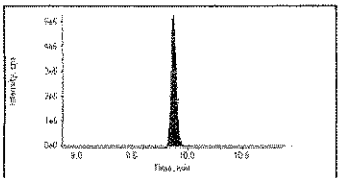

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

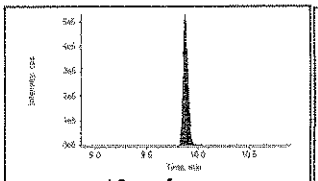

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

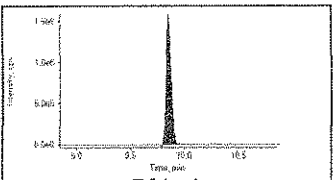

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

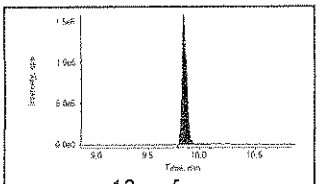

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

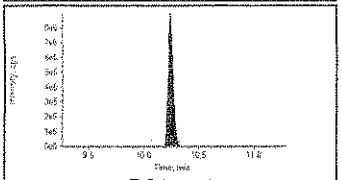

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

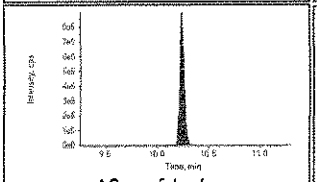

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

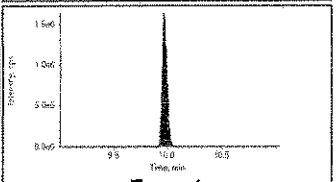

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

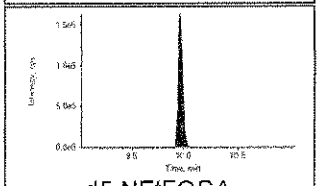

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

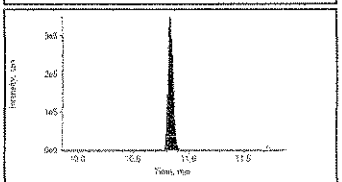

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

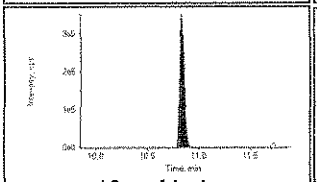

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

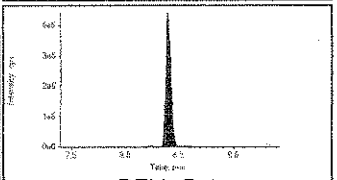

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

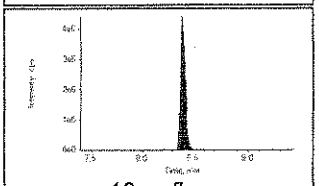

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

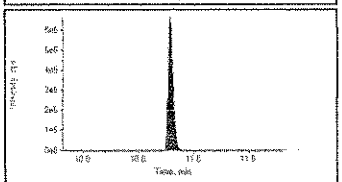

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

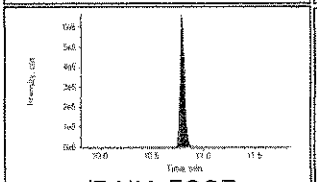

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

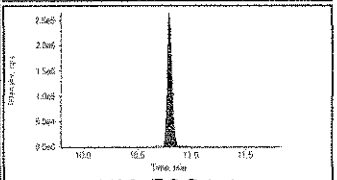

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

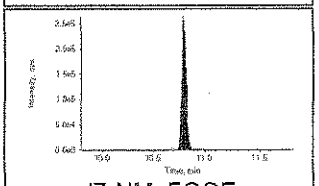

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

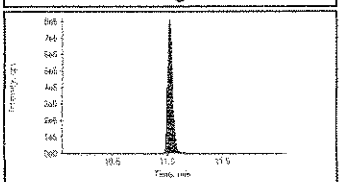

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

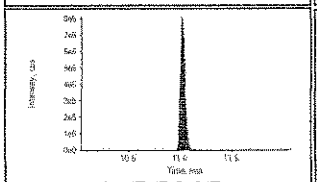

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

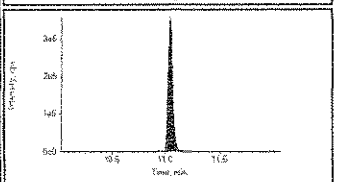

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

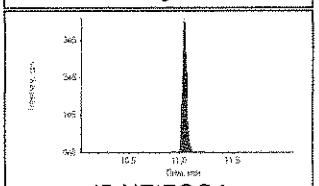

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

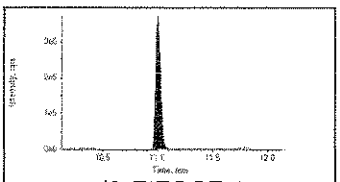

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

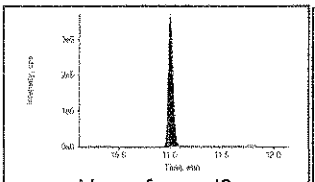

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

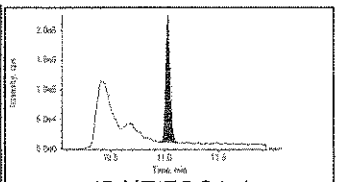

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

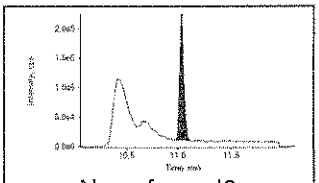

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

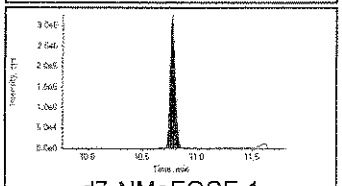

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

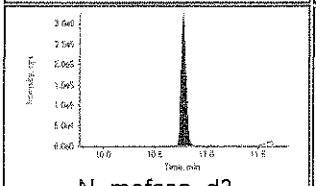

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

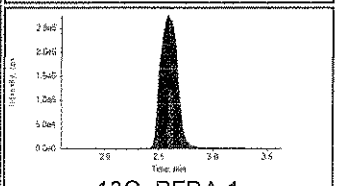

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

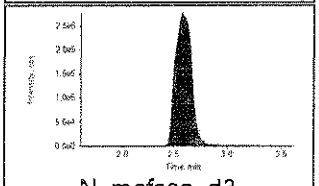

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

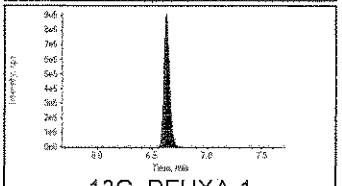

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

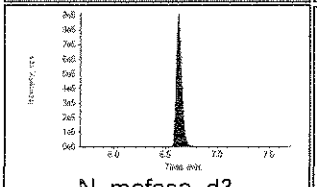

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

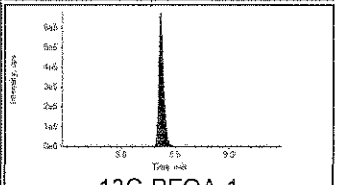

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

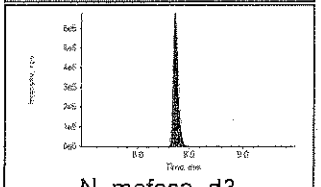

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

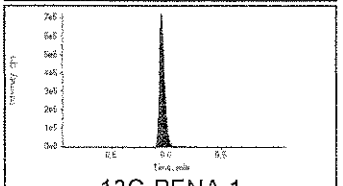

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

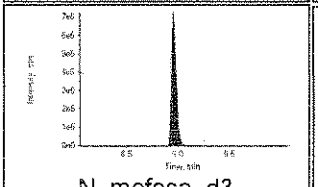

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

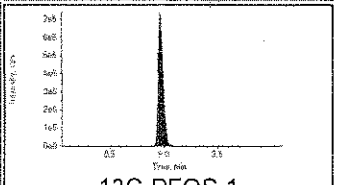

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

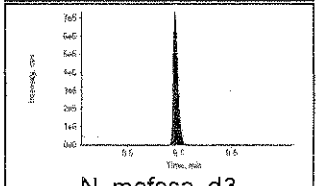

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

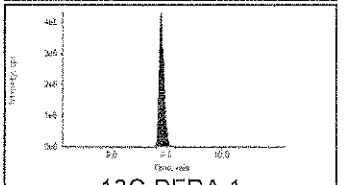

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

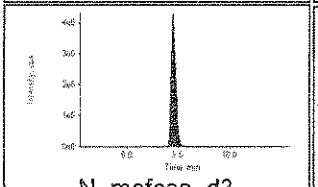

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

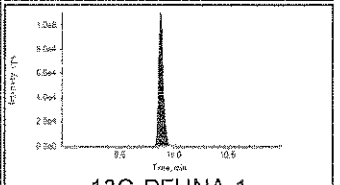

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

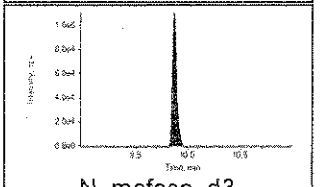

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

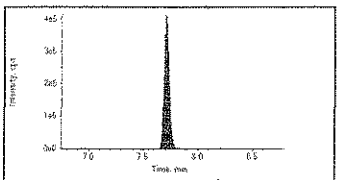

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

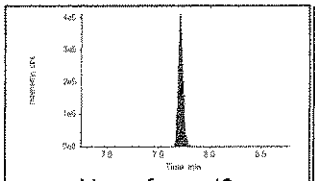

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

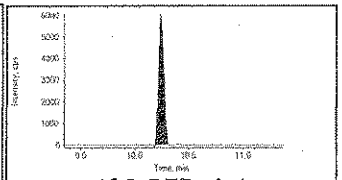

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

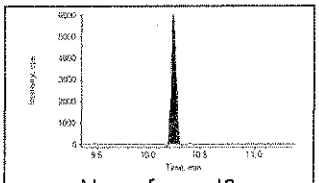

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

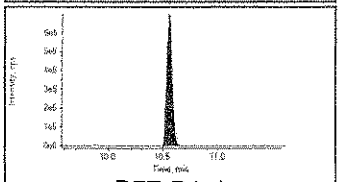

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

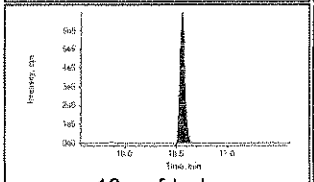

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

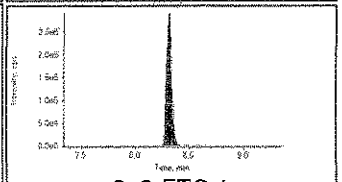

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

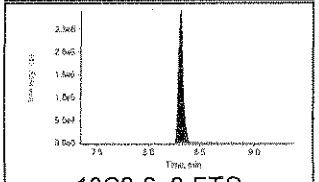

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

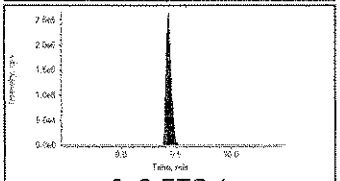

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

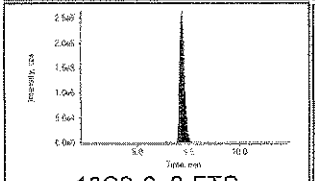

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

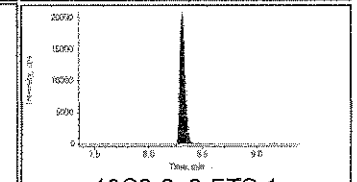

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

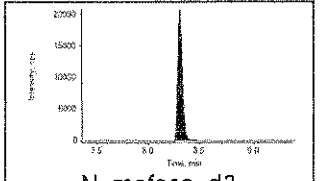

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

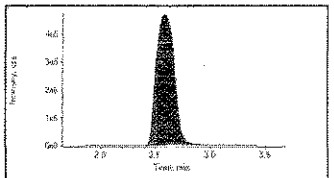

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

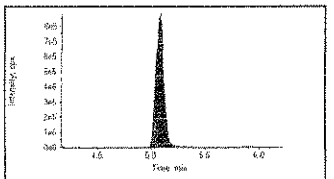

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

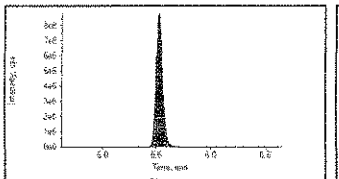
Ion Ratio Confirmation



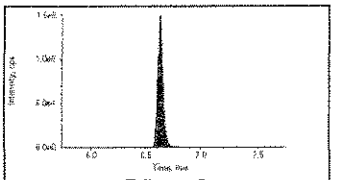
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



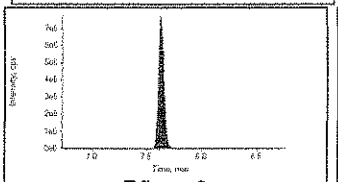
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



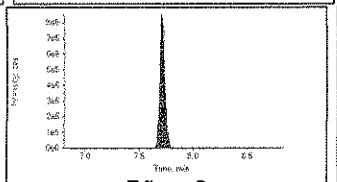
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



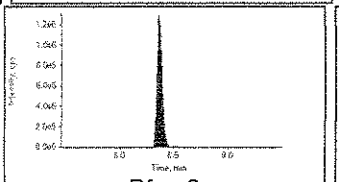
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



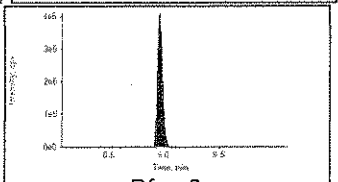
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



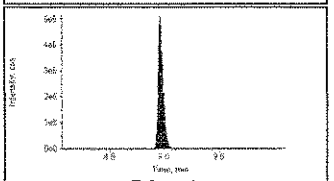
Pfhxs 2
Mod?
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□ Wrong Peak



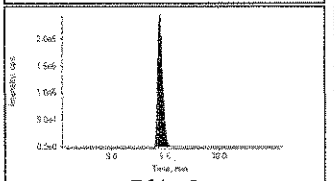
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



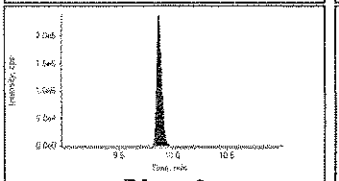
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



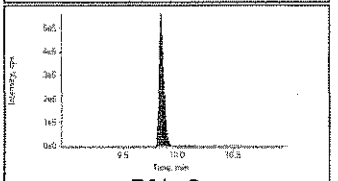
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



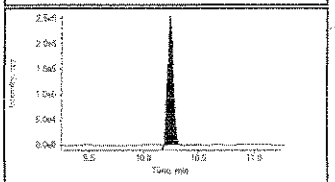
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



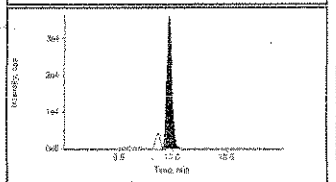
Pfuna 2
Mod?
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□ Wrong Peak



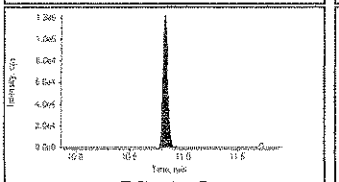
Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



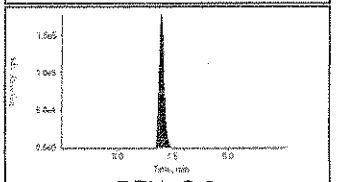
Pfdoa 2
Mod?
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□ Wrong Peak



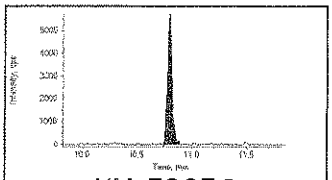
Fosa 2
Mod?
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□ Wrong Peak



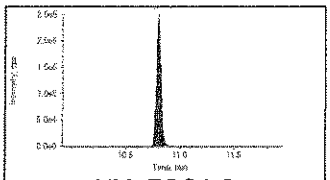
Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



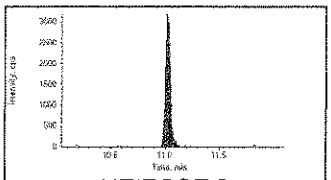
PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



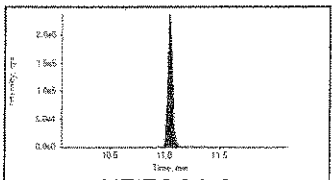
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



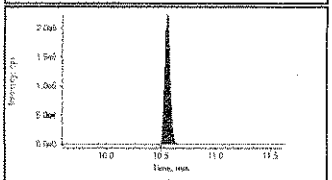
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



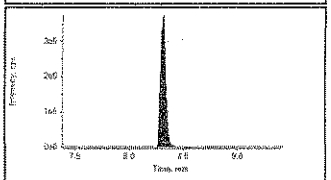
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



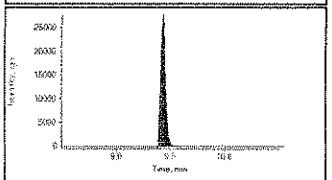
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1016.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 20ppb	Injection Vial	11
Acquisition Date	3/17/2016 8:49:22 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35I	Dilution Factor	1.00

Results Summary

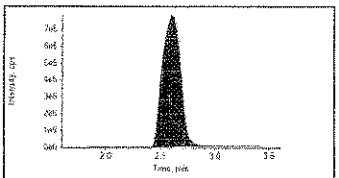
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.61 (2.60)	13c_pfba	3183698	9311367	20.00	17.2790	86	No
Pfpea 1	5.09 (5.13)	13c_pfhxa	3457053	7733813	20.00	16.9780	85	No
Pfbs 1	5.54 (5.54)	18o-pfhs	1314600	15055239	20.00	16.5330	83	No
Pfhxa 1	6.63 (6.68)	13c_pfhxa	3457053	10345481	20.00	15.9280	80	No
Pfhpa 1	7.64 (7.63)	13c_pfhxa	3457053	10517677	20.00	15.5890	78	No
Pfhxs 1	7.71 (7.72)	18o-pfhs	1314600	11519556	20.00	15.5740	78	No
Pfoa 1	8.37 (8.36)	13c-pfoa	2258067	4096151	20.00	16.1960	81	No
Pfna 1	8.96 (8.96)	13c-pfna	2395051	7390781	20.00	16.6960	84	No
Pfos 1	8.96 (9.00)	13c-pfos	2516829	7462182	20.00	16.7560	84	No
Pfda 1	9.45 (9.45)	13c-pfda	1395384	4609641	20.00	16.5110	83	No
Pfuna 1	9.87 (9.87)	13c-pfuna	335806	3085106	20.00	16.1700	81	No
Pfds 1	9.85 (9.85)	13c-pfos	2516829	8368053	20.00	16.9170	85	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	25974	4573272	20.00	14.1030	71	No
Fosa 1	9.96 (10.00)	d5-NEtFOSA	650768	8547069	20.00	15.6840	78	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	25974	1881123	20.00	16.0000	80	No
PFHpS 1	8.40 (8.40)	18o-pfhs	1314600	2471679	20.00	16.7130	84	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1217770	3590594	20.00	15.6060	78	No

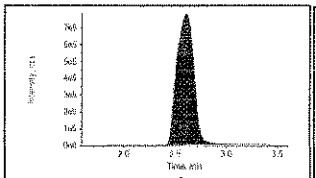
MAR 2 2 2016

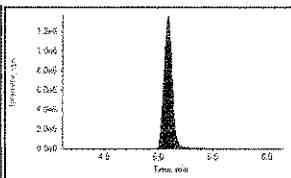
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1217770	1414219	20.00	16.6930	84	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1362962	4684382	20.00	15.1750	76	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	650768	1914580	20.00	16.4760	82	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	539804	1362962	5.00	4.9470	99	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa_d3	539804	650768	5.00	4.7090	94	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	539804	1217770	5.00	4.7650	95	No
13C_PFBA 1	2.60 (2.60)	N_mefosa_d3	539804	3183698	5.00	4.6840	94	No
13C_PFHXA 1	6.64 (6.68)	N_mefosa_d3	539804	3457053	5.00	4.6640	93	No
13C-PFOA 1	8.37 (8.43)	N_mefosa_d3	539804	2258067	5.00	4.7010	94	No
13C-PFNA 1	8.96 (9.05)	N_mefosa_d3	539804	2395051	5.00	4.5420	91	No
13C-PFOS 1	8.96 (9.03)	N_mefosa_d3	539804	2516829	5.00	4.5360	91	No
13C-PFDA 1	9.44 (9.52)	N_mefosa_d3	539804	1395384	5.00	4.5390	91	No
13C-PFUNA 1	9.86 (9.93)	N_mefosa_d3	539804	335806	5.00	4.4060	88	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa_d3	539804	1314600	5.00	4.5260	91	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa_d3	539804	25974	5.00	5.0770	102	No
PFTrDA 1	10.50 (10.60)	13c-pfdoda	25974	4263107	20.00	15.3850	77	No
6_2-FTS 1	8.31 (8.35)	13C2-6_2-FTS	74586	1567454	20.00	13.9150	70	No
8_2-FTS 1	9.43 (9.45)	13C2-6_2-FTS	74586	1383196	20.00	16.9630	85	No
13C2-6_2-FTS 1	8.32 (8.36)	N_mefosa_d3	539804	74586	5.00	5.0010	100	No

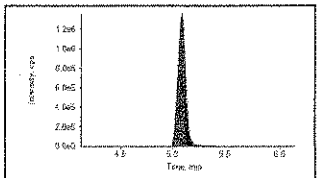
IRC Summary

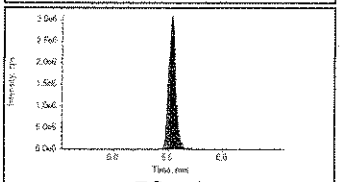
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.60 (2.66)	9347662	No	1.00
Pfpea 2	5.09 (5.18)	7834855	No	1.01
Pfbs 2	5.53 (5.63)	6748015	No	0.45
Pfhxa 2	6.64 (6.73)	965457	No	0.09
Pfhpa 2	7.63 (7.68)	4514323	No	0.43
Pfhxs 2	7.71 (7.80)	4766609	No	0.41
Pfoa 2	8.37 (8.47)	7078579	No	1.73
Pfna 2	8.96 (9.07)	2373747	No	0.32
Pfos 2	8.96 (8.97)	2705638	No	0.36
Pfda 2	9.45 (9.44)	1416853	No	0.31
Pfuna 2	9.87 (9.87)	1429046	No	0.46
Pfds 2	9.85 (9.84)	2811551	No	0.34
Pfdoa 2	10.20 (10.20)	1641625	No	0.36
Fosa 2	9.96 (10.00)	213422	No	0.02
Pfteda 2	10.80 (10.90)	663629	No	0.35
PFHpS 2	8.40 (8.49)	989961	No	0.40
NMeFOSE 2	10.80 (10.80)	28439	No	0.01
NMeFOSA 2	10.80 (10.80)	1336918	No	0.95
NEtFOSE 2	11.00 (11.10)	20298	No	0.00
NEtFOSA 2	11.00 (11.10)	1297230	No	0.68
PFTrDA 2	10.50 (10.60)	1380125	No	0.32
6_2-FTS 2	8.31 (8.39)	2057099	No	1.31
8_2-FTS 2	9.42 (9.50)	143238	No	0.10

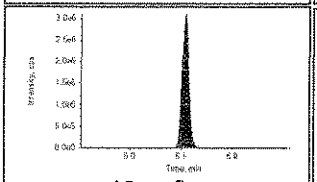

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

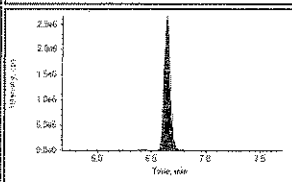

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

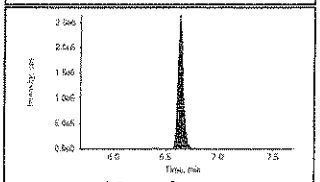

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

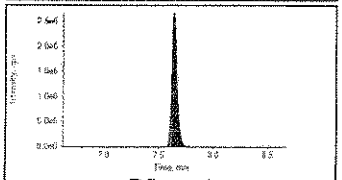

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

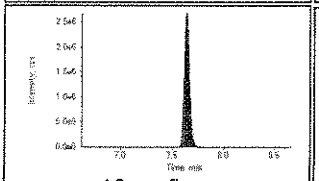

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

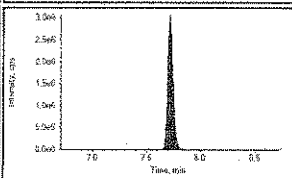

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

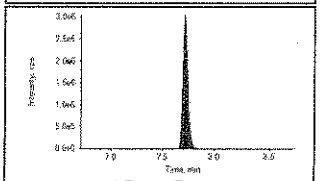

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

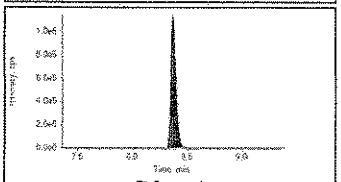

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

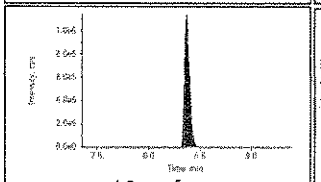

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

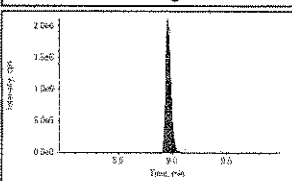

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

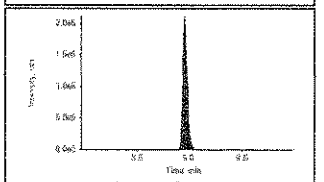

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

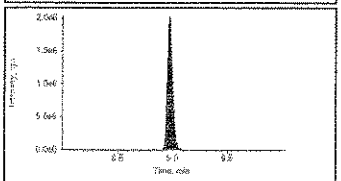

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

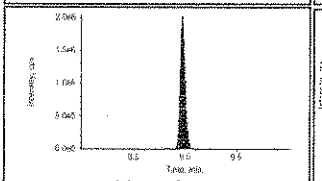

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

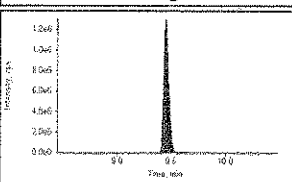

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

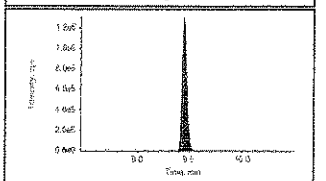

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

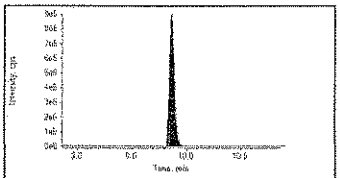

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

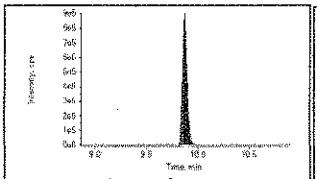

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

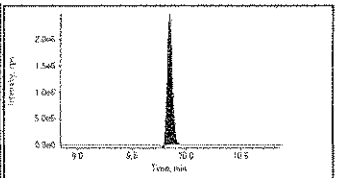

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

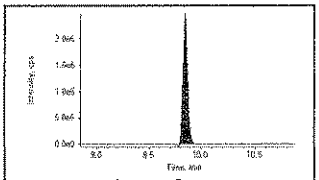

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

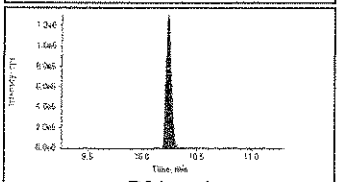

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

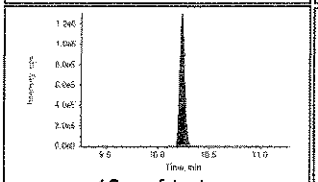

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

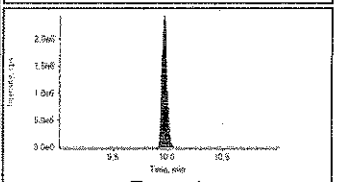

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

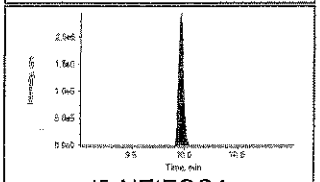

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

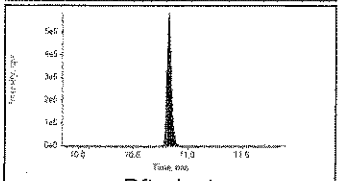

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

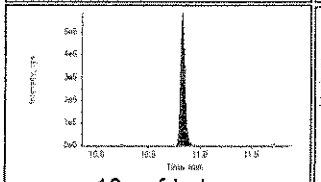

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

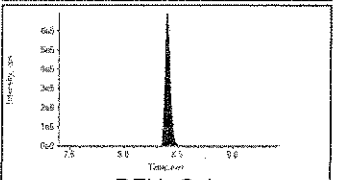

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

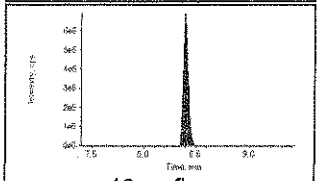

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

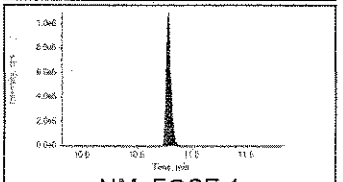

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

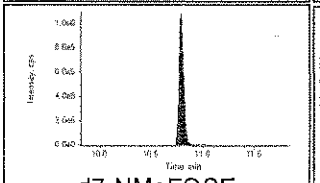

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

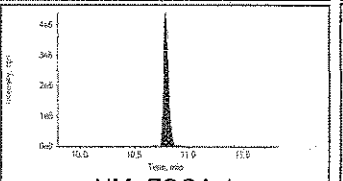

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

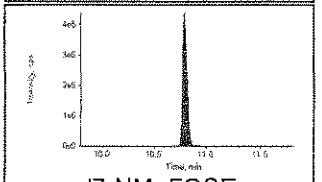

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

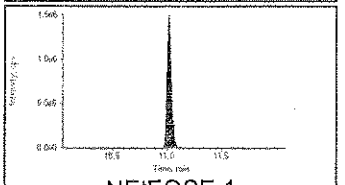

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

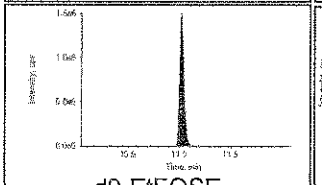

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

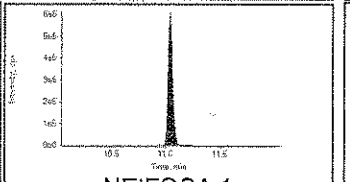

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

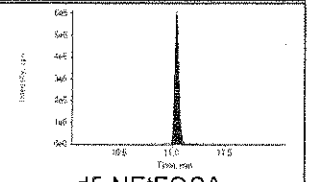

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

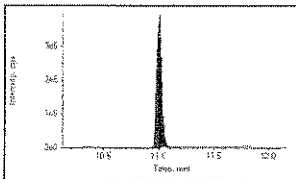
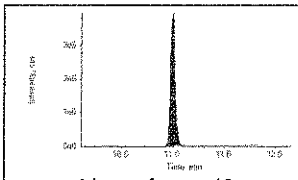
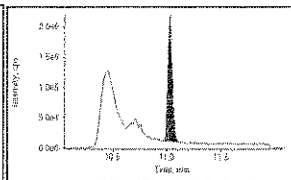
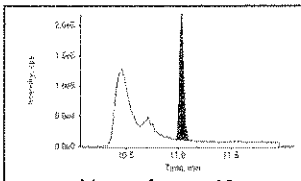
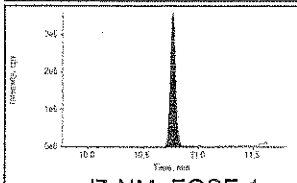
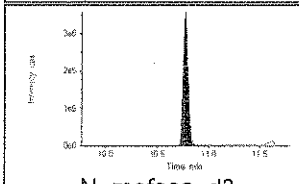
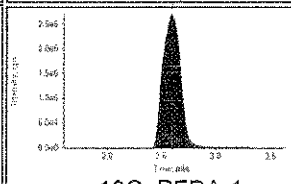
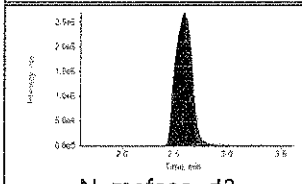
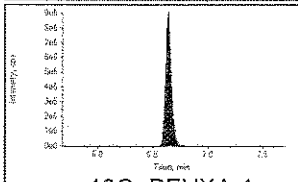
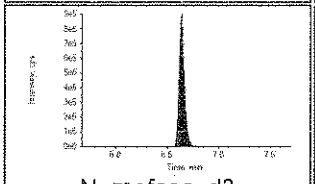
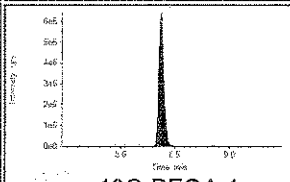
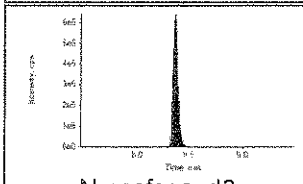
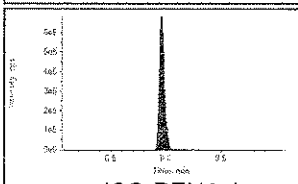
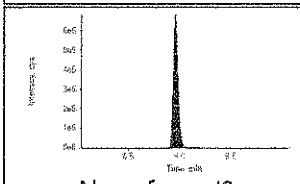
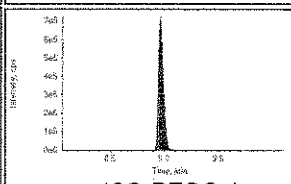
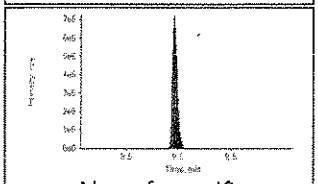
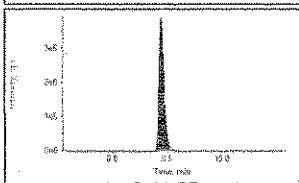
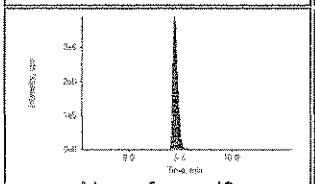
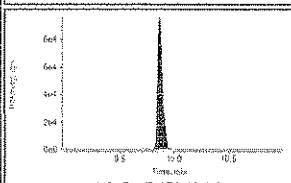
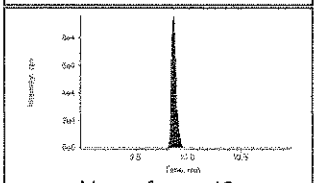

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

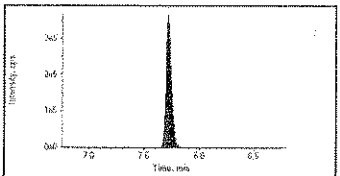

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

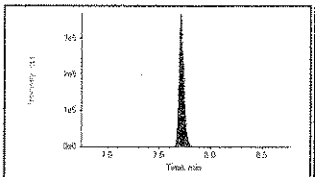

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

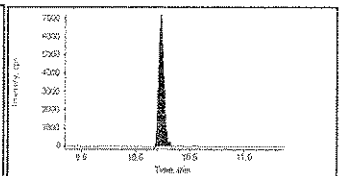

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

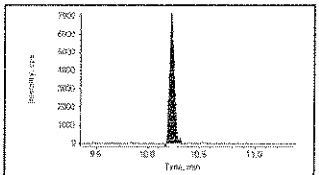

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

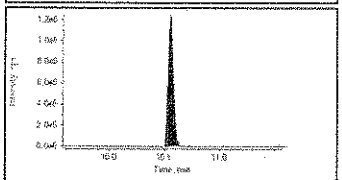
 d9-EtFOSE 1 639.000/59.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 d5-NEtFOSA 1 531.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak
 d7-NMeFOSE 1 623.000/59.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 13C_PFBA 1 217.000/172.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak
 13C_PFHXA 1 315.000/270.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFOA 1 417.000/372.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak
 13C-PFNA 1 468.000/423.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFOS 1 503.000/80.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak
 13C-PFDA 1 515.000/470.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak	 13C-PFUNA 1 565.000/520.000 Da □ Baseline □ Missed □ Wrong Peak	 N_mefosa_d3 515.000/169.000 Da □ Baseline □ Missed □ Wrong Peak

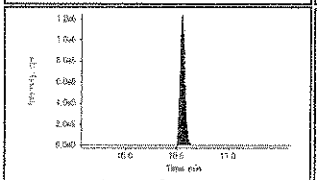

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

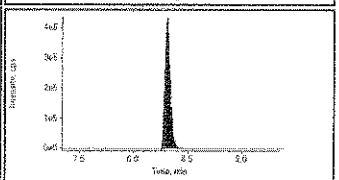

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

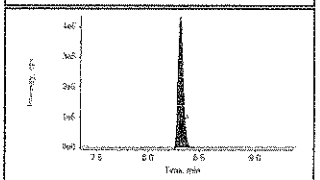

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

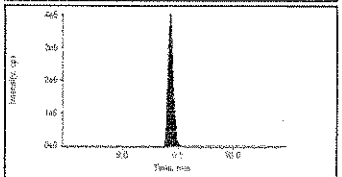

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

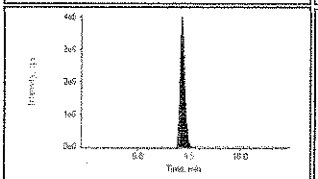

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

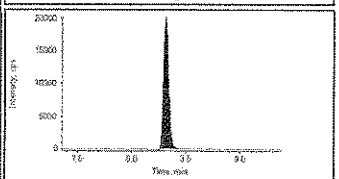

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

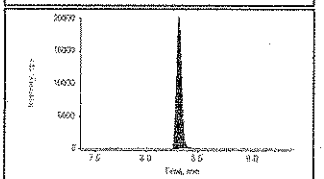

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

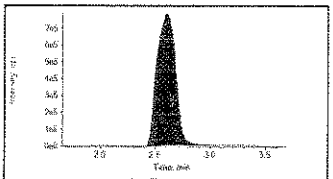

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak

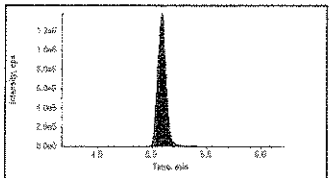

13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

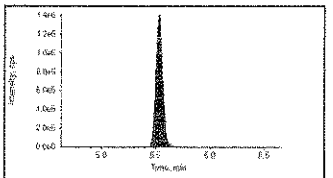

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

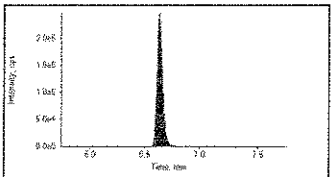

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

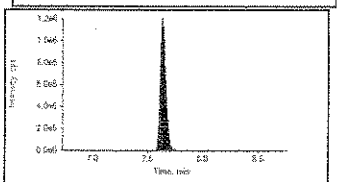
Ion Ratio Confirmation

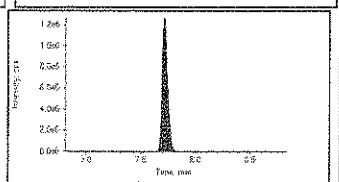

Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

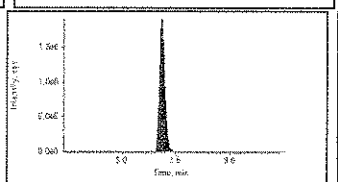

Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

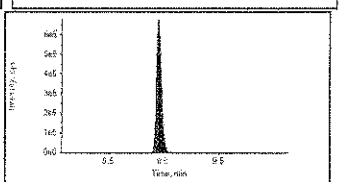

Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

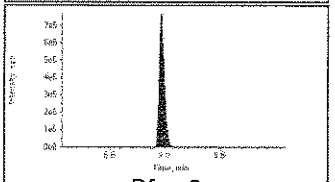

Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

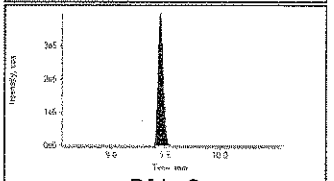

Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

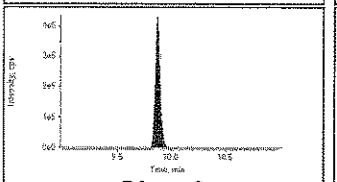

Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

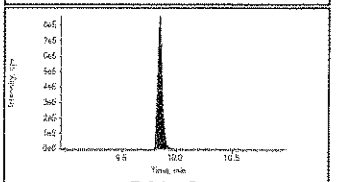

Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

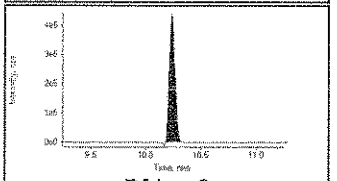

Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

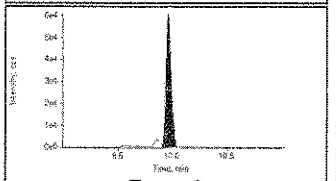

Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

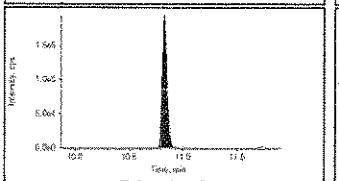

Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

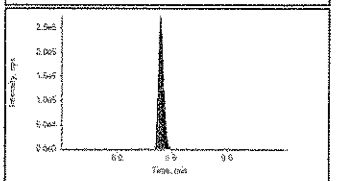

Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

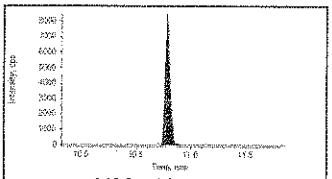

Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

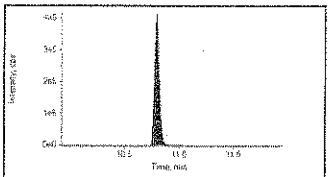

Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

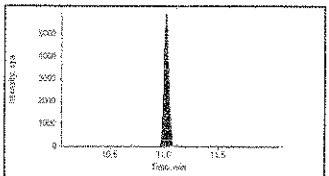

PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



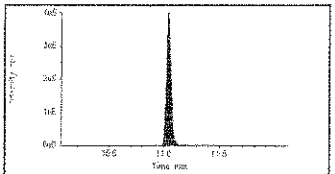
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



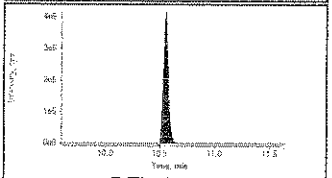
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



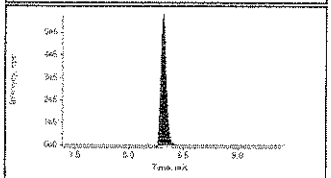
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



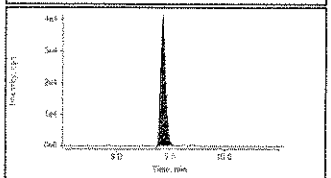
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1017.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 50ppb	Injection Vial	12
Acquisition Date	3/17/2016 9:07:41 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Standard
Sample ID	15-OLC-02-35J	Dilution Factor	1.00

Results Summary

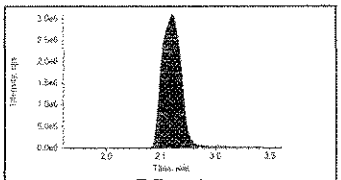
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.61 (2.60)	13c_pfba	2806957	39390131	50.00	82.8200	166	No
Pfpea 1	5.09 (5.13)	13c_pfhxa	2717878	28370815	50.00	79.2220	158	No
Pfbs 1	5.54 (5.54)	18o-pfhs	1030352	43342744	50.00	60.7280	121	No
Pfhxa 1	6.64 (6.68)	13c_pfhxa	2717878	31040401	50.00	60.7890	122	No
Pfhpa 1	7.63 (7.63)	13c_pfhxa	2717878	29953395	50.00	56.4700	113	No
Pfhxs 1	7.71 (7.72)	18o-pfhs	1030352	32764231	50.00	56.5150	113	No
Pfoa 1	8.37 (8.36)	13c-pfoa	1727398	14378436	50.00	74.3180	149	No
Pfna 1	8.96 (8.96)	13c-pfna	1770357	22310071	50.00	68.1820	136	No
Pfos 1	8.97 (9.00)	13c-pfos	1864559	24001139	50.00	72.7470	145	No
Pfda 1	9.45 (9.45)	13c-pfda	1120016	15729174	50.00	70.1930	140	No
Pfuna 1	9.87 (9.87)	13c-pfuna	266715	10763551	50.00	71.0310	142	No
Pfds 1	9.85 (9.85)	13c-pfos	1864559	26138820	50.00	71.3270	143	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	20112	16201968	50.00	64.5240	129	No
Fosa 1	9.97 (10.00)	d5-NEtFOSA	604921	30421413	50.00	60.0550	120	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	20112	7694567	50.00	84.5240	169	No
PFHpS 1	8.40 (8.40)	18o-pfhs	1030352	9897124	50.00	85.3830	171	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1148150	15427484	50.00	71.1210	142	No

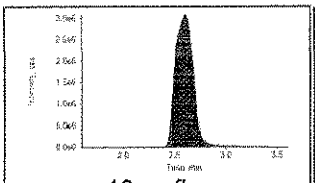
MAR 22 2016

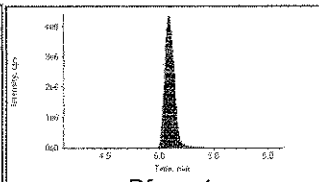
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1148150	7174492	50.00	89.8230	180	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1249392	20213687	50.00	71.4360	143	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	604921	9597897	50.00	88.8560	178	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa_d3	445176	1249392	5.00	5.4990	110	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa_d3	445176	604921	5.00	5.3070	106	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa_d3	445176	1148150	5.00	5.4470	109	No
13C_PFBA 1	2.59 (2.60)	N_mefosa_d3	445176	2806957	5.00	5.0070	100	No
13C_PFHXA 1	6.64 (6.68)	N_mefosa_d3	445176	2717878	5.00	4.4460	89	No
13C-PFOA 1	8.37 (8.43)	N_mefosa_d3	445176	1727398	5.00	4.3600	87	No
13C-PFNA 1	8.96 (9.05)	N_mefosa_d3	445176	1770357	5.00	4.0710	81	No
13C-PFOS 1	8.97 (9.03)	N_mefosa_d3	445176	1864559	5.00	4.0750	82	No
13C-PFDA 1	9.45 (9.52)	N_mefosa_d3	445176	1120016	5.00	4.4180	88	No
13C-PFUNA 1	9.87 (9.94)	N_mefosa_d3	445176	266715	5.00	4.2430	85	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa_d3	445176	1030352	5.00	4.3010	86	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa_d3	445176	20112	5.00	4.7670	95	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	20112	14144856	50.00	65.9230	132	No
6_2-FTS 1	8.32 (8.35)	13C2-6_2-FTS	95875	7290071	50.00	50.3480	101	No
8_2-FTS 1	9.43 (9.45)	13C2-6_2-FTS	95875	6322793	50.00	N/A	N/A	No
13C2-6_2-FTS 1	8.32 (8.36)	N_mefosa_d3	445176	95875	5.00	7.7950	156	No

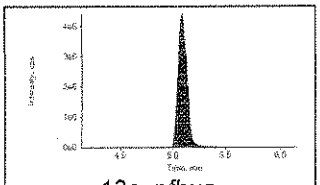
IRC Summary

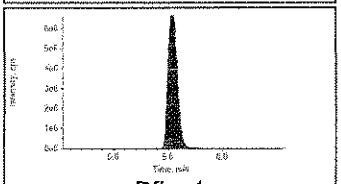
Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	2.61 (2.66)	38996174	No	0.99
Pfpea 2	5.09 (5.18)	28540140	No	1.01
Pfbs 2	5.54 (5.63)	23770787	No	0.55
Pfhxa 2	6.64 (6.73)	3758354	No	0.12
Pfhpa 2	7.64 (7.68)	16251626	No	0.54
Pfhxs 2	7.71 (7.81)	16703209	No	0.51
Pfoa 2	8.37 (8.47)	22382641	No	1.56
Pfna 2	8.96 (9.07)	8601313	No	0.39
Pfos 2	8.97 (8.98)	9536883	No	0.40
Pfda 2	9.45 (9.44)	5697917	No	0.36
Pfuna 2	9.87 (9.88)	5326467	No	0.49
Pfds 2	9.85 (9.85)	10491054	No	0.40
Pfdoa 2	10.20 (10.20)	6890253	No	0.43
Fosa 2	9.97 (10.00)	1086600	No	0.04
Pfteda 2	10.80 (10.90)	3012750	No	0.39
PFHpS 2	8.40 (8.49)	4148114	No	0.42
NMeFOSE 2	10.80 (10.80)	130396	No	0.01
NMeFOSA 2	10.80 (10.80)	6683246	No	0.93
NEtFOSE 2	11.00 (11.10)	89479	No	0.00
NEtFOSA 2	11.00 (11.10)	6717806	No	0.70
PFTrDA 2	10.60 (10.60)	5522556	No	0.39
6_2-FTS 2	8.32 (8.39)	9277384	No	1.27
8_2-FTS 2	9.43 (9.50)	651534	No	0.10

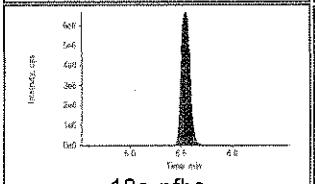

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

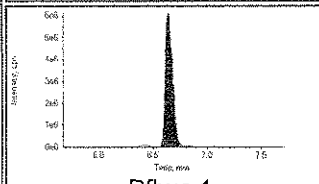

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

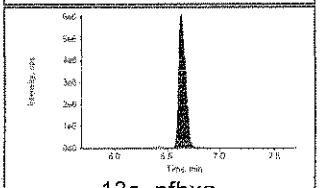

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

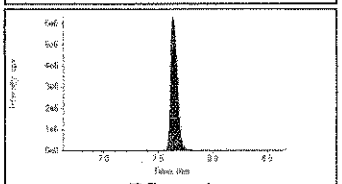

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

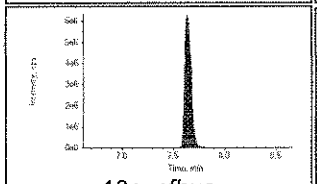

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

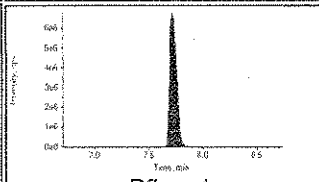

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

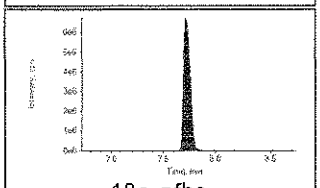

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

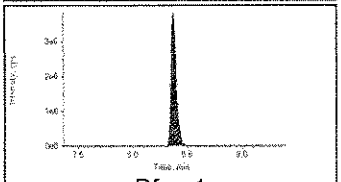

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

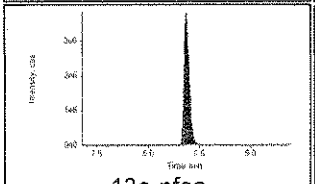

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

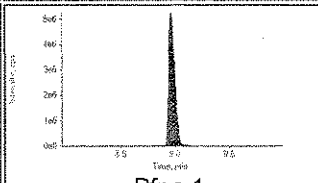

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

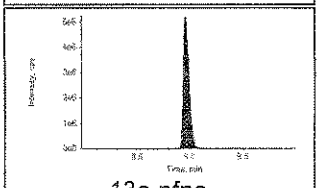

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

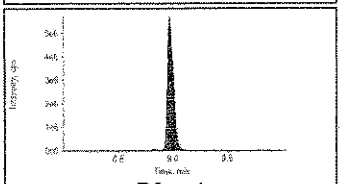

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

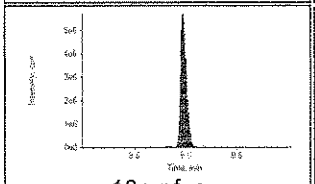

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

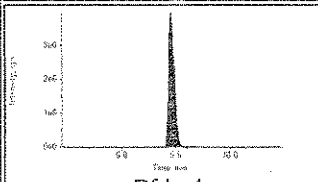

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

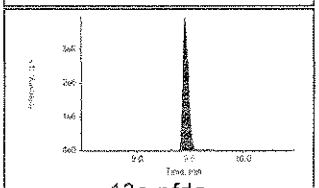

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

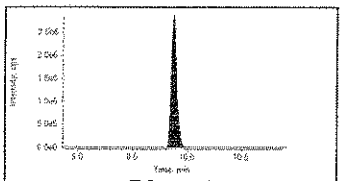

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

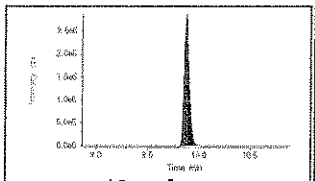

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

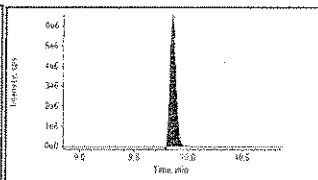

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

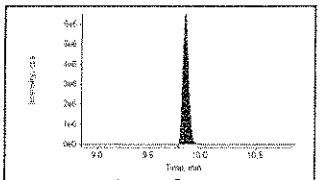

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

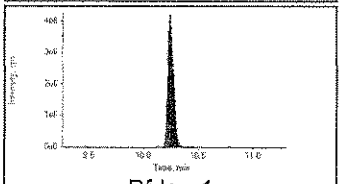

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

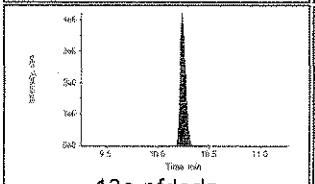

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

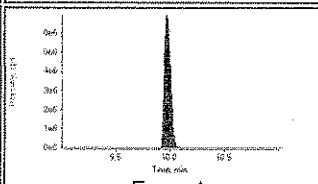

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

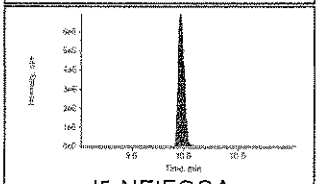

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

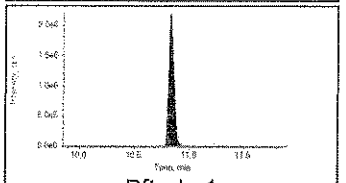

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

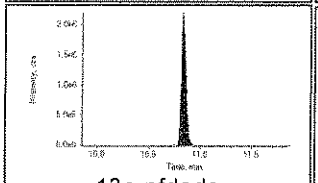

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

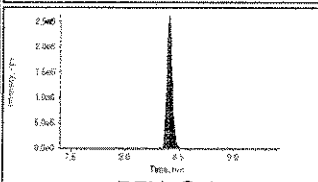

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

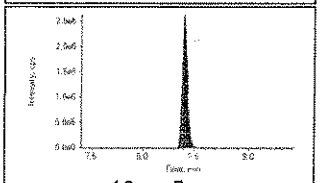

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

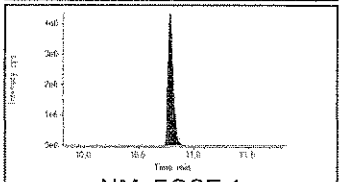

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

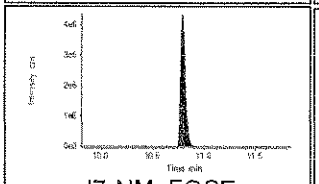

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
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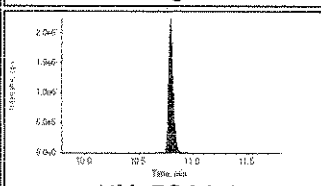

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

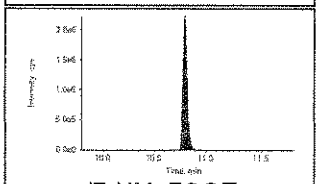

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
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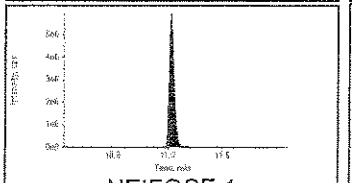

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

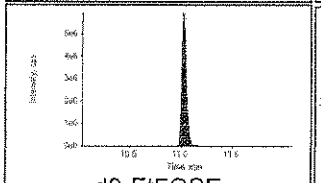

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

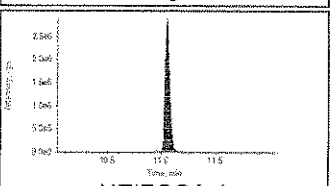

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

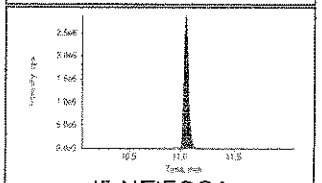

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

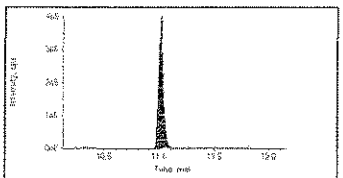

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

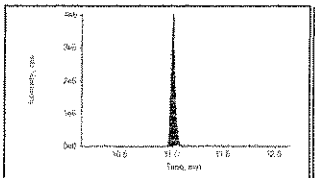

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

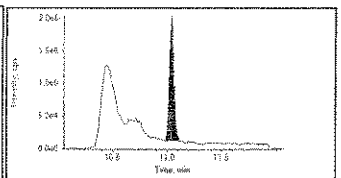

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

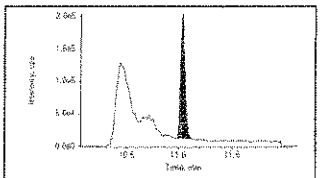

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

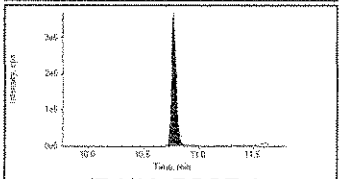

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

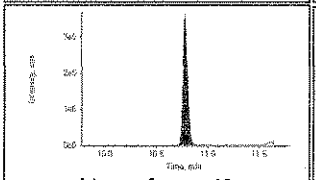

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

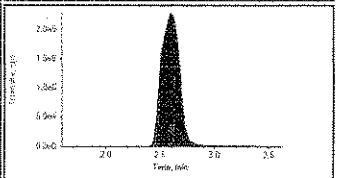

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

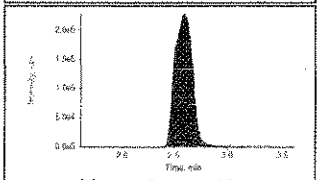

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

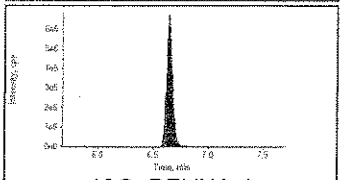

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

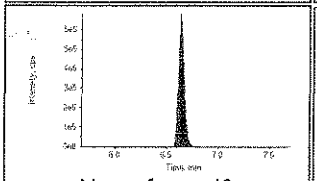

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

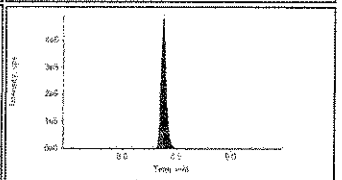

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

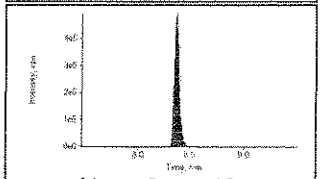

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

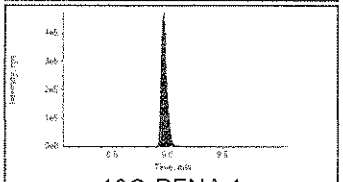

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

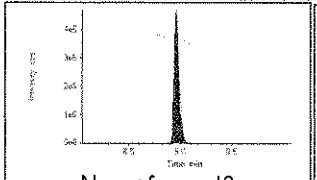

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

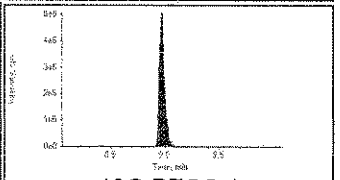

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

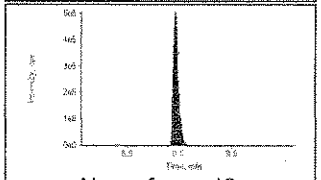

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

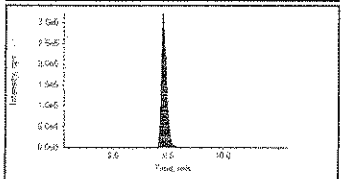

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

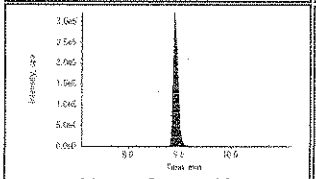

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

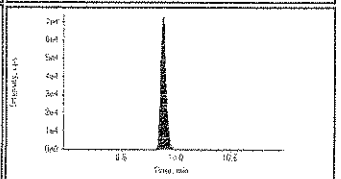

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

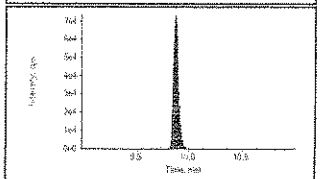

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

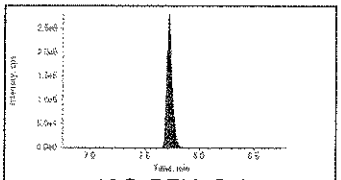

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

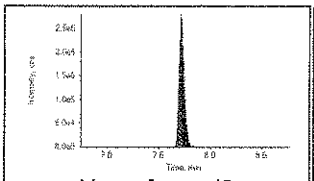

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

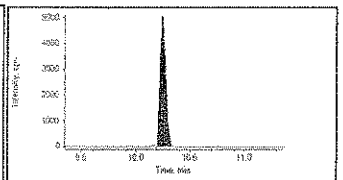

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

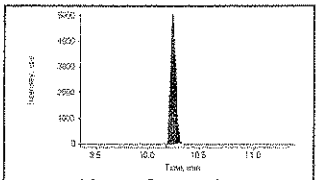

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

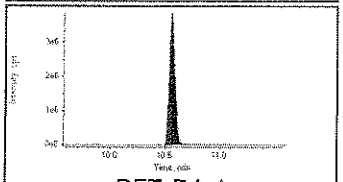

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

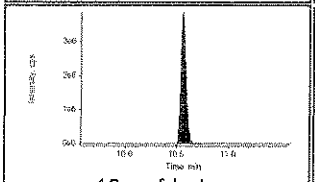

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

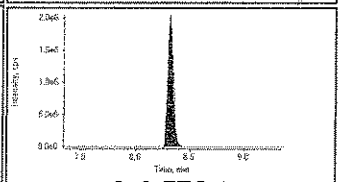

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

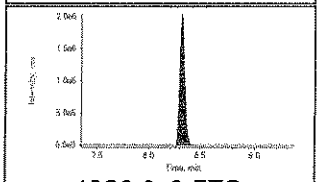

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

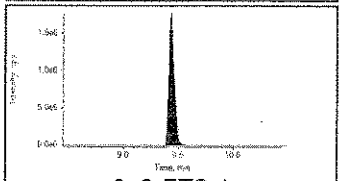

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

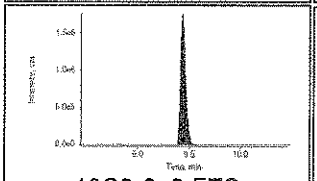

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

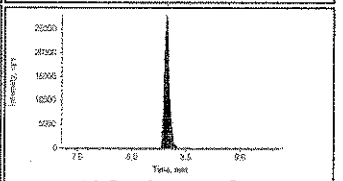

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

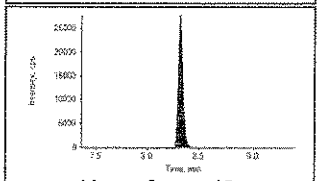

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

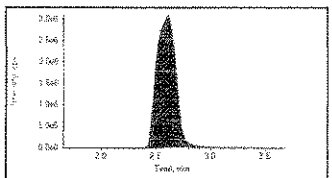

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak

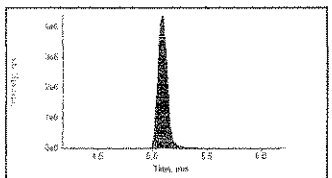

13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

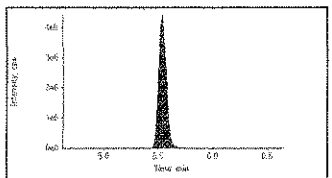

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

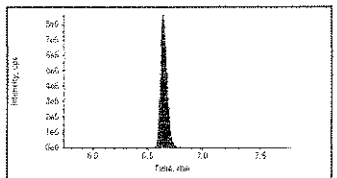

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

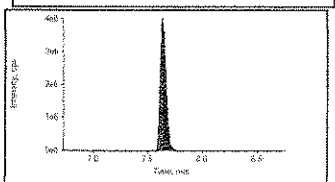
Ion Ratio Confirmation

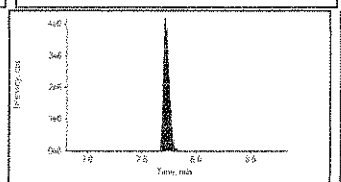

Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

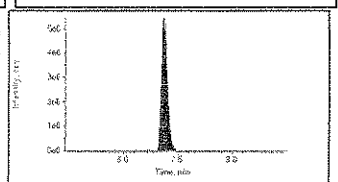

Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

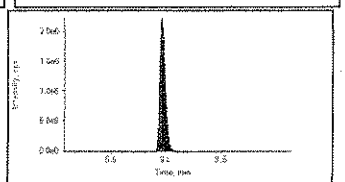

Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

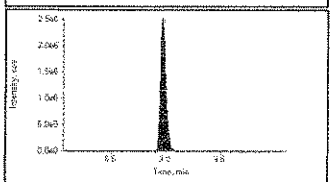

Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

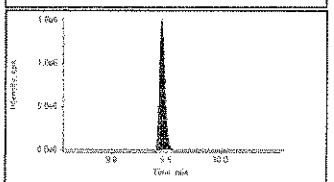

Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

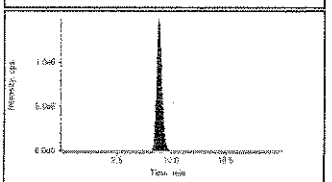

Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

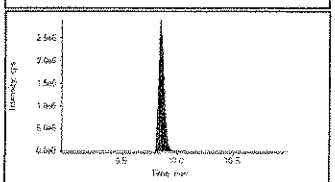

Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

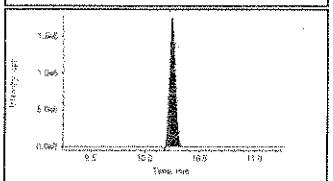

Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

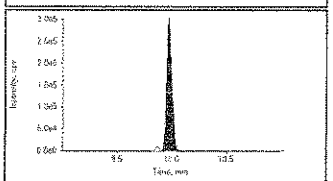

Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

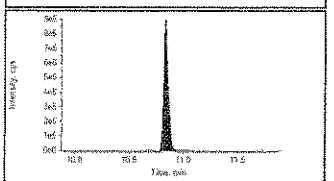

Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

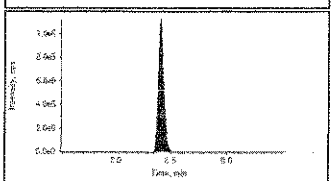

Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

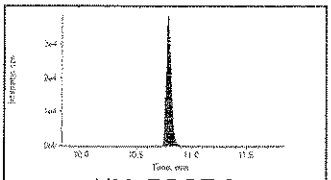

Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

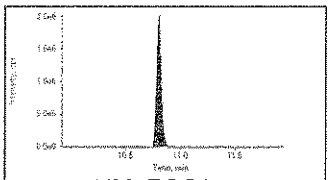

Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

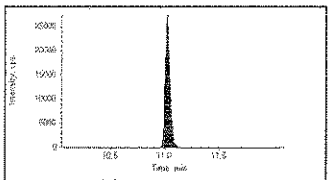

PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



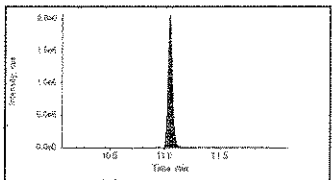
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



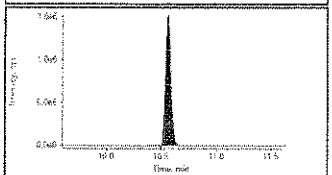
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



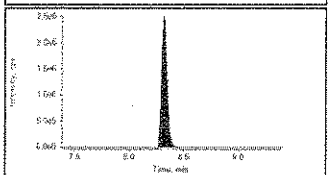
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



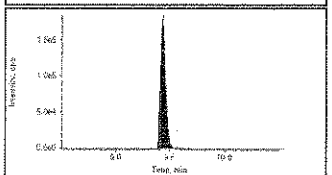
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1018.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	10
Acquisition Date	3/17/2016 9:26:00 PM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	2	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	3116326	0.00 (2.60)	0	N/A	No
Pfpea 1	13c_pfhxa	3454019	0.00 (5.13)	0	N/A	No
Pfbs 1	18o-pfhs	1378456	0.00 (5.54)	0	N/A	No
Pfhxa 1	13c_pfhxa	3454019	6.63 (6.68)	5954	0.0090	No
Pfhpa 1	13c_pfhxa	3454019	0.00 (7.63)	0	N/A	Yes
Pfhxs 1	18o-pfhs	1378456	7.71 (7.72)	12926	0.0170	No
Pfoa 1	13c-pfoa	2250277	8.38 (8.36)	3650	0.0140	No
Pfna 1	13c-pfna	2413558	8.95 (8.96)	4816	0.0110	No
Pfos 1	13c-pfos	2572723	8.97 (9.00)	792	0.0020	No
Pfda 1	13c-pfda	1387315	9.45 (9.45)	2241	0.0080	No
Pfuna 1	13c-pfuna	351932	9.88 (9.87)	4174	0.0210	No
Pfds 1	13c-pfos	2572723	9.88 (9.85)	1254	0.0020	No
Pfdoa 1	13c-pfdoda	25213	10.20 (10.30)	4622	0.0150	No
Fosa 1	d5-NEtFOSA	622928	9.98 (10.00)	9761	0.0190	No
Pfteda 1	13c-pfdoda	25213	10.80 (10.90)	5354	0.0470	No
PFHpS 1	18o-pfhs	1378456	0.00 (8.40)	0	N/A	No
NMeFOSE 1	d7-NMeFOSE	1121985	10.80 (10.80)	1443	0.0070	No
NMeFOSA 1	d7-NMeFOSE	1121985	0.00 (10.80)	0	N/A	Yes
NEtFOSE 1	d9-EtFOSE	1265307	11.00 (11.10)	4468	0.0160	No

MAR 22 2016

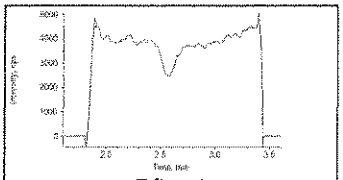
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
NEtFOSA 1	d5-NEtFOSA	622928	11.10 (11.00)	2460	0.0220	No
d9-EtFOSE 1	N_mefosa_d3	554883	11.00 (11.10)	1265307	4.4680	No
d5-NEtFOSA 1	N_mefosa_d3	554883	11.00 (11.10)	622928	4.3850	No
d7-NMeFOSE 1	N_mefosa_d3	554883	10.80 (10.80)	1121985	4.2710	No
13C_PFBA 1	N_mefosa_d3	554883	2.57 (2.60)	3116326	4.4600	No
13C_PFHXA 1	N_mefosa_d3	554883	6.63 (6.68)	3454019	4.5330	No
13C-PFOA 1	N_mefosa_d3	554883	8.37 (8.43)	2250277	4.5570	No
13C-PFNA 1	N_mefosa_d3	554883	8.96 (9.05)	2413558	4.4530	No
13C-PFOS 1	N_mefosa_d3	554883	8.97 (9.03)	2572723	4.5110	No
13C-PFDA 1	N_mefosa_d3	554883	9.45 (9.52)	1387315	4.3910	No
13C-PFUNA 1	N_mefosa_d3	554883	9.87 (9.94)	351932	4.4920	No
18O-PFHxS 1	N_mefosa_d3	554883	7.71 (7.75)	1378456	4.6170	No
13C-PFDoA 1	N_mefosa_d3	554883	10.20 (10.30)	25213	4.7950	No
PFTrDA 1	13c-pfdoda	25213	10.60 (10.60)	7905	0.0290	No
6_2-FTS 1	13C2-6_2-FTS	59732	0.00 (8.35)	0	N/A	No
8_2-FTS 1	13C2-6_2-FTS	59732	0.00 (9.45)	0	N/A	No
13C2-6_2-FTS 1	N_mefosa_d3	554883	8.32 (8.36)	59732	3.8960	No

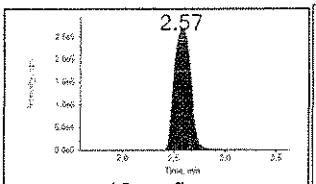
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (2.66)	0	No	0.00 (0.94)	No
Pfpea 2	0.00 (5.18)	0	No	0.00 (1.01)	No
Pfbs 2	0.00 (5.63)	0	No	0.00 (0.43)	No
Pfhxa 2	0.00 (6.73)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (7.67)	0	No	0.00 (0.42)	No
Pfhxs 2	7.71 (7.81)	5453	No	0.42 (0.41)	YES
Pfoa 2	8.37 (8.47)	6271	No	1.72 (1.86)	YES

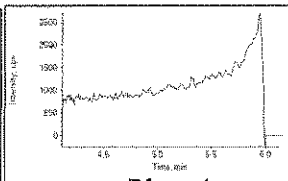
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfna 2	8.96 (9.07)	1229	No	0.26 (0.32)	No
Pfos 2	0.00 (8.97)	0	No	0.00 (0.36)	No
Pfda 2	9.45 (9.45)	980	No	0.44 (0.31)	No
Pfuna 2	9.89 (9.88)	2064	No	0.49 (0.46)	YES
Pfds 2	0.00 (9.84)	0	No	0.00 (0.34)	No
Pfdoa 2	10.20 (10.20)	2533	No	0.55 (0.35)	No
Fosa 2	0.00 (10.00)	0	Yes	0.00 (0.02)	No
Pfteda 2	10.80 (10.90)	1084	No	0.20 (0.36)	No
PFHpS 2	0.00 (8.49)	0	No	0.00 (0.43)	No
NMeFOSE 2	0.00 (10.80)	0	No	0.00 (0.01)	No
NMeFOSA 2	0.00 (10.80)	0	No	0.00 (1.05)	No
NEtFOSE 2	0.00 (11.10)	0	No	0.00 (0.00)	No
NEtFOSA 2	11.00 (11.10)	2237	No	0.91 (0.68)	No
PFTrDA 2	10.50 (10.60)	2598	No	0.33 (0.33)	YES
6_2-FTS 2	0.00 (8.39)	0	No	0.00 (1.30)	No
8_2-FTS 2	0.00 (9.50)	0	No	0.00 (0.10)	No

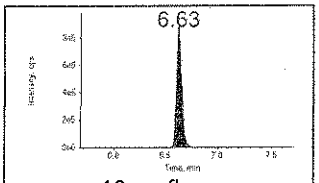
Quantitative Peak Review **IB** *No data for Sample ID*


Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

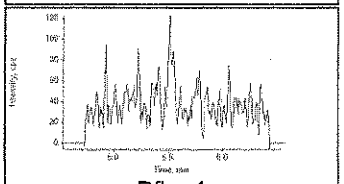


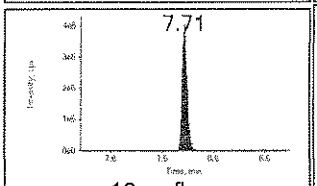
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

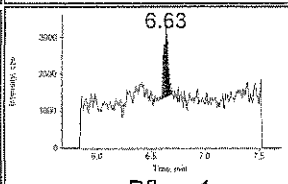


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

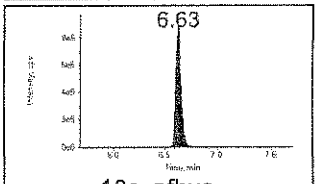

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



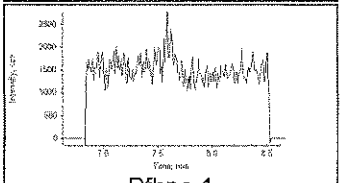
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

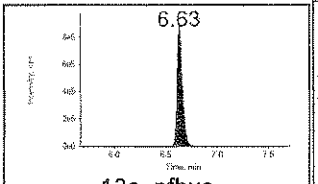


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

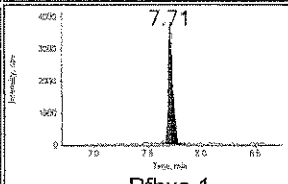


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

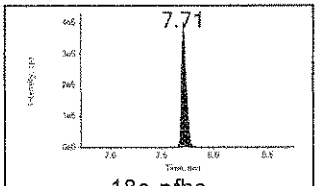

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



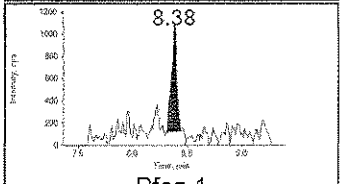
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



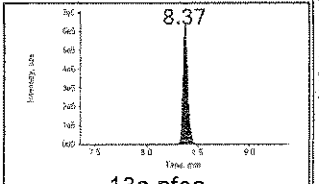
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



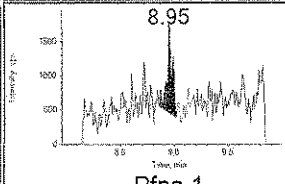
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



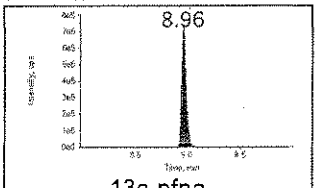
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



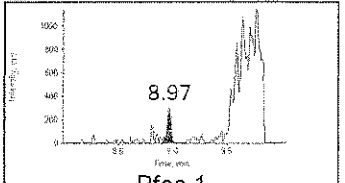
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



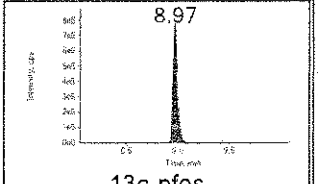
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



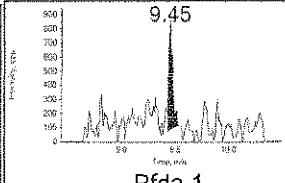
13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



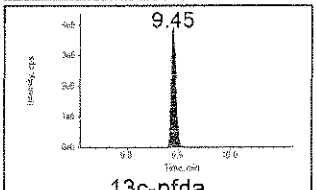
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



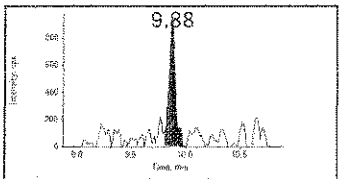
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



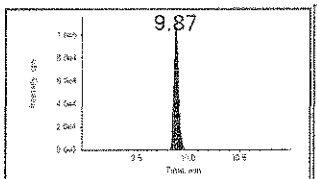
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



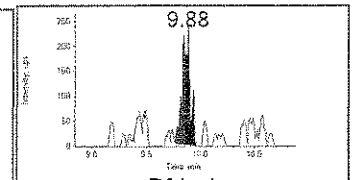
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



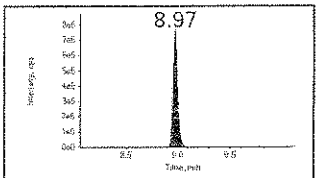
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



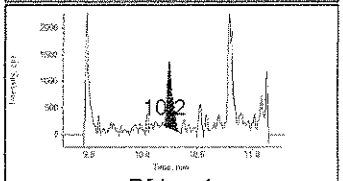
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



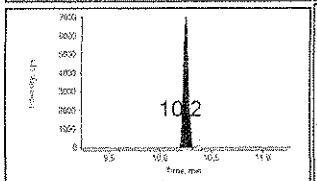
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



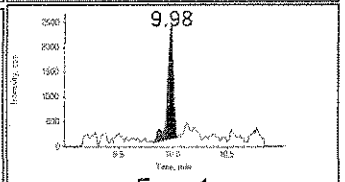
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



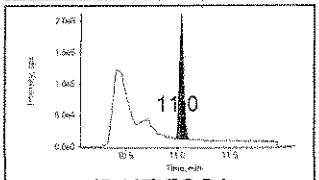
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



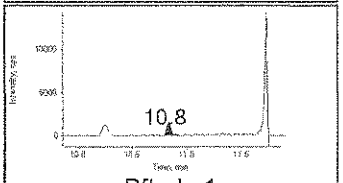
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



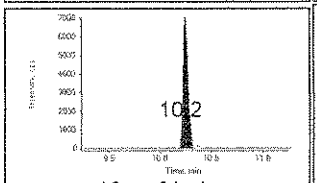
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



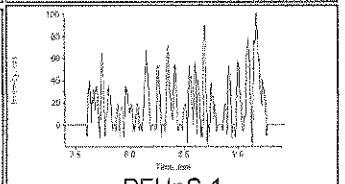
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



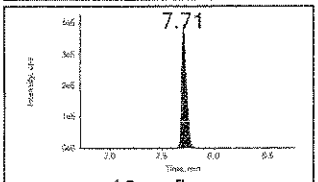
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



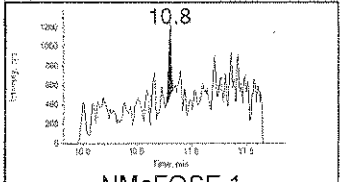
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



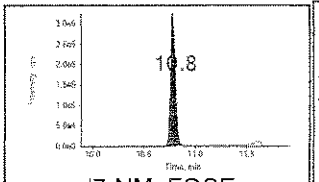
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



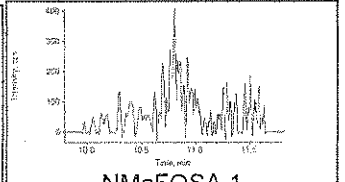
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



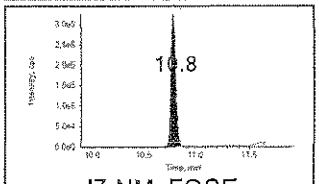
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



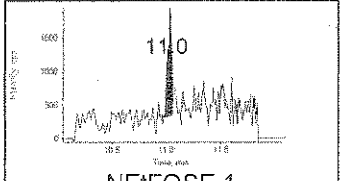
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



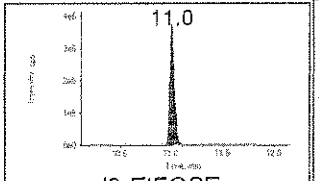
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



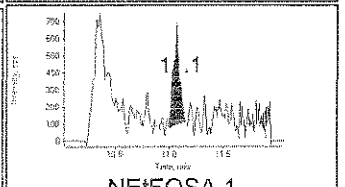
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



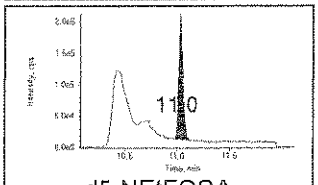
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



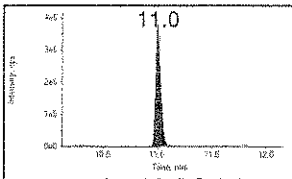
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



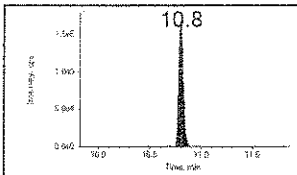
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



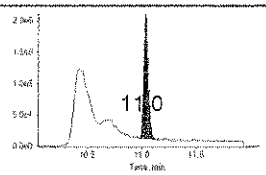
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



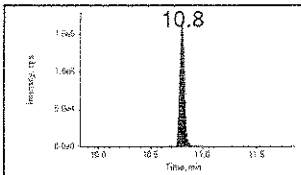
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



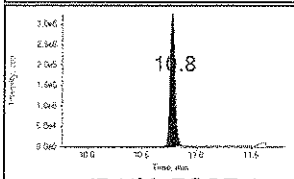
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



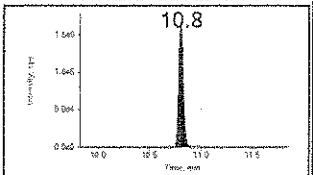
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



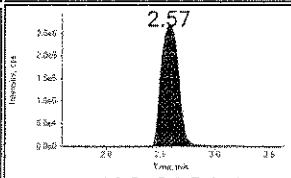
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



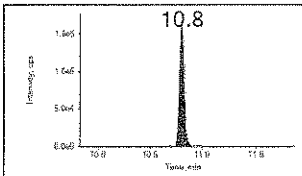
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



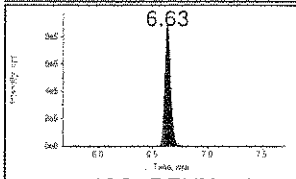
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



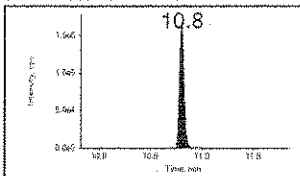
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



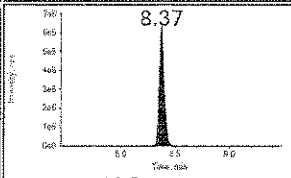
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



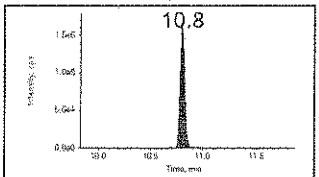
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



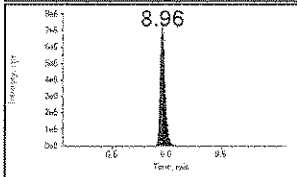
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



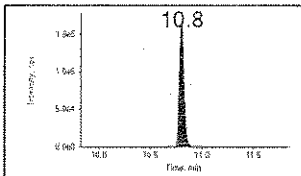
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



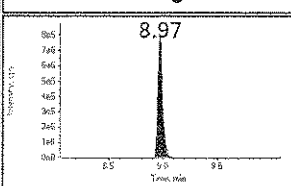
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



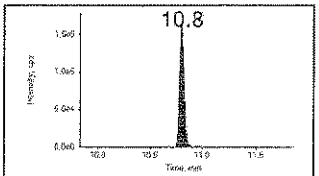
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



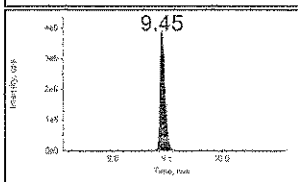
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



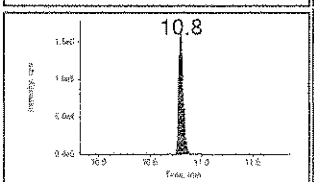
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



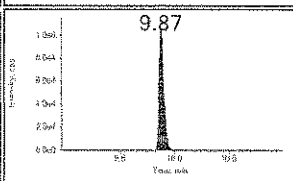
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



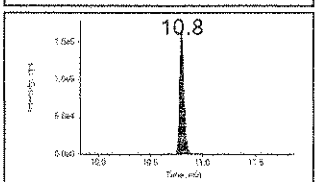
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



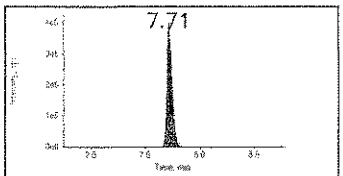
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



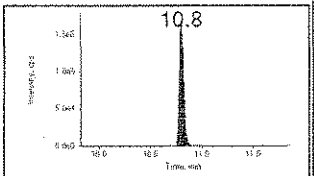
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



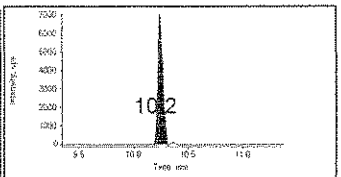
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



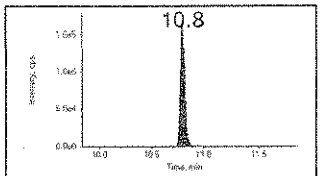
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



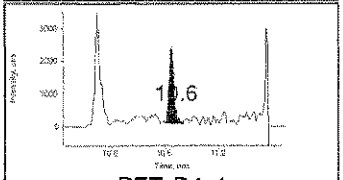
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



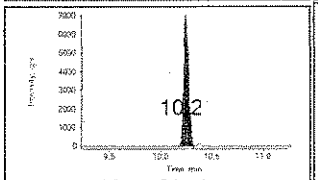
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



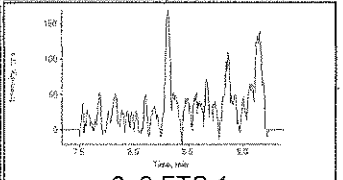
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



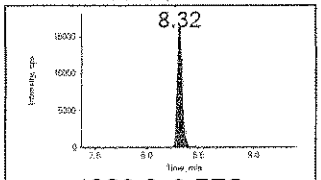
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



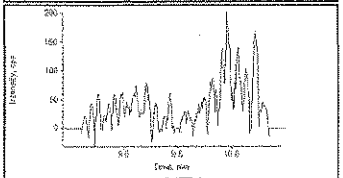
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



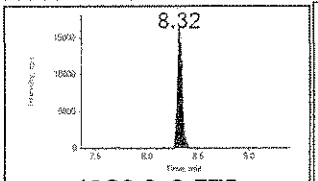
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



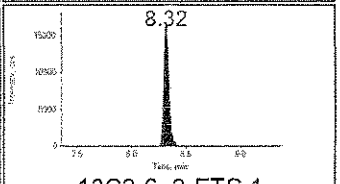
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



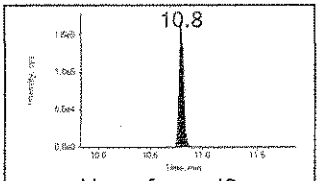
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

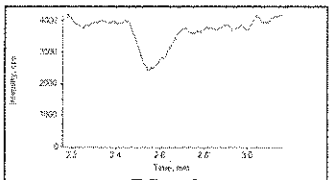


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

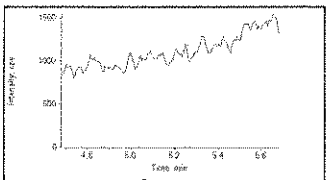


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

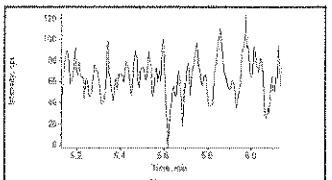
Ion Ratio Confirmation



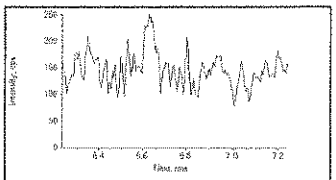
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



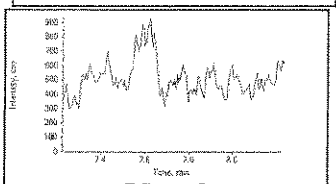
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



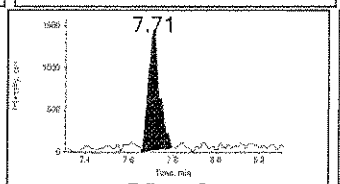
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



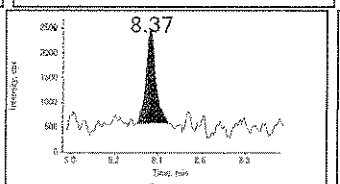
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



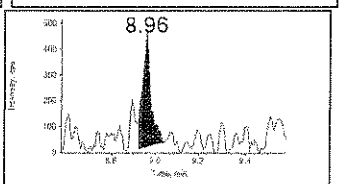
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



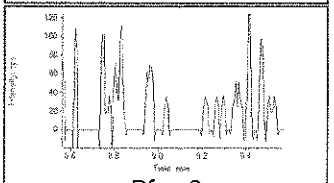
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



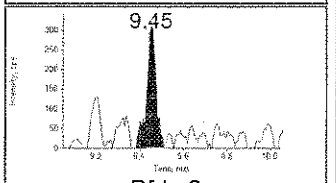
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



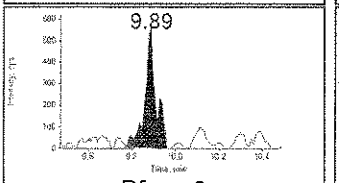
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



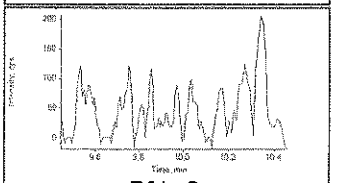
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



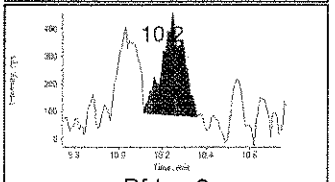
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



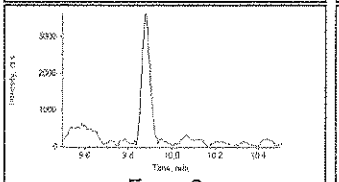
Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



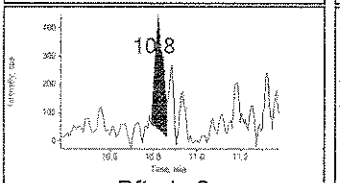
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



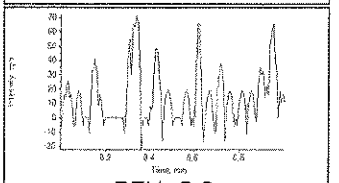
Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



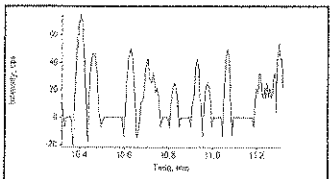
Fosa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



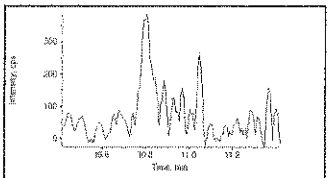
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



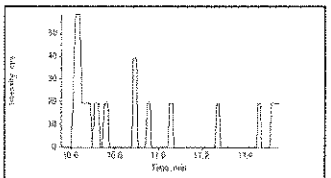
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



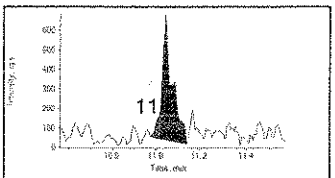
NMeFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



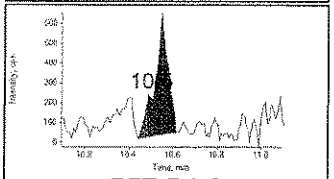
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



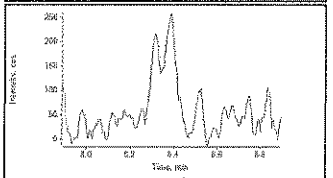
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



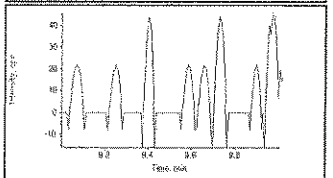
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1019.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 2ppb ICV	Injection Vial	13
Acquisition Date	3/17/2016 9:44:16 PM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Quality Control
Sample ID	15-OLC-02-35M	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.58 (2.60)	13c_pfba	3096592	1220419	2.00	2.3480	117	No
Pfpea 1	5.08 (5.13)	13c_pfhxa	3562871	1087464	2.00	2.3160	116	No
Pfbs 1	5.53 (5.54)	18o-pfhs	1387192	2202822	2.00	2.2920	115	No
Pfhxa 1	6.62 (6.68)	13c_pfhxa	3562871	1485386	2.00	2.2190	111	No
Pfhpa 1	7.63 (7.63)	13c_pfhxa	3562871	1553060	2.00	2.2340	112	No
Pfhxs 1	7.71 (7.72)	18o-pfhs	1387192	1792771	2.00	2.2970	115	No
Pfoa 1	8.36 (8.36)	13c-pfoa	2306089	564298	2.00	2.1850	109	No
Pfna 1	8.96 (8.96)	13c-pfna	2455880	1098058	2.00	2.4190	121	No
Pfos 1	8.96 (9.00)	13c-pfos	2540855	1095306	2.00	2.4360	122	No
Pfda 1	9.45 (9.45)	13c-pfda	1406133	657735	2.00	2.3380	117	No
Pfuna 1	9.87 (9.87)	13c-pfuna	364232	448306	2.00	2.1660	108	No
Pfds 1	9.85 (9.85)	13c-pfos	2540855	1209706	2.00	2.4220	121	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	23396	662999	2.00	2.2700	113	No
Fosa 1	9.96 (10.00)	d5-NEtFOSA	606287	1130159	2.00	2.2260	111	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	23396	260451	2.00	2.4590	123	No
PFHpS 1	8.39 (8.40)	18o-pfhs	1387192	333555	2.00	2.1370	107	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1165020	504861	2.00	2.2940	115	No
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1165020	180763	2.00	2.2300	112	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1198252	624975	2.00	2.3030	115	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	606287	264142	2.00	2.4400	122	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa d3	470257	1198252	5.00	4.9920	100	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa d3	470257	606287	5.00	5.0360	101	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa d3	470257	1165020	5.00	5.2330	105	No

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Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
13C_PFBA 1	2.58 (2.60)	N_mefosa d3	470257	3096592	5.00	5.2290	105	No
13C_PFHXA 1	6.62 (6.68)	N_mefosa d3	470257	3562871	5.00	5.5170	110	No
13C-PFOA 1	8.36 (8.43)	N_mefosa d3	470257	2306089	5.00	5.5110	110	No
13C-PFNA 1	8.96 (9.05)	N_mefosa d3	470257	2455880	5.00	5.3460	107	No
13C-PFOS 1	8.96 (9.03)	N_mefosa d3	470257	2540855	5.00	5.2570	105	No
13C-PFDA 1	9.45 (9.52)	N_mefosa d3	470257	1406133	5.00	5.2510	105	No
13C-PFUNA 1	9.87 (9.93)	N_mefosa d3	470257	364232	5.00	5.4850	110	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa d3	470257	1387192	5.00	5.4820	110	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa d3	470257	23396	5.00	5.2500	105	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	23396	584290	2.00	2.3410	117	No
6_2-FTS 1	8.31 (8.35)	13C2-6_2-FTS	64864	229271	2.00	2.3400	117	No
8_2-FTS 1	9.43 (9.45)	13C2-6_2-FTS	64864	197284	2.00	2.1830	109	No
13C2-6_2-FTS 1	8.31 (8.36)	N_mefosa d3	470257	64864	5.00	4.9920	100	No

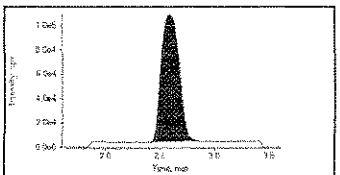
IRC Summary

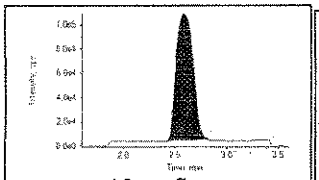
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	2.59 (2.66)	1225063	No	YES
Pfpea 2	5.07 (5.18)	1068118	No	YES
Pfbs 2	5.52 (5.63)	939202	No	YES
Pfhxa 2	6.63 (6.73)	130047	No	YES
Pfhpa 2	7.63 (7.66)	632014	No	YES
Pfhxs 2	7.71 (7.80)	708502	No	YES
Pfoa 2	8.36 (8.46)	1122567	No	YES
Pfna 2	8.96 (9.07)	334735	No	YES
Pfos 2	8.96 (8.96)	382224	No	YES
Pfda 2	9.45 (9.45)	196633	No	YES
Pfuna 2	9.87 (9.88)	211339	No	YES
Pfds 2	9.85 (9.84)	401577	No	YES
Pfdoa 2	10.20 (10.20)	233127	No	YES

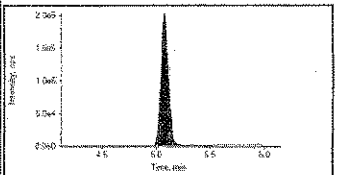
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Fosa 2	9.96 (10.00)	25387	No	YES
Pfteda 2	10.80 (10.90)	88110	No	YES
PFHpS 2	8.39 (8.48)	132025	No	YES
NMeFOSE 2	10.80 (10.80)	4096	No	YES
NMeFOSA 2	10.80 (10.80)	170122	No	YES
NEtFOSE 2	11.00 (11.10)	1989	No	YES
NEtFOSA 2	11.00 (11.10)	182073	No	YES
PFTrDA 2	10.60 (10.60)	183378	No	YES
6_2-FTS 2	8.31 (8.39)	307889	No	YES
8_2-FTS 2	9.43 (9.50)	19137	No	YES

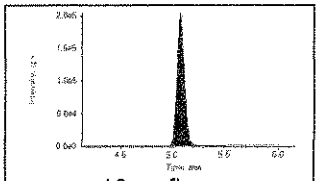
Quantitative Peak Review

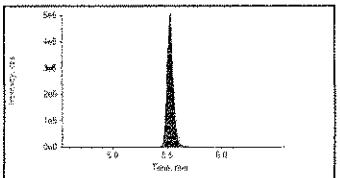
PFC 2ppb ICV 15-OLC-02-35M

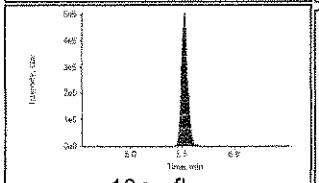

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

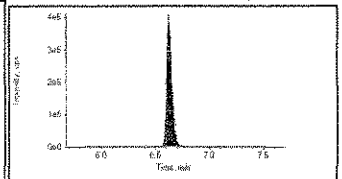

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

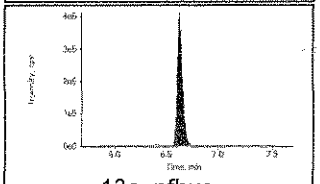

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

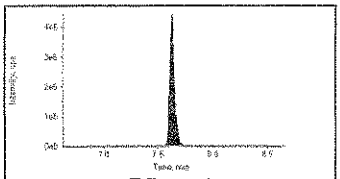

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

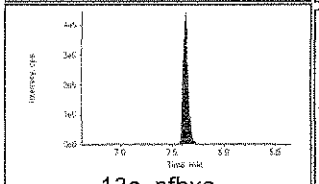

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

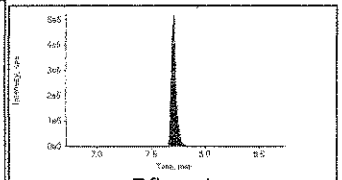

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

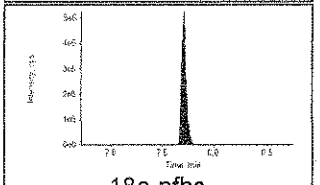

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

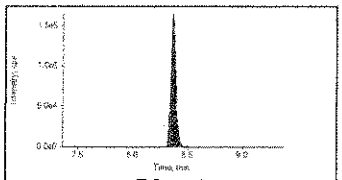

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

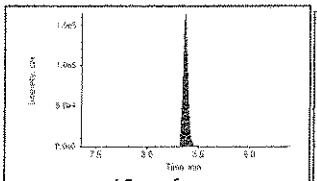

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

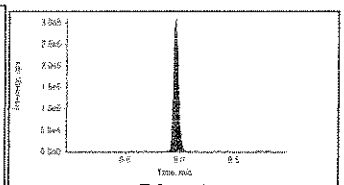

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

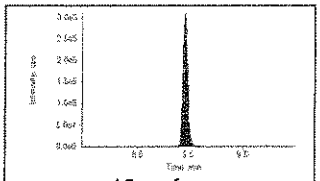

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

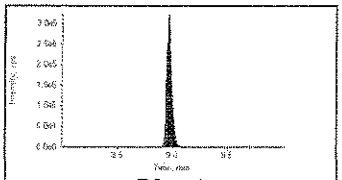

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

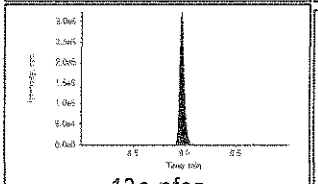

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

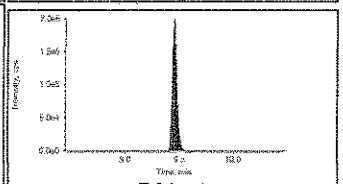

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

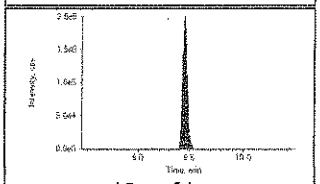

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

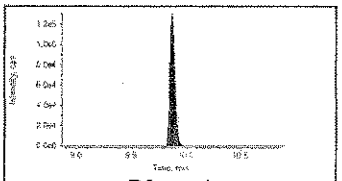

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

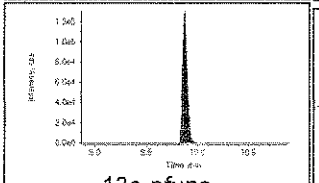

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

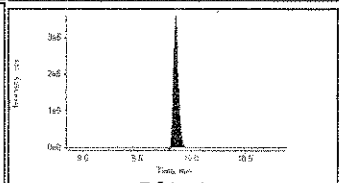

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

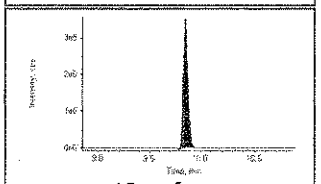

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

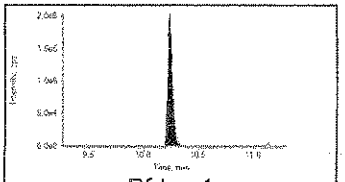

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

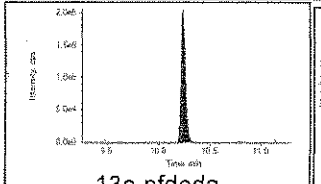

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

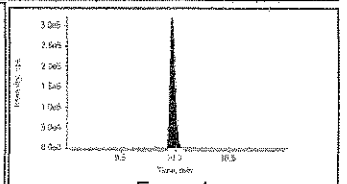

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

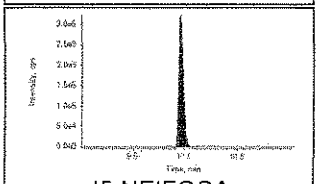

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

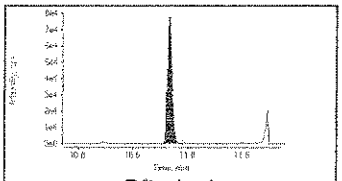

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

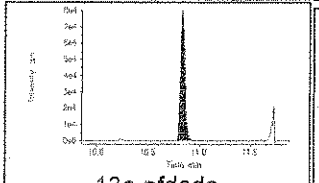

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

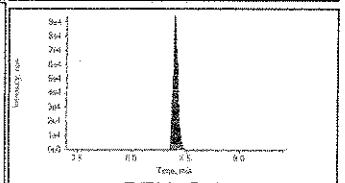

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

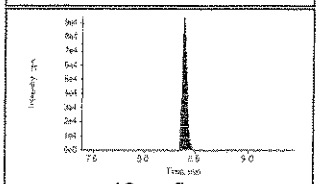

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

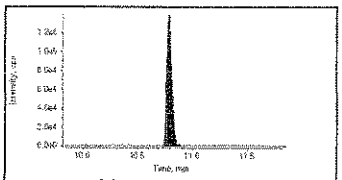

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

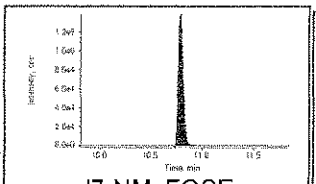

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

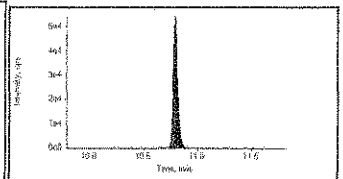

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

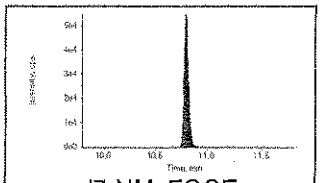

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

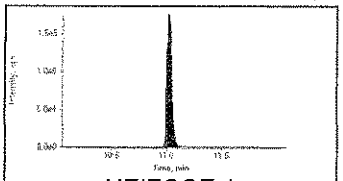

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

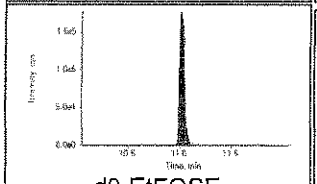

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

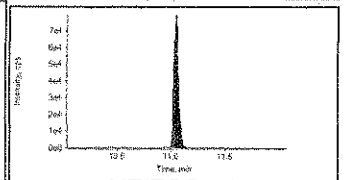

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

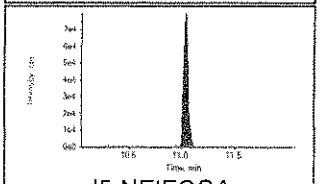

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

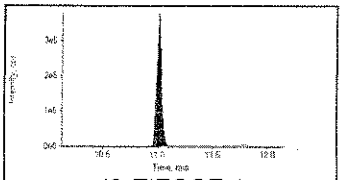

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

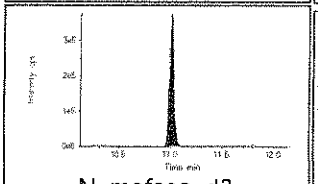

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

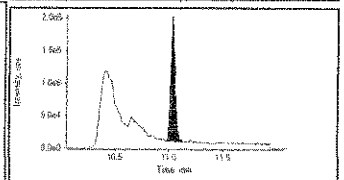

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

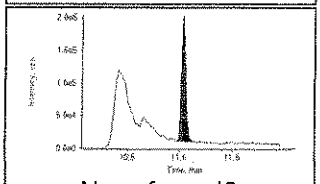

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

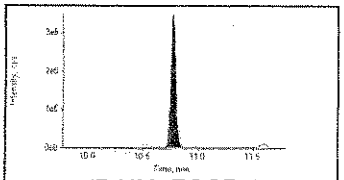

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

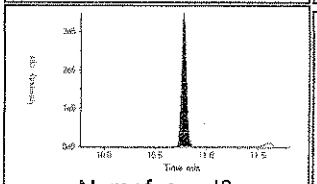

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

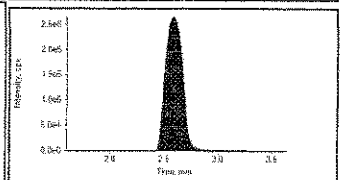

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

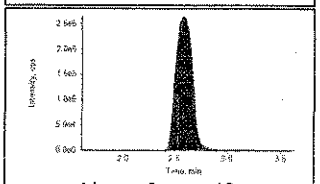

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

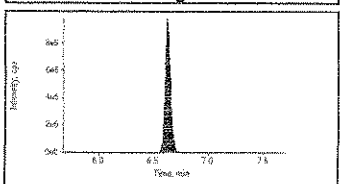

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

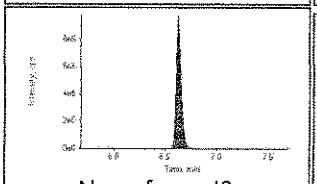

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

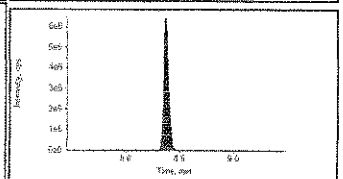

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

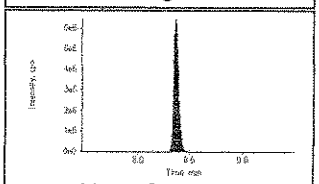

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

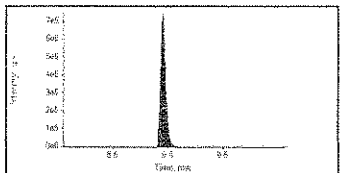

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

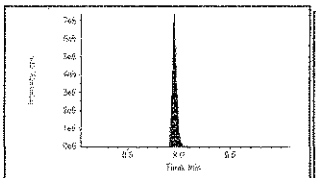

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

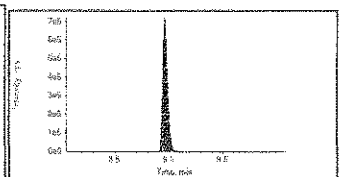

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

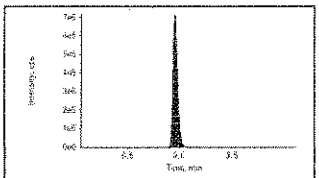

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

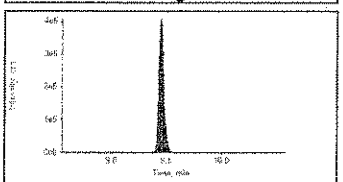

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

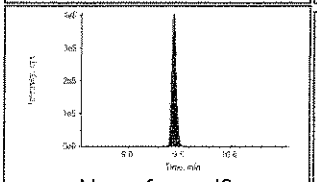

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

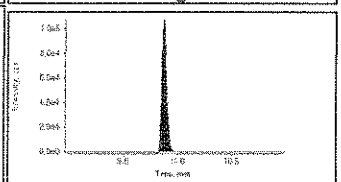

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

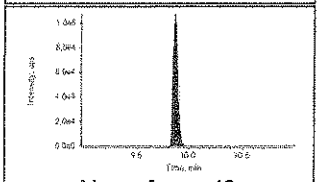

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

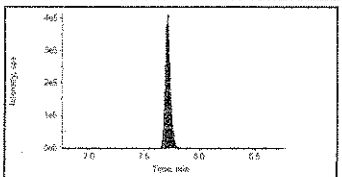

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

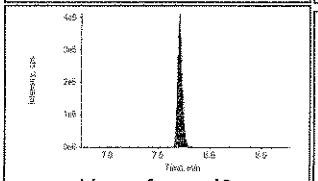

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

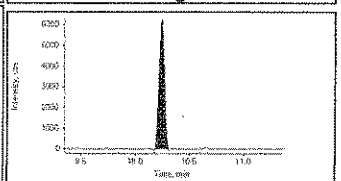

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

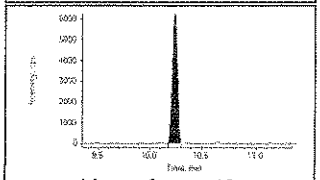

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

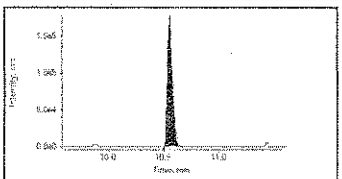

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

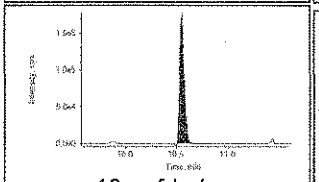

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

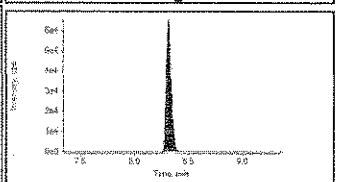

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

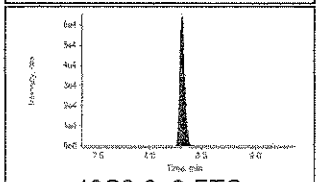

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

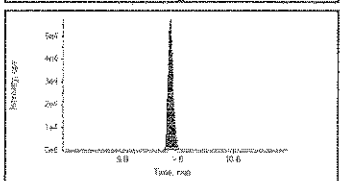

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

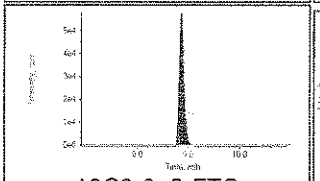

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

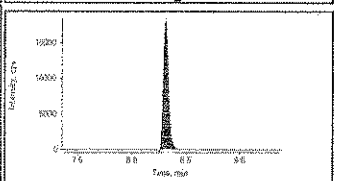

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

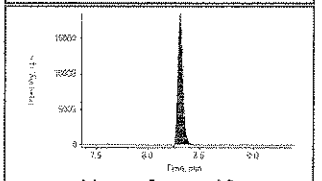

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

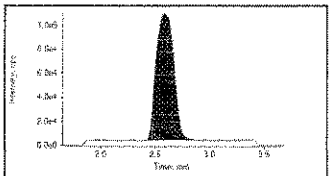

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

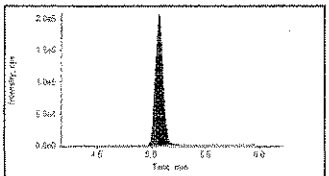

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

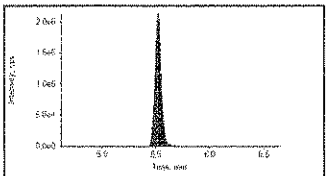
Ion Ratio Confirmation



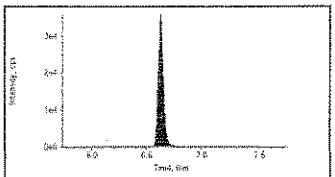
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



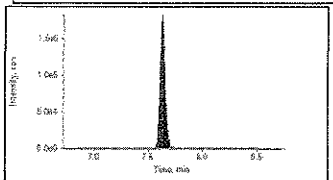
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



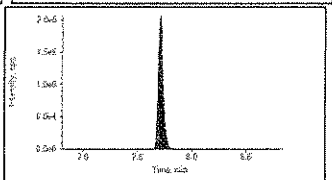
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



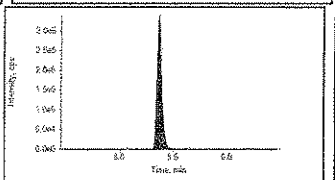
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



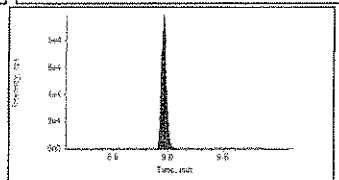
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



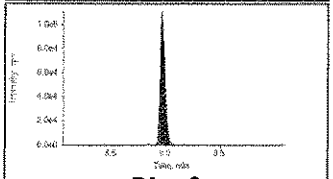
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



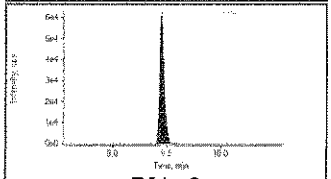
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



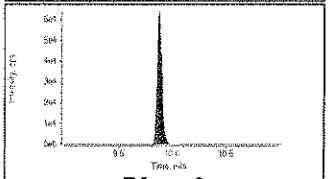
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



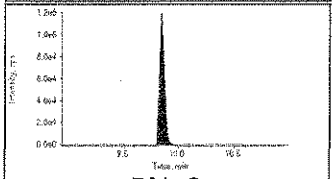
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



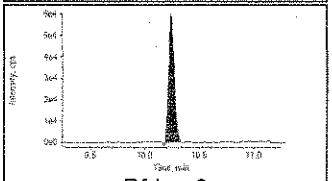
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



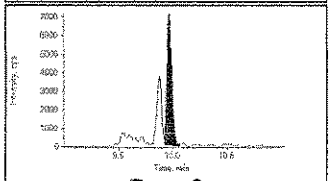
Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



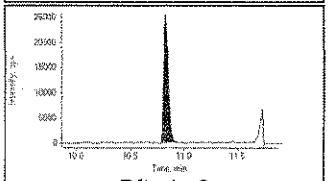
Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



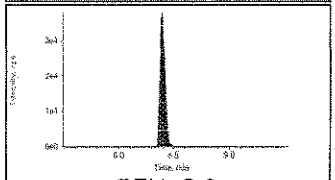
Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



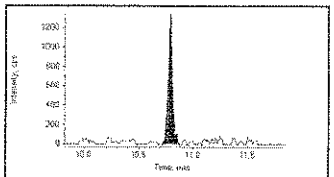
Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



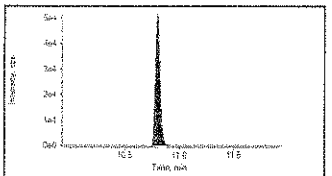
Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



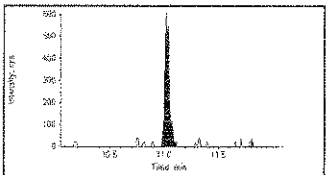
PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



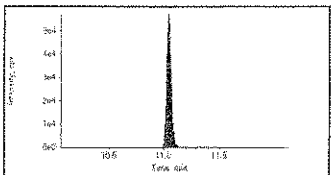
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



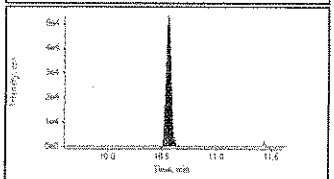
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



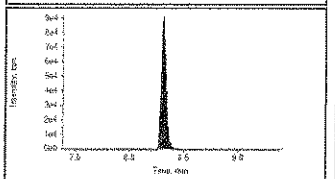
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



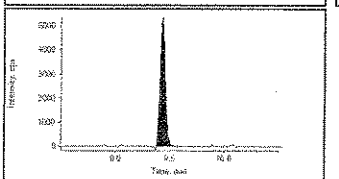
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1020.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	10
Acquisition Date	3/17/2016 10:02:37 PM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	2	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	2995970	0.00 (2.60)	0	N/A	Yes
Pfpea 1	13c_pfhxa	3346224	0.00 (5.13)	0	N/A	No
Pfbs 1	18o-pfhs	1336021	0.00 (5.54)	0	N/A	No
Pfhxa 1	13c_pfhxa	3346224	6.63 (6.68)	6290	0.0100	No
Pfhpa 1	13c_pfhxa	3346224	0.00 (7.63)	0	N/A	No
Pfhxs 1	18o-pfhs	1336021	7.72 (7.72)	12751	0.0170	No
Pfoa 1	13c-pfoa	2253186	8.36 (8.36)	3912	0.0160	No
Pfna 1	13c-pfna	2474430	8.94 (8.96)	5957	0.0130	No
Pfos 1	13c-pfos	2553206	0.00 (9.00)	0	N/A	Yes
Pfda 1	13c-pfda	1446115	9.43 (9.45)	2964	0.0100	No
Pfuna 1	13c-pfuna	364733	9.87 (9.87)	3272	0.0160	No
Pfds 1	13c-pfos	2553206	0.00 (9.85)	0	N/A	No
Pfdoa 1	13c-pfdoda	25832	10.20 (10.30)	3162	0.0100	No
Fosa 1	d5-NEtFOSA	608869	9.98 (10.00)	3177	0.0060	No
Pfteda 1	13c-pfdoda	25832	10.80 (10.90)	1705	0.0150	No
PFHpS 1	18o-pfhs	1336021	0.00 (8.40)	0	N/A	No
NMeFOSE 1	d7-NMeFOSE	1172738	0.00 (10.80)	0	N/A	No
NMeFOSA 1	d7-NMeFOSE	1172738	0.00 (10.80)	0	N/A	No
NEtFOSE 1	d9-EtFOSE	1184089	0.00 (11.10)	0	N/A	Yes
NEtFOSA 1	d5-NEtFOSA	608869	0.00 (11.00)	0	N/A	No

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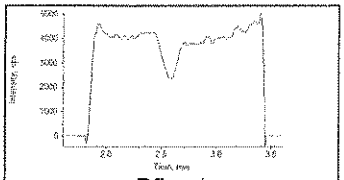
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	537792	11.00 (11.10)	1184089	4.3140	No
d5-NEtFOSA 1	N_mefosa_d3	537792	11.00 (11.10)	608869	4.4220	No
d7-NMeFOSE 1	N_mefosa_d3	537792	10.80 (10.80)	1172738	4.6060	No
13C_PFBA 1	N_mefosa_d3	537792	2.61 (2.60)	2995970	4.4240	No
13C_PFHXA 1	N_mefosa_d3	537792	6.63 (6.68)	3346224	4.5310	No
13C-PFOA 1	N_mefosa_d3	537792	8.36 (8.43)	2253186	4.7080	No
13C-PFNA 1	N_mefosa_d3	537792	8.96 (9.05)	2474430	4.7100	No
13C-PFOS 1	N_mefosa_d3	537792	8.96 (9.03)	2553206	4.6190	No
13C-PFDA 1	N_mefosa_d3	537792	9.45 (9.52)	1446115	4.7220	No
13C-PFUNA 1	N_mefosa_d3	537792	9.87 (9.93)	364733	4.8030	No
18O-PFHxS 1	N_mefosa_d3	537792	7.71 (7.75)	1336021	4.6170	No
13C-PFDoA 1	N_mefosa_d3	537792	10.20 (10.30)	25832	5.0690	No
PFTrDA 1	13c-pfdoda	25832	10.60 (10.60)	1425	0.0050	No
6_2-FTS 1	13C2-6_2-FTS	63190	0.00 (8.35)	0	N/A	No
8_2-FTS 1	13C2-6_2-FTS	63190	0.00 (9.45)	0	N/A	No
13C2-6_2-FTS 1	N_mefosa_d3	537792	8.31 (8.36)	63190	4.2530	No

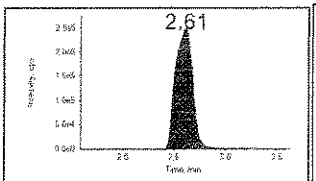
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (2.66)	0	No	0.00 (0.94)	No
Pfpea 2	0.00 (5.18)	0	No	0.00 (1.01)	No
Pfbs 2	0.00 (5.63)	0	No	0.00 (0.43)	No
Pfhxa 2	0.00 (6.73)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (7.68)	0	No	0.00 (0.42)	No
Pfhxs 2	7.71 (7.80)	4965	No	0.39 (0.41)	YES
Pfoa 2	8.37 (8.47)	6591	No	1.68 (1.86)	YES
Pfna 2	0.00 (9.07)	0	No	0.00 (0.32)	No

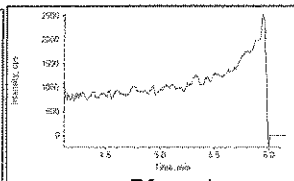
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	0.00 (8.97)	0	No	0.00 (0.36)	No
Pfda 2	0.00 (9.45)	0	No	0.00 (0.31)	No
Pfuna 2	0.00 (9.88)	0	No	0.00 (0.46)	No
Pfds 2	0.00 (9.84)	0	No	0.00 (0.34)	No
Pfdoa 2	0.00 (10.20)	0	Yes	0.00 (0.35)	No
Fosa 2	9.96 (10.00)	861	No	0.27 (0.02)	No
Pfteda 2	0.00 (10.90)	0	No	0.00 (0.36)	No
PFHpS 2	0.00 (8.49)	0	No	0.00 (0.43)	No
NMeFOSE 2	0.00 (10.80)	0	No	0.00 (0.01)	No
NMeFOSA 2	0.00 (10.80)	0	No	0.00 (1.05)	No
NEtFOSE 2	0.00 (11.10)	0	No	0.00 (0.00)	No
NEtFOSA 2	0.00 (11.10)	0	No	0.00 (0.68)	No
PFTrDA 2	0.00 (10.60)	0	No	0.00 (0.33)	No
6_2-FTS 2	0.00 (8.39)	0	No	0.00 (1.30)	No
8_2-FTS 2	0.00 (9.50)	0	No	0.00 (0.10)	No

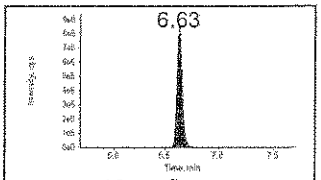
Quantitative Peak Review IB *No data for Sample ID*


Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

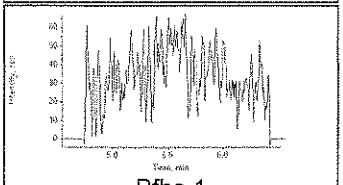


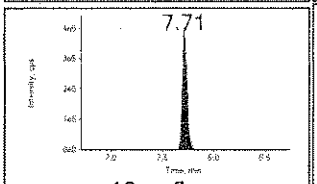
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

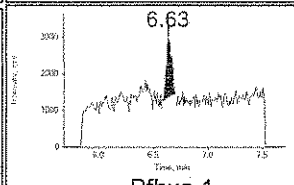


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

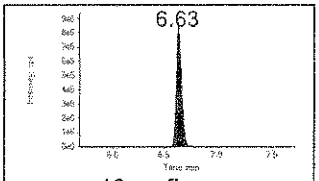

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



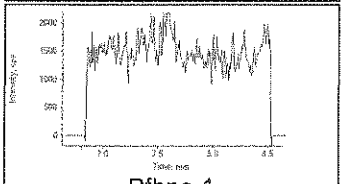
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

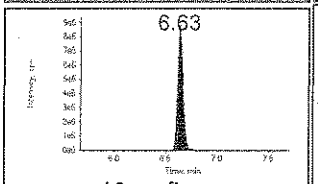


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

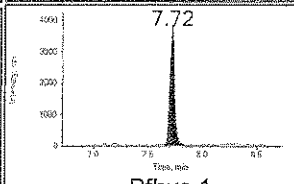


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

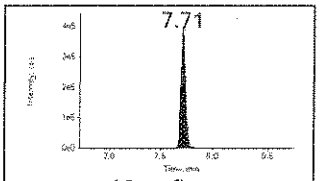

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



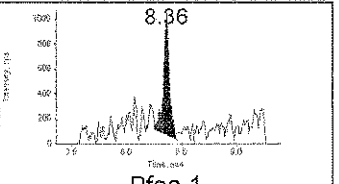
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



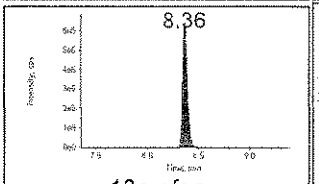
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



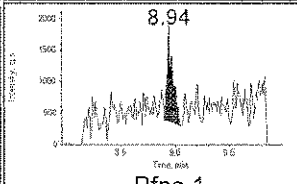
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



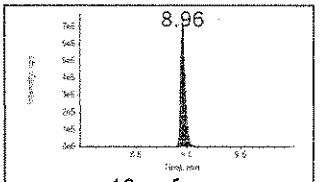
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



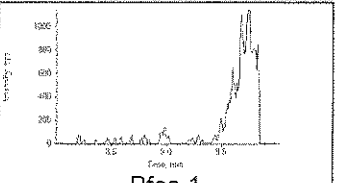
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

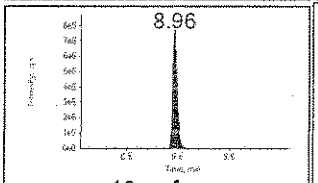


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

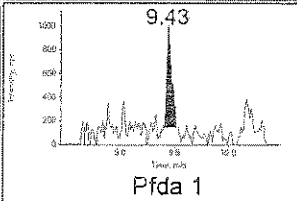


13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

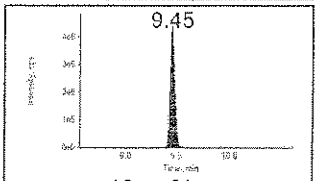

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



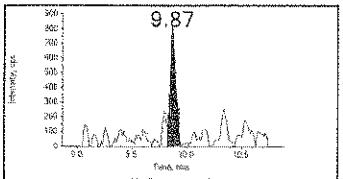
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



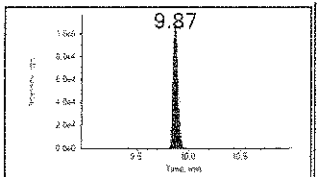
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



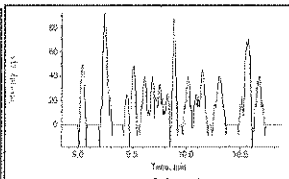
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



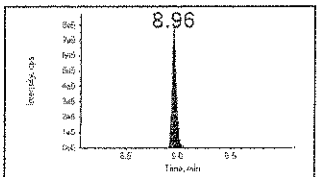
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



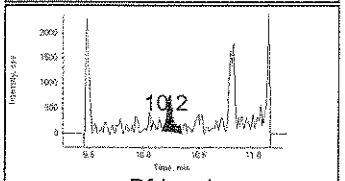
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



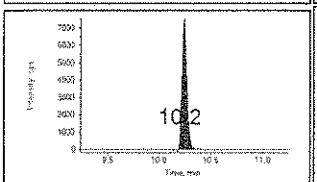
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



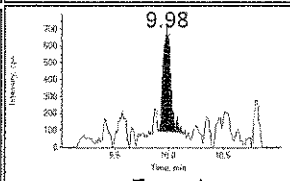
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



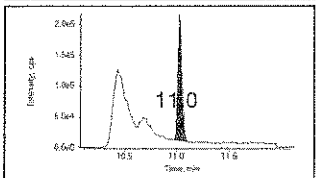
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



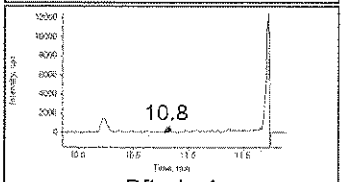
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



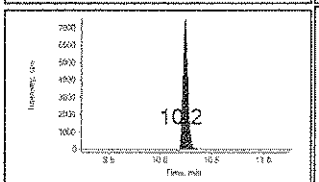
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



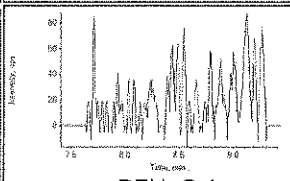
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



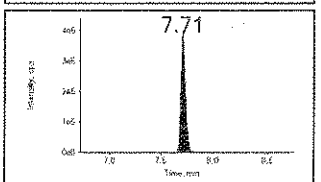
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



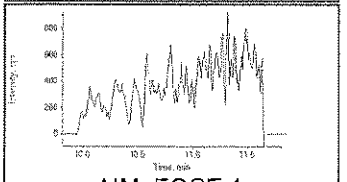
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



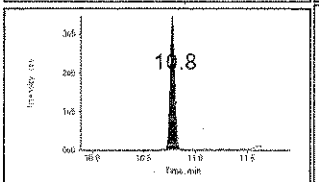
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



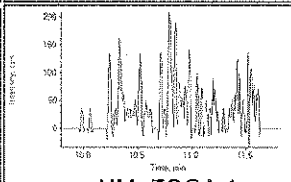
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



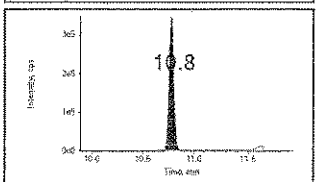
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



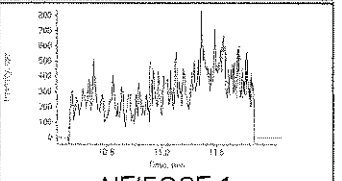
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



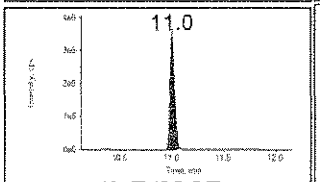
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



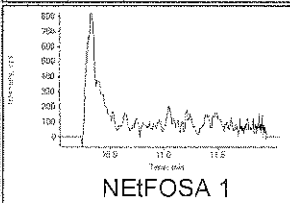
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



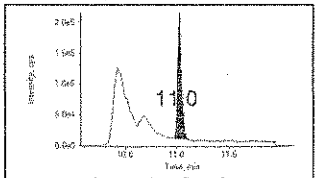
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



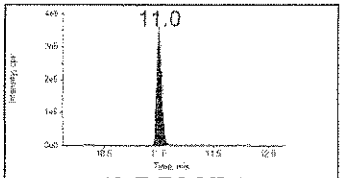
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



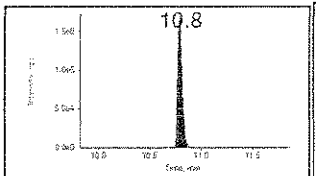
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



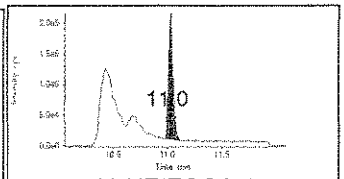
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



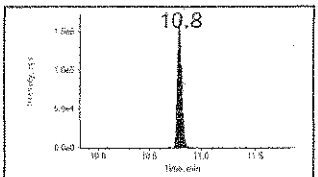
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



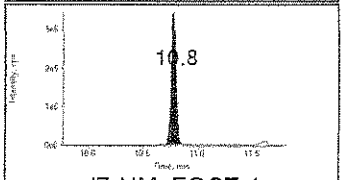
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



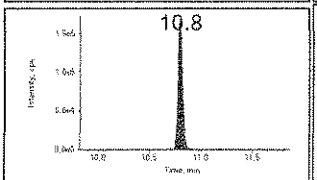
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



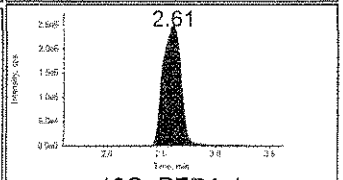
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



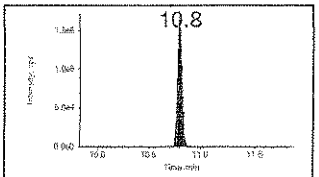
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



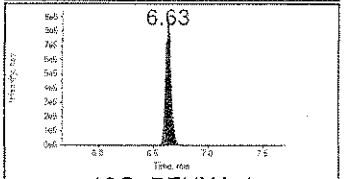
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



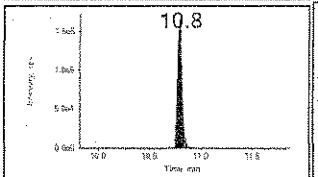
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



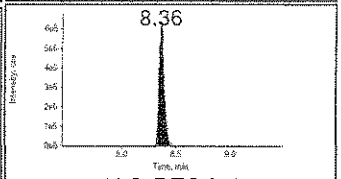
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



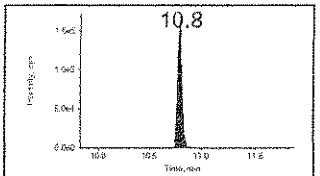
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



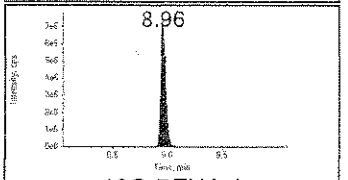
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



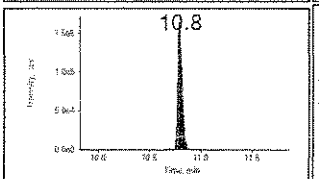
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



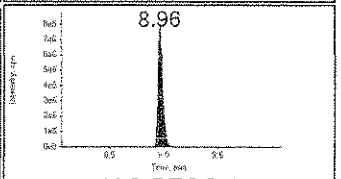
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



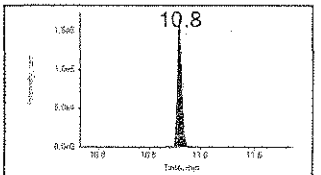
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



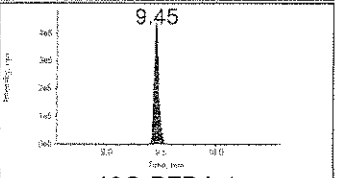
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



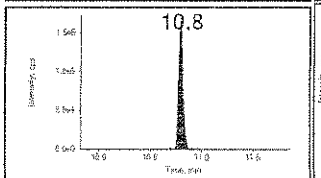
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



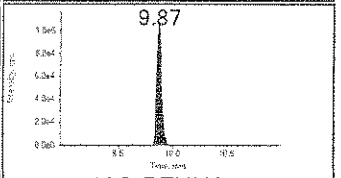
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



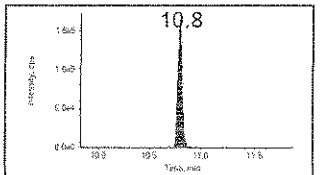
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



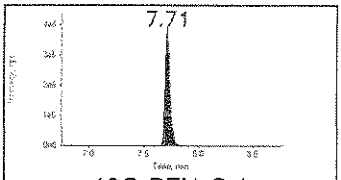
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



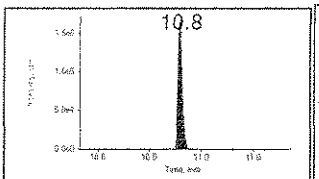
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



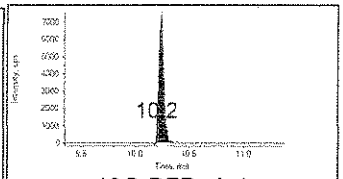
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



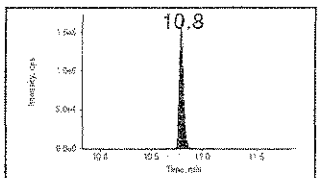
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



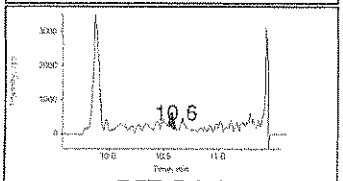
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



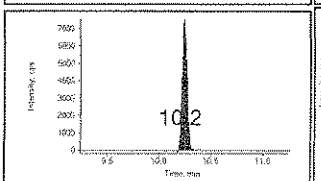
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



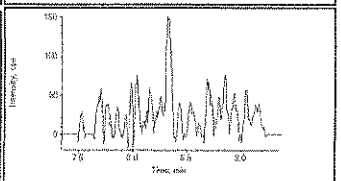
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



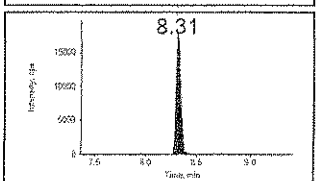
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



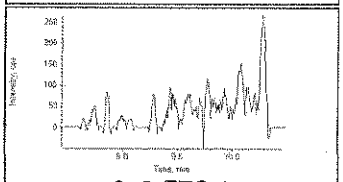
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



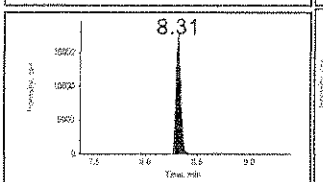
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



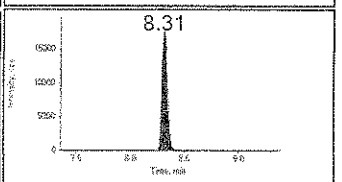
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



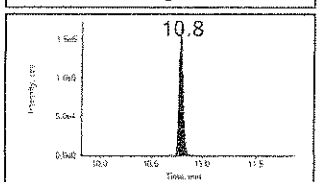
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

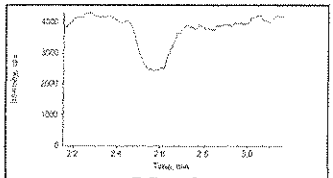


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

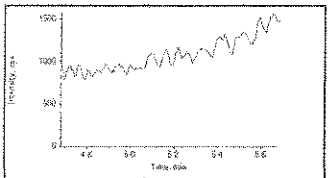


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

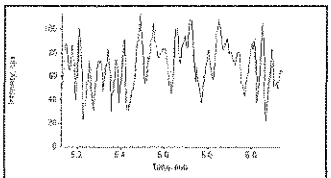
Ion Ratio Confirmation



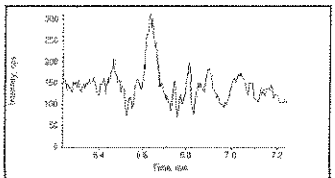
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



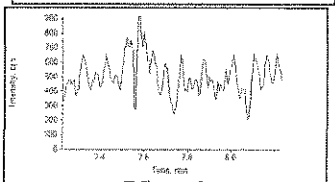
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



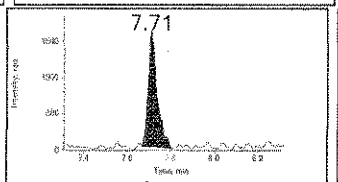
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



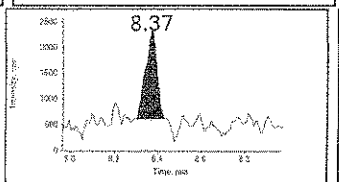
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



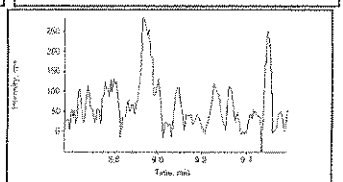
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



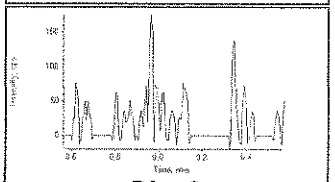
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



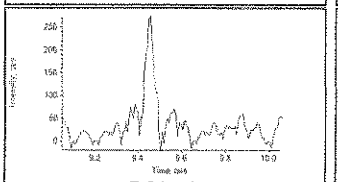
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



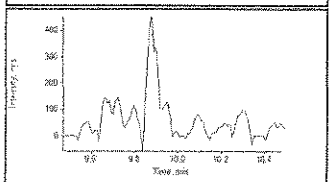
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



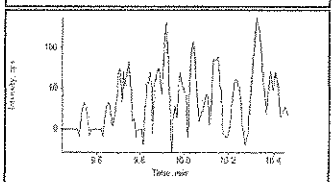
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



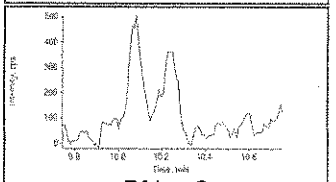
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



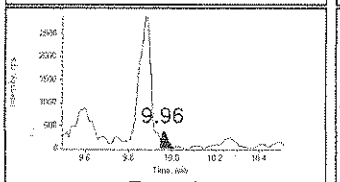
Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



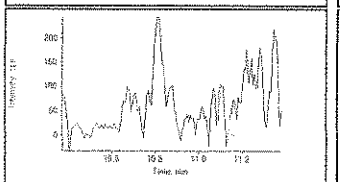
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



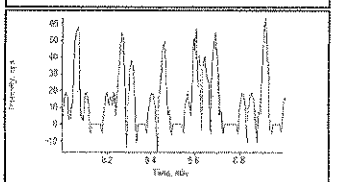
Pfdoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



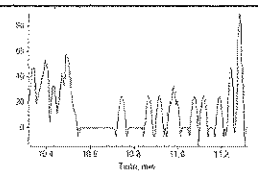
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



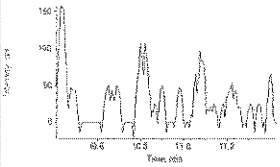
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



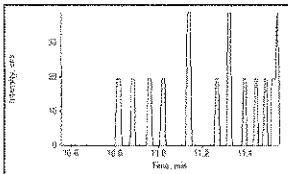
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



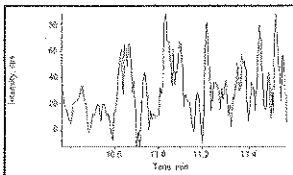
NMeFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



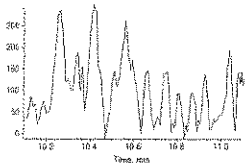
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



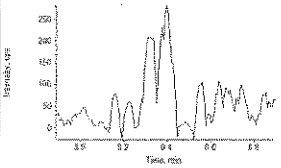
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



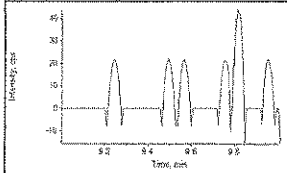
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1031.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 1.0ppb	Injection Vial	14
Acquisition Date	3/18/2016 1:24:17 AM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Quality Control
Sample ID	15-OLC-02-35L	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.59 (2.60)	13c_pfba	3485049	612357	1.00	1.0590	106	No
Pfpea 1	5.08 (5.13)	13c_pfhxa	3903645	541343	1.00	1.0520	105	No
Pfbs 1	5.53 (5.54)	18o-pfhs	1561659	1127894	1.00	1.0430	104	No
Pfhxa 1	6.64 (6.68)	13c_pfhxa	3903645	749676	1.00	1.0220	102	No
Pfhpa 1	7.63 (7.63)	13c_pfhxa	3903645	812654	1.00	1.0670	107	No
Pfhxs 1	7.71 (7.72)	18o-pfhs	1561659	927298	1.00	1.0550	106	No
Pfoa 1	8.36 (8.36)	13c-pfoa	2588720	286742	1.00	0.9890	99	No
Pfna 1	8.95 (8.96)	13c-pfna	2949859	546963	1.00	1.0030	100	No
Pfos 1	8.96 (9.00)	13c-pfos	2972993	553369	1.00	1.0520	105	No
Pfda 1	9.44 (9.45)	13c-pfda	1612132	337648	1.00	1.0470	105	No
Pfuna 1	9.87 (9.87)	13c-pfuna	444493	226795	1.00	0.8980	90	No
Pfds 1	9.85 (9.85)	13c-pfos	2972993	626721	1.00	1.0730	107	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	29553	363122	1.00	0.9840	98	No
Fosa 1	9.96 (10.00)	d5-NEtFOSA	701741	629205	1.00	1.0710	107	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	29553	130454	1.00	0.9750	98	No
PFHpS 1	8.39 (8.40)	18o-pfhs	1561659	177277	1.00	1.0090	101	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1402019	273303	1.00	1.0320	103	No
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1402019	95428	1.00	0.9780	98	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1415822	360758	1.00	1.1250	113	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	701741	129339	1.00	1.0320	103	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa d3	512344	1415822	5.00	5.4140	108	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa d3	512344	701741	5.00	5.3500	107	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa d3	512344	1402019	5.00	5.7800	116	No

MAR 2 2 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
13C_PFBA 1	2.59 (2.60)	N_mefosa d3	512344	3485049	5.00	5.4020	108	No
13C_PFHXA 1	6.63 (6.68)	N_mefosa d3	512344	3903645	5.00	5.5480	111	No
13C-PFOA 1	8.36 (8.42)	N_mefosa d3	512344	2588720	5.00	5.6780	114	No
13C-PFNA 1	8.95 (9.05)	N_mefosa d3	512344	2949859	5.00	5.8940	118	No
13C-PFOS 1	8.96 (9.02)	N_mefosa d3	512344	2972993	5.00	5.6460	113	No
13C-PFDA 1	9.44 (9.51)	N_mefosa d3	512344	1612132	5.00	5.5260	111	No
13C-PFUNA 1	9.86 (9.93)	N_mefosa d3	512344	444493	5.00	6.1440	123	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa d3	512344	1561659	5.00	5.6640	113	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa d3	512344	29553	5.00	6.0870	122	No
PFTrDA 1	10.50 (10.60)	13c-pfdoda	29553	304090	1.00	0.9640	96	No
6_2-FTS 1	8.31 (8.35)	13C2-6_2-FTS	66639	113043	1.00	1.1230	112	No
8_2-FTS 1	9.42 (9.45)	13C2-6_2-FTS	66639	103601	1.00	1.1060	111	No
13C2-6_2-FTS 1	8.31 (8.36)	N_mefosa d3	512344	66639	5.00	4.7080	94	No

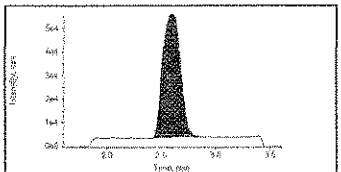
IRC Summary

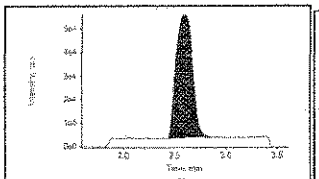
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	2.59 (2.66)	614001	No	YES
Pfpea 2	5.08 (5.18)	545899	No	YES
Pfbs 2	5.53 (5.63)	482963	No	YES
Pfhxa 2	6.63 (6.73)	66960	No	YES
Pfhpa 2	7.63 (7.67)	328507	No	YES
Pfhxs 2	7.71 (7.80)	354185	No	YES
Pfoa 2	8.36 (8.46)	523183	No	YES
Pfna 2	8.95 (9.06)	176762	No	YES
Pfos 2	8.96 (8.96)	190418	No	YES
Pfda 2	9.45 (9.44)	101329	No	YES
Pfuna 2	9.86 (9.87)	105135	No	YES
Pfds 2	9.84 (9.83)	205899	No	YES
Pfdoa 2	10.20 (10.20)	122436	No	YES

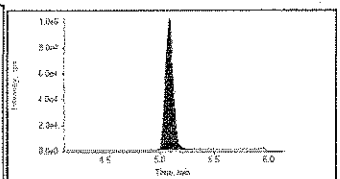
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Fosa 2	9.96 (10.00)	13908	No	YES
Pfteda 2	10.80 (10.90)	48718	No	YES
PFHpS 2	8.39 (8.48)	69226	No	YES
NMeFOSE 2	10.80 (10.80)	1900	No	YES
NMeFOSA 2	10.80 (10.80)	89222	No	YES
NEtFOSE 2	11.00 (11.10)	1203	No	YES
NEtFOSA 2	11.00 (11.10)	89362	No	YES
PFTrDA 2	10.50 (10.60)	92939	No	YES
6_2-FTS 2	8.31 (8.39)	155018	No	YES
8_2-FTS 2	9.43 (9.50)	10787	No	YES

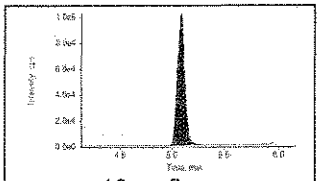
Quantitative Peak Review

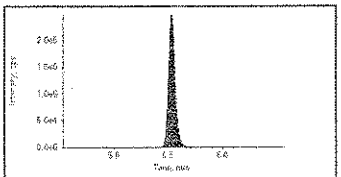
PFC 1.0ppb 15-OLC-02-35L

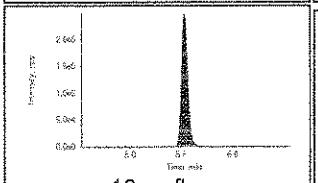

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

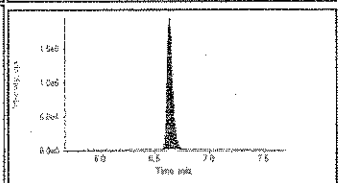

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

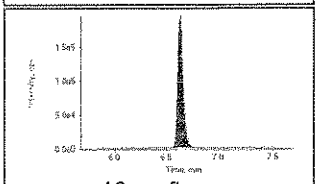

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

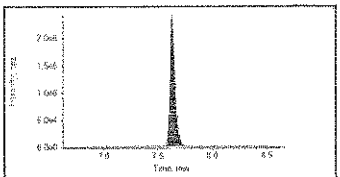

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

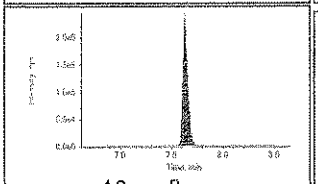

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

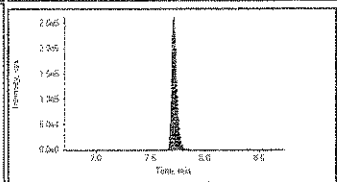

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

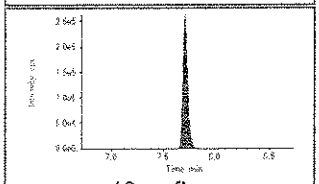

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

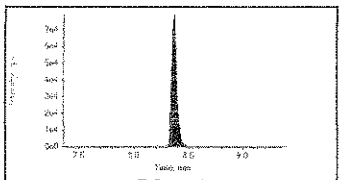

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

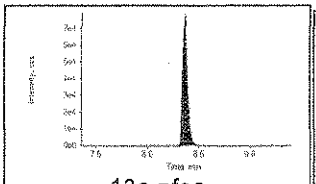

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

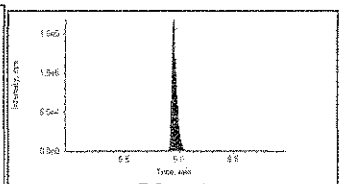

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

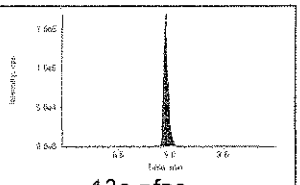

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

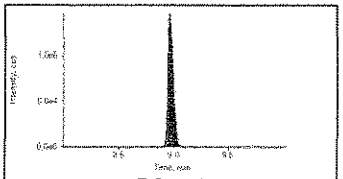

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

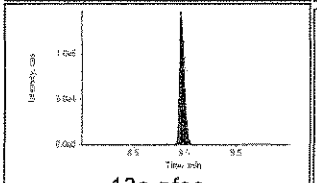

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

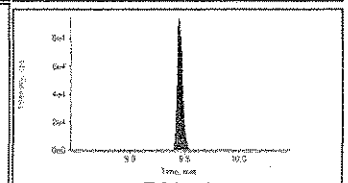

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

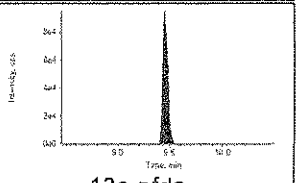

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

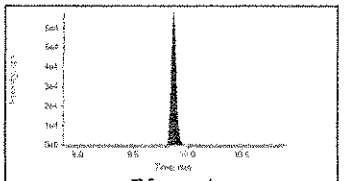

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

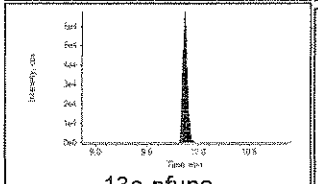

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

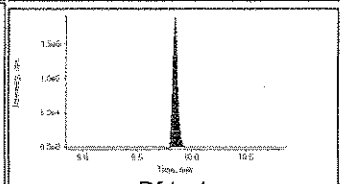

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

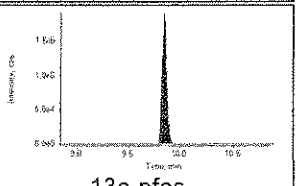

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

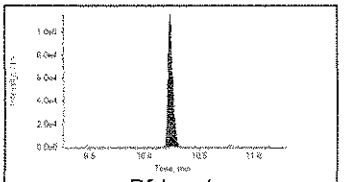

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

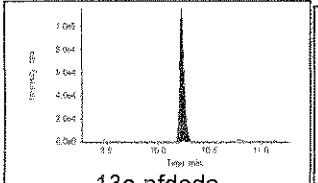

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

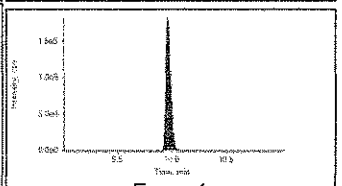

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

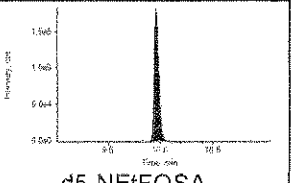

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

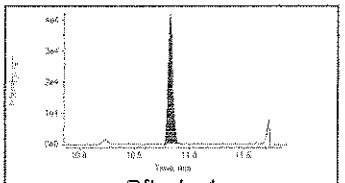

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

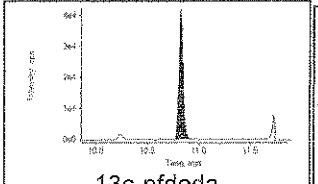

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

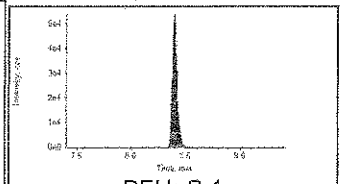

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

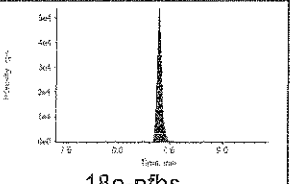

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

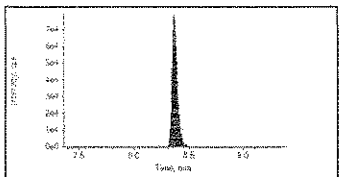

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

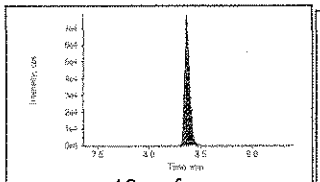

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

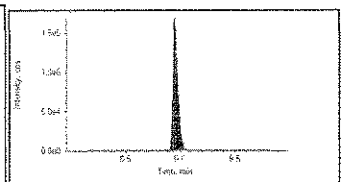

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

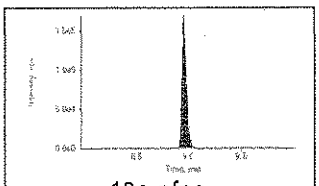

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

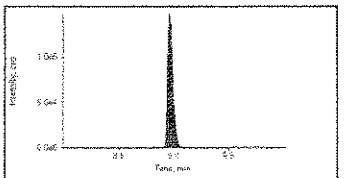

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

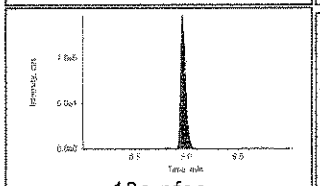

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

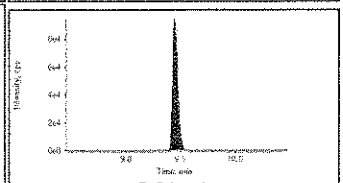

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

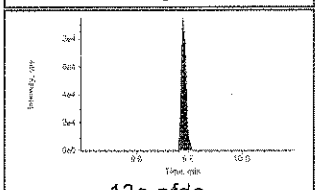

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

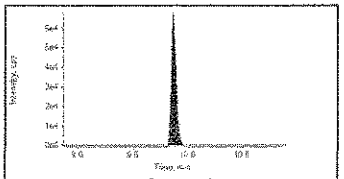

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

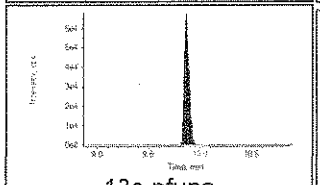

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

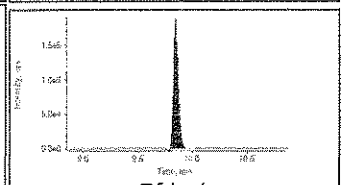

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

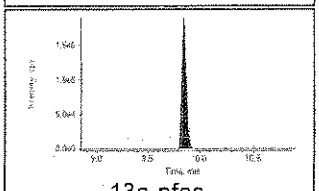

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

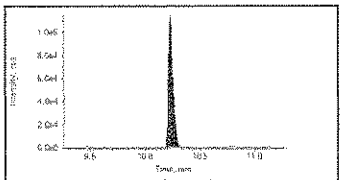

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

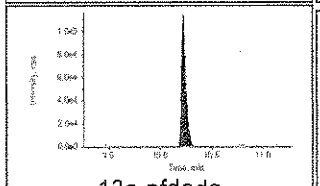

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

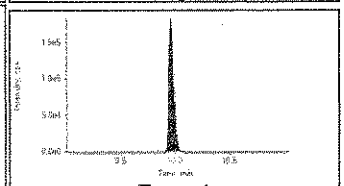

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

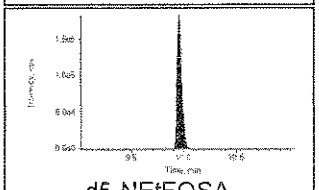

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

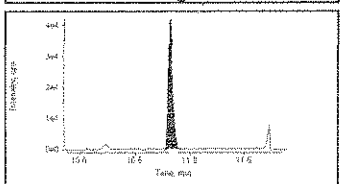

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

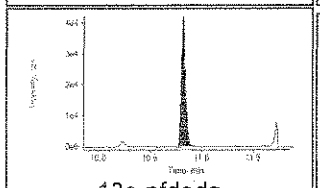

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

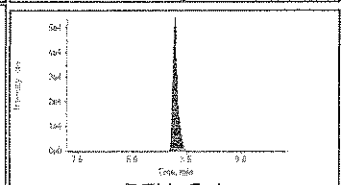

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

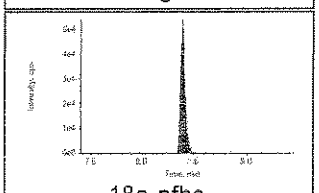

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

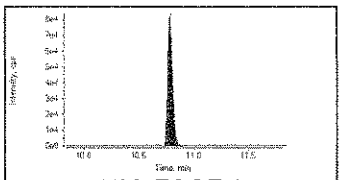

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

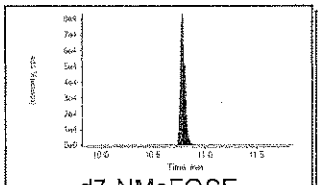

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

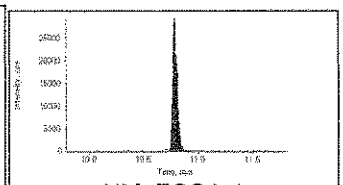

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

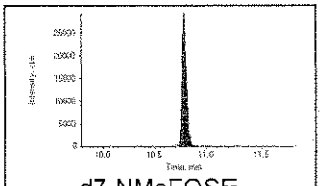

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

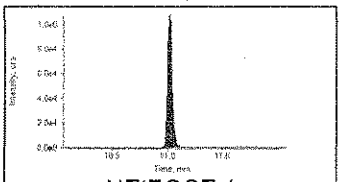

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

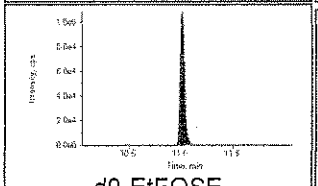

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

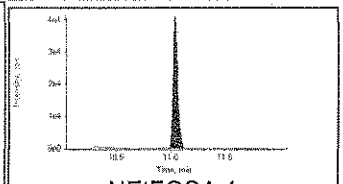

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

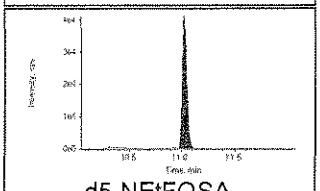

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

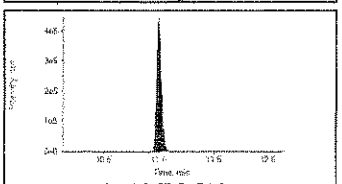

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

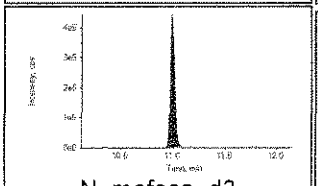

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

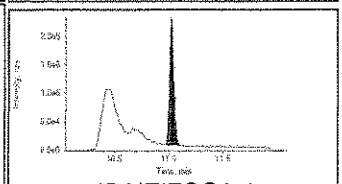

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

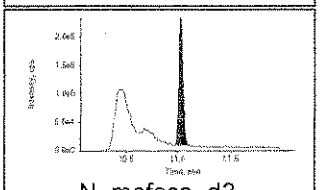

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

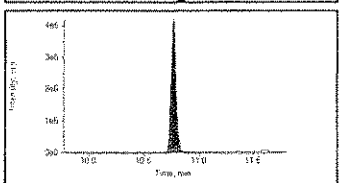

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

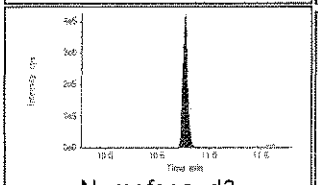

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

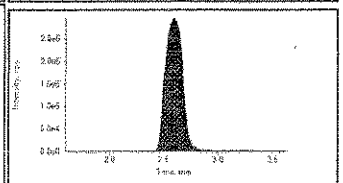

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

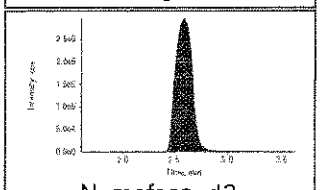

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

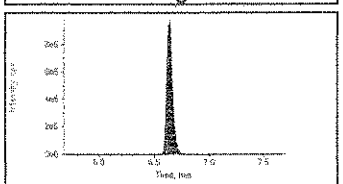

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

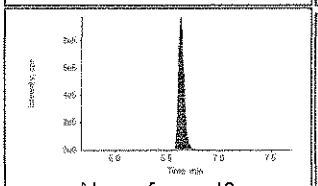

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

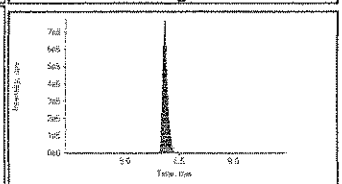

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

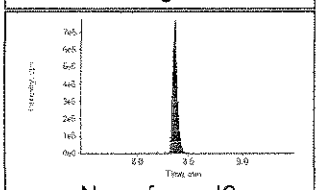

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

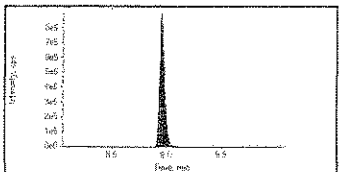

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

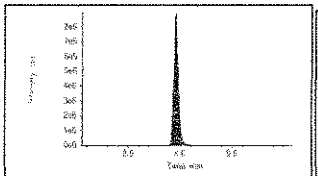

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

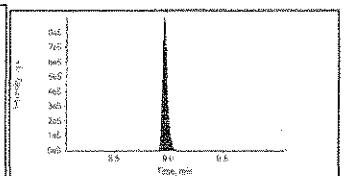

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

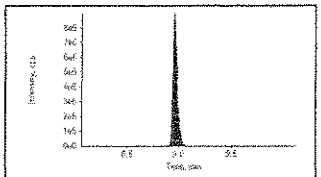

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

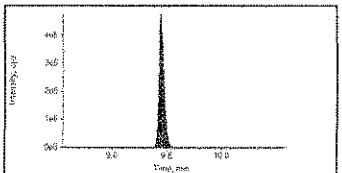

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

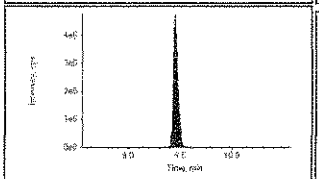

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

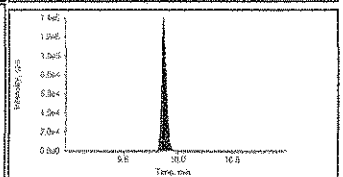

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

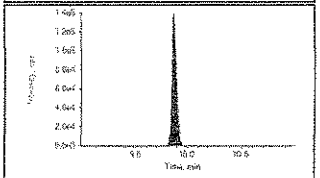

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

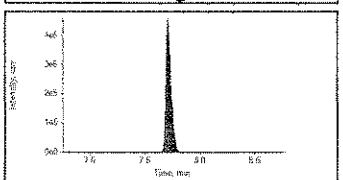

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

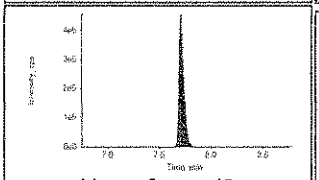

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

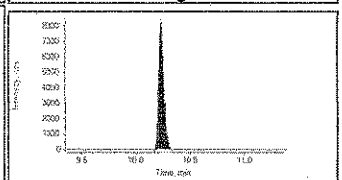

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

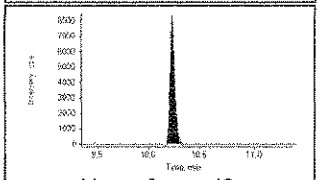

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

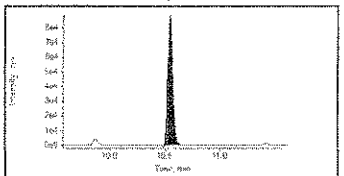

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

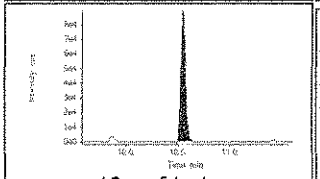

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

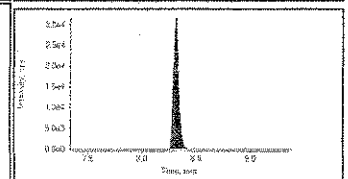

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

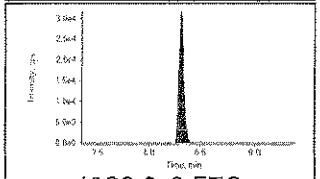

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

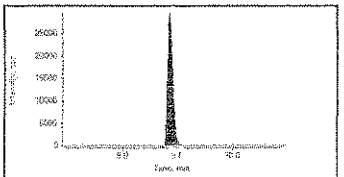

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

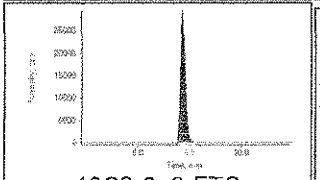

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

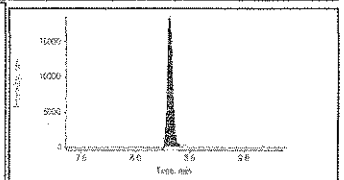

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

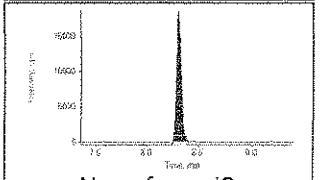

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

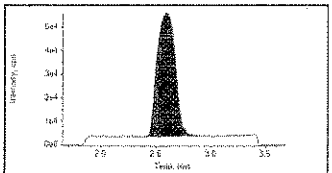

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak

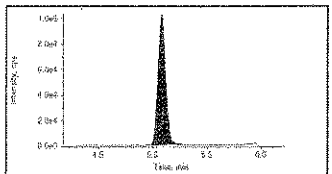

13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

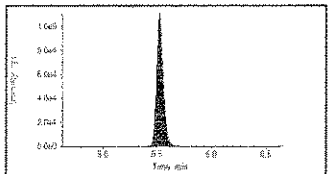

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

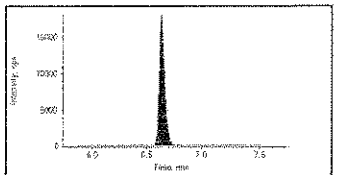

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

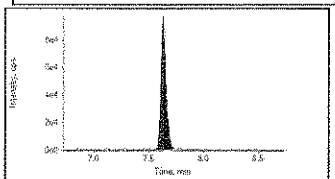
Ion Ratio Confirmation

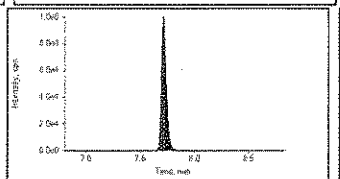

Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

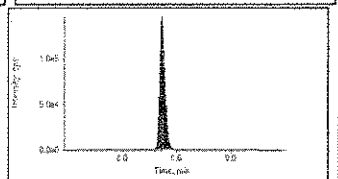

Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

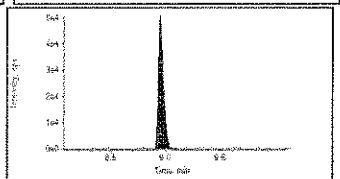

Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

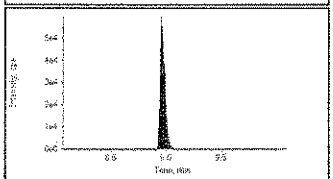

Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

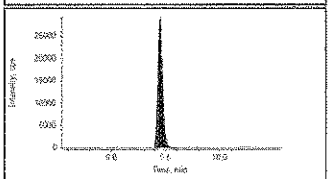

Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

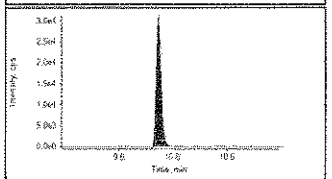

Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

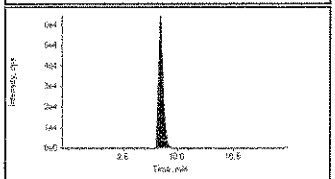

Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

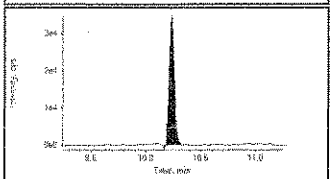

Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

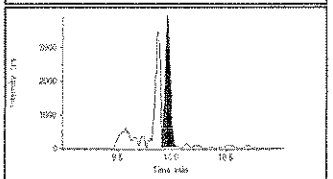

Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

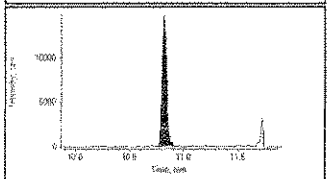

Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

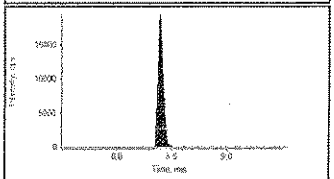

Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

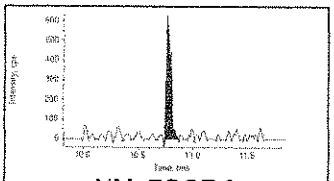

Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

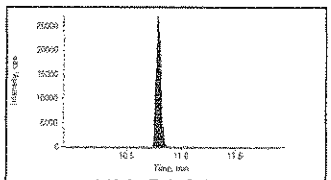

Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

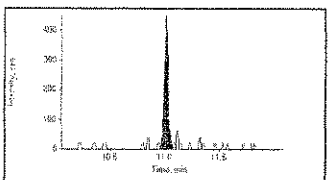

PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



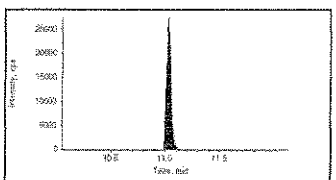
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



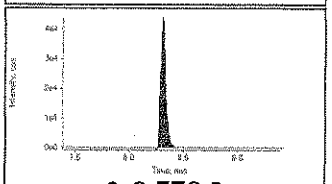
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



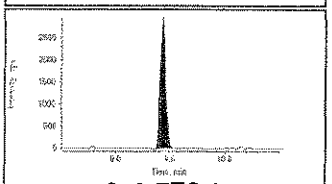
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1032.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	10
Acquisition Date	3/18/2016 1:42:36 AM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	2	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	3051399	0.00 (2.60)	0	N/A	Yes
Pfpea 1	13c_pfhxa	3453347	0.00 (5.13)	0	N/A	No
Pfbs 1	18o-pfhs	1358501	0.00 (5.54)	0	N/A	No
Pfhxa 1	13c_pfhxa	3453347	6.63 (6.68)	5948	0.0090	No
Pfhpa 1	13c_pfhxa	3453347	0.00 (7.63)	0	N/A	No
Pfhxs 1	18o-pfhs	1358501	7.71 (7.72)	12291	0.0160	No
Pfoa 1	13c-pfoa	2363771	8.36 (8.36)	3508	0.0130	No
Pfna 1	13c-pfna	2446983	0.00 (8.96)	0	N/A	No
Pfos 1	13c-pfos	2550939	0.00 (9.00)	0	N/A	No
Pfda 1	13c-pfda	1399815	9.45 (9.45)	1348	0.0050	No
Pfuna 1	13c-pfuna	353184	9.86 (9.87)	4536	0.0230	No
Pfds 1	13c-pfos	2550939	0.00 (9.85)	0	N/A	No
Pfdoa 1	13c-pfdoda	20009	10.20 (10.30)	1453	0.0060	No
Fosa 1	d5-NEtFOSA	618770	9.97 (10.00)	1327	0.0030	No
Pfteda 1	13c-pfdoda	20009	0.00 (10.90)	0	N/A	Yes
PFHpS 1	18o-pfhs	1358501	0.00 (8.40)	0	N/A	No
NMeFOSE 1	d7-NMeFOSE	1124577	0.00 (10.80)	0	N/A	No
NMeFOSA 1	d7-NMeFOSE	1124577	0.00 (10.80)	0	N/A	No
NEtFOSE 1	d9-EtFOSE	1242050	0.00 (11.10)	0	N/A	Yes
NEtFOSA 1	d5-NEtFOSA	618770	0.00 (11.00)	0	N/A	No

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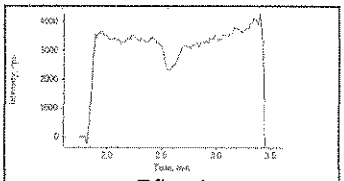
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	536183	11.00 (11.10)	1242050	4.5390	No
d5-NEtFOSA 1	N_mefosa_d3	536183	11.00 (11.10)	618770	4.5070	No
d7-NMeFOSE 1	N_mefosa_d3	536183	10.80 (10.80)	1124577	4.4300	No
13C_PFBA 1	N_mefosa_d3	536183	2.59 (2.60)	3051399	4.5190	No
13C_PFHXA 1	N_mefosa_d3	536183	6.63 (6.68)	3453347	4.6900	No
13C-PFOA 1	N_mefosa_d3	536183	8.36 (8.43)	2363771	4.9540	No
13C-PFNA 1	N_mefosa_d3	536183	8.96 (9.05)	2446983	4.6720	No
13C-PFOS 1	N_mefosa_d3	536183	8.97 (9.03)	2550939	4.6290	No
13C-PFDA 1	N_mefosa_d3	536183	9.44 (9.52)	1399815	4.5850	No
13C-PFUNA 1	N_mefosa_d3	536183	9.86 (9.93)	353184	4.6650	No
18O-PFHxS 1	N_mefosa_d3	536183	7.71 (7.75)	1358501	4.7090	No
13C-PFDoA 1	N_mefosa_d3	536183	10.20 (10.30)	20009	3.9380	No
PFTrDA 1	13c-pfdoda	20009	0.00 (10.60)	0	N/A	Yes
6_2-FTS 1	13C2-6_2-FTS	60622	8.30 (8.35)	556	0.0060	No
8_2-FTS 1	13C2-6_2-FTS	60622	0.00 (9.45)	0	N/A	No
13C2-6_2-FTS 1	N_mefosa_d3	536183	8.31 (8.36)	60622	4.0920	No

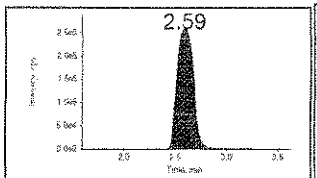
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (2.66)	0	No	0.00 (0.94)	No
Pfpea 2	0.00 (5.18)	0	No	0.00 (1.01)	No
Pfbs 2	0.00 (5.63)	0	No	0.00 (0.43)	No
Pfhxa 2	0.00 (6.73)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (7.67)	0	No	0.00 (0.42)	No
Pfhxs 2	7.71 (7.80)	5185	No	0.42 (0.41)	YES
Pfoa 2	8.35 (8.47)	4898	No	1.40 (1.86)	No
Pfna 2	0.00 (9.07)	0	No	0.00 (0.32)	No

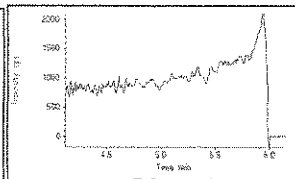
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	0.00 (8.97)	0	No	0.00 (0.36)	No
Pfda 2	0.00 (9.44)	0	No	0.00 (0.31)	No
Pfuna 2	0.00 (9.87)	0	No	0.00 (0.46)	No
Pfds 2	0.00 (9.84)	0	No	0.00 (0.34)	No
Pfdoa 2	10.00 (10.20)	3252	No	2.24 (0.35)	No
Fosa 2	0.00 (10.00)	0	No	0.00 (0.02)	No
Pfteda 2	0.00 (10.90)	0	No	0.00 (0.36)	No
PFHpS 2	0.00 (8.49)	0	No	0.00 (0.43)	No
NMeFOSE 2	0.00 (10.80)	0	Yes	0.00 (0.01)	No
NMeFOSA 2	0.00 (10.80)	0	No	0.00 (1.05)	No
NEtFOSE 2	0.00 (11.10)	0	No	0.00 (0.00)	No
NEtFOSA 2	0.00 (11.10)	0	No	0.00 (0.68)	No
PFTrDA 2	0.00 (10.60)	0	No	0.00 (0.33)	No
6_2-FTS 2	0.00 (8.39)	0	No	0.00 (1.30)	No
8_2-FTS 2	0.00 (9.50)	0	No	0.00 (0.10)	No

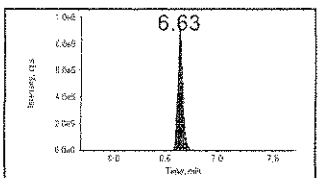
Quantitative Peak Review IB *No data for Sample ID*


Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

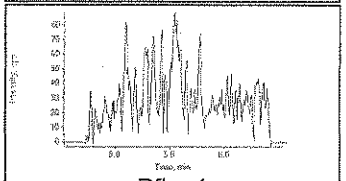


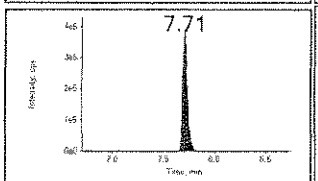
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

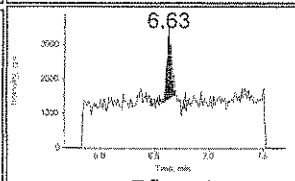


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

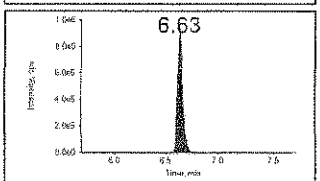

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



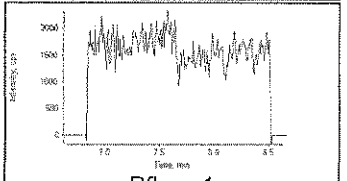
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

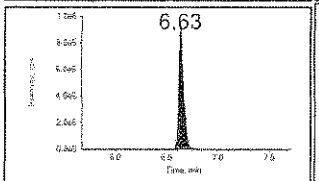


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

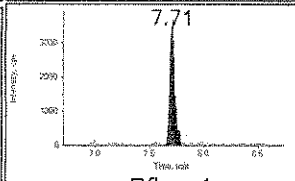


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

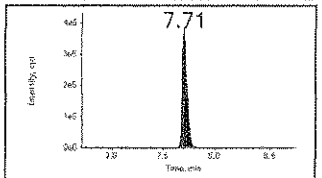

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



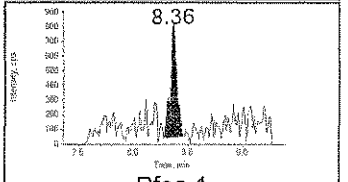
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



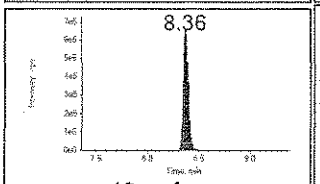
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



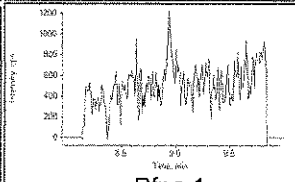
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

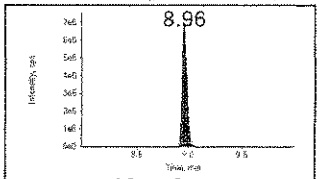


Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

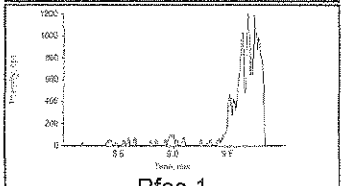


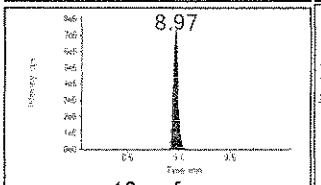
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

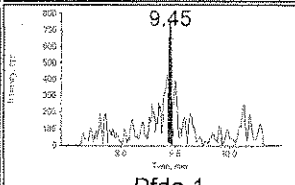


13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

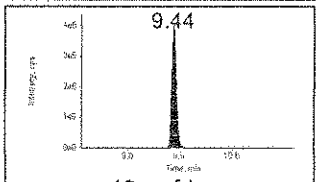

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



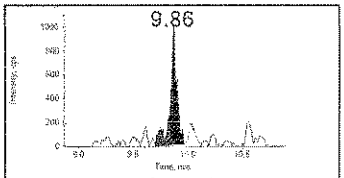
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



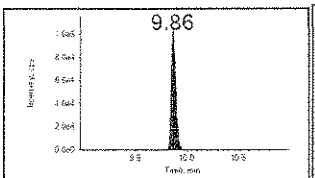
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



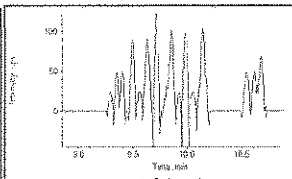
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



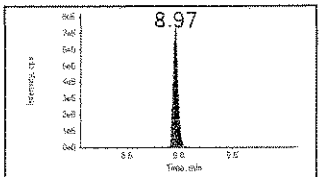
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



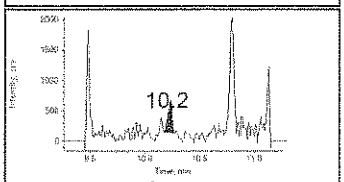
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



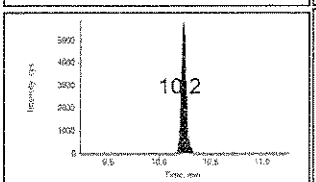
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



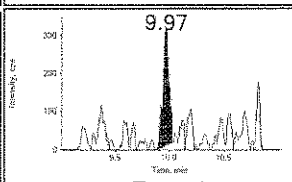
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



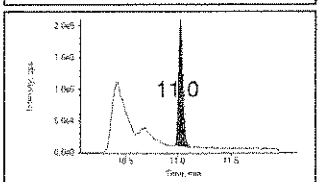
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



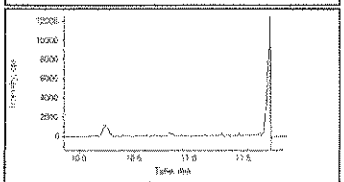
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



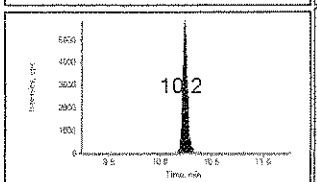
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



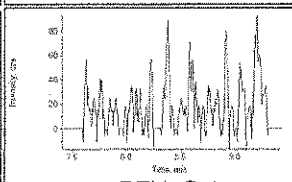
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



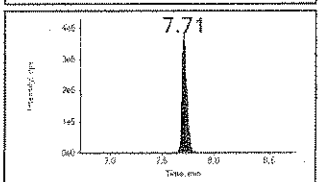
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



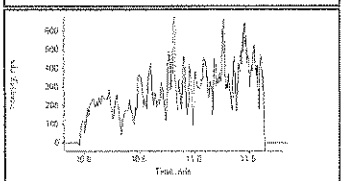
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



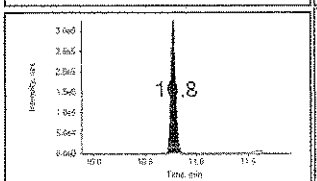
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



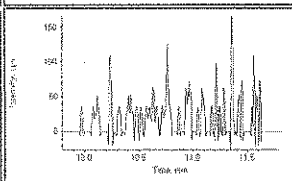
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



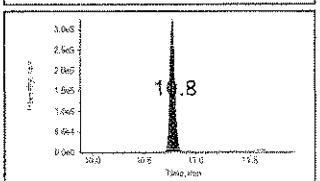
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



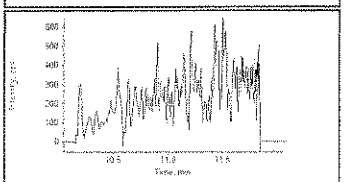
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



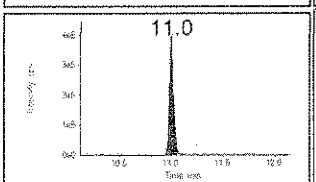
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



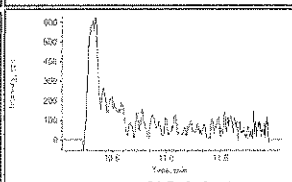
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



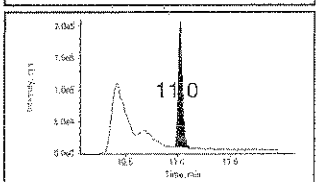
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



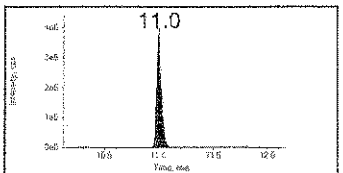
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



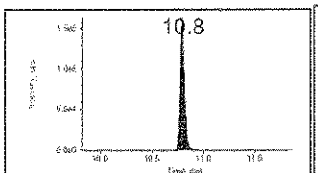
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



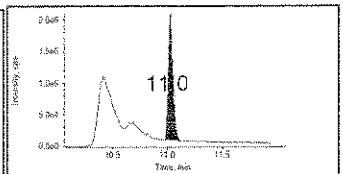
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



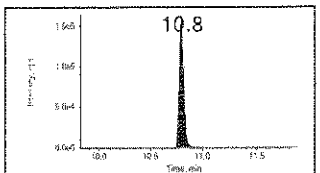
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



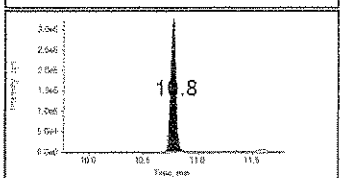
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



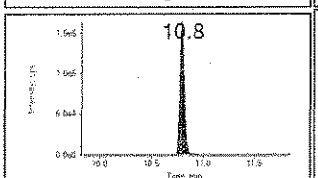
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



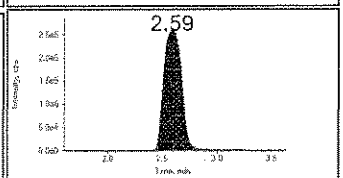
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



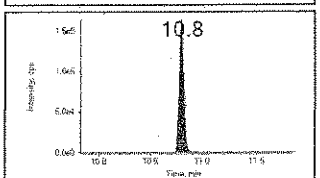
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



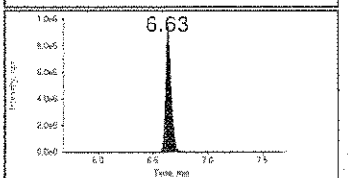
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



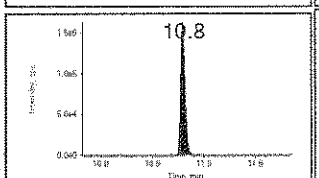
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



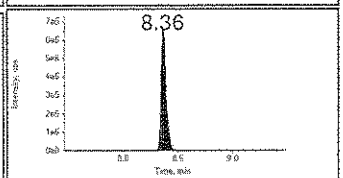
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



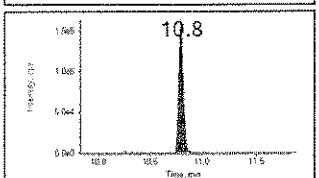
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



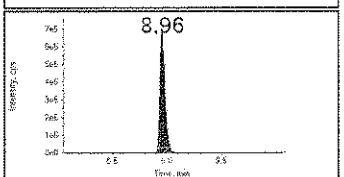
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



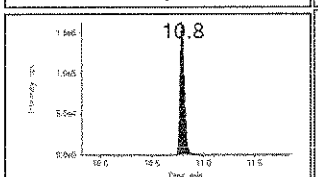
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



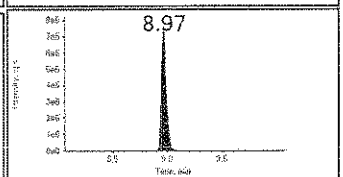
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



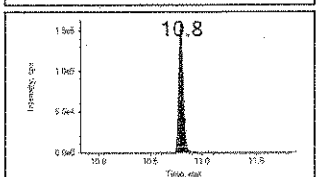
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



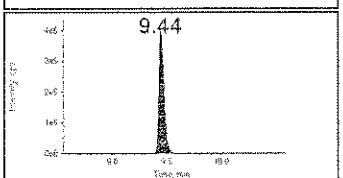
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



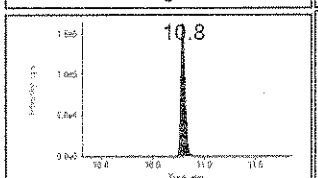
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



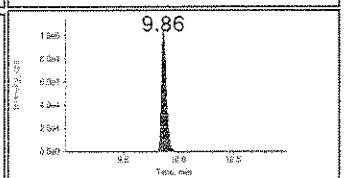
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



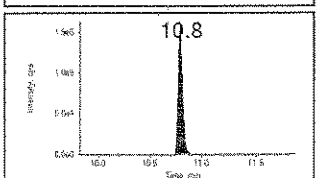
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



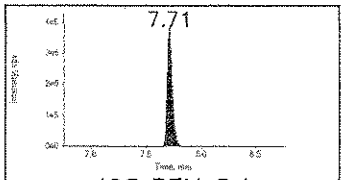
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



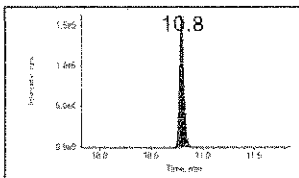
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



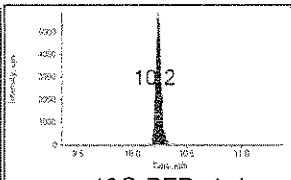
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



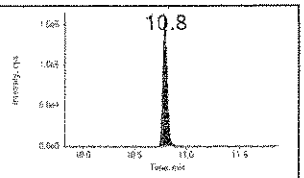
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



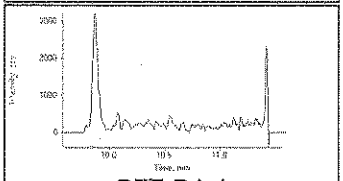
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



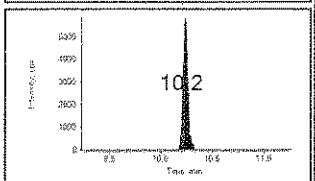
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



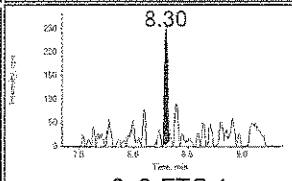
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



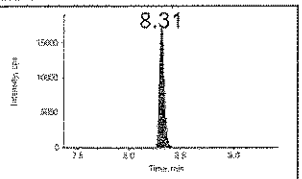
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



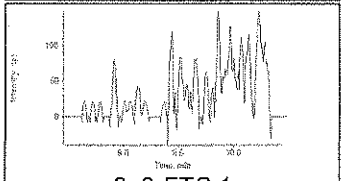
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



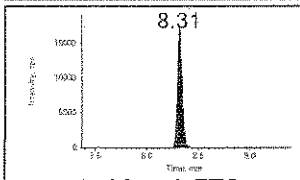
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



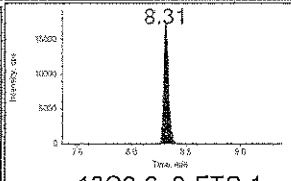
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



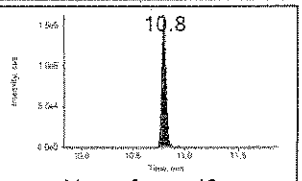
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

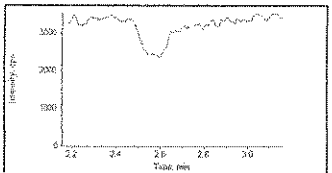


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

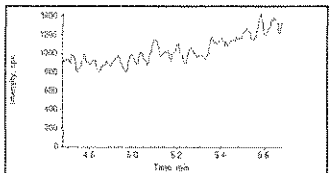


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

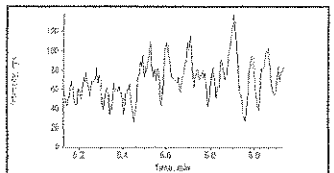
Ion Ratio Confirmation



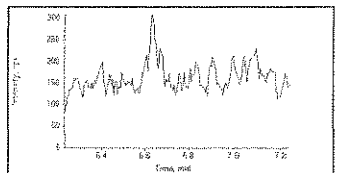
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



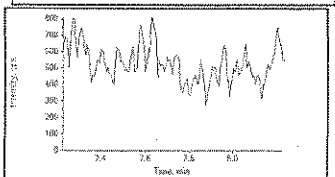
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



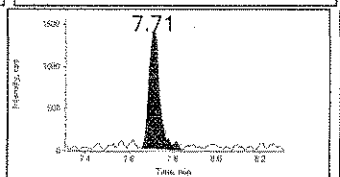
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



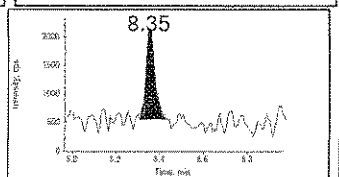
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



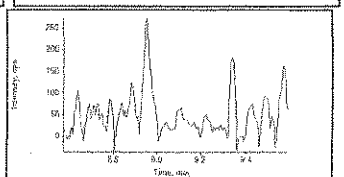
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



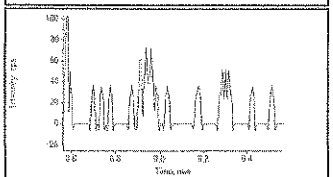
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



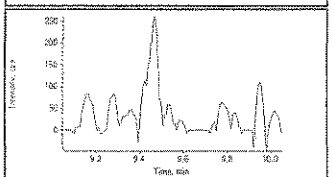
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



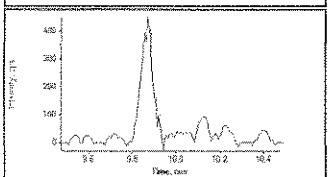
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



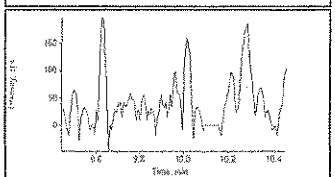
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



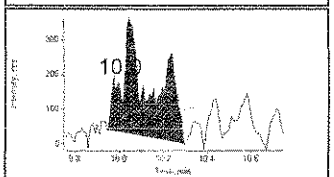
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



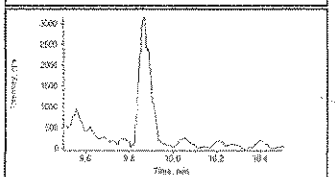
Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



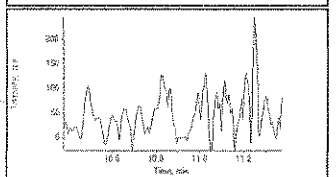
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



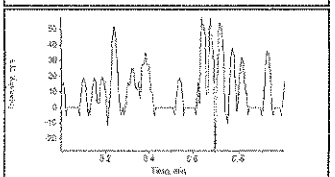
Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



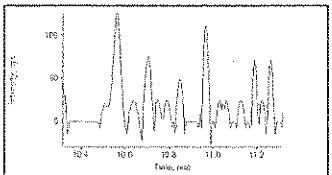
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



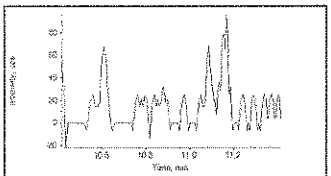
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



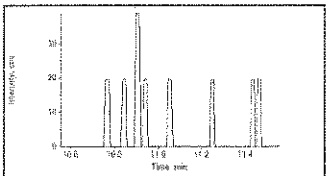
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



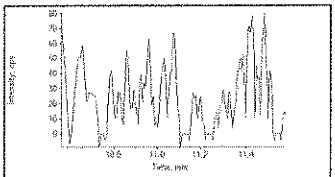
NMeFOSE 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



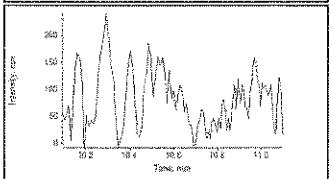
NMeFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



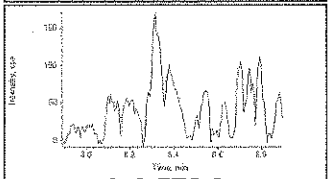
NEtFOSE 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



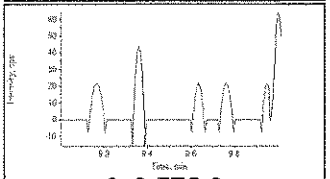
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	031716.rdb
Data File	031716\1043.wiff	Algorithm Used	MQL
Acquisition Method	PFC_090315 schedule mrm.dam	Instrument Name	LCMS02

Sample Name	PFC 1.0ppb	Injection Vial	14
Acquisition Date	3/18/2016 5:04:06 AM	Injection Volume	10
Acquisition Method	PFC_090315 schedule mrm.dam	Sample Type	Quality Control
Sample ID	15-OLC-02-35L	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	2.61 (2.60)	13c_pfba	3561177	617734	1.00	1.0460	105	No
Pfpea 1	5.08 (5.13)	13c_pfhxa	4092525	553871	1.00	1.0270	103	No
Pfbs 1	5.52 (5.54)	18o-pfhs	1579924	1149539	1.00	1.0500	105	No
Pfhxa 1	6.62 (6.68)	13c_pfhxa	4092525	791477	1.00	1.0290	103	No
Pfhpa 1	7.63 (7.63)	13c_pfhxa	4092525	858572	1.00	1.0750	107	No
Pfhxs 1	7.71 (7.72)	18o-pfhs	1579924	938282	1.00	1.0550	106	No
Pfoa 1	8.37 (8.36)	13c-pfoa	2767850	300850	1.00	0.9700	97	No
Pfna 1	8.96 (8.96)	13c-pfna	3014717	568434	1.00	1.0200	102	No
Pfos 1	8.97 (9.00)	13c-pfos	3130891	607621	1.00	1.0970	110	No
Pfda 1	9.45 (9.45)	13c-pfda	1701695	357068	1.00	1.0490	105	No
Pfuna 1	9.88 (9.87)	13c-pfuna	429745	239528	1.00	0.9810	98	No
Pfds 1	9.86 (9.85)	13c-pfos	3130891	647268	1.00	1.0520	105	No
Pfdoa 1	10.20 (10.30)	13c-pfdoda	32564	357720	1.00	0.8800	88	No
Fosa 1	9.97 (10.00)	d5-NEtFOSA	700605	640046	1.00	1.0910	109	No
Pfteda 1	10.80 (10.90)	13c-pfdoda	32564	133278	1.00	0.9040	90	No
PFHpS 1	8.40 (8.40)	18o-pfhs	1579924	182355	1.00	1.0260	103	No
NMeFOSE 1	10.80 (10.80)	d7-NMeFOSE	1331477	268508	1.00	1.0670	107	No
NMeFOSA 1	10.80 (10.80)	d7-NMeFOSE	1331477	96306	1.00	1.0400	104	No
NEtFOSE 1	11.00 (11.10)	d9-EtFOSE	1473781	349142	1.00	1.0460	105	No
NEtFOSA 1	11.00 (11.00)	d5-NEtFOSA	700605	131703	1.00	1.0530	105	No
d9-EtFOSE 1	11.00 (11.10)	N_mefosa d3	523076	1473781	5.00	5.5200	110	No
d5-NEtFOSA 1	11.00 (11.10)	N_mefosa d3	523076	700605	5.00	5.2310	105	No
d7-NMeFOSE 1	10.80 (10.80)	N_mefosa d3	523076	1331477	5.00	5.3760	108	No

MAR 22 2016

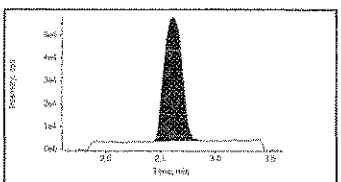
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
13C_PFBA 1	2.62 (2.60)	N_mefosa d3	523076	3561177	5.00	5.4070	108	No
13C_PFHXA 1	6.62 (6.68)	N_mefosa d3	523076	4092525	5.00	5.6970	114	No
13C-PFOA 1	8.37 (8.44)	N_mefosa d3	523076	2767850	5.00	5.9460	119	No
13C-PFNA 1	8.96 (9.05)	N_mefosa d3	523076	3014717	5.00	5.9000	118	No
13C-PFOS 1	8.97 (9.04)	N_mefosa d3	523076	3130891	5.00	5.8240	116	No
13C-PFDA 1	9.45 (9.53)	N_mefosa d3	523076	1701695	5.00	5.7130	114	No
13C-PFUNA 1	9.88 (9.94)	N_mefosa d3	523076	429745	5.00	5.8180	116	No
18O-PFHxS 1	7.71 (7.75)	N_mefosa d3	523076	1579924	5.00	5.6130	112	No
13C-PFDoA 1	10.20 (10.30)	N_mefosa d3	523076	32564	5.00	6.5690	131	No
PFTrDA 1	10.60 (10.60)	13c-pfdoda	32564	317978	1.00	0.9150	92	No
6_2-FTS 1	8.31 (8.35)	13C2-6_2-FTS	68385	123588	1.00	1.1970	120	No
8_2-FTS 1	9.43 (9.45)	13C2-6_2-FTS	68385	116476	1.00	1.2120	121	No
13C2-6_2-FTS 1	8.31 (8.36)	N_mefosa d3	523076	68385	5.00	4.7320	95	No

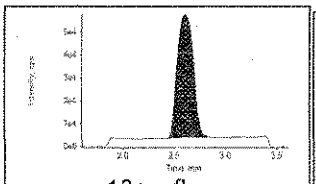
IRC Summary

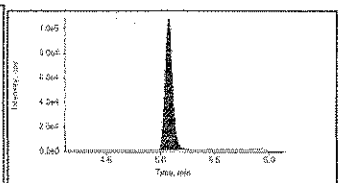
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	2.61 (2.66)	616048	No	YES
Pfpea 2	5.08 (5.18)	556821	No	YES
Pfbs 2	5.52 (5.63)	490940	No	YES
Pfhxa 2	6.62 (6.73)	68562	No	YES
Pfhpa 2	7.63 (7.66)	340795	No	YES
Pfhxs 2	7.71 (7.80)	355773	No	YES
Pfoa 2	8.37 (8.47)	593931	No	YES
Pfna 2	8.96 (9.07)	170411	No	YES
Pfos 2	8.97 (8.97)	204347	No	YES
Pfda 2	9.46 (9.45)	106725	No	YES
Pfuna 2	9.88 (9.89)	110242	No	YES
Pfds 2	9.86 (9.84)	215708	No	YES
Pfdoa 2	10.20 (10.20)	126229	No	YES

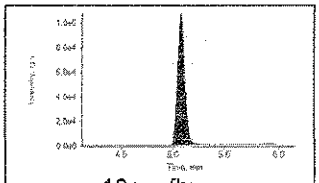
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Fosa 2	9.97 (10.00)	15335	No	YES
Pfteda 2	10.80 (10.90)	53264	No	YES
PFHpS 2	8.40 (8.49)	75804	No	YES
NMeFOSE 2	10.80 (10.80)	1818	No	YES
NMeFOSA 2	10.80 (10.80)	94004	No	YES
NEtFOSE 2	11.00 (11.10)	1597	No	YES
NEtFOSA 2	11.00 (11.10)	88829	No	YES
PFTrDA 2	10.60 (10.60)	98969	No	YES
6_2-FTS 2	8.31 (8.39)	157200	No	YES
8_2-FTS 2	9.43 (9.50)	12758	No	YES

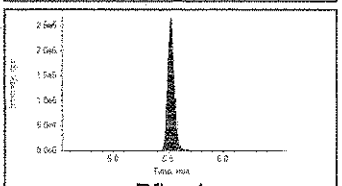
Quantitative Peak Review PFC 1.0ppb 15-OLC-02-35L

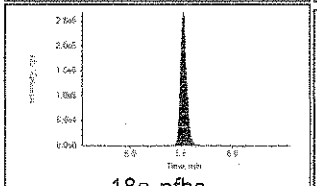

Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

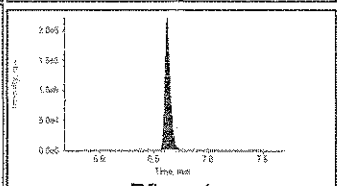

13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

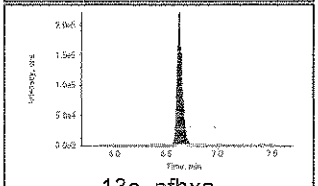

Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

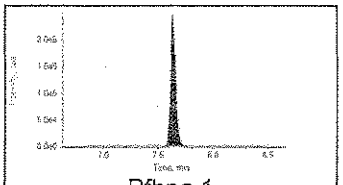

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

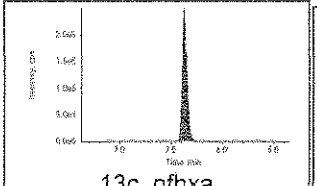

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

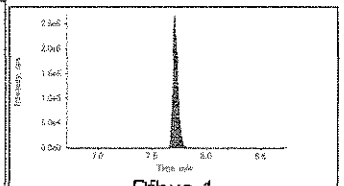

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

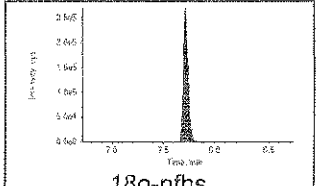

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

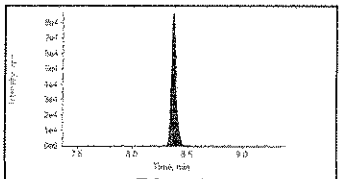

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

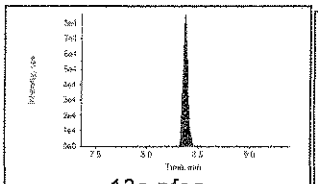

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

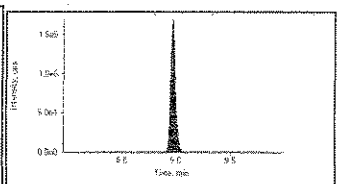

13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

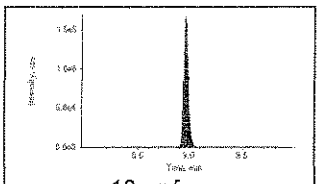

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

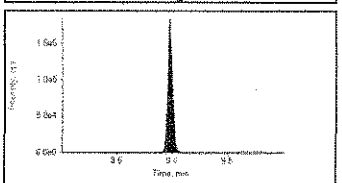

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

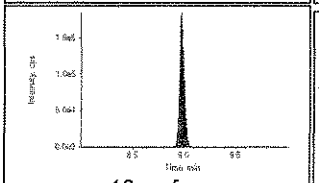

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

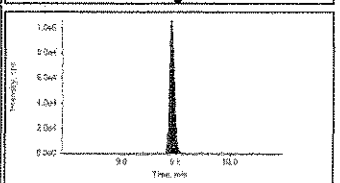

13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

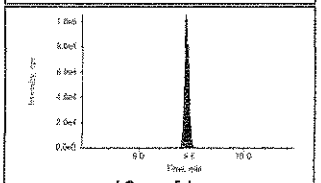

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

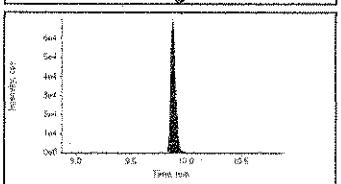

13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

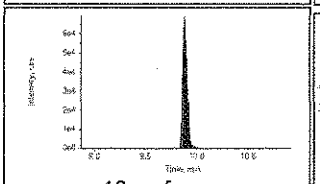

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

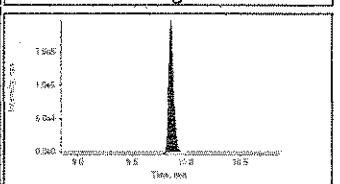

13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

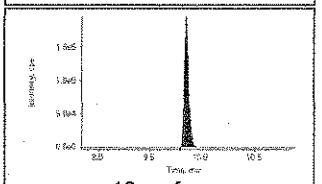

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

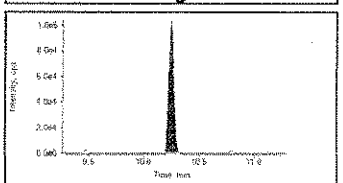

13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

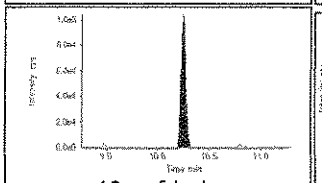

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

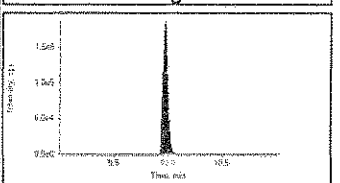

13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

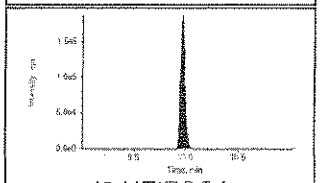

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

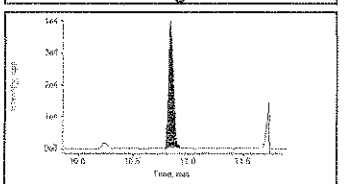

13c-pfos
503.000/80.000 Da
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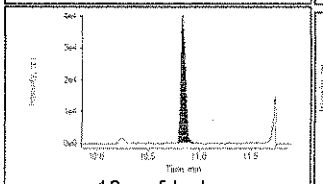

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

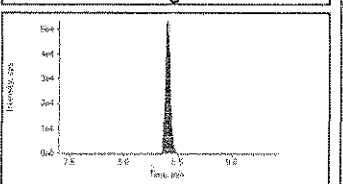

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

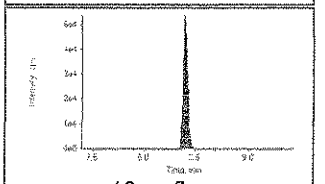

Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak

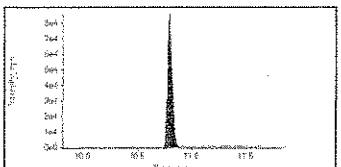

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

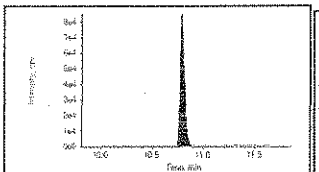

Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak

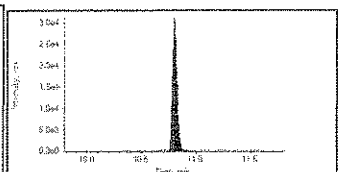

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

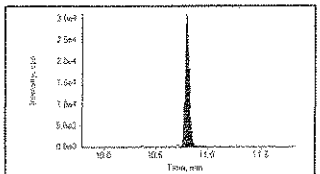

PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

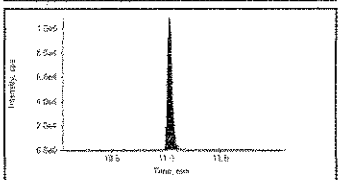

18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

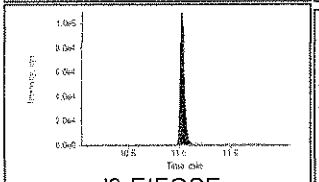

NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak

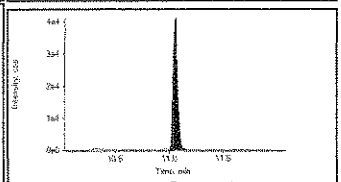

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

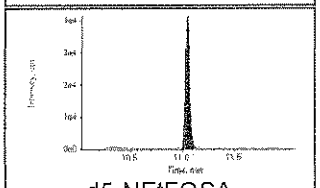

NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak

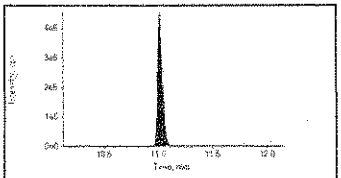

d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

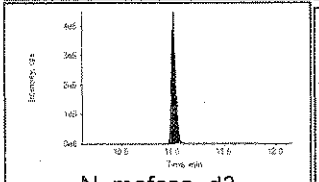

NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

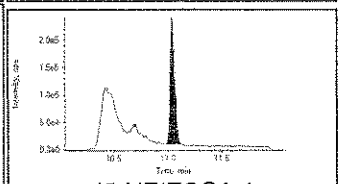

d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

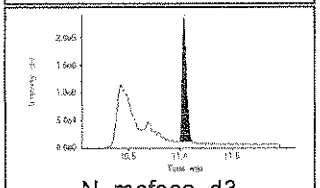

NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

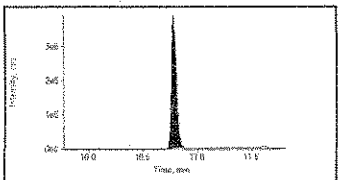

d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

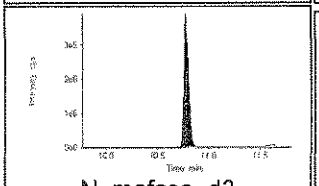

d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

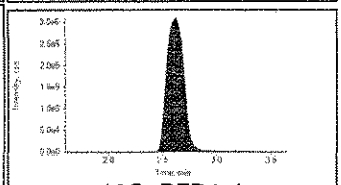

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

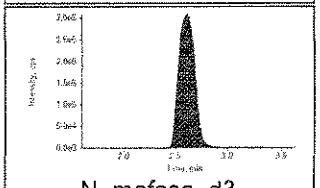

d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

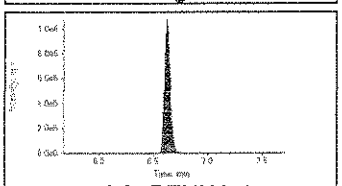

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

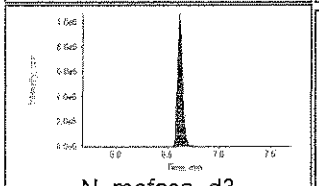

d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak

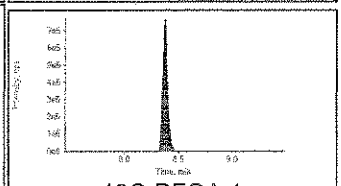

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

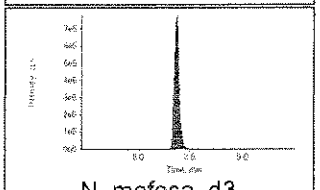

13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

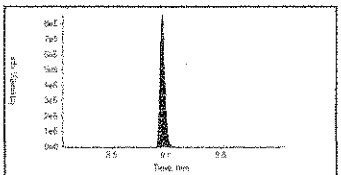

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

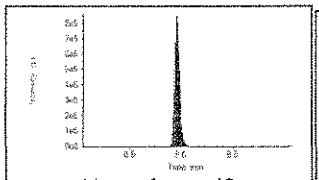

13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

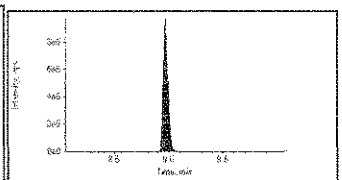

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

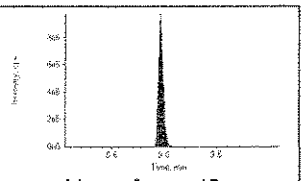

13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

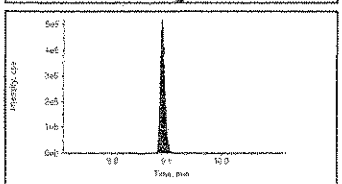

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

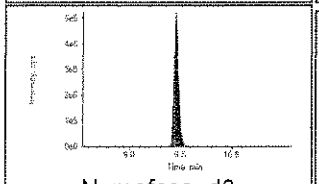

13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

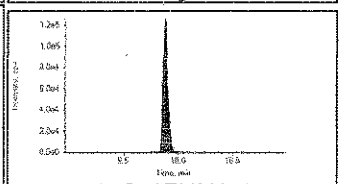

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

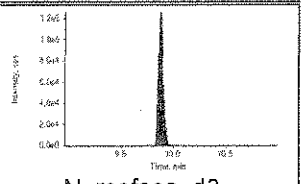

13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

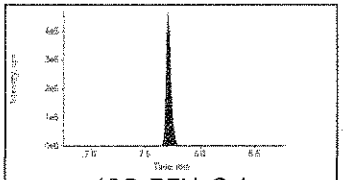

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

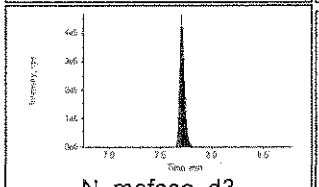

13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

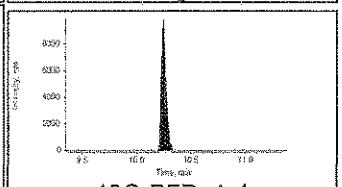

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

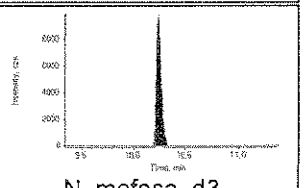

13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

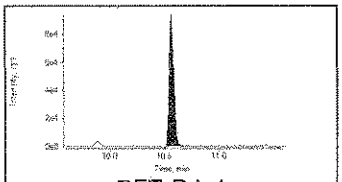

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

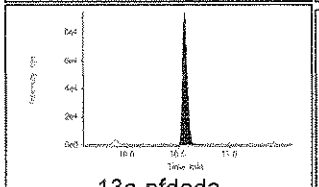

18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

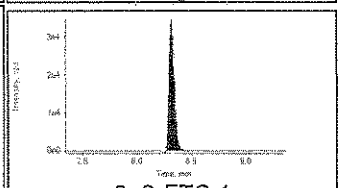

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

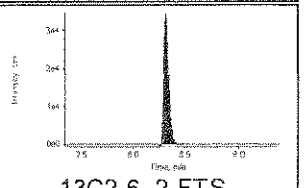

13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

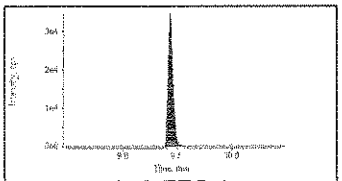

N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

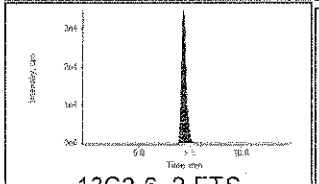

PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak

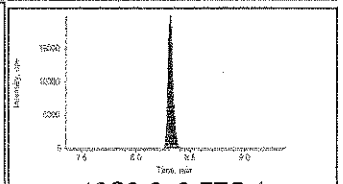

13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

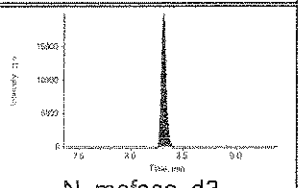

6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

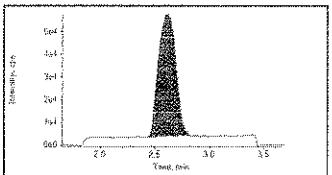

8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak


13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

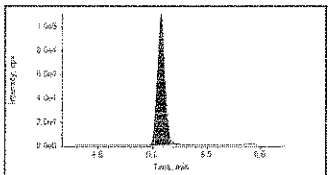

13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

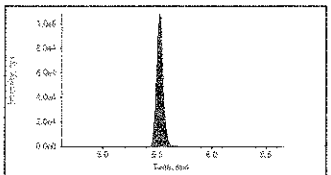
Ion Ratio Confirmation



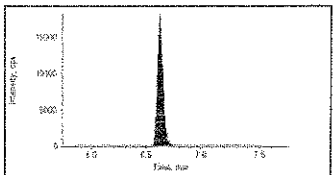
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



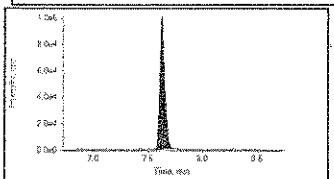
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



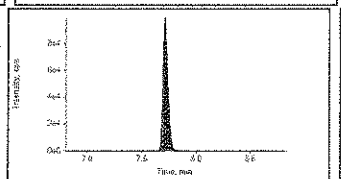
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



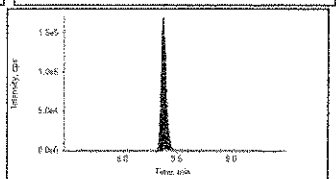
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



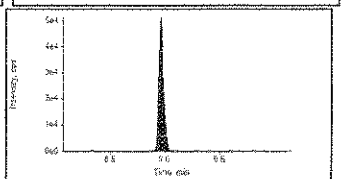
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



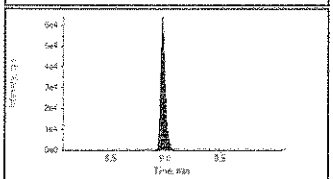
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



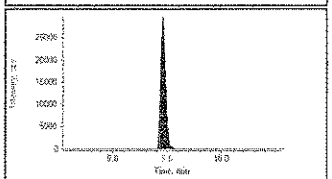
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



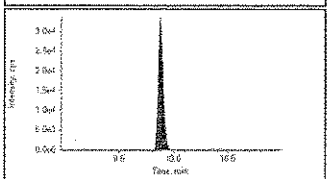
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



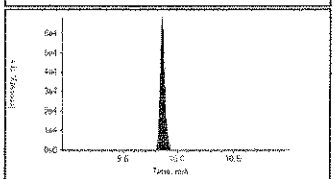
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



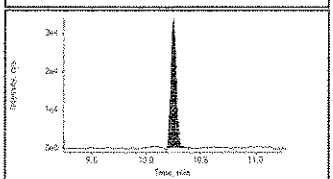
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



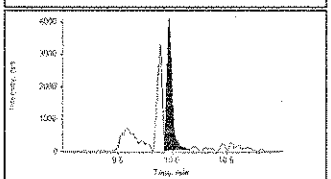
Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



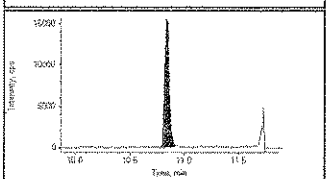
Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



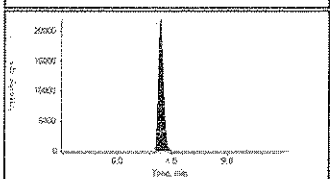
Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



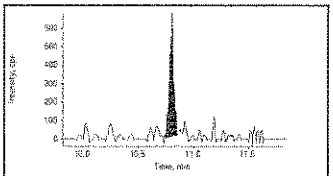
Fosa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



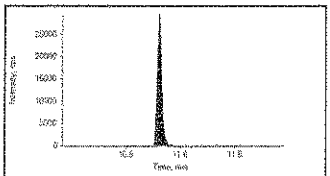
Pfteda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



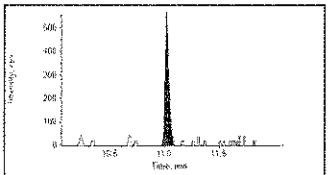
PFHpS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



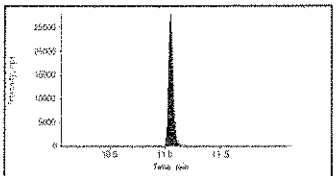
NMeFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



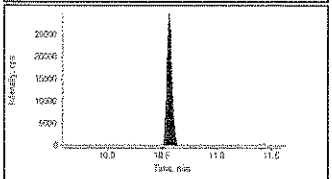
NMeFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



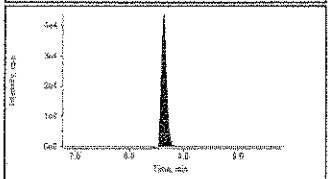
NEtFOSE 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



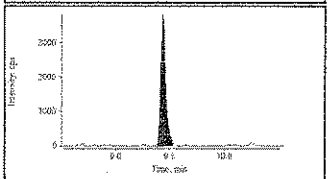
NEtFOSA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	031716\1044.wiff
Result Table	031716.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	10
Acquisition Date	3/18/2016 5:22:23 AM	Sample Type	Unknown
Acquisition Method	PFC_090315 schedule mrm.dam	Dilution Factor	1.00
Injection Vial	2	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13c_pfba	2956862	0.00 (2.60)	0	N/A	Yes
Pfpea 1	13c_pfhxa	3466196	0.00 (5.13)	0	N/A	No
Pfbs 1	18o-pfhs	1344740	0.00 (5.54)	0	N/A	No
Pfhxa 1	13c_pfhxa	3466196	6.65 (6.68)	5217	0.0080	No
Pfhpa 1	13c_pfhxa	3466196	0.00 (7.63)	0	N/A	Yes
Pfhxs 1	18o-pfhs	1344740	7.72 (7.72)	13271	0.0180	No
Pfoa 1	13c-pfoa	2416105	8.37 (8.36)	4100	0.0150	No
Pfna 1	13c-pfna	2608347	0.00 (8.96)	0	N/A	No
Pfos 1	13c-pfos	2734392	0.00 (9.00)	0	N/A	Yes
Pfda 1	13c-pfda	1582304	9.48 (9.45)	2738	0.0090	No
Pfuna 1	13c-pfuna	389630	9.88 (9.87)	4775	0.0220	No
Pfds 1	13c-pfos	2734392	0.00 (9.85)	0	N/A	No
Pfdoa 1	13c-pfdoda	24672	10.20 (10.30)	3427	0.0110	No
Fosa 1	d5-NEtFOSA	615252	9.97 (10.00)	1152	0.0020	No
Pfteda 1	13c-pfdoda	24672	0.00 (10.90)	0	N/A	Yes
PFHpS 1	18o-pfhs	1344740	0.00 (8.40)	0	N/A	No
NMeFOSE 1	d7-NMeFOSE	1186431	0.00 (10.80)	0	N/A	No
NMeFOSA 1	d7-NMeFOSE	1186431	0.00 (10.80)	0	N/A	No
NEtFOSE 1	d9-EtFOSE	1282495	0.00 (11.10)	0	N/A	Yes
NEtFOSA 1	d5-NEtFOSA	615252	0.00 (11.00)	0	N/A	No

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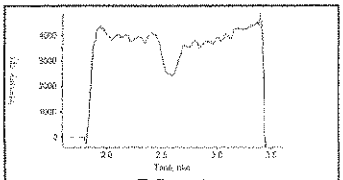
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
d9-EtFOSE 1	N_mefosa_d3	540577	11.00 (11.10)	1282495	4.6480	No
d5-NEtFOSA 1	N_mefosa_d3	540577	11.00 (11.10)	615252	4.4450	No
d7-NMeFOSE 1	N_mefosa_d3	540577	10.80 (10.80)	1186431	4.6360	No
13C_PFBA 1	N_mefosa_d3	540577	2.59 (2.60)	2956862	4.3440	No
13C_PFHXA 1	N_mefosa_d3	540577	6.64 (6.68)	3466196	4.6690	No
13C-PFOA 1	N_mefosa_d3	540577	8.37 (8.44)	2416105	5.0230	No
13C-PFNA 1	N_mefosa_d3	540577	8.97 (9.05)	2608347	4.9390	No
13C-PFOS 1	N_mefosa_d3	540577	8.97 (9.04)	2734392	4.9220	No
13C-PFDA 1	N_mefosa_d3	540577	9.46 (9.53)	1582304	5.1400	No
13C-PFUNA 1	N_mefosa_d3	540577	9.88 (9.94)	389630	5.1040	No
18O-PFHxS 1	N_mefosa_d3	540577	7.72 (7.75)	1344740	4.6230	No
13C-PFDoA 1	N_mefosa_d3	540577	10.20 (10.30)	24672	4.8160	No
PFTrDA 1	13c-pfdoda	24672	0.00 (10.60)	0	N/A	Yes
6_2-FTS 1	13C2-6_2-FTS	65754	0.00 (8.35)	0	N/A	No
8_2-FTS 1	13C2-6_2-FTS	65754	0.00 (9.45)	0	N/A	No
13C2-6_2-FTS 1	N_mefosa_d3	540577	8.32 (8.36)	65754	4.4020	No

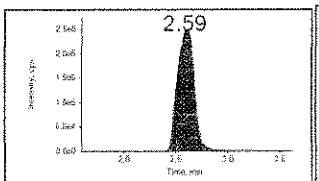
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (2.66)	0	Yes	0.00 (0.94)	No
Pfpea 2	0.00 (5.18)	0	No	0.00 (1.01)	No
Pfbs 2	0.00 (5.63)	0	No	0.00 (0.43)	No
Pfhxa 2	6.63 (6.73)	886	No	0.17 (0.09)	No
Pfhpa 2	0.00 (7.68)	0	No	0.00 (0.42)	No
Pfhxs 2	7.73 (7.81)	5210	No	0.39 (0.41)	YES
Pfoa 2	8.38 (8.47)	6561	No	1.60 (1.86)	YES
Pfna 2	0.00 (9.08)	0	Yes	0.00 (0.32)	No

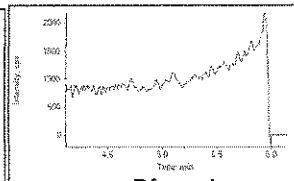
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfos 2	0.00 (8.98)	0	No	0.00 (0.36)	No
Pfda 2	9.46 (9.45)	1564	No	0.57 (0.31)	No
Pfuna 2	0.00 (9.88)	0	No	0.00 (0.46)	No
Pfds 2	0.00 (9.85)	0	No	0.00 (0.34)	No
Pfdoa 2	0.00 (10.20)	0	Yes	0.00 (0.35)	No
Fosa 2	0.00 (10.00)	0	No	0.00 (0.02)	No
Pfteda 2	0.00 (10.90)	0	No	0.00 (0.36)	No
PFHpS 2	0.00 (8.50)	0	No	0.00 (0.43)	No
NMeFOSE 2	0.00 (10.80)	0	Yes	0.00 (0.01)	No
NMeFOSA 2	0.00 (10.80)	0	No	0.00 (1.05)	No
NEtFOSE 2	0.00 (11.10)	0	No	0.00 (0.00)	No
NEtFOSA 2	0.00 (11.10)	0	No	0.00 (0.68)	No
PFTrDA 2	0.00 (10.60)	0	No	0.00 (0.33)	No
6_2-FTS 2	0.00 (8.39)	0	No	0.00 (1.30)	No
8_2-FTS 2	0.00 (9.50)	0	No	0.00 (0.10)	No

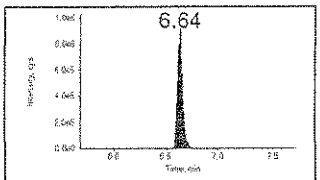
Quantitative Peak Review IB *No data for Sample ID*


Pfba 1
213.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

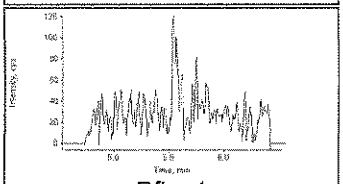


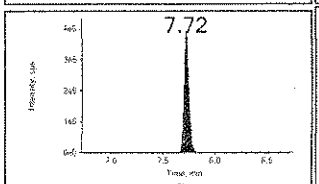
13c_pfba
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.000/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

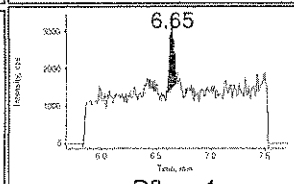


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

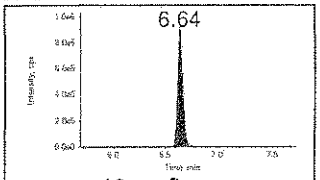

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



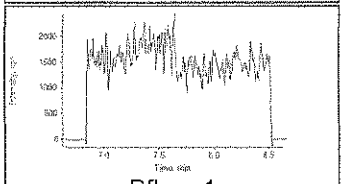
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

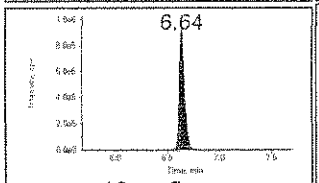


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

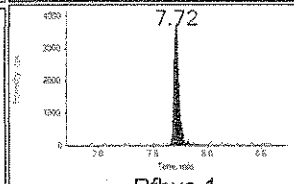


13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

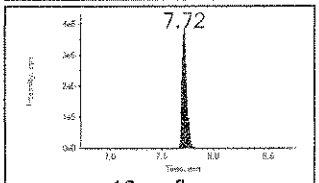

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



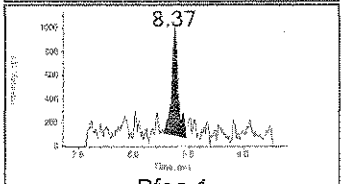
13c_pfhxa
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



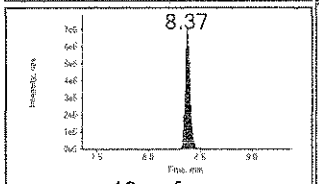
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



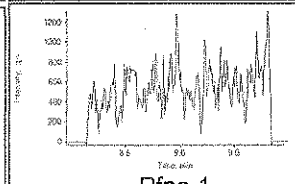
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

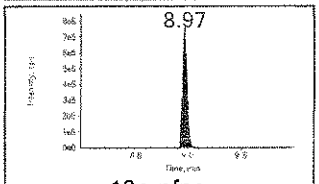


Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

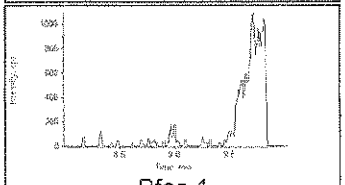


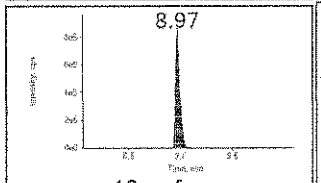
13c-pfoa
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

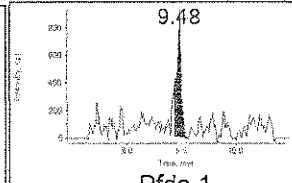


13c-pfna
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

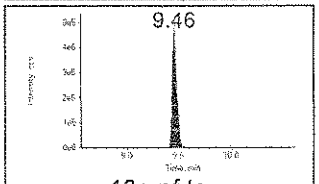

Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



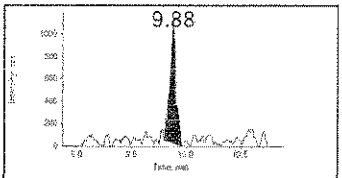
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



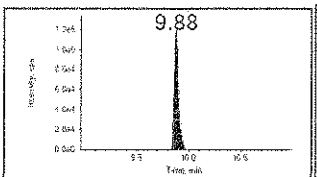
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



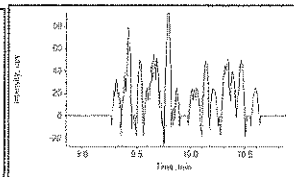
13c-pfda
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



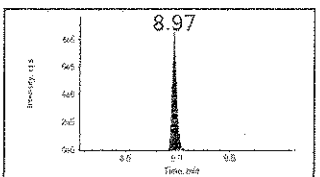
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



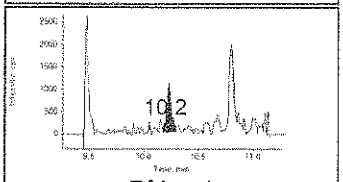
13c-pfuna
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



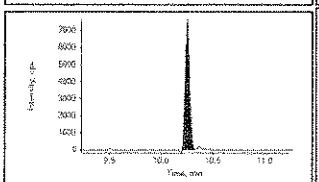
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



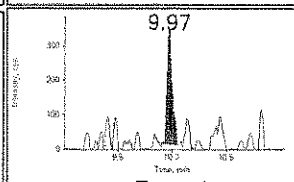
13c-pfos
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



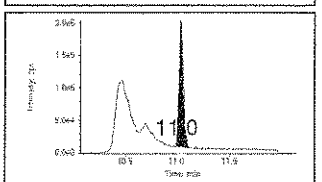
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



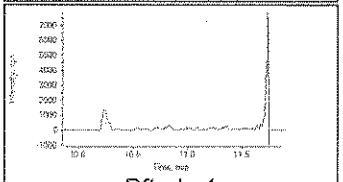
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



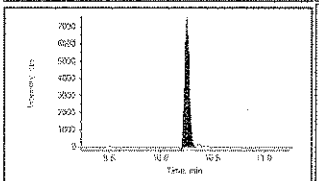
Fosa 1
498.000/78.000 Da
□ Baseline □ Missed
□ Wrong Peak



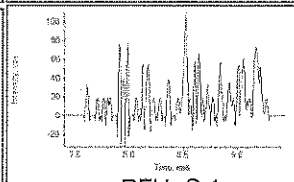
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



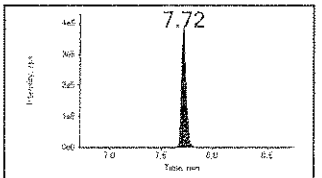
Pfteda 1
713.000/669.000 Da
□ Baseline □ Missed
□ Wrong Peak



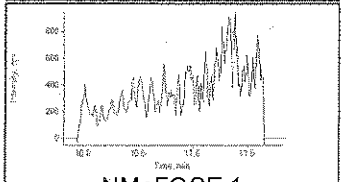
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



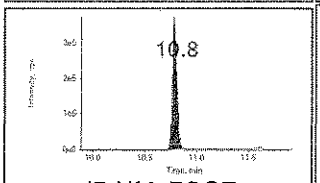
PFHpS 1
449.400/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



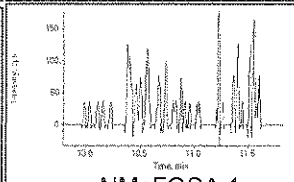
18o-pfhs
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



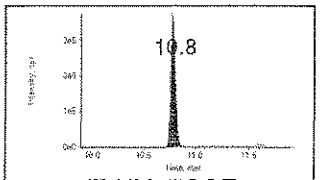
NMeFOSE 1
616.200/58.800 Da
□ Baseline □ Missed
□ Wrong Peak



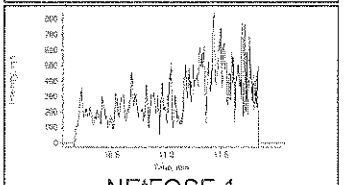
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



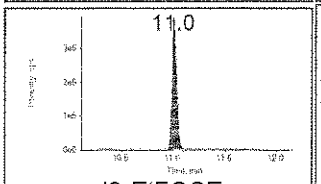
NMeFOSA 1
512.200/169.300 Da
□ Baseline □ Missed
□ Wrong Peak



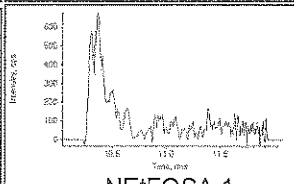
d7-NMeFOSE
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



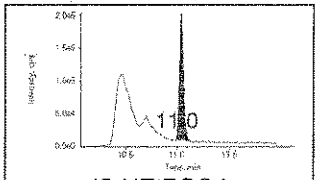
NEtFOSE 1
630.200/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



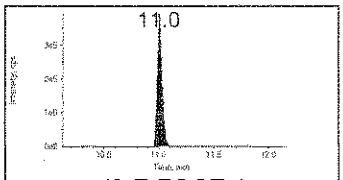
d9-EtFOSE
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



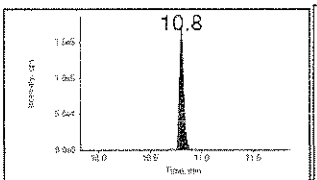
NEtFOSA 1
526.200/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



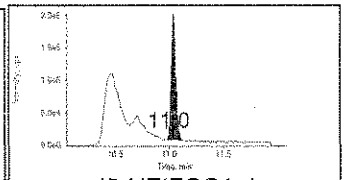
d5-NEtFOSA
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



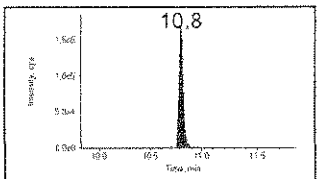
d9-EtFOSE 1
639.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



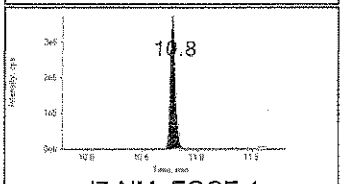
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



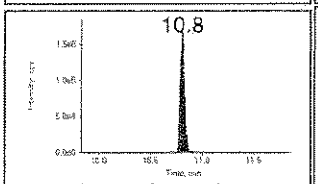
d5-NEtFOSA 1
531.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



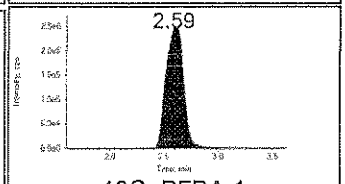
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



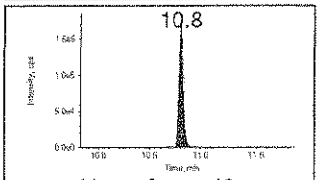
d7-NMeFOSE 1
623.000/59.000 Da
□ Baseline □ Missed
□ Wrong Peak



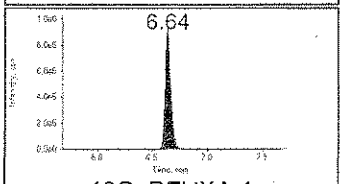
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



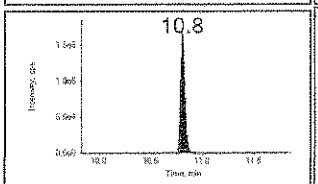
13C_PFBA 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



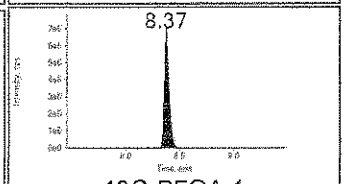
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



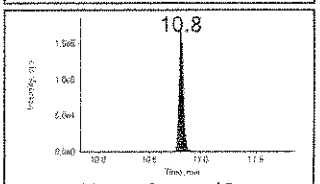
13C_PFHXA 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



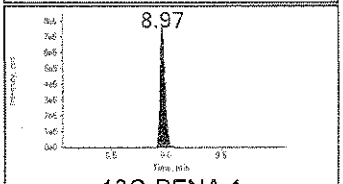
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



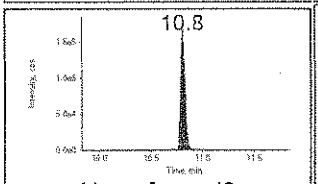
13C-PFOA 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



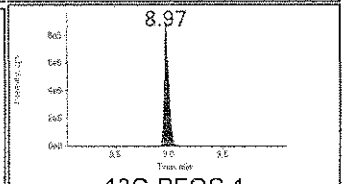
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



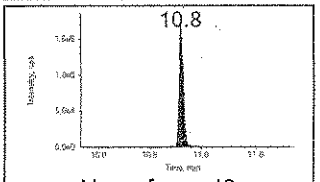
13C-PFNA 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



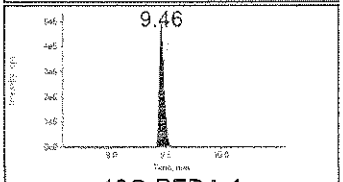
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



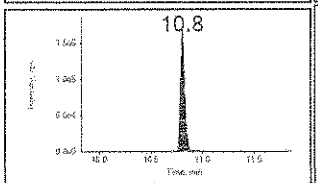
13C-PFOS 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



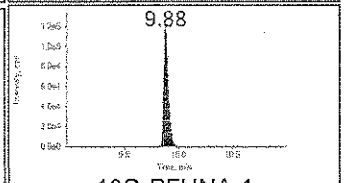
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



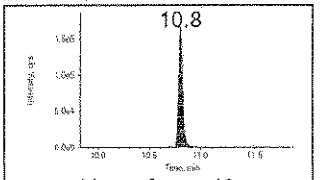
13C-PFDA 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



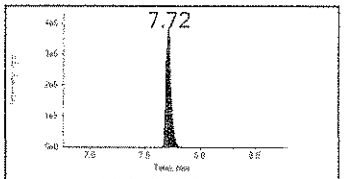
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



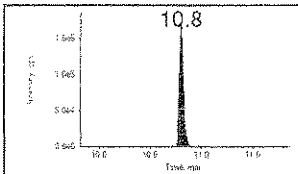
13C-PFUNA 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



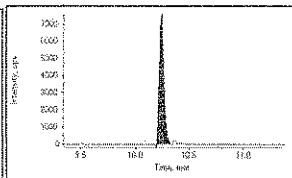
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



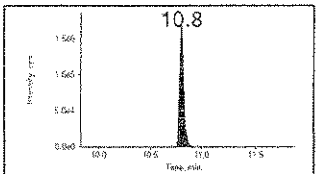
18O-PFHxS 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



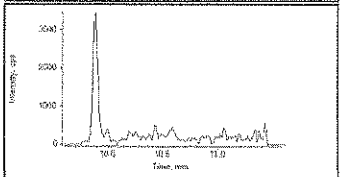
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



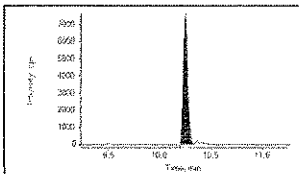
13C-PFDoA 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



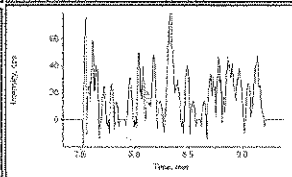
N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



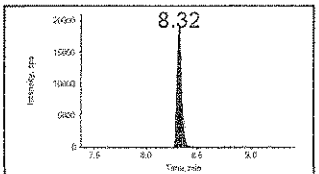
PFTrDA 1
663.000/619.000 Da
□ Baseline □ Missed
□ Wrong Peak



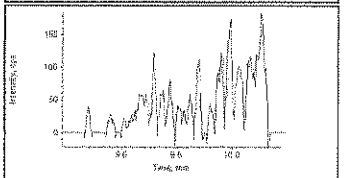
13c-pfdoda
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



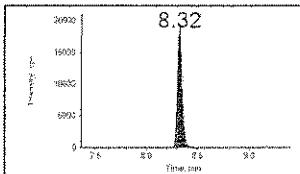
6_2-FTS 1
427.000/407.000 Da
□ Baseline □ Missed
□ Wrong Peak



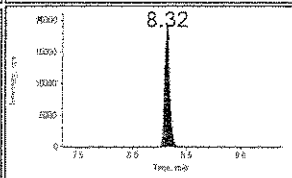
13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak



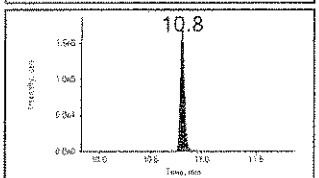
8_2-FTS 1
527.200/507.100 Da
□ Baseline □ Missed
□ Wrong Peak



13C2-6_2-FTS
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

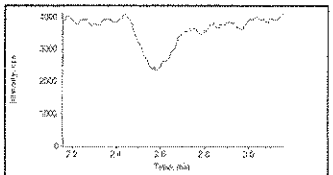


13C2-6_2-FTS 1
429.500/409.000 Da
□ Baseline □ Missed
□ Wrong Peak

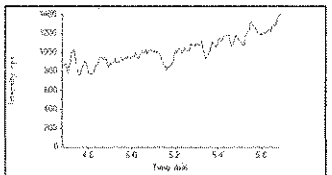


N_mefosa_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

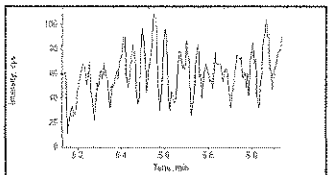
Ion Ratio Confirmation



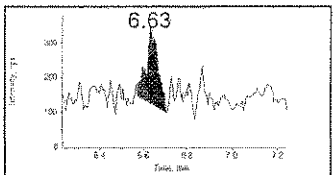
Pfba 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



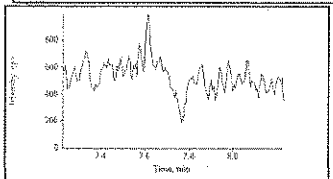
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



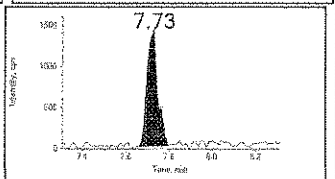
Pfbs 2
Mod? No
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□ Wrong Peak



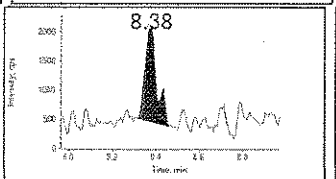
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



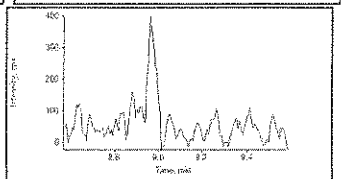
Pfhpa 2
Mod? No
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□ Wrong Peak



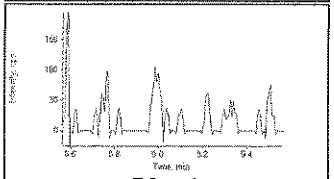
Pfhxs 2
Mod? No
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□ Wrong Peak



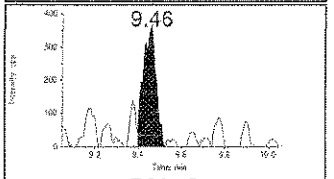
Pfoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



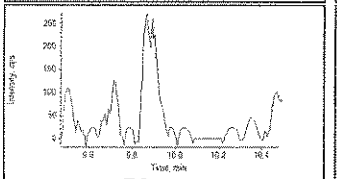
Pfna 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



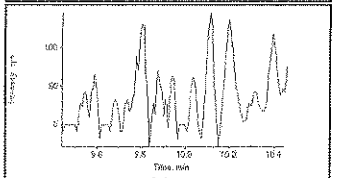
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



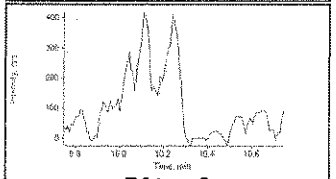
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



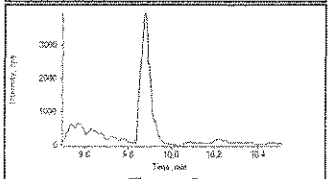
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Mod? No
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□ Wrong Peak



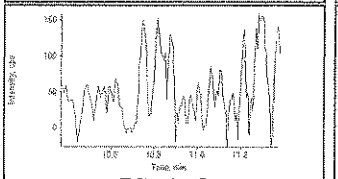
Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



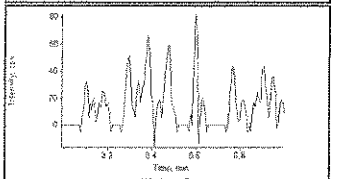
Pfdoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



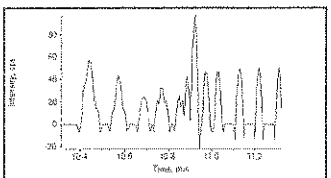
Fosa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



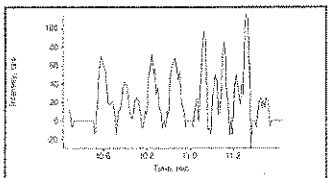
Pfteda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



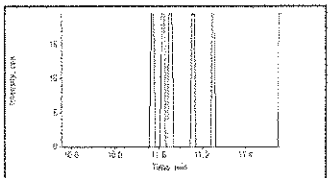
PFHpS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



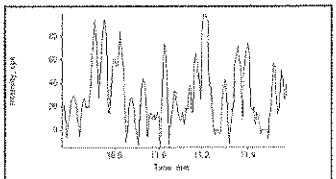
NMeFOSE 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



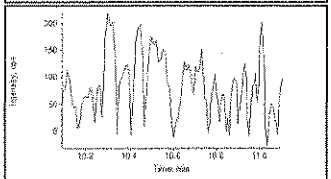
NMeFOSA 2
Mod? No
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□ Wrong Peak



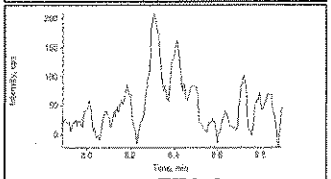
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□ Wrong Peak



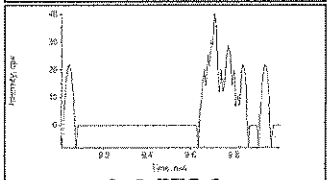
NEtFOSA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



PFTrDA 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



6_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



8_2-FTS 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Date:04/18/16

ICAL Date: 04/18/16

ALS Environmental

Cal. Std. xp:5/3/16

1st Review: Matthew Hall

Injection Log

ICAL ID: K1606 0049

2nd Review: APR 2 1 2016

LCMS02 - API 5000

LIMS ID: 49237

Column: Kinetex XB C18 100x4.6mm s/n: H15-058572

Mobile Phases A: 5mM Am.Ace. In water 15-OLC-01-36G,15-OLC-01-39C B: 5mM Am.Ace. In MeOH 15-OLC-01-36H, 15-OLC-01-39D

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments
1	IB		041816\2009.wiff	PFC_122812.dam	1x	✓	
2	PFC 0.10ppb	15-OLC-02-38A	041816\2010.wiff	PFC_122812.dam	1x	✓	
3	PFC 0.25ppb	15-OLC-02-38B	041816\2011.wiff	PFC_122812.dam	1x	✓	
4	PFC 0.50ppb	15-OLC-02-38C	041816\2012.wiff	PFC_122812.dam	1x	✓	
5	PFC 1.00ppb	15-OLC-02-38D	041816\2013.wiff	PFC_122812.dam	1x	✓	
6	PFC 5.00ppb	15-OLC-02-38E	041816\2014.wiff	PFC_122812.dam	1x	✓	
7	PFC 10.0ppb	15-OLC-02-38F	041816\2015.wiff	PFC_122812.dam	1x	✓	
8	PFC 20.0ppb	15-OLC-02-39B	041816\2016.wiff	PFC_122812.dam	1x	✓	
9	PFC 50.0ppb	15-OLC-02-39C	041816\2017.wiff	PFC_122812.dam	1x	✓	
10	PFC 100ppb	15-OLC-02-39D	041816\2018.wiff	PFC_122812.dam	1x	✓	
11	IB		041816\2019.wiff	PFC_122812.dam	1x	✓	
12	PFC 20.0ppb ICV	15-OLC-02-39A	041816\2020.wiff	PFC_122812.dam	1x	✓	
13	IB		041816\2021.wiff	PFC_122812.dam	1x	✓	
14	KQ1602426-04	MB	041816\2022.wiff	PFC_122812.dam	1x	✓	
15	KQ1602426-03	LCS	041816\2023.wiff	PFC_122812.dam	1x	✓	
16	KQ1606114-04	MB	041816\2024.wiff	PFC_122812.dam	1x	✓	
17	KQ1603114-03	LCS	041816\2025.wiff	PFC_122812.dam	1x	✓	
18	K1602494-001		041816\2026.wiff	PFC_122812.dam	1x	✓	
19	K1602494-002		041816\2027.wiff	PFC_122812.dam	1x	✓	
20	K1602924-003		041816\2028.wiff	PFC_122812.dam	1x	✓	
21	K1602494-004		041816\2029.wiff	PFC_122812.dam	1x	✓	
22	K1602494-005		041816\2030.wiff	PFC_122812.dam	1x		nr, IS high
23	K1602494-006		041816\2031.wiff	PFC_122812.dam	1x	✓	
24	PFC 10.0ppb	15-OLC-02-38F	041816\2032.wiff	PFC_122812.dam	1x	✓	
25	IB		041816\2033.wiff	PFC_122812.dam	1x	✓	
26	K1602494-007		041816\2034.wiff	PFC_122812.dam	1x		nr, IS high
27	K1602494-008		041816\2035.wiff	PFC_122812.dam	1x	✓	
28	KQ1602426-01	K1602494-008 MS	041816\2036.wiff	PFC_122812.dam	1x	✓	
29	KQ1602426-02	K1602494-008 DMS	041816\2037.wiff	PFC_122812.dam	1x	✓	
30	K1603217-001		041816\2038.wiff	PFC_122812.dam	1x	✓	
31	K1603217-002		041816\2039.wiff	PFC_122812.dam	1x	✓	
32	K1603217-003		041816\2040.wiff	PFC_122812.dam	1x	✓	
33	K1603217-004		041816\2041.wiff	PFC_122812.dam	1x	✓	
34	K1603217-005		041816\2042.wiff	PFC_122812.dam	1x	✓	
35	K1603217-006		041816\2043.wiff	PFC_122812.dam	1x	✓	
36	PFC 10.0ppb	15-OLC-02-38F	041816\2044.wiff	PFC_122812.dam	1x	✓	
37	IB		041816\2045.wiff	PFC_122812.dam	1x	✓	
38	KI1603217-007		041816\2046.wiff	PFC_122812.dam	1x	✓	

J:\LCMS02\PFCs\041816\041816 injection log

Date:04/18/16

ALS Environmental

ICAL Date: 04/18/16

Cal. Std. xp:5/3/16

1st Review: Matthew Hall

Injection Log

ICAL ID:

2nd Review: APR 21 2016

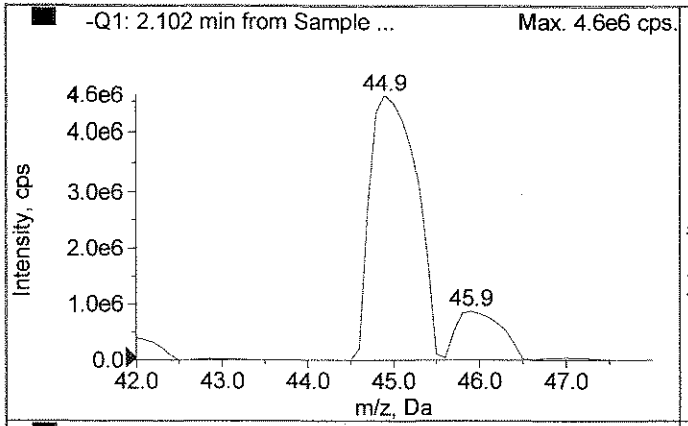
LCMS02 - API 5000

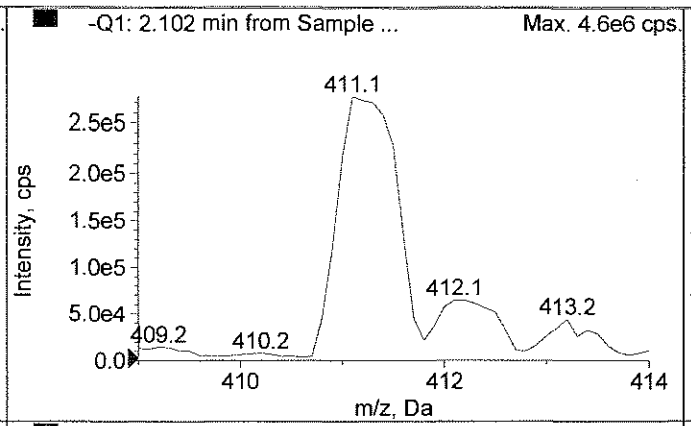
LIMS ID:

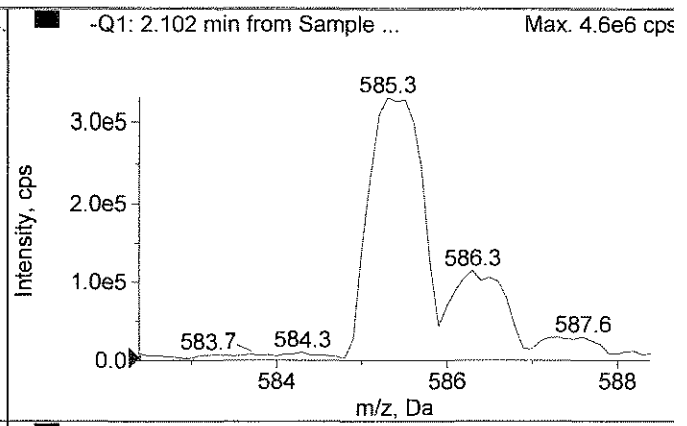
Column: Kinetex XB C18 100x4.6mm s/n: H15-058572

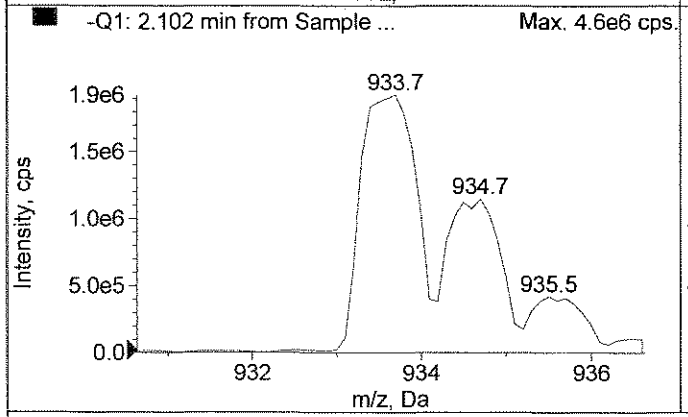
Mobile Phases A: 5mM Am.Ace. In water 15-OLC-01-36G,15-OLC-01-39C B: 5mM Am.Ace. In MeOH 15-OLC-01-36H, 15-OLC-01-39D

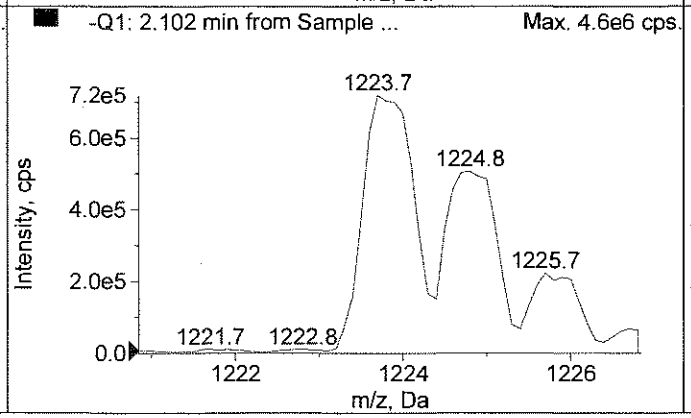
	Sample Name		File Name	Acquisition Method	Dilution	R	Comments
39	KI1603217-008		041816\2047.wiff	PFC_122812.dam	1x	✓	
40	KI1603217-009		041816\2048.wiff	PFC_122812.dam	1x	✓	
41	KI1603217-010		041816\2049.wiff	PFC_122812.dam	1x	✓	
42	KI1603217-011		041816\2050.wiff	PFC_122812.dam	1x	✓	
43	KI1603217-012		041816\2051.wiff	PFC_122812.dam	1x	✓	
44	KQ1606114-01	KI1603217-012 MS	041816\2052.wiff	PFC_122812.dam	1x	✓	
45	KQ1606114-02	KI1603217-012 DMS	041816\2053.wiff	PFC_122812.dam	1x	✓	
46	KI1603217-013		041816\2054.wiff	PFC_122812.dam	1x	✓	
47	KI1603217-014		041816\2055.wiff	PFC_122812.dam	1x	✓	
48	PFC 10.0ppb	15-OLC-02-38F	041816\2056.wiff	PFC_122812.dam	1x	✓	
49	IB		041816\2057.wiff	PFC_122812.dam	1x	✓	
50	KI1603217-015		041816\2058.wiff	PFC_122812.dam	1x	✓	
51	KI1603217-016		041816\2059.wiff	PFC_122812.dam	1x	✓	
52	KI1603217-017		041816\2060.wiff	PFC_122812.dam	1x	✓	
53	PFC 10.0ppb	15-OLC-02-38F	041816\2061.wiff	PFC_122812.dam	1x	✓	
54	IB		041816\2062.wiff	PFC_122812.dam	1x	✓	
55	Primer 10		041916\5004.wiff	PFC_122812.dam	1x		nr
56	PFC 10.0ppb	15-OLC-02-38F	041916\5032.wiff	PFC_122812.dam	1x	✓	
57	IB		041916\5033.wiff	PFC_122812.dam	1x	✓	
58	K1602494-005 10X		041916\5034.wiff	PFC_122812.dam	10x	✓	100ul→1mL MeOH:DN615 15-OLC-02-36I
59	K1602494-007 10X		041916\5035.wiff	PFC_122812.dam	10x		100ul→1mL MeOH:DN615 15-OLC-02-36I NR Not needed.
60	K1602494-005		041916\5036.wiff	PFC_122812.dam	1x	✓	nr, IS high
61	K1602494-007		041916\5037.wiff	PFC_122812.dam	1x	✓	
62	PFC 10.0ppb	15-OLC-02-38F	041916\5038.wiff	PFC_122812.dam	1x	✓	
63	IB		041916\5039.wiff	PFC_122812.dam	1x	✓	

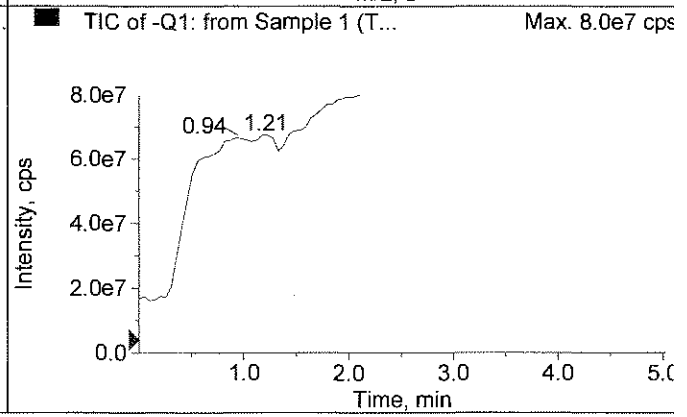










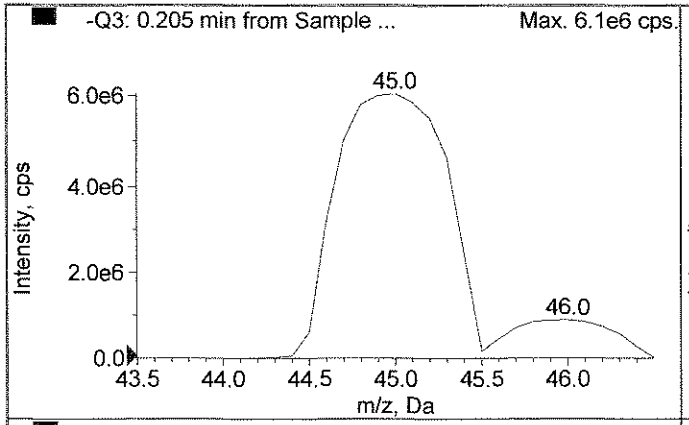


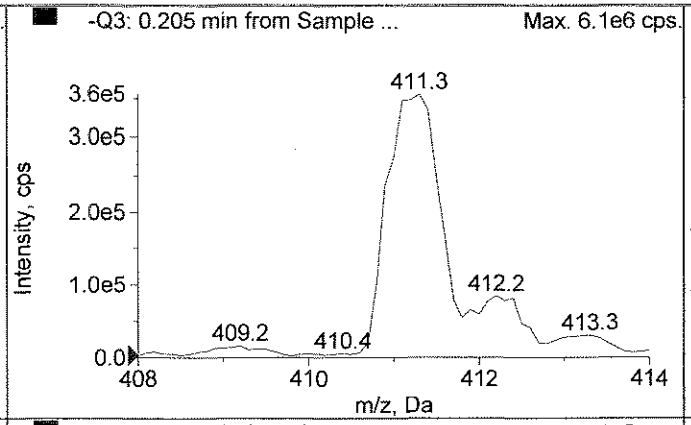
Peak List for " -Q1: 2.102 min from Sample 1 (TuneSampleID) of MT20160418193202.wiff (Turbo Spray)"

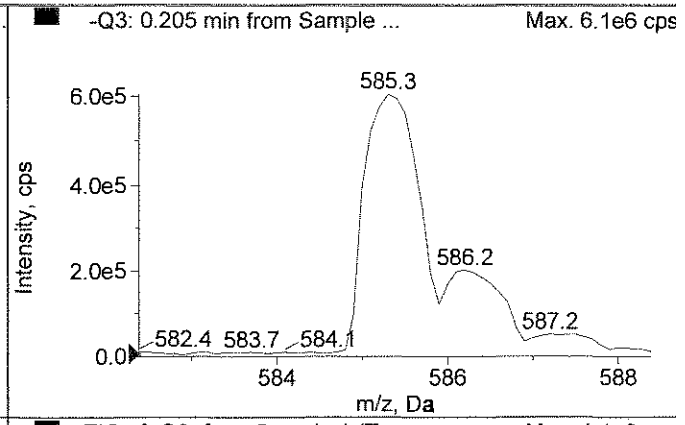
	Target Mass (Da)	Found At (Da)	Intensity (cps)	Width (Da)	Mass Shift (Da)
1	44.9980	44.9974	4.6127e6	0.6799	5.7146e-4
2	411.2590	411.2490	2.7657e5	0.6757	0.0100
3	585.3850	585.4013	3.2990e5	0.7431	-0.0163
4	933.6360	933.6075	1.9301e6	0.7731	0.0285
5	1223.8450	1223.8294	7.2000e5	0.6872	0.0156

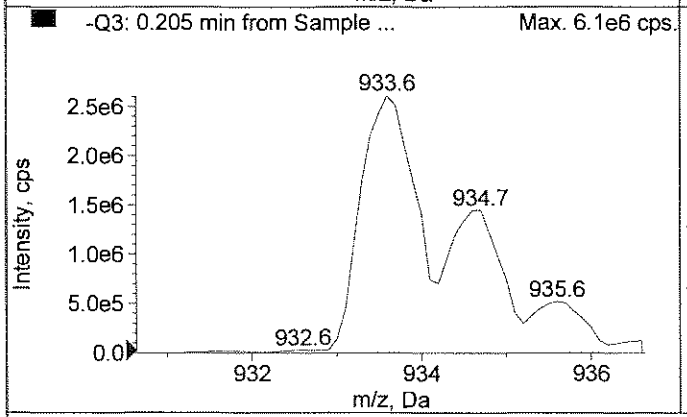
All Mass shift ~0.5 Da.
mkl 4/18/16

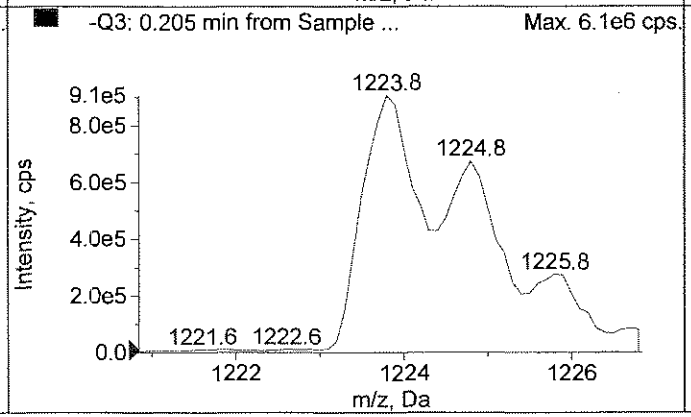
APR 2 1 2016

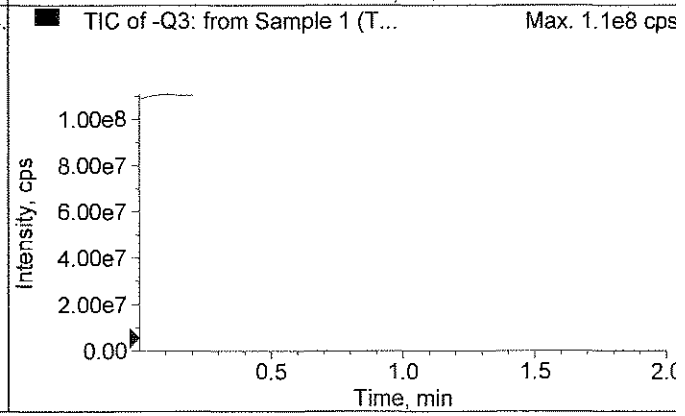












Peak List for " -Q3: 0.205 min from Sample 1 (TuneSampleID) of MT20160418193444.wiff (Turbo Spray)"

	Target Mass (Da)	Found At (Da)	Intensity (cps)	Width (Da)	Mass Shift (Da)
1	44.9980	44.9859	6.0546e6	0.7804	0.0121
2	411.2590	411.2182	3.5620e5	0.7290	0.0408
3	585.3850	585.3300	6.0520e5	0.7644	0.0550
4	933.6360	933.6052	2.6127e6	0.7819	0.0308
5	1223.8450	1223.8217	9.0770e5	0.8233	0.0233

All mass shift ~0.5 Da.

APR 21 2016

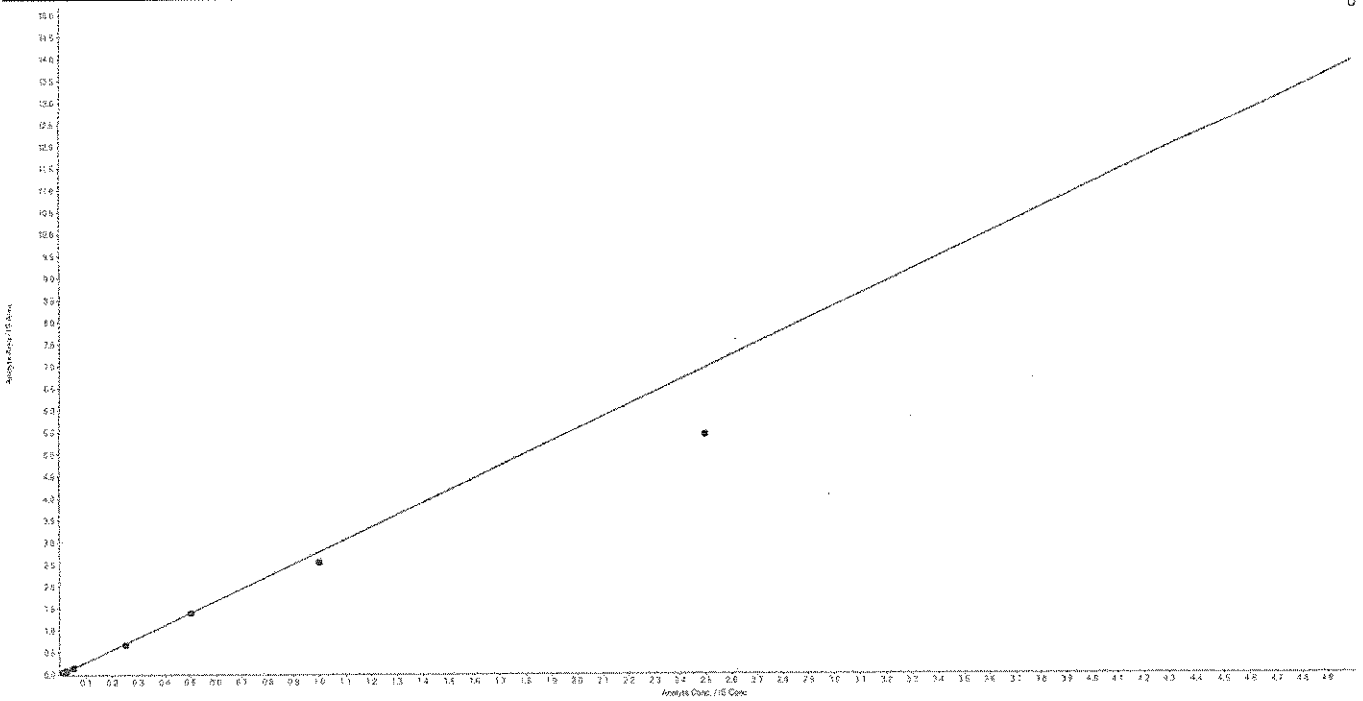
Analyte Name: Pfbs 1
Internal Standard: 18O_PFHS

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.78 x (std. dev. = 0.315) ✓

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.1	0.112	112	NaN	NaN
0.25	0.261	104	NaN	NaN
0.5	0.557	111	NaN	NaN
1	1.053	105	NaN	NaN
5	4.866	97	NaN	NaN
10	9.948	99	NaN	NaN
20	18.301	92	NaN	NaN
50	39.030	78	NaN	NaN



APR 21 2016

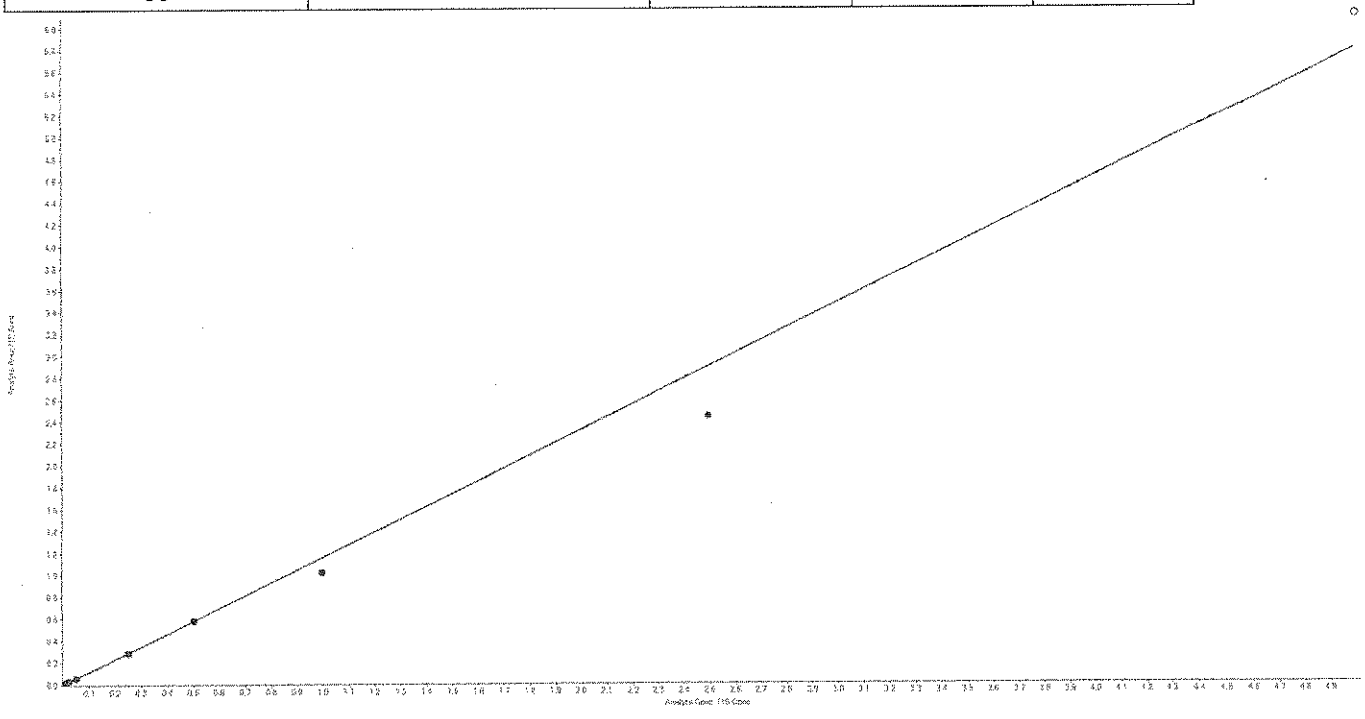
Analyte Name: Pfhpa 1
Internal Standard: 13C-PFHxA

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 1.16 x (std. dev. = 0.13)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.25	0.271	108	NaN	NaN
0.5	0.584	117	NaN	NaN
1	1.036	104	NaN	NaN
5	4.908	98	NaN	NaN
10	10.044	100	NaN	NaN
20	17.654	88	NaN	NaN
50	42.117	84	NaN	NaN



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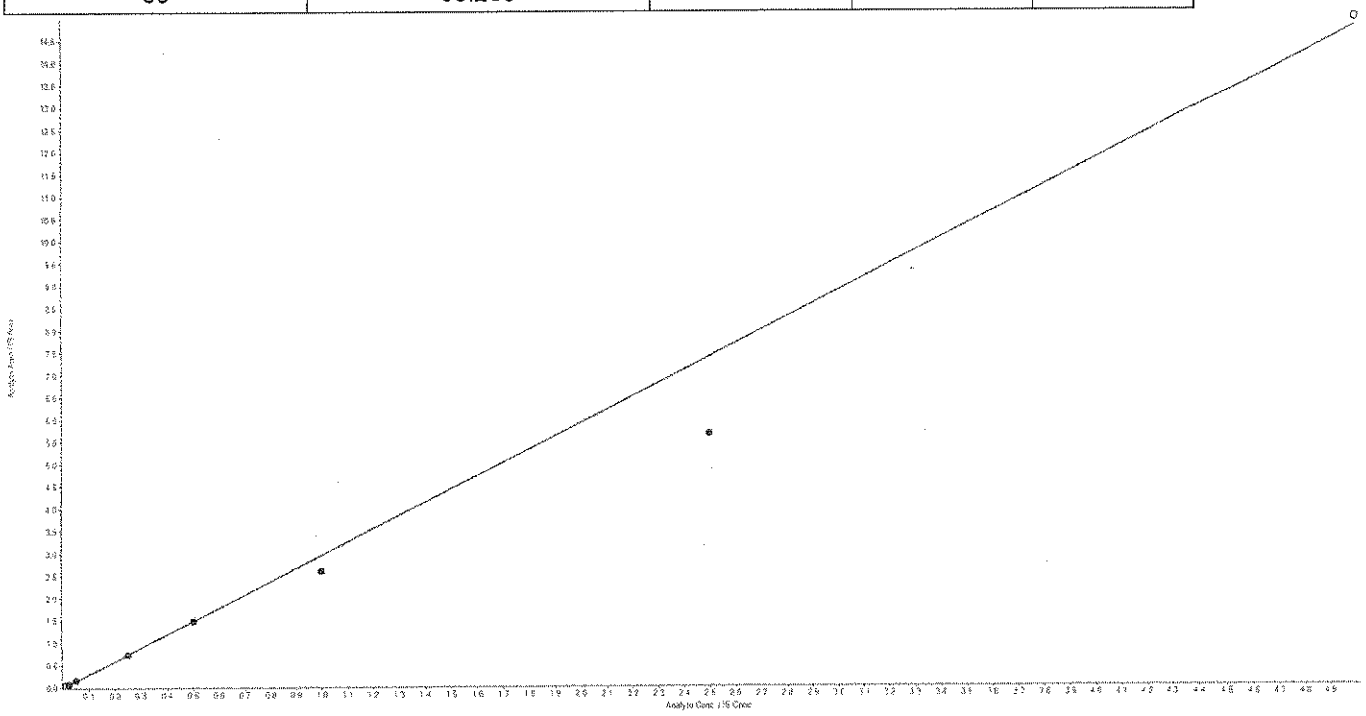
Analyte Name: Pfhxs 1
Internal Standard: 18O_PFHS

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.96 x (std. dev. = 0.499)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.5	0.618	124	NaN	NaN
1	1.134	113	NaN	NaN
5	4.911	98	NaN	NaN
10	9.993	100	NaN	NaN
20	17.666	88	NaN	NaN
50	38.280	77	NaN	NaN



APR 21 2016

Created with Analyst Reporter
Printed: 4/19/2016 5:34 PM

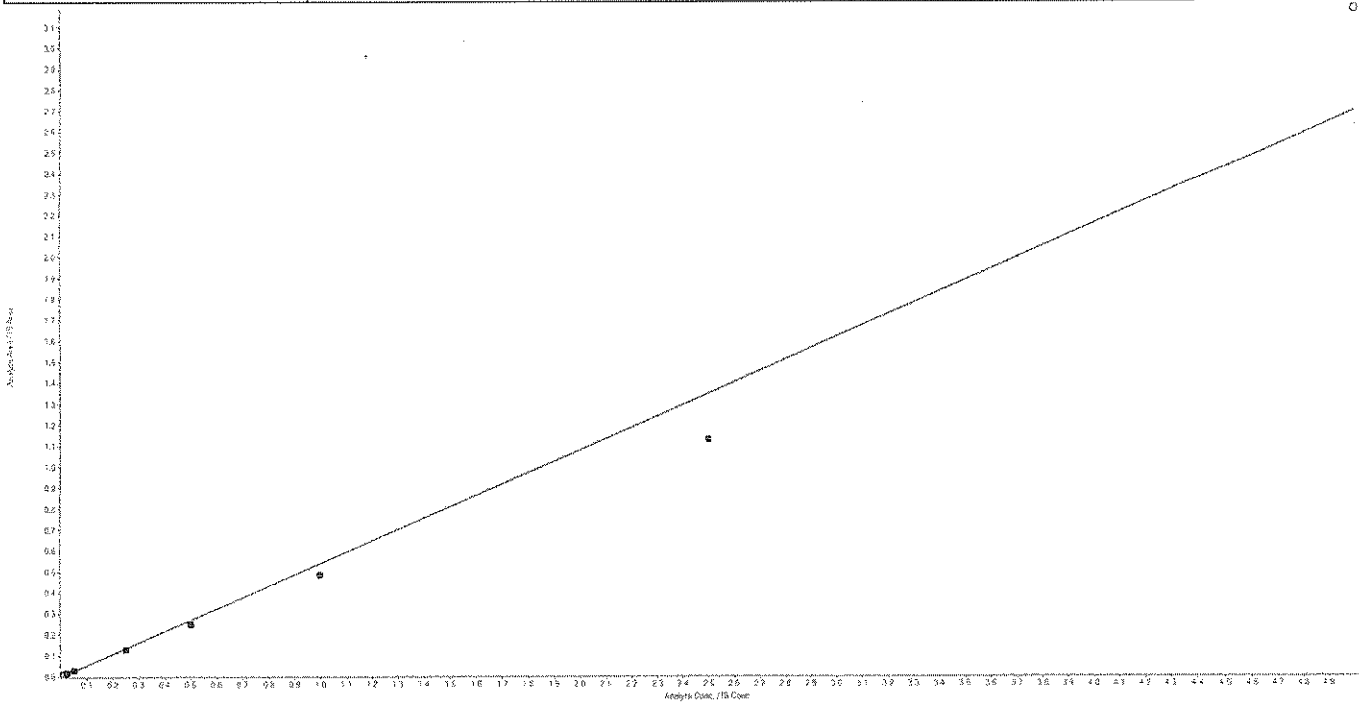
4/4/2016

Analyte Name: Pfoa 1
Internal Standard: 13C-PFOA

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.539 x (std. dev. = 0.087)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.5	0.637	127	NaN	NaN
1	1.107	111	NaN	NaN
5	4.794	96	NaN	NaN
10	9.207	92	NaN	NaN
20	18.039	90	NaN	NaN
50	41.913	84	NaN	NaN



APR 21 2016

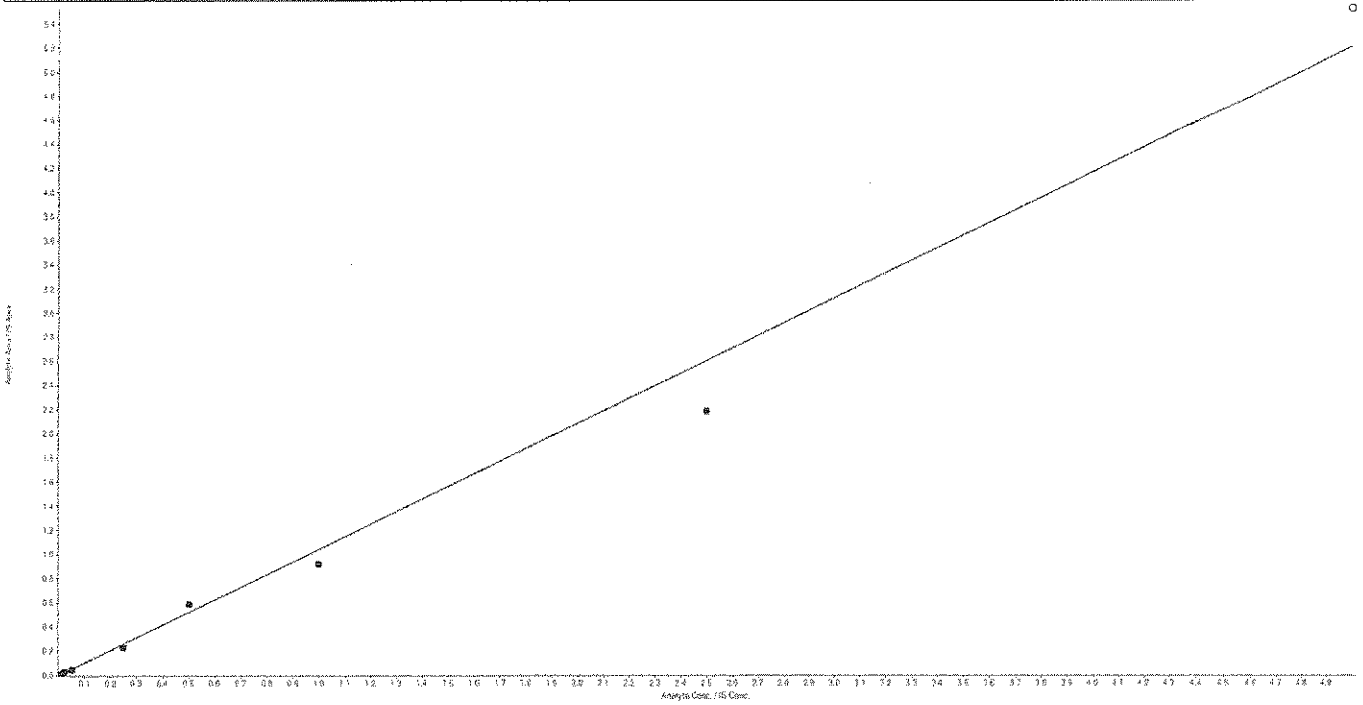
Analyte Name: Pfna 1
Internal Standard: 13C-PFNA

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 1.04 x (std. dev. = 0.158)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.1	0.113	113	NaN	NaN
0.25	0.259	104	NaN	NaN
0.5	0.619	124	NaN	NaN
1	0.867	87	NaN	NaN
5	4.416	88	NaN	NaN
10	11.301	113	NaN	NaN
20	17.660	88	NaN	NaN
50	41.903	84	NaN	NaN



APR 21 2016

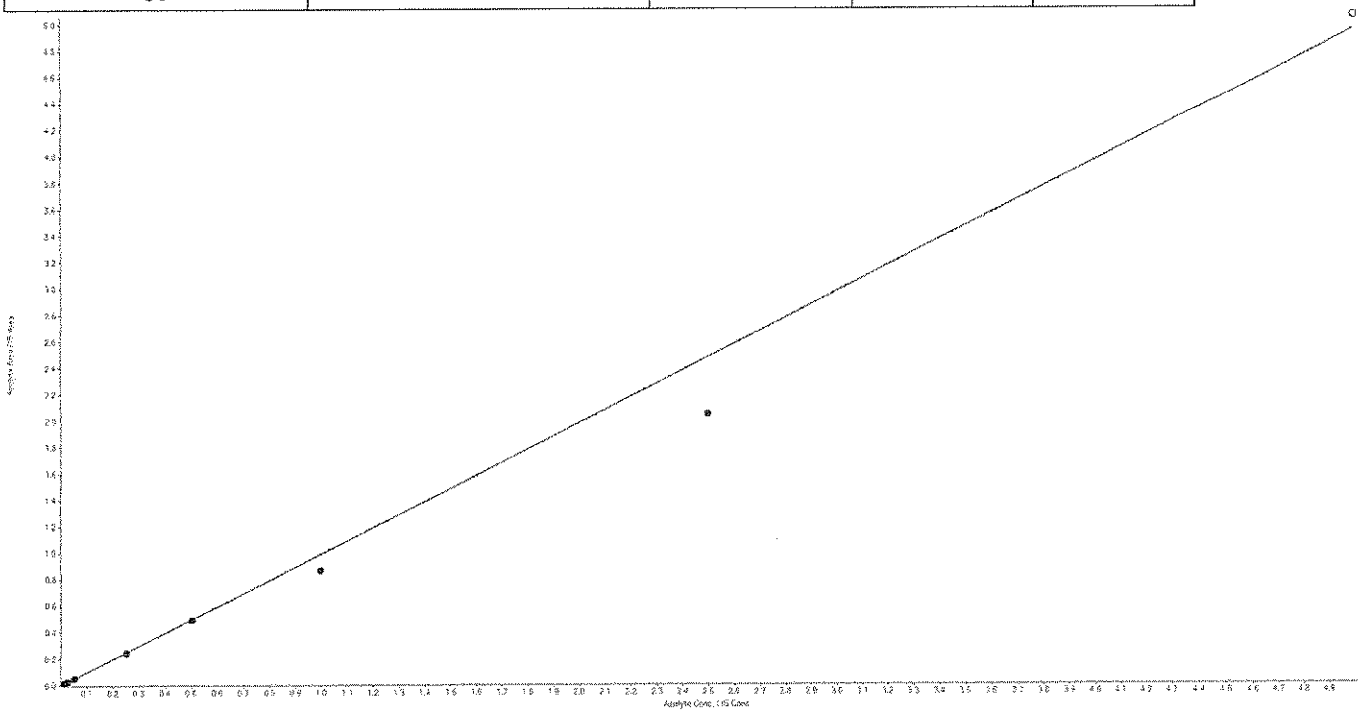
Analyte Name: Pfos 1
Internal Standard: 13C_PFOS

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 0.99 x (std. dev. = 0.106)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.1	0.104	104	NaN	NaN
0.25	0.265	106	NaN	NaN
0.5	0.572	114	NaN	NaN
1	1.084	108	NaN	NaN
5	4.900	98	NaN	NaN
10	9.907	99	NaN	NaN
20	17.471	87	NaN	NaN
50	41.274	83	NaN	NaN



APR 2 1 2016

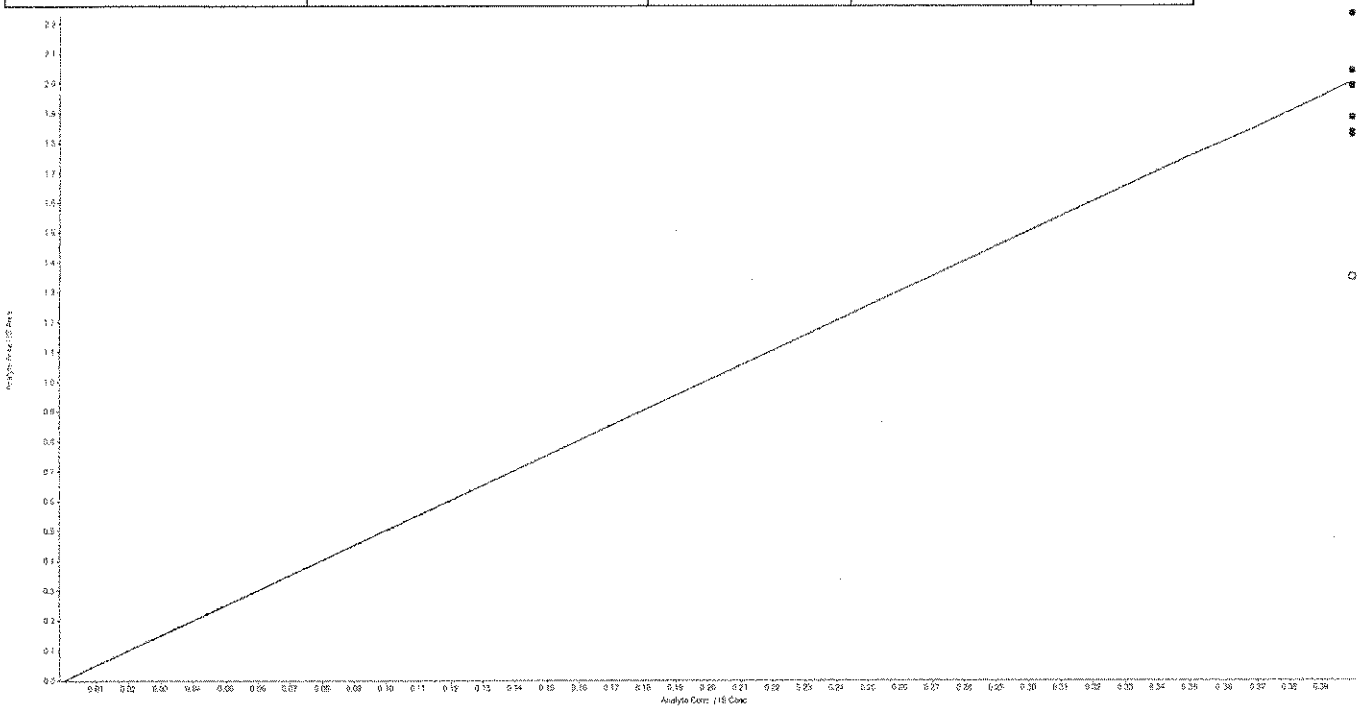
Analyte Name: S_phhxa 1
Internal Standard: N_MeFOSA_d3

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 5.01 x (std. dev. = 0.402) ✓

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
20	20.000	100	1.61	8.0



APR 21 2016

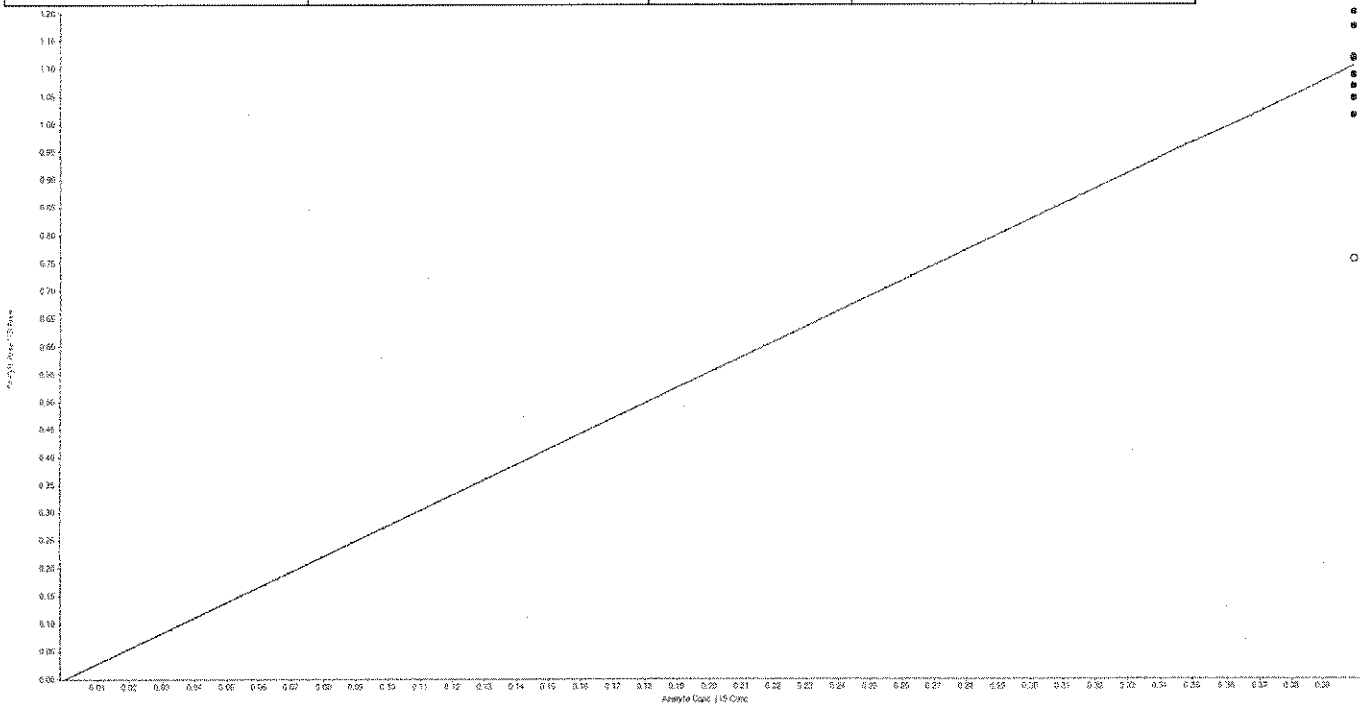
Analyte Name: S_pfhs 1
Internal Standard: N_MeFOSA_d3

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 2.76 x (std. dev. = 0.158)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
20	20.000	100	1.14	5.7



APR 2 1 2016

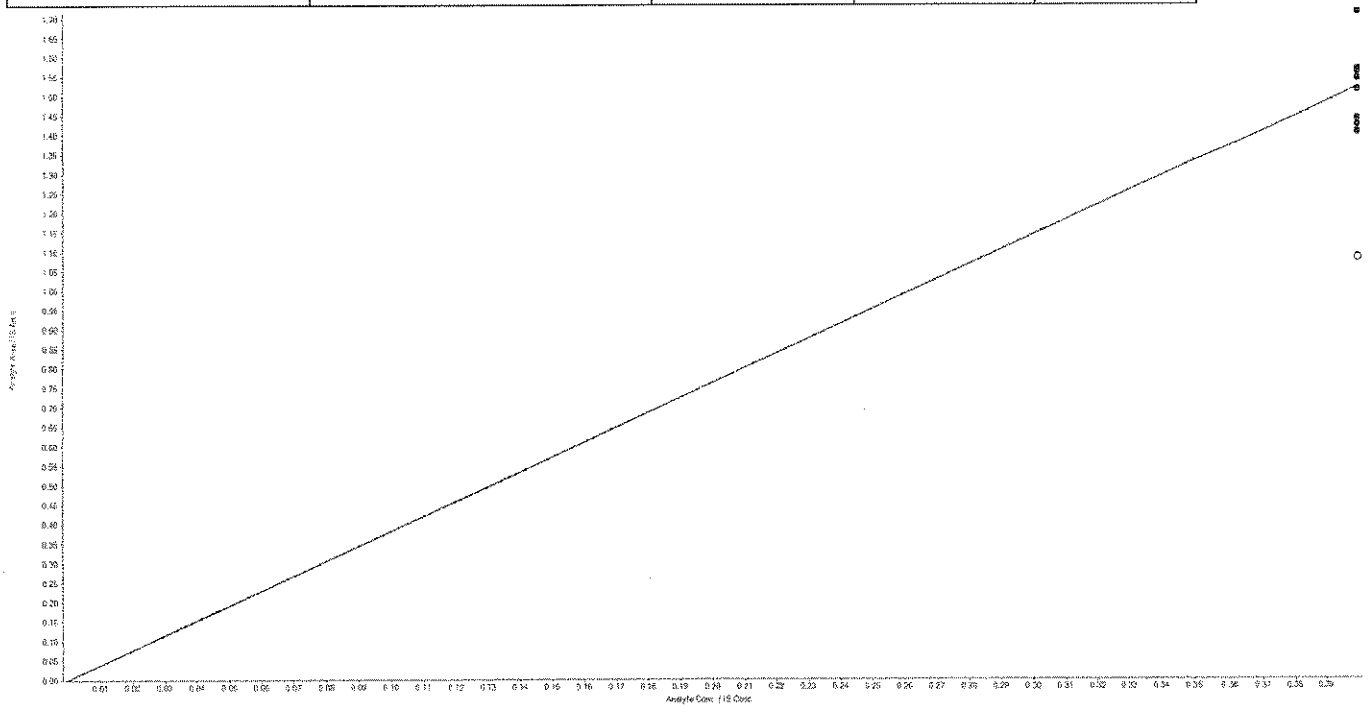
Analyte Name: S_pfoa 1
Internal Standard: N_MeFOSA_d3

4/20/16

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 3.8 x (std. dev. = 0.252)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
20	20.000	100	1.32	6.6



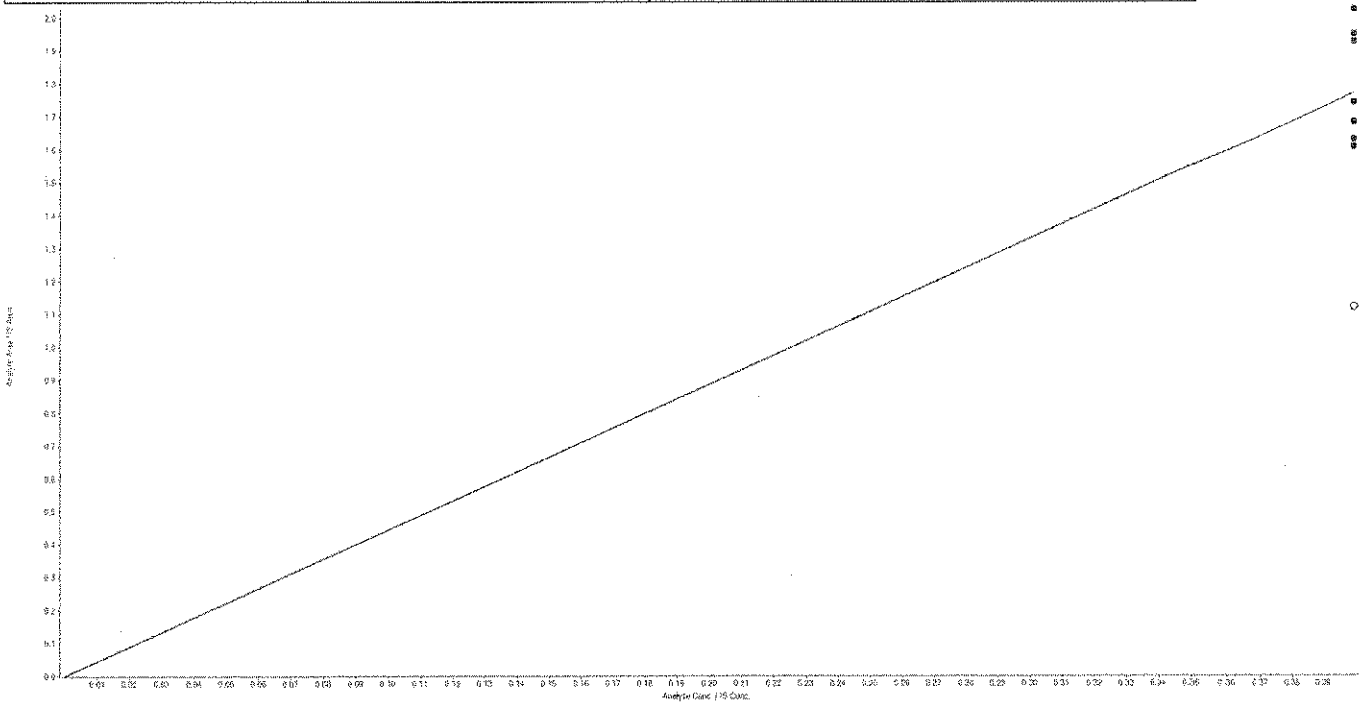
APR 2 1 2016

Analyte Name: S_pfna 1
Internal Standard: N_MeFOSA_d3

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 4.43 x (std. dev. = 0.427)

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
20	20.000	100	1.93	9.6



APR 21 2016

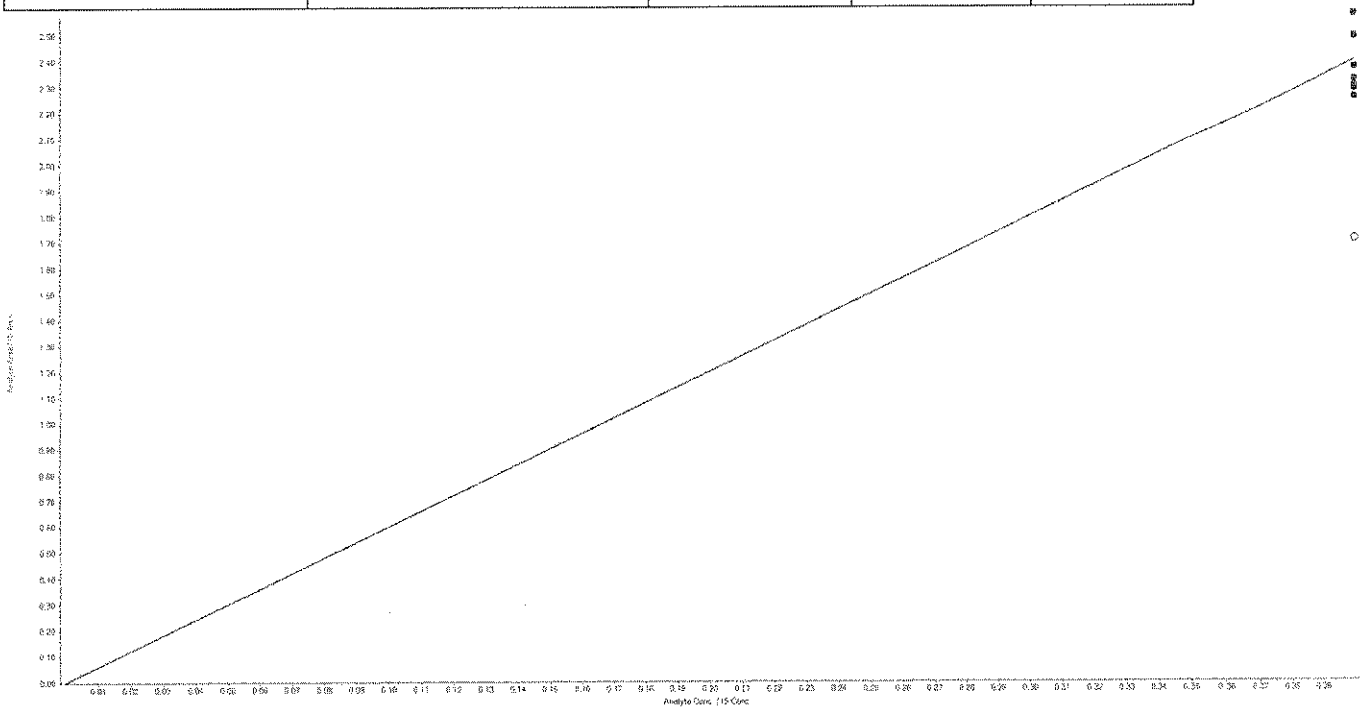
4/4/2016

Analyte Name: S_pfos 1
Internal Standard: N_MeFOSA_d3

Data File	041816\2009.wiff	**Result Table**	041816.rdb
Acquisition Date	4/18/2016 9:11:04 PM	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02
Project			

Regression Equation: y = 5.99 x (std. dev. = 0.33) ✓

Exp Conc (ng/mL)	Calc Conc (ng/mL)	% Accuracy	STD	%CV
20	20.000	100	1.10	5.5



APR 21 2016

Project	Ewan's Projects\PFCs
Data File	041816\2009.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/18/2016 9:11:04 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5254818	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	5058497	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2628566	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	5058497	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	5058497	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2628566	4.42 (4.41)	24119	0.0620	No
Pfoa 1	13C-PFOA	3497064	0.00 (4.94)	0	N/A	Yes
Pfna 1	13C-PFNA	4437830	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	5846595	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	3535879	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	880867	0.00 (6.12)	0	N/A	Yes
Pfds 1	13C_PFOS	5846595	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	56583	0.00 (6.39)	0	N/A	Yes
S_pfba 1	N_MeFOSA d3	2446424	1.44 (1.43)	5254818	20.2760	No
S_phhxa 1	N_MeFOSA d3	2446424	3.56 (3.58)	5058497	20.6370	No
S_pfhs 1	N_MeFOSA d3	2446424	4.41 (4.41)	2628566	19.4730	No
S_pfoa 1	N_MeFOSA d3	2446424	4.95 (4.94)	3497064	18.7890	No
S_pfna 1	N_MeFOSA d3	2446424	5.41 (5.38)	4437830	20.4900	No
S_pfda 1	N_MeFOSA d3	2446424	5.80 (5.79)	3535879	21.2510	No
S_pfos 1	N_MeFOSA d3	2446424	5.40 (5.39)	5846595	19.9480	No

APR 21 2016

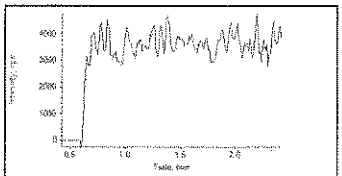
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	2446424	6.11 (6.11)	880867	21.2550	No
S_pfdoda 1	N_MeFOSA d3	2446424	6.40 (6.40)	56583	22.1930	No

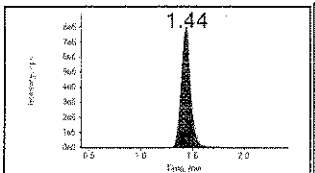
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.43)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.42 (4.41)	9460	No	0.39 (0.39)	YES
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	No	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

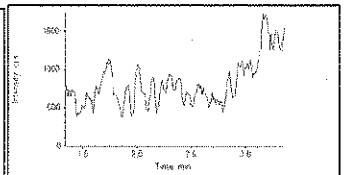
Quantitative Peak Review

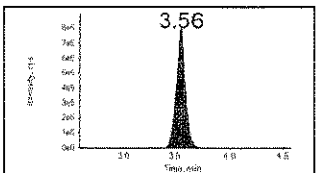
IB *No data for Sample ID*


Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

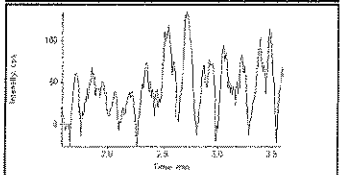


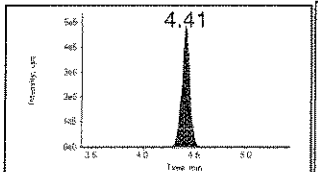
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

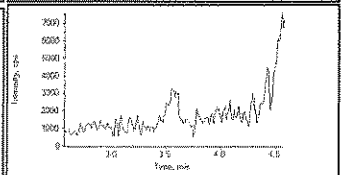


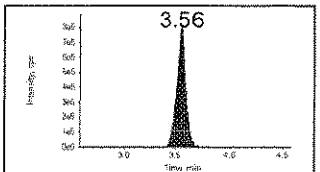
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

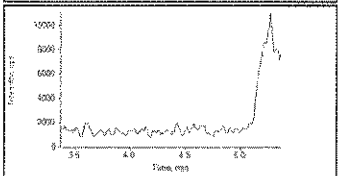


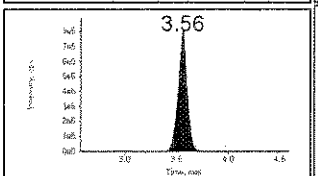
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

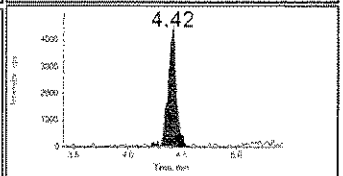


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

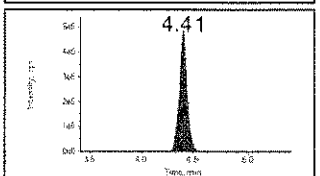

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



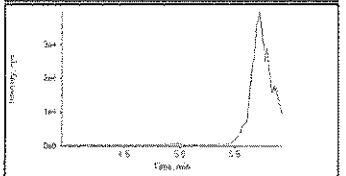
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

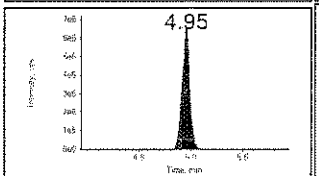


Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

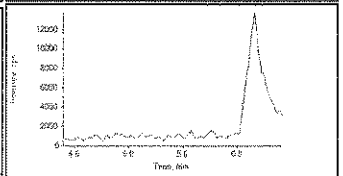


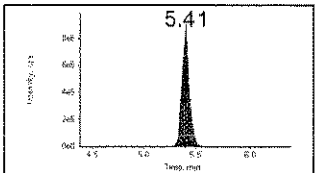
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

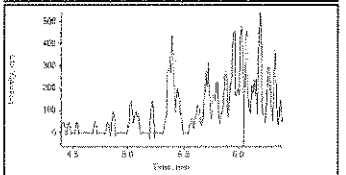


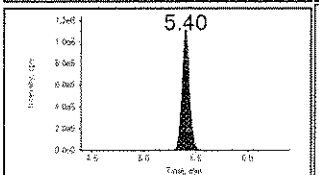
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

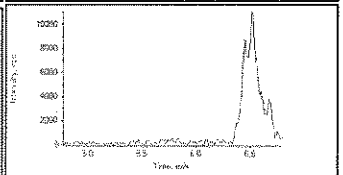


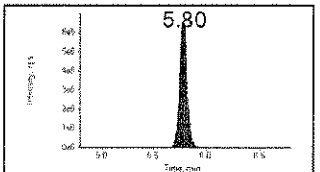
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

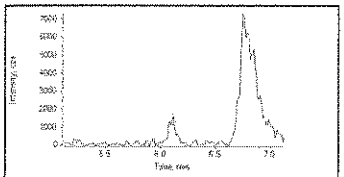


13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

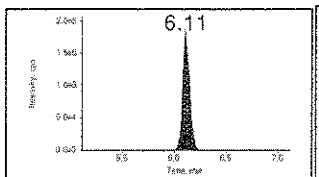

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



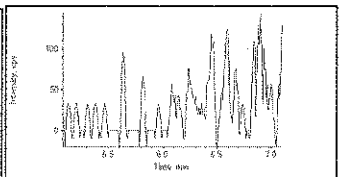
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



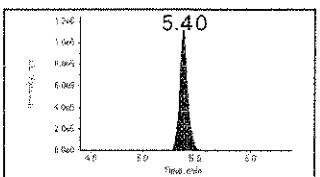
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



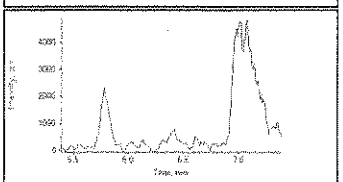
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



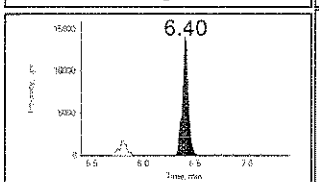
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



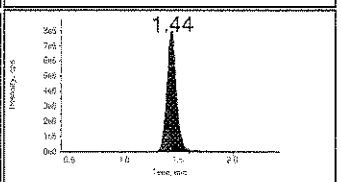
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



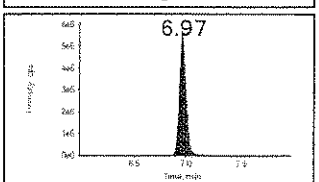
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



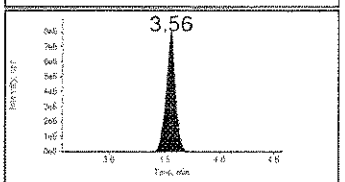
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



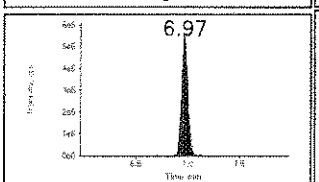
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



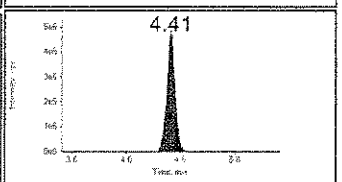
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



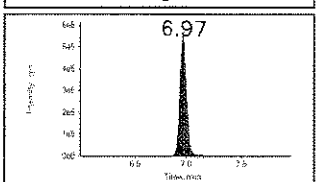
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



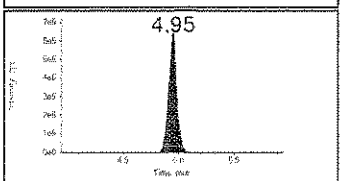
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



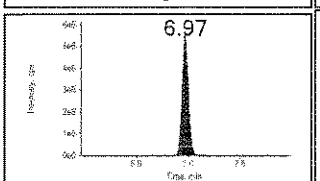
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



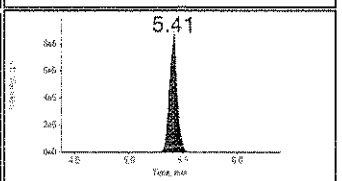
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



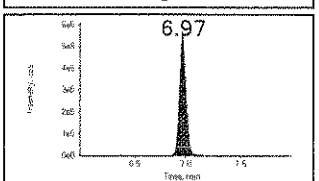
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



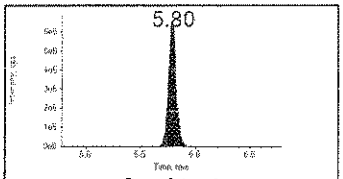
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



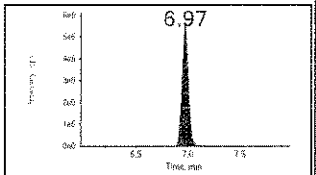
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



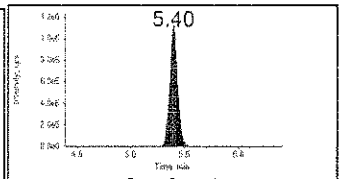
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



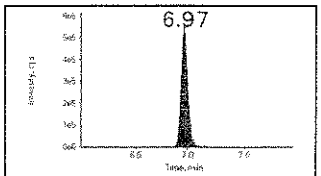
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



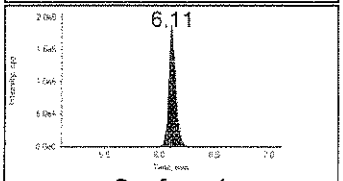
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



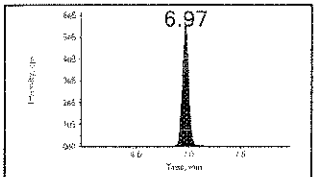
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



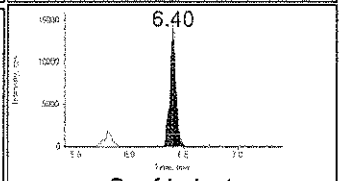
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



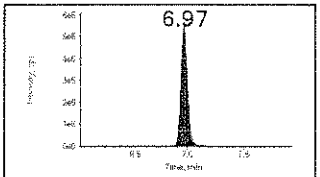
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

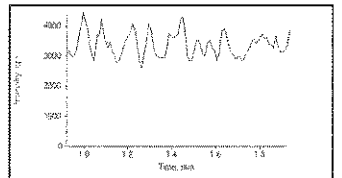


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

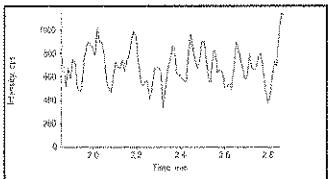


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

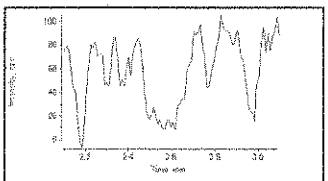
Ion Ratio Confirmation



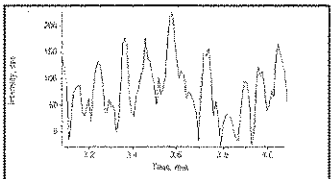
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



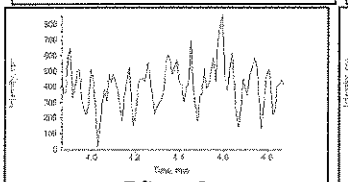
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



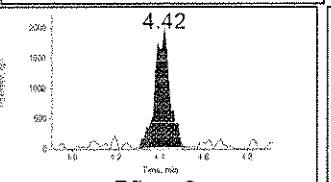
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



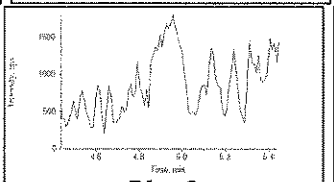
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



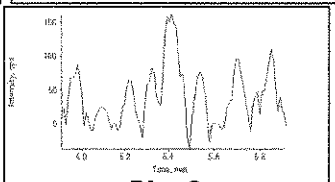
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



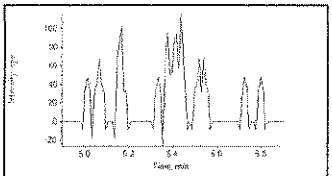
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



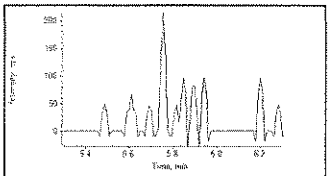
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



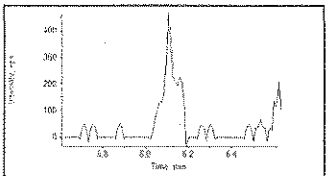
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



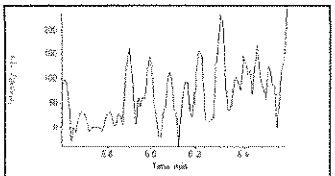
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



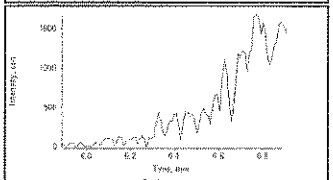
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2010.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 0.10ppb	Injection Vial	20001
Acquisition Date	4/18/2016 9:21:08 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Standard
Sample ID	15-OLC-02-38A	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.44 (1.43)	13C-PFBA	6267838	30471	0.10	0.1070	107	No
Pfpea 1	2.31 (2.34)	13C-PFHxA	5972720	15224	0.10	0.0800	81	No
Pfbs 1	2.56 (2.59)	18O_PFHS	3214962	50302	0.10	0.1120	112	No
Pfhxa 1	3.56 (3.57)	13C-PFHxA	5972720	46531	0.10	0.1590	159	No
Pfhpa 1	4.36 (4.37)	13C-PFHxA	5972720	48564	0.10	0.1400	140	No
Pfhxs 1	4.42 (4.41)	18O_PFHS	3214962	79564	0.10	0.1670	167	No
Pfoa 1	4.94 (4.94)	13C-PFOA	4195463	19795	0.10	0.1750	175	No
Pfna 1	5.42 (5.40)	13C-PFNA	5215739	30600	0.10	0.1130	113	No
Pfos 1	5.40 (5.40)	13C_PFOS	6893067	35582	0.10	0.1040	104	No
Pfda 1	5.80 (5.78)	13C-PFDA	4036983	22697	0.10	0.1030	103	No
Pfuna 1	6.11 (6.12)	13C-PFUnA	1135746	31164	0.10	0.1540	154	No
Pfds 1	6.09 (6.09)	13C_PFOS	6893067	50252	0.10	0.1170	117	No
Pfdoa 1	6.40 (6.39)	13C-PFDoA	67563	22329	0.10	0.1060	106	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d 3	2676296	6267838	20.00	22.1080	111	No
S_phhxa 1	3.56 (3.58)	N_MeFOSA_d 3	2676296	5972720	20.00	22.2740	111	No
S_pfhs 1	4.41 (4.41)	N_MeFOSA_d 3	2676296	3214962	20.00	21.7710	109	No
S_pfoa 1	4.94 (4.94)	N_MeFOSA_d 3	2676296	4195463	20.00	20.6050	103	No

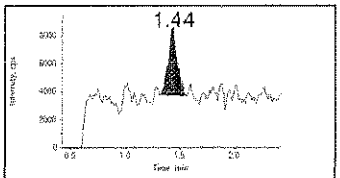
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.40 (5.38)	N_MeFOSA_d 3	2676296	5215739	20.00	22.0140	110	No
S_pfda 1	5.80 (5.79)	N_MeFOSA_d 3	2676296	4036983	20.00	22.1780	111	No
S_pfos 1	5.40 (5.39)	N_MeFOSA_d 3	2676296	6893067	20.00	21.4990	107	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d 3	2676296	1135746	20.00	25.0510	125	No
S_pfdoda 1	6.39 (6.40)	N_MeFOSA_d 3	2676296	67563	20.00	24.2230	121	No

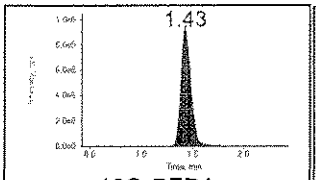
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.45 (1.42)	26343	No	0.86
Pfpea 2	2.34 (2.36)	19554	No	1.28
Pfbs 2	2.56 (2.59)	19713	No	0.39
Pfhxa 2	3.56 (3.58)	3550	No	0.08
Pfhpa 2	4.36 (4.37)	16766	No	0.35
Pfhxs 2	4.42 (4.41)	33057	No	0.42
Pfoa 2	4.94 (4.94)	32981	No	1.67
Pfna 2	5.41 (5.41)	7666	No	0.25
Pfos 2	5.41 (5.39)	12682	No	0.36
Pfda 2	5.79 (5.79)	5657	No	0.25
Pfuna 2	6.12 (6.11)	8083	No	0.26
Pfds 2	6.10 (6.09)	16562	No	0.33
Pfdoa 2	6.41 (6.39)	4488	No	0.20

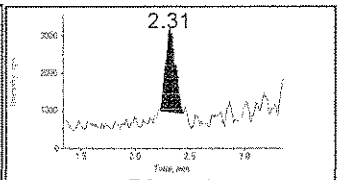
Quantitative Peak Review PFC 0.10ppb 15-OLC-02-38A



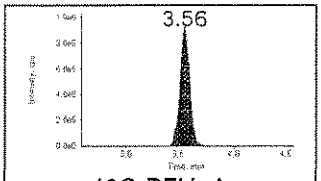
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



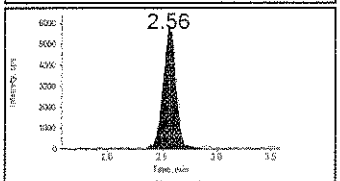
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



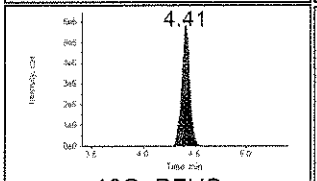
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



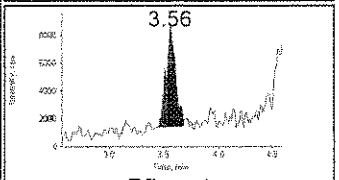
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



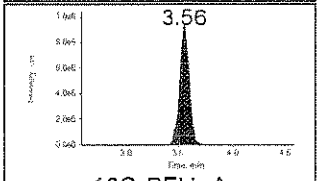
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



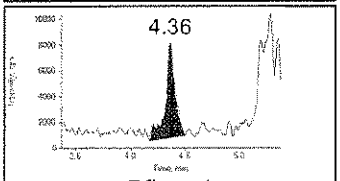
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



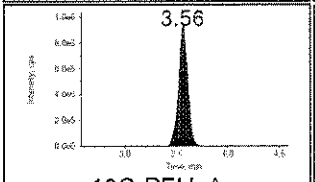
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



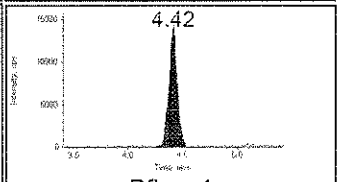
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



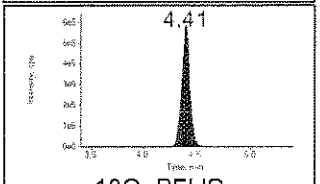
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



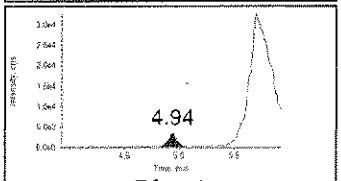
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



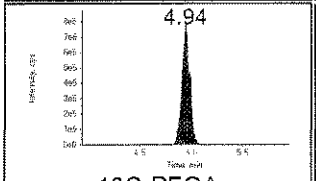
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



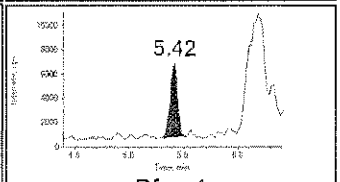
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



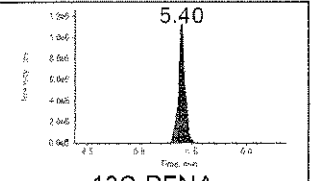
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



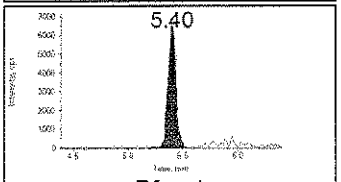
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



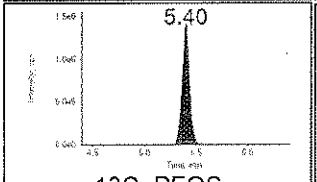
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



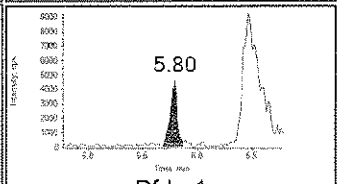
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



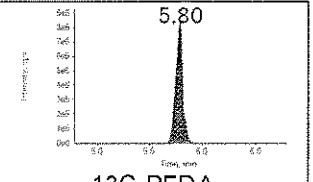
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



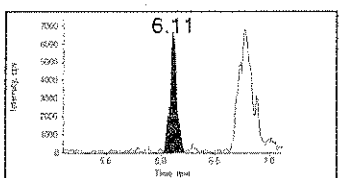
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



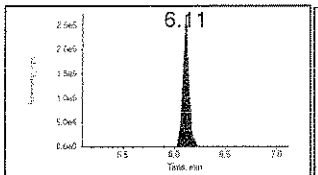
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



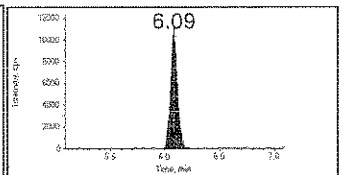
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



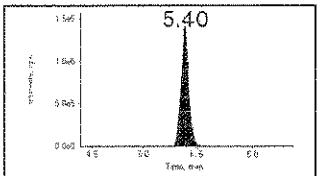
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



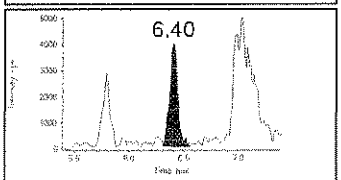
13C-PFUnA
565.000/520.000 Da
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□ Wrong Peak



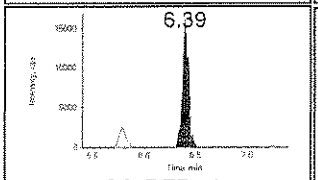
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



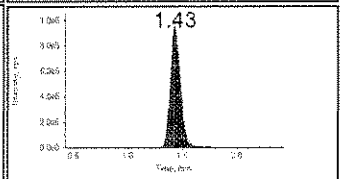
13C_PFOS
503.000/80.000 Da
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□ Wrong Peak



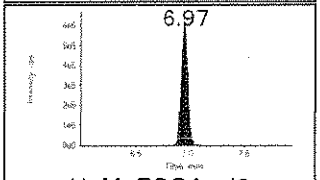
Pfdoa 1
613.000/569.000 Da
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□ Wrong Peak



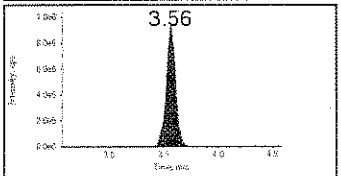
13C-PFDoA
615.000/570.000 Da
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□ Wrong Peak



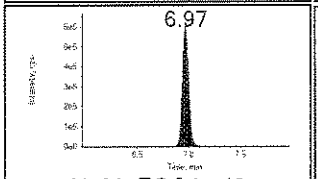
S_pfba 1
217.000/172.000 Da
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□ Wrong Peak



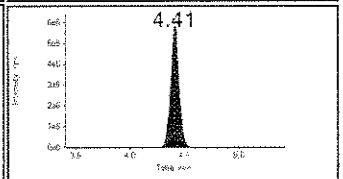
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



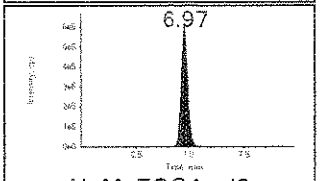
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



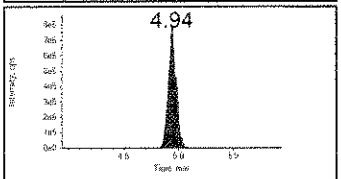
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



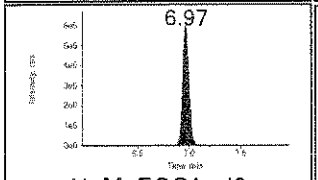
S_pfhs 1
403.000/103.000 Da
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□ Wrong Peak



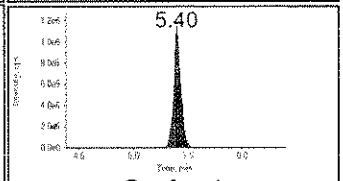
N_MeFOSA_d3
515.000/169.000 Da
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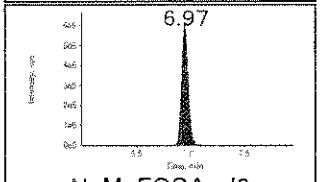
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



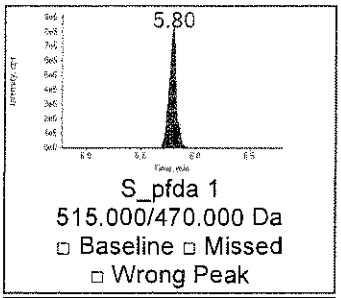
N_MeFOSA_d3
515.000/169.000 Da
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□ Wrong Peak



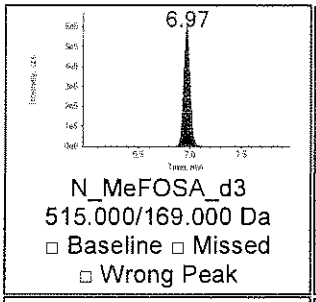
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



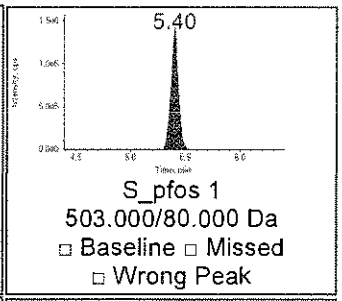
N_MeFOSA_d3
515.000/169.000 Da
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□ Wrong Peak



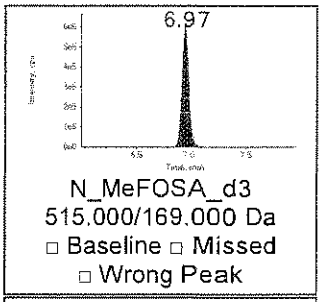
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



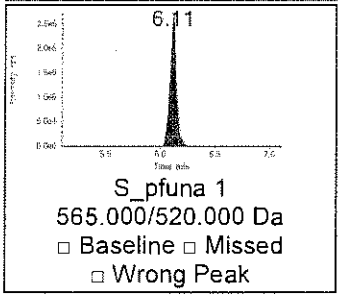
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



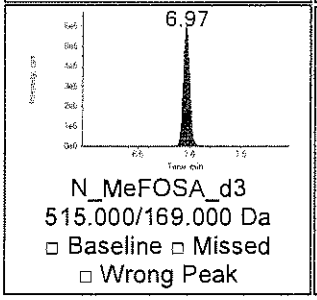
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



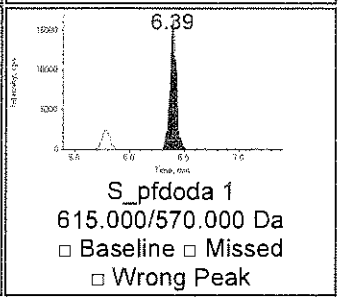
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



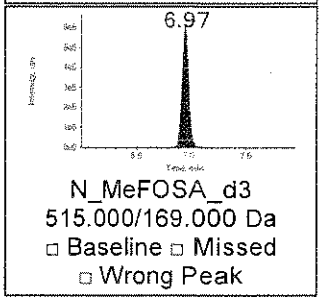
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

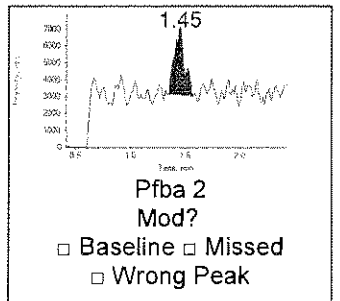


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

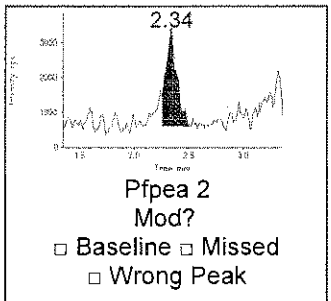


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

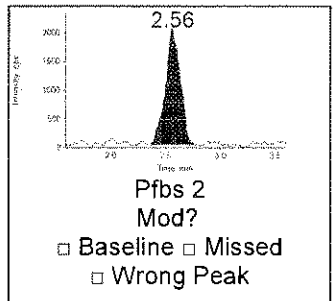
Ion Ratio Confirmation



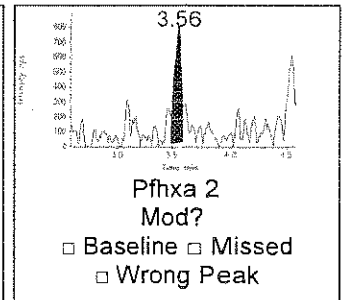
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



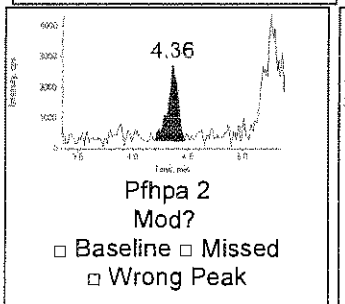
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



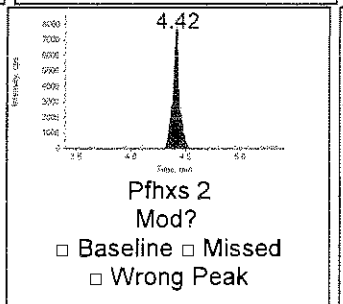
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



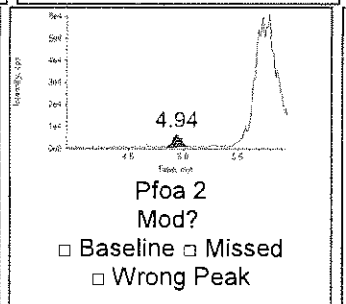
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



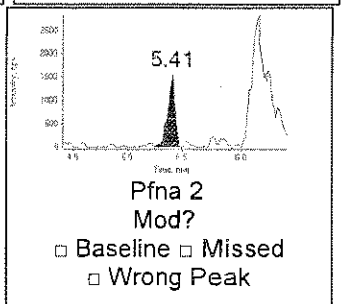
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



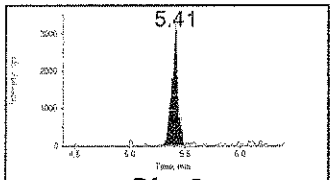
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



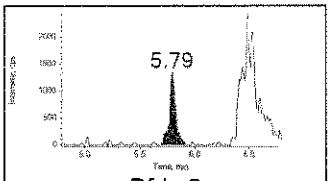
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



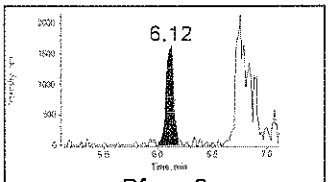
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



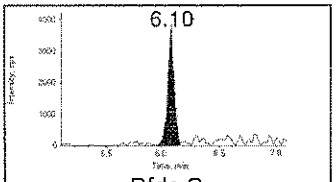
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



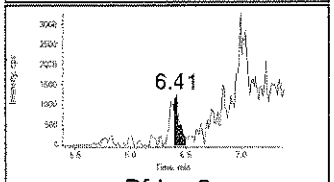
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	**Result Table**	041816.rdb
Data File	041816\2011.wiff	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02

Sample Name	PFC 0.25ppb	**Injection Vial**	20002
Acquisition Date	4/18/2016 9:31:15 PM	**Injection Volume**	5
Acquisition Method	PFC_122812.dam	**Sample Type**	Standard
Sample ID	15-OLC-02-38B	**Dilution Factor**	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.42 (1.43)	13C-PFBA	6987631	82919	0.25	0.2610	104	No
Pfpea 1	2.34 (2.34)	13C-PFHxA	6473337	49274	0.25	0.2400	96	No
Pfbs 1	2.57 (2.59)	18O_PFHS	3404893	123602	0.25	0.2610	104	No
Pfhxa 1	3.56 (3.57)	13C-PFHxA	6473337	75147	0.25	0.2360	95	No
Pfhpa 1	4.38 (4.37)	13C-PFHxA	6473337	101632	0.25	0.2710	108	No
Pfhxs 1	4.42 (4.41)	18O_PFHS	3404893	161930	0.25	0.3220	129	No
Pfoa 1	4.94 (4.94)	13C-PFOA	4968637	46261	0.25	0.3450	138	No
Pfna 1	5.41 (5.40)	13C-PFNA	5868729	79220	0.25	0.2590	104	No
Pfos 1	5.40 (5.40)	13C_PFOS	7467549	97909	0.25	0.2650	106	No
Pfda 1	5.78 (5.78)	13C-PFDA	4531322	66180	0.25	0.2670	107	No
Pfuna 1	6.13 (6.12)	13C-PFUnA	1184152	54561	0.25	0.2580	103	No
Pfds 1	6.10 (6.09)	13C_PFOS	7467549	119192	0.25	0.2560	102	No
Pfdoa 1	6.40 (6.39)	13C-PFDoA	70933	62675	0.25	0.2830	113	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d3	2897552	6987631	20.00	22.7650	114	No
S_phhxa 1	3.57 (3.58)	N_MeFOSA_d3	2897552	6473337	20.00	22.2980	111	No
S_pfhs 1	4.42 (4.41)	N_MeFOSA_d3	2897552	3404893	20.00	21.2970	106	No
S_pfoa 1	4.95 (4.94)	N_MeFOSA_d3	2897552	4968637	20.00	22.5390	113	No

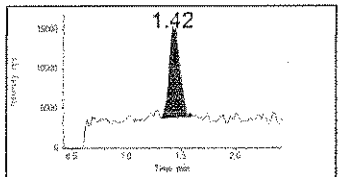
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.41 (5.38)	N_MeFOSA_d 3	2897552	5868729	20.00	22.8780	114	No
S_pfda 1	5.80 (5.79)	N_MeFOSA_d 3	2897552	4531322	20.00	22.9930	115	No
S_pfos 1	5.40 (5.39)	N_MeFOSA_d 3	2897552	7467549	20.00	21.5120	108	No
S_pfuna 1	6.13 (6.11)	N_MeFOSA_d 3	2897552	1184152	20.00	24.1250	121	No
S_pfdoda 1	6.40 (6.40)	N_MeFOSA_d 3	2897552	70933	20.00	23.4890	117	No

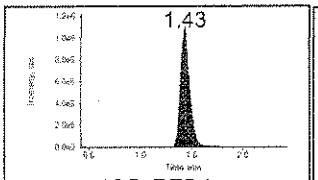
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.43 (1.43)	88569	No	1.07
Pfpea 2	2.32 (2.36)	62001	No	1.26
Pfbs 2	2.58 (2.59)	50266	No	0.41
Pfhxa 2	3.59 (3.58)	7925	No	0.11
Pfhpa 2	4.37 (4.37)	38271	No	0.38
Pfhxs 2	4.43 (4.41)	64725	No	0.40
Pfoa 2	4.95 (4.94)	81314	No	1.76
Pfna 2	5.41 (5.41)	20685	No	0.26
Pfos 2	5.40 (5.39)	30566	No	0.31
Pfda 2	5.78 (5.79)	13382	No	0.20
Pfuna 2	6.13 (6.11)	12705	No	0.23
Pfds 2	6.09 (6.09)	39026	No	0.33
Pfdoa 2	6.41 (6.39)	18021	No	0.29

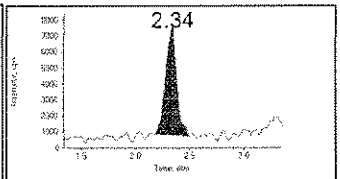
Quantitative Peak Review PFC 0.25ppb 15-OLC-02-38B



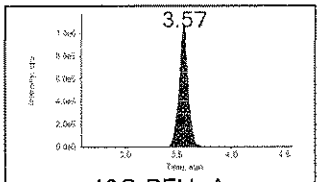
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



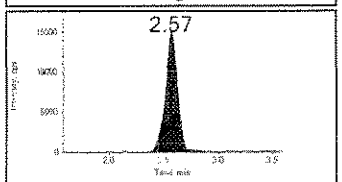
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



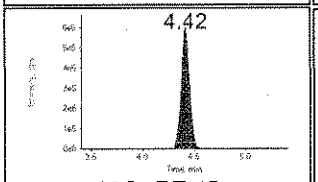
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



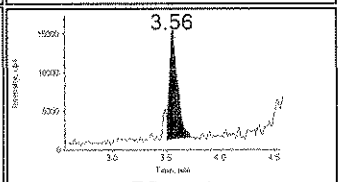
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



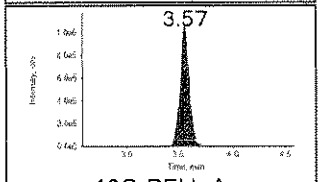
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



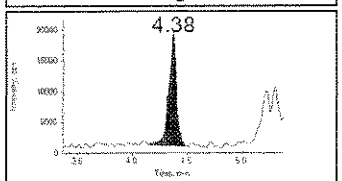
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



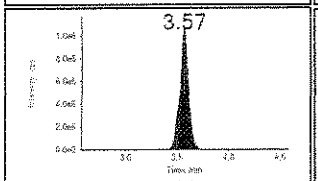
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



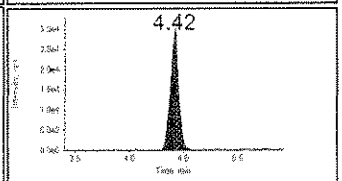
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



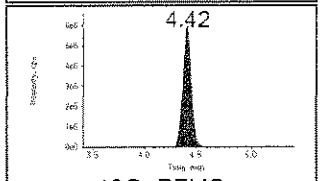
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



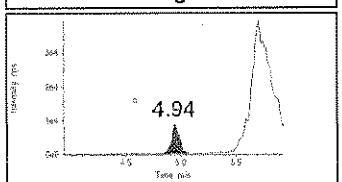
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



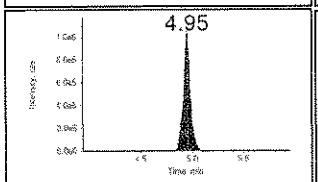
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



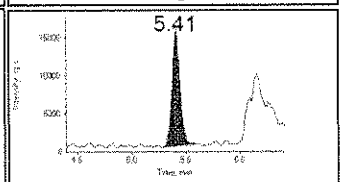
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



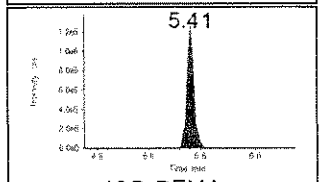
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



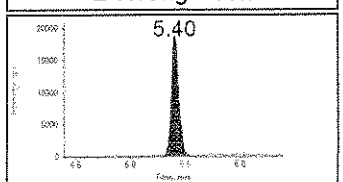
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



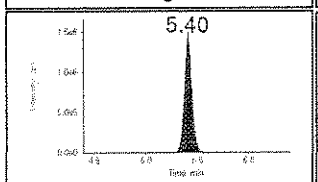
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



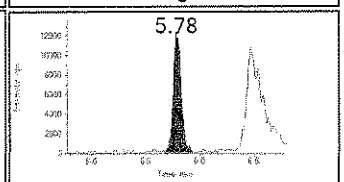
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



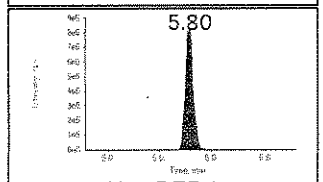
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



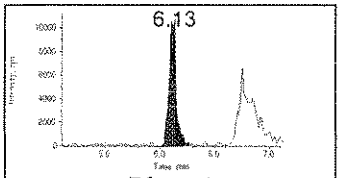
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



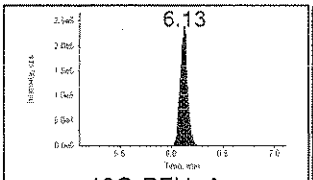
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



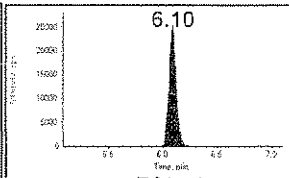
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



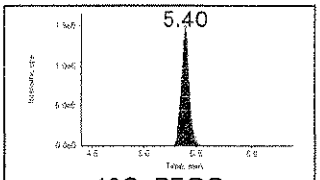
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



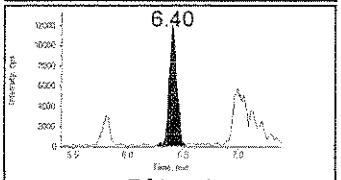
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



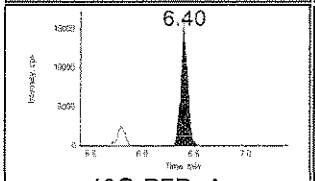
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



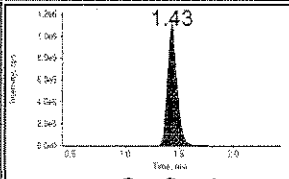
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



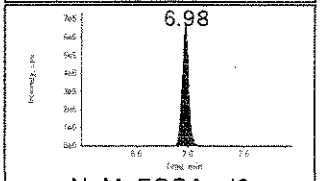
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



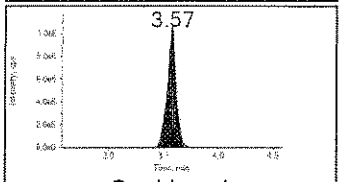
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



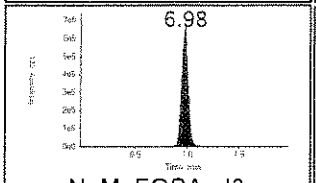
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



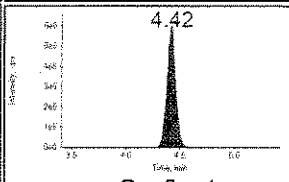
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



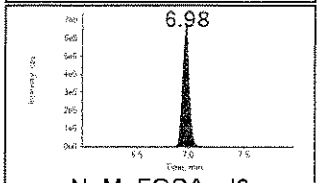
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



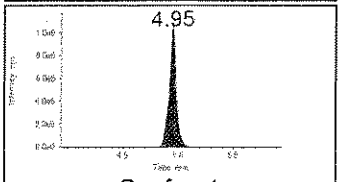
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



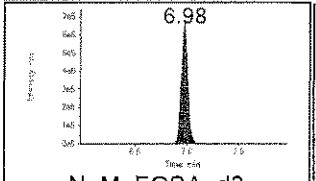
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



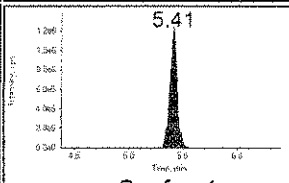
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



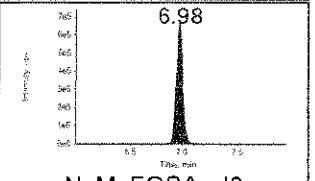
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



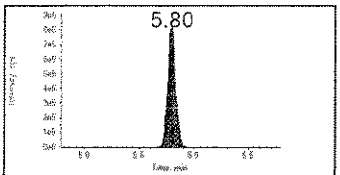
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



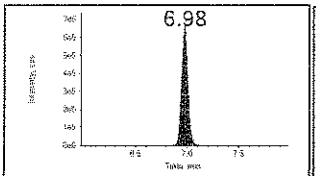
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



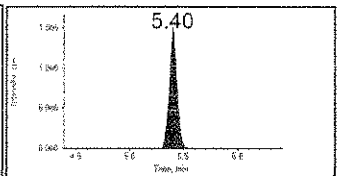
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



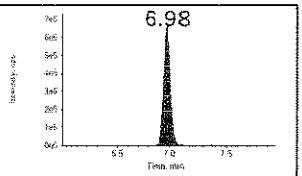
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



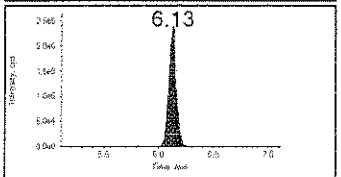
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



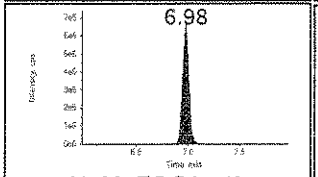
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



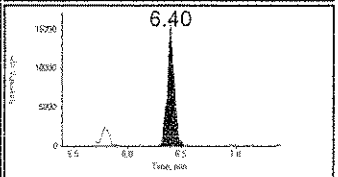
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



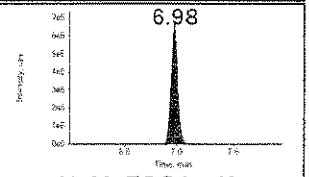
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

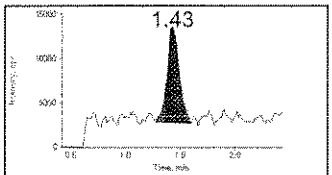


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

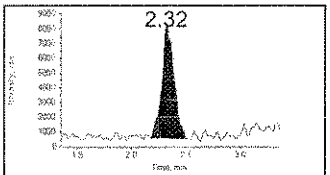


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

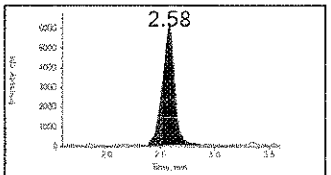
Ion Ratio Confirmation



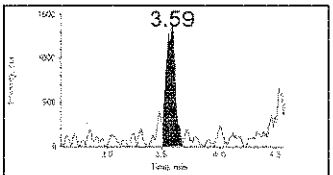
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



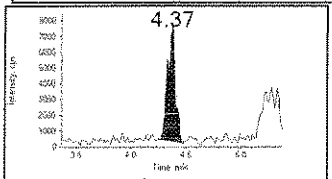
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



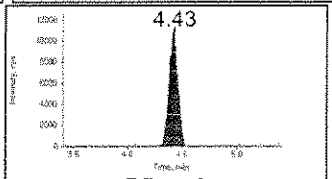
Pfbs 2
Mod?
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□ Wrong Peak



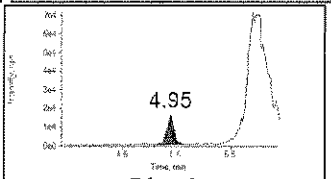
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



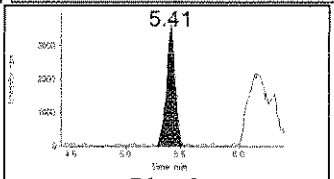
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



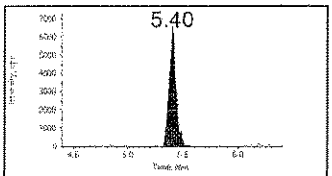
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



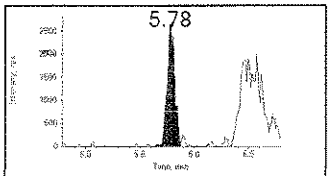
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



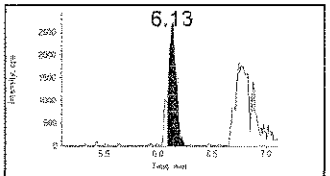
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



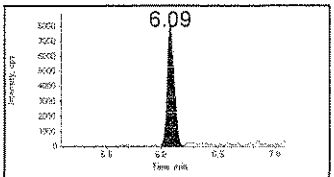
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



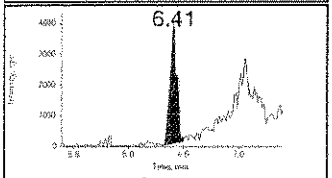
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2012.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 0.50ppb	Injection Vial	20003
Acquisition Date	4/18/2016 9:41:17 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Standard
Sample ID	15-OLC-02-38C	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.43 (1.43)	13C-PFBA	6620280	180059	0.50	0.5970	119	No
Pfpea 1	2.34 (2.34)	13C-PFHxA	6235024	115031	0.50	0.5830	117	No
Pfbs 1	2.58 (2.59)	18O_PFHS	3496511	271081	0.50	0.5570	111	No
Pfhxa 1	3.57 (3.57)	13C-PFHxA	6235024	171558	0.50	0.5600	112	No
Pfhpa 1	4.38 (4.37)	13C-PFHxA	6235024	210914	0.50	0.5840	117	No
Pfhxs 1	4.42 (4.41)	18O_PFHS	3496511	319153	0.50	0.6180	124	No
Pfoa 1	4.95 (4.94)	13C-PFOA	4889792	83969	0.50	0.6370	127	No
Pfna 1	5.41 (5.40)	13C-PFNA	5100993	164654	0.50	0.6190	124	No
Pfos 1	5.40 (5.40)	13C_PFOS	7270443	205947	0.50	0.5720	114	No
Pfda 1	5.80 (5.78)	13C-PFDA	4073282	141497	0.50	0.6340	127	No
Pfuna 1	6.12 (6.12)	13C-PFUnA	1114194	109209	0.50	0.5490	110	No
Pfds 1	6.09 (6.09)	13C_PFOS	7270443	251693	0.50	0.5550	111	No
Pfdoa 1	6.39 (6.39)	13C-PFDoA	68957	123422	0.50	0.5720	114	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d 3	3130313	6620280	20.00	19.9640	100	No
S_phhxa 1	3.57 (3.58)	N_MeFOSA_d 3	3130313	6235024	20.00	19.8800	99	No
S_pfhs 1	4.42 (4.41)	N_MeFOSA_d 3	3130313	3496511	20.00	20.2440	101	No
S_pfoa 1	4.95 (4.94)	N_MeFOSA_d 3	3130313	4889792	20.00	20.5320	103	No

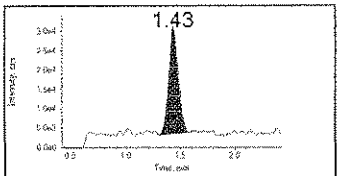
APR 2 1 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.41 (5.38)	N_MeFOSA_d 3	3130313	5100993	20.00	18.4070	92	No
S_pfda 1	5.80 (5.79)	N_MeFOSA_d 3	3130313	4073282	20.00	19.1320	96	No
S_pfos 1	5.40 (5.39)	N_MeFOSA_d 3	3130313	7270443	20.00	19.3870	97	No
S_pfuna 1	6.12 (6.11)	N_MeFOSA_d 3	3130313	1114194	20.00	21.0110	105	No
S_pfdoda 1	6.38 (6.40)	N_MeFOSA_d 3	3130313	68957	20.00	21.1370	106	No

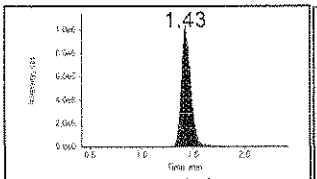
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.44 (1.43)	136583	No	0.76
Pfpea 2	2.32 (2.36)	112972	No	0.98
Pfbs 2	2.58 (2.59)	113079	No	0.42
Pfhxa 2	3.57 (3.58)	11514	No	0.07
Pfhpa 2	4.37 (4.37)	79492	No	0.38
Pfhxs 2	4.42 (4.41)	126298	No	0.40
Pfoa 2	4.95 (4.94)	155069	No	1.85
Pfna 2	5.40 (5.41)	42620	No	0.26
Pfos 2	5.41 (5.39)	71938	No	0.35
Pfda 2	5.79 (5.79)	28088	No	0.20
Pfuna 2	6.12 (6.11)	30062	No	0.28
Pfds 2	6.09 (6.09)	81420	No	0.32
Pfdoa 2	6.41 (6.39)	35368	No	0.29

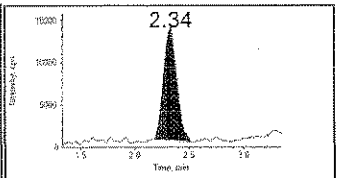
Quantitative Peak Review PFC 0.50ppb 15-OLC-02-38C



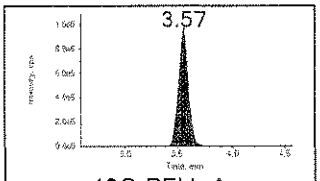
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



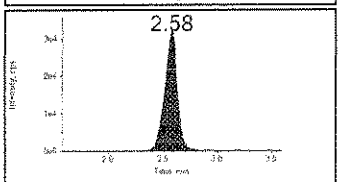
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



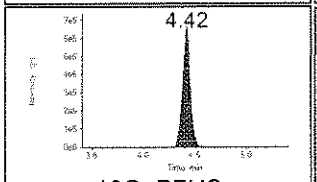
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



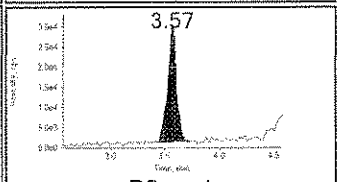
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



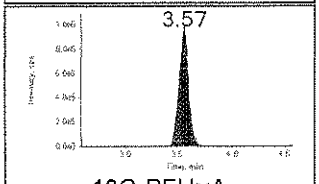
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



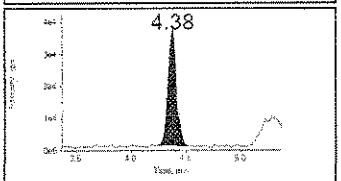
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



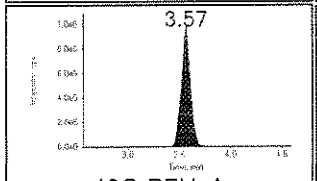
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



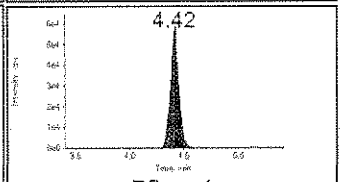
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



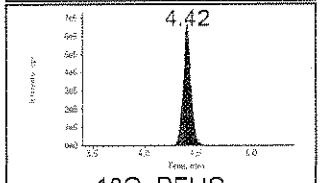
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



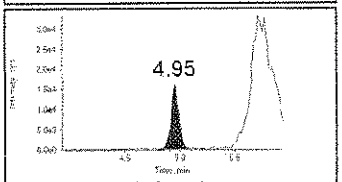
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



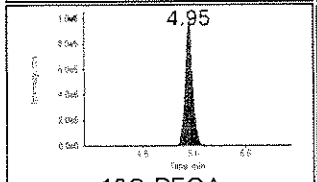
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



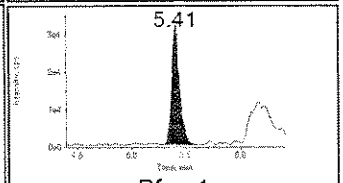
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



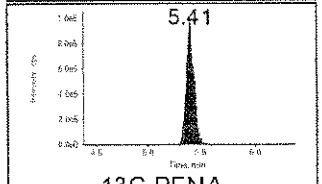
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



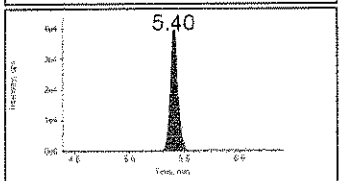
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



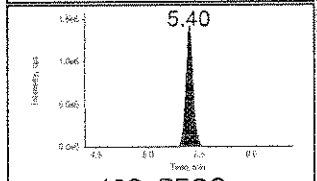
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



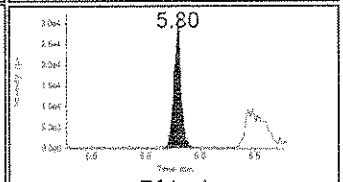
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



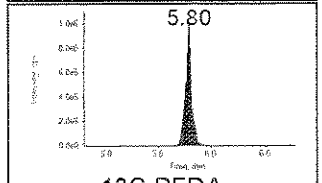
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



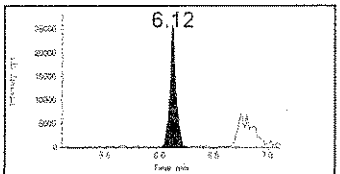
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



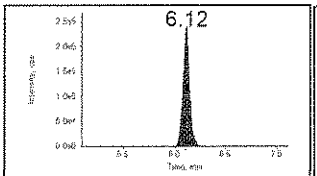
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



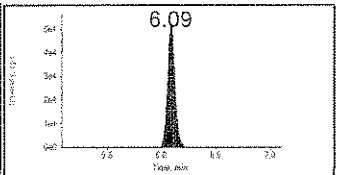
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



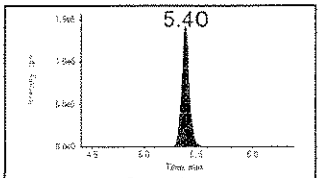
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



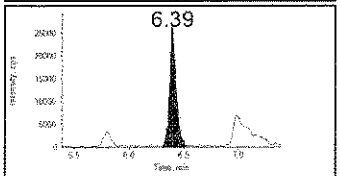
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



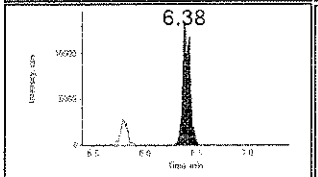
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



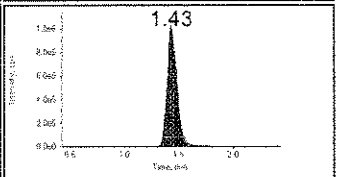
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



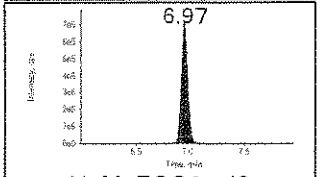
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



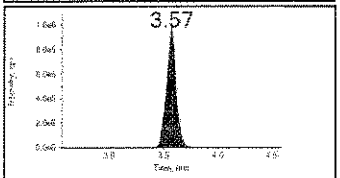
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



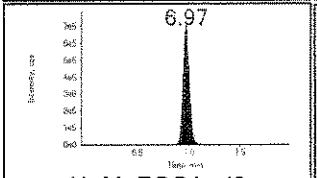
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



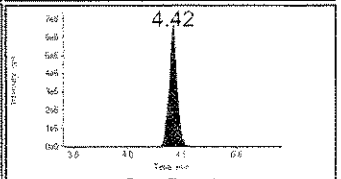
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



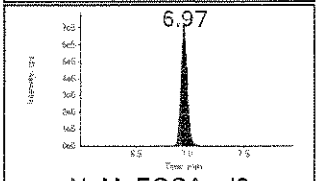
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



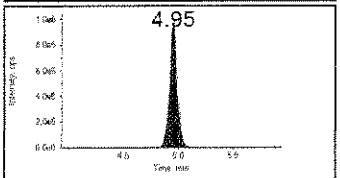
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



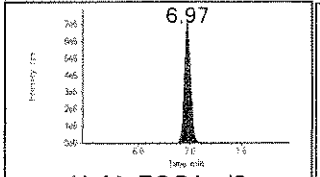
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



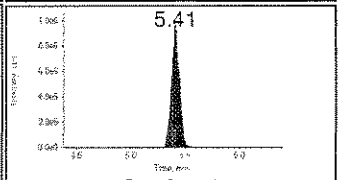
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



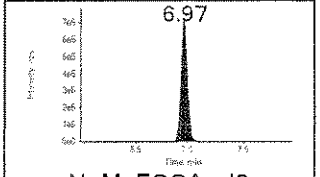
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



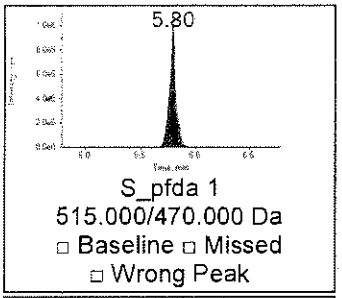
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



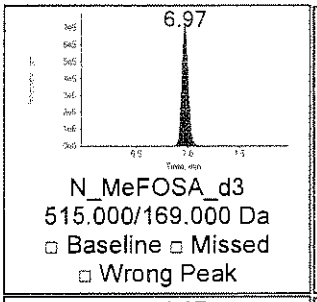
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



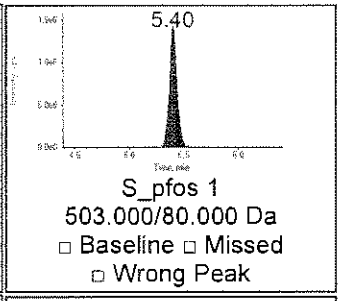
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



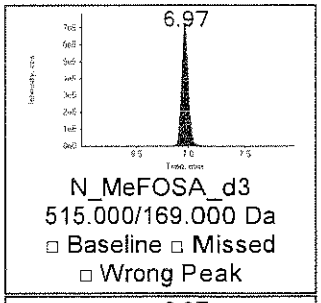
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



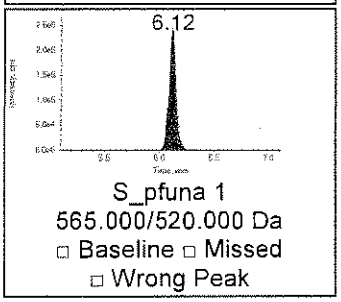
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



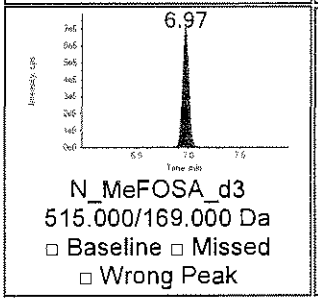
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



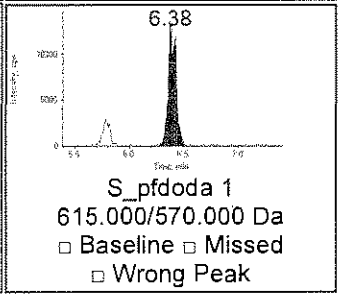
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



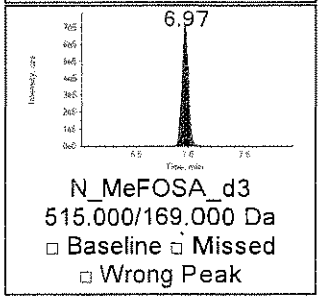
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

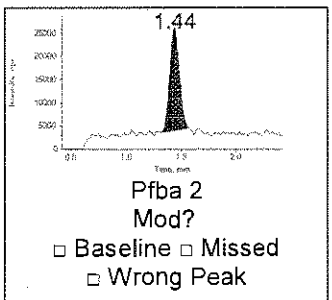


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

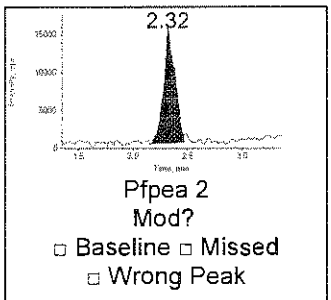


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

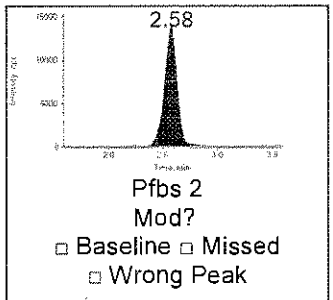
Ion Ratio Confirmation



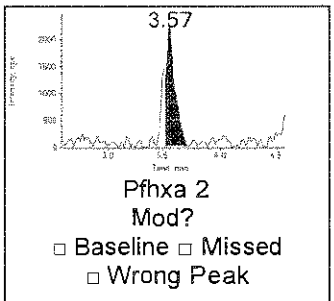
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



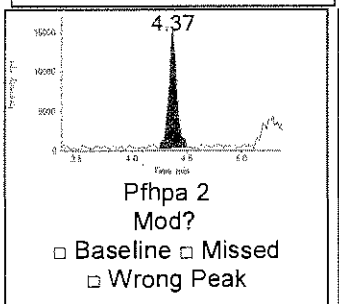
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



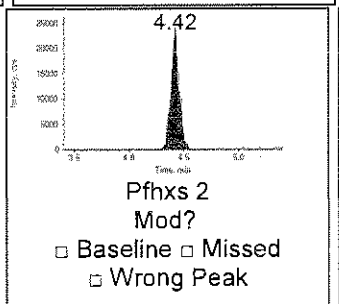
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



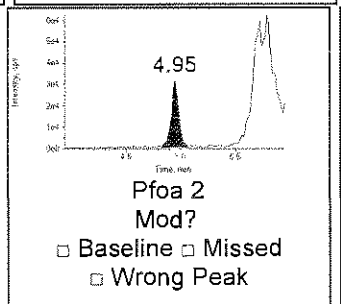
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



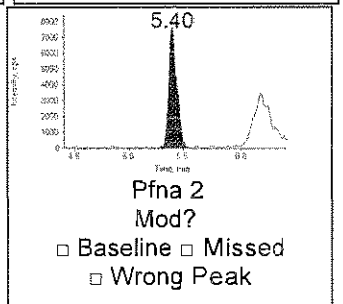
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



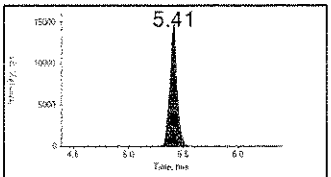
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



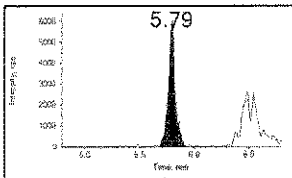
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



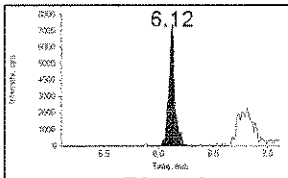
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



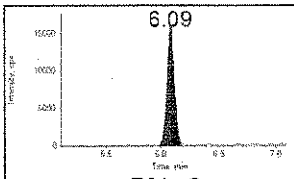
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



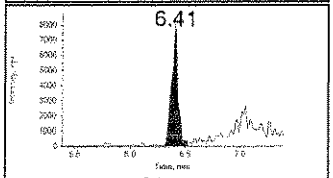
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	**Result Table**	041816.rdb
Data File	041816\2013.wiff	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02

Sample Name	PFC 1.00ppb	**Injection Vial**	20004
Acquisition Date	4/18/2016 9:51:25 PM	**Injection Volume**	5
Acquisition Method	PFC_122812.dam	**Sample Type**	Standard
Sample ID	15-OLC-02-38D	**Dilution Factor**	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.43 (1.43)	13C-PFBA	6718049	315038	1.00	1.0300	103	No
Pfpea 1	2.32 (2.34)	13C-PFHxA	6080983	198829	1.00	1.0320	103	No
Pfbs 1	2.57 (2.59)	18O_PFHS	3328049	487417	1.00	1.0530	105	No
Pfhxa 1	3.56 (3.57)	13C-PFHxA	6080983	297401	1.00	0.9960	100	No
Pfhpa 1	4.36 (4.37)	13C-PFHxA	6080983	364959	1.00	1.0360	104	No
Pfhxs 1	4.41 (4.41)	18O_PFHS	3328049	557780	1.00	1.1340	113	No
Pfoa 1	4.94 (4.94)	13C-PFOA	4721992	140905	1.00	1.1070	111	No
Pfna 1	5.39 (5.40)	13C-PFNA	5892478	266442	1.00	0.8670	87	No
Pfos 1	5.39 (5.40)	13C_PFOS	7251016	388918	1.00	1.0840	108	No
Pfda 1	5.78 (5.78)	13C-PFDA	4719389	278684	1.00	1.0790	108	No
Pfuna 1	6.11 (6.12)	13C-PFUnA	1056684	193292	1.00	1.0240	102	No
Pfds 1	6.08 (6.09)	13C_PFOS	7251016	481730	1.00	1.0660	107	No
Pfdoa 1	6.40 (6.39)	13C-PFDoA	76726	207192	1.00	0.8640	86	No
S_pfba 1	1.42 (1.43)	N_MeFOSA_d 3	3059804	6718049	20.00	20.7260	104	No
S_phhxa 1	3.55 (3.58)	N_MeFOSA_d 3	3059804	6080983	20.00	19.8360	99	No
S_pfhs 1	4.41 (4.41)	N_MeFOSA_d 3	3059804	3328049	20.00	19.7130	99	No
S_pfoa 1	4.94 (4.94)	N_MeFOSA_d 3	3059804	4721992	20.00	20.2840	101	No

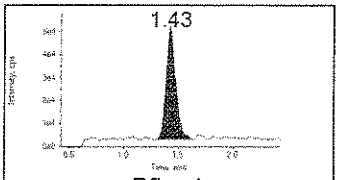
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.38 (5.38)	N_MeFOSA_d 3	3059804	5892478	20.00	21.7530	109	No
S_pfda 1	5.78 (5.79)	N_MeFOSA_d 3	3059804	4719389	20.00	22.6780	113	No
S_pfos 1	5.39 (5.39)	N_MeFOSA_d 3	3059804	7251016	20.00	19.7800	99	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d 3	3059804	1056684	20.00	20.3860	102	No
S_pfdoda 1	6.39 (6.40)	N_MeFOSA_d 3	3059804	76726	20.00	24.0610	120	No

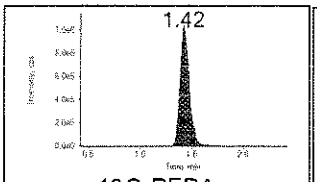
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.43 (1.42)	290338	No	0.92
Pfpea 2	2.32 (2.36)	214051	No	1.08
Pfbs 2	2.57 (2.59)	207732	No	0.43
Pfhxa 2	3.55 (3.58)	30054	No	0.10
Pfhpa 2	4.34 (4.37)	147512	No	0.40
Pfhxs 2	4.41 (4.41)	211553	No	0.38
Pfoa 2	4.94 (4.94)	283255	No	2.01
Pfna 2	5.39 (5.41)	80709	No	0.30
Pfos 2	5.39 (5.39)	128557	No	0.33
Pfda 2	5.78 (5.79)	50862	No	0.18
Pfuna 2	6.11 (6.11)	51190	No	0.26
Pfds 2	6.08 (6.09)	151192	No	0.31
Pfdoa 2	6.41 (6.39)	67394	No	0.33

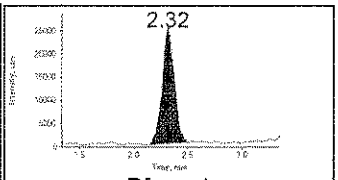
Quantitative Peak Review PFC 1.00ppb 15-OLC-02-38D



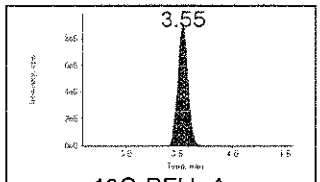
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



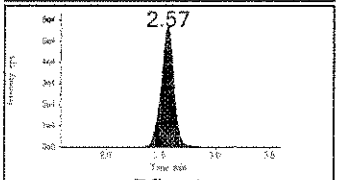
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



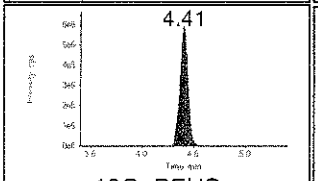
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



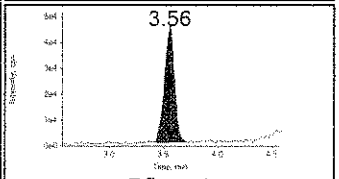
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



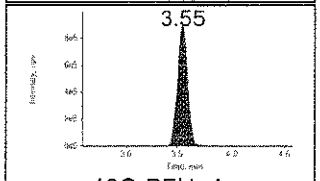
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



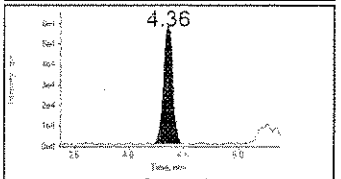
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



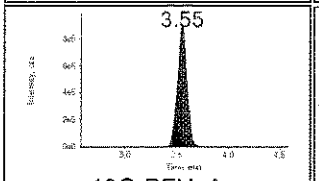
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



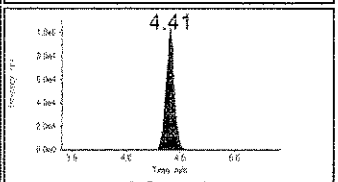
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



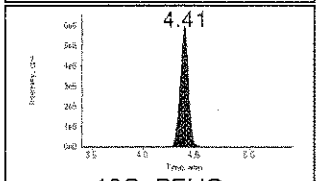
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



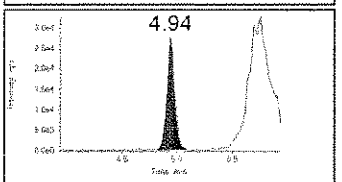
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



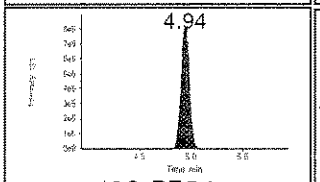
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



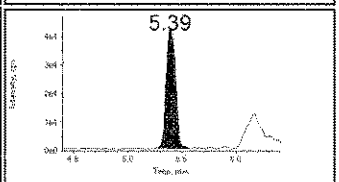
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



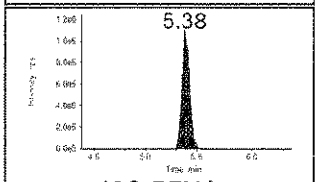
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



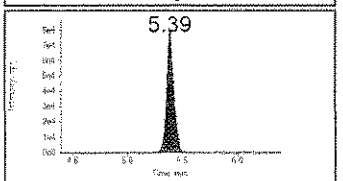
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



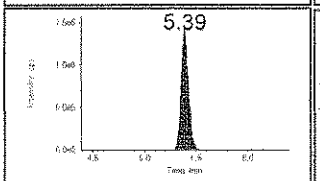
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



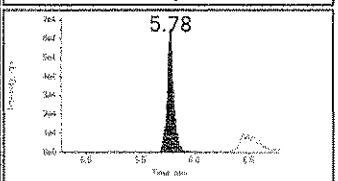
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



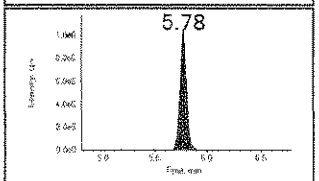
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



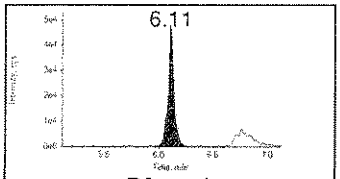
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



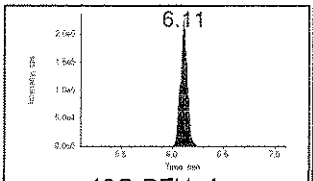
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



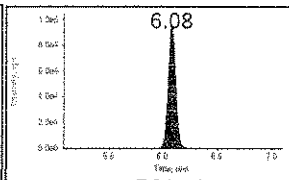
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



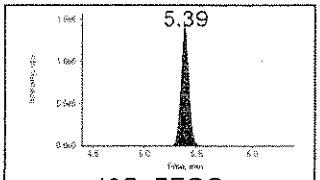
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



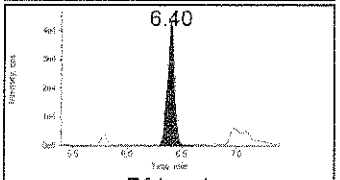
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



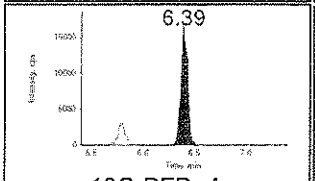
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



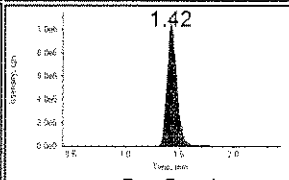
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



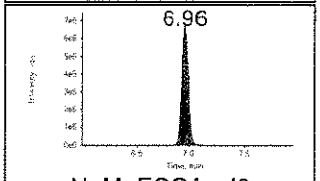
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



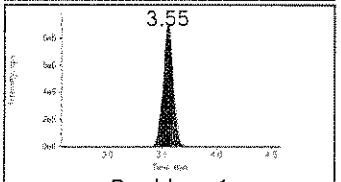
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



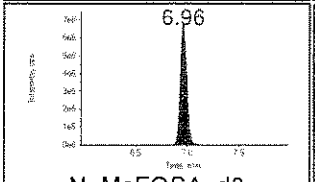
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



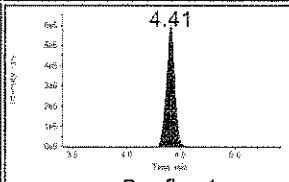
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



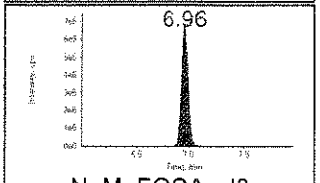
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



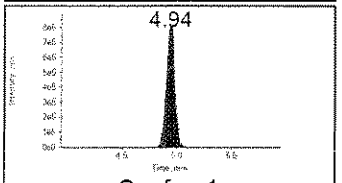
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



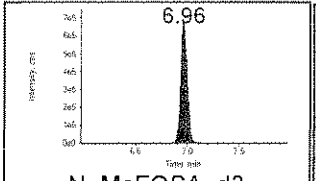
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



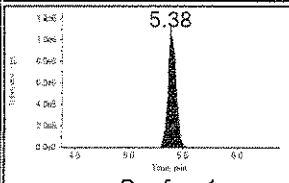
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



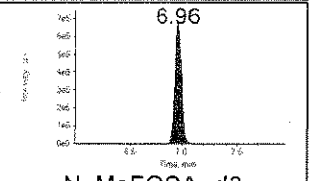
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



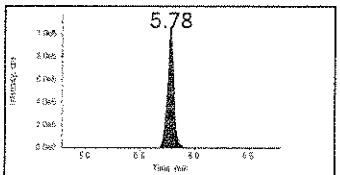
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



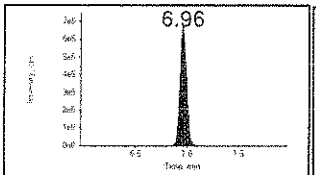
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



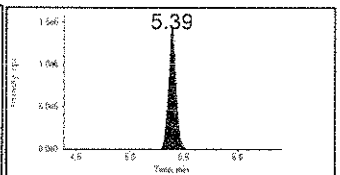
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



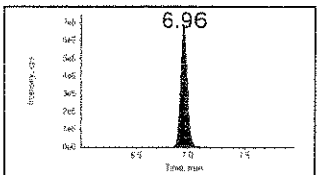
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



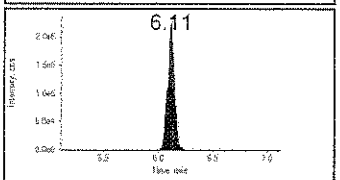
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



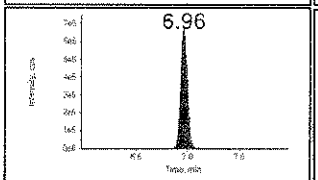
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



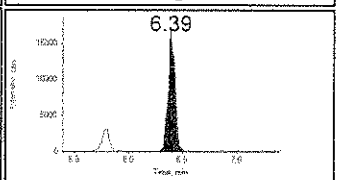
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



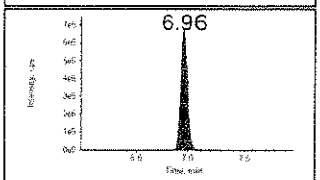
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

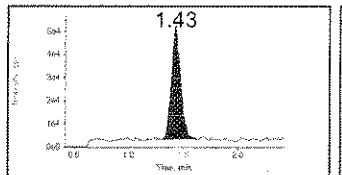


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

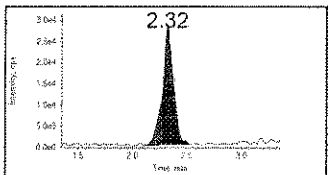


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

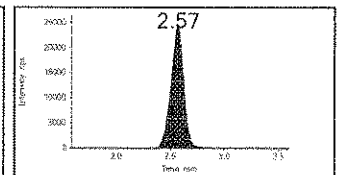
Ion Ratio Confirmation



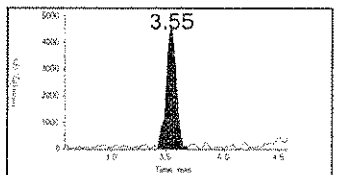
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



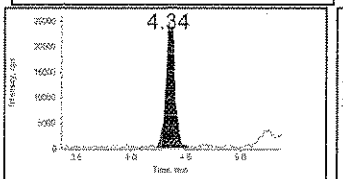
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



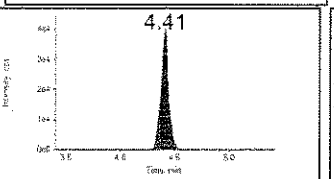
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



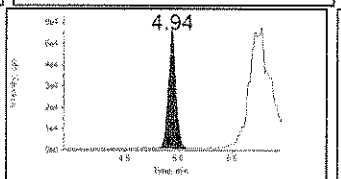
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



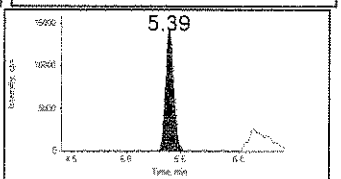
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



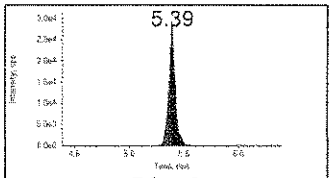
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



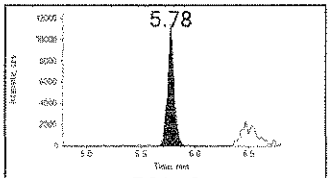
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



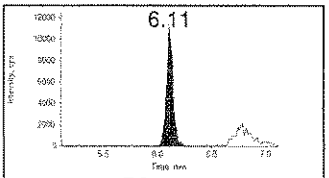
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



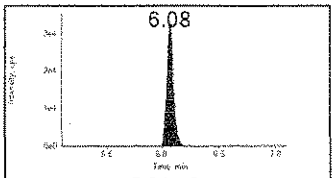
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



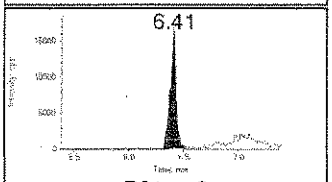
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2014.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 5.00ppb	Injection Vial	20005
Acquisition Date	4/18/2016 10:01:30 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Standard
Sample ID	15-OLC-02-38E	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.43 (1.43)	13C-PFBA	7211457	1499263	5.00	4.5650	91	No
Pfpea 1	2.33 (2.34)	13C-PFHxA	6336554	1005934	5.00	5.0130	100	No
Pfbs 1	2.57 (2.59)	18O_PFHS	3520025	2382529	5.00	4.8660	97	No
Pfhxa 1	3.57 (3.57)	13C-PFHxA	6336554	1380656	5.00	4.4380	89	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	6336554	1801161	5.00	4.9080	98	No
Pfhxs 1	4.41 (4.41)	18O_PFHS	3520025	2554331	5.00	4.9110	98	No
Pfoa 1	4.95 (4.94)	13C-PFOA	4726231	610985	5.00	4.7940	96	No
Pfna 1	5.41 (5.40)	13C-PFNA	5859257	1349452	5.00	4.4160	88	No
Pfos 1	5.40 (5.40)	13C_PFOS	7583653	1839357	5.00	4.9000	98	No
Pfda 1	5.80 (5.78)	13C-PFDA	4733259	1155355	5.00	4.4580	89	No
Pfuna 1	6.12 (6.12)	13C-PFUnA	1084573	810684	5.00	4.1830	84	No
Pfds 1	6.09 (6.09)	13C_PFOS	7583653	2251308	5.00	4.7630	95	No
Pfdoa 1	6.41 (6.39)	13C-PFDoA	78833	997850	5.00	4.0480	81	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d3	3364100	7211457	20.00	20.2360	101	No
S_phhxa 1	3.56 (3.58)	N_MeFOSA_d3	3364100	6336554	20.00	18.8000	94	No
S_pfhs 1	4.41 (4.41)	N_MeFOSA_d3	3364100	3520025	20.00	18.9640	95	No
S_pfoa 1	4.95 (4.94)	N_MeFOSA_d3	3364100	4726231	20.00	18.4660	92	No

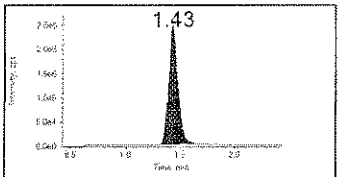
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.40 (5.38)	N_MeFOSA_d 3	3364100	5859257	20.00	19.6740	98	No
S_pfda 1	5.79 (5.79)	N_MeFOSA_d 3	3364100	4733259	20.00	20.6870	103	No
S_pfos 1	5.40 (5.39)	N_MeFOSA_d 3	3364100	7583653	20.00	18.8170	94	No
S_pfuna 1	6.12 (6.11)	N_MeFOSA_d 3	3364100	1084573	20.00	19.0310	95	No
S_pfdoda 1	6.40 (6.40)	N_MeFOSA_d 3	3364100	78833	20.00	22.4850	112	No

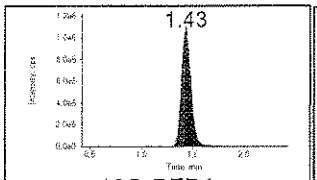
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.43 (1.43)	1301532	No	0.87
Pfpea 2	2.33 (2.36)	1013714	No	1.01
Pfbs 2	2.57 (2.59)	966751	No	0.41
Pfhxa 2	3.56 (3.58)	128535	No	0.09
Pfhpa 2	4.38 (4.37)	645721	No	0.36
Pfhxs 2	4.41 (4.41)	978406	No	0.38
Pfoa 2	4.95 (4.94)	1216461	No	1.99
Pfna 2	5.41 (5.41)	364959	No	0.27
Pfos 2	5.40 (5.39)	619832	No	0.34
Pfda 2	5.80 (5.79)	245930	No	0.21
Pfuna 2	6.13 (6.11)	236025	No	0.29
Pfds 2	6.09 (6.09)	722337	No	0.32
Pfdoa 2	6.41 (6.39)	323166	No	0.32

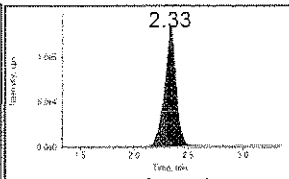
Quantitative Peak Review PFC 5.00ppb 15-OLC-02-38E



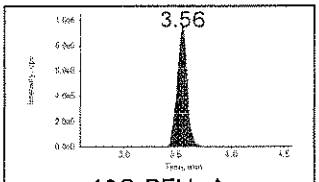
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



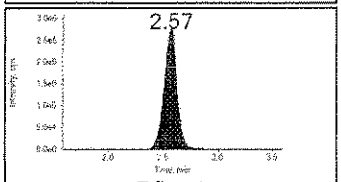
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



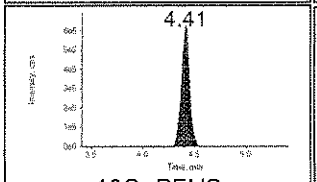
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



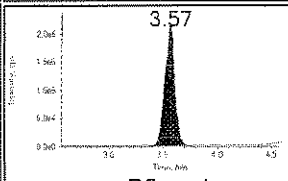
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



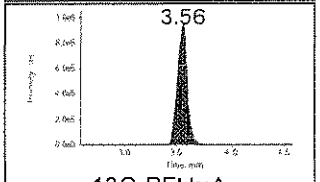
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



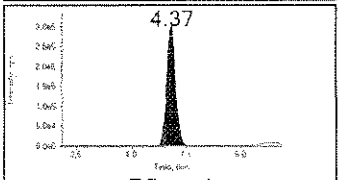
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



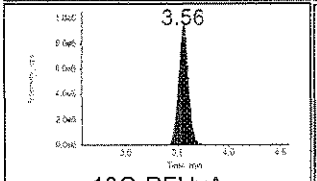
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



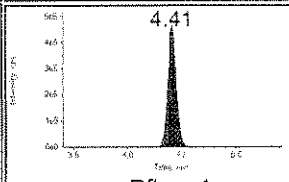
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



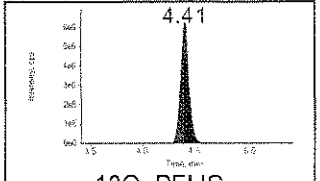
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



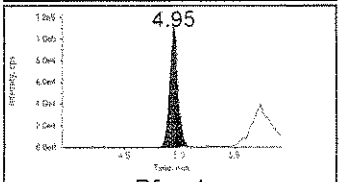
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



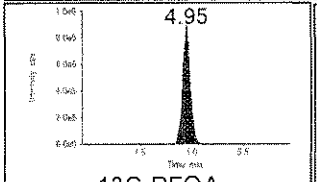
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



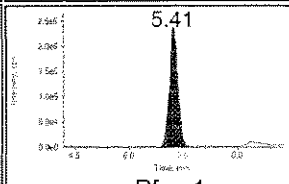
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



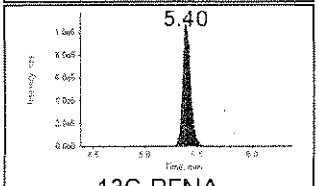
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



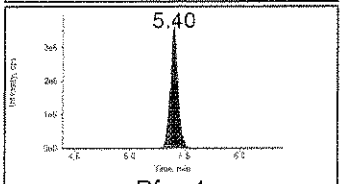
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



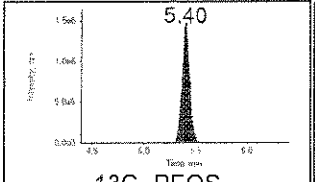
Pfna 1
463.000/419.000 Da
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□ Wrong Peak



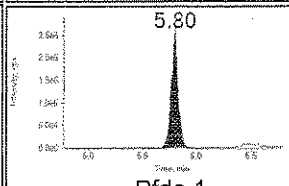
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



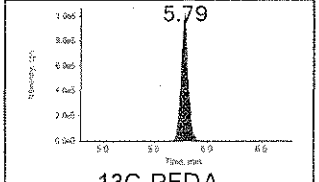
Pfos 1
499.000/80.000 Da
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□ Wrong Peak



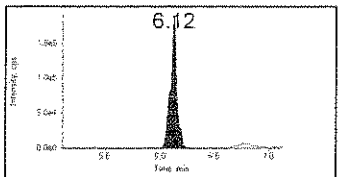
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



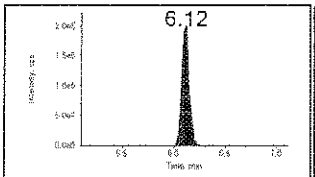
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



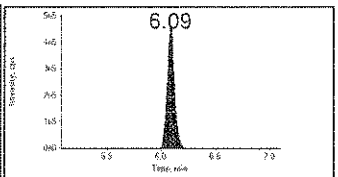
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



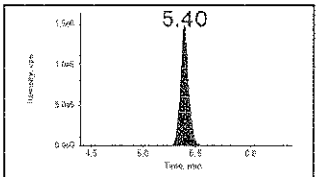
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



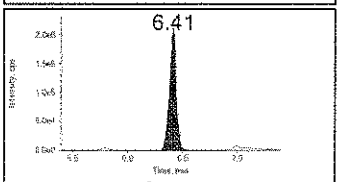
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



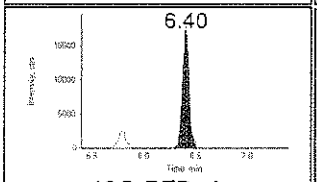
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



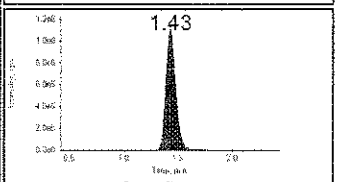
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



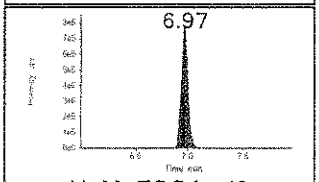
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



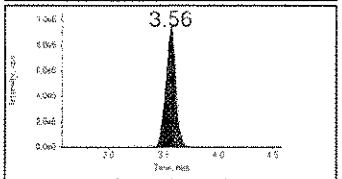
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



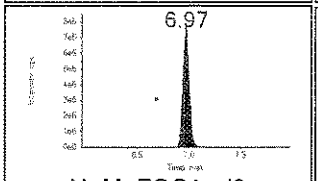
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



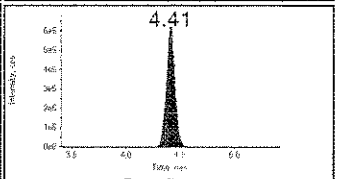
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



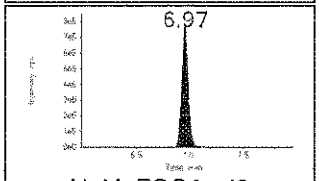
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



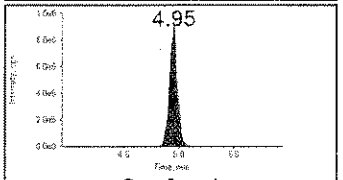
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



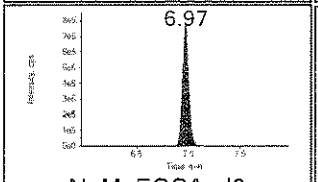
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



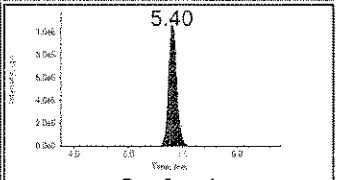
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



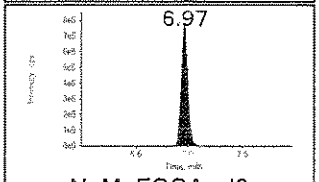
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



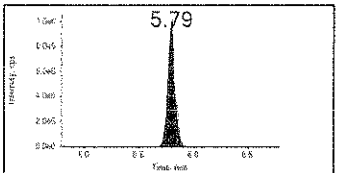
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



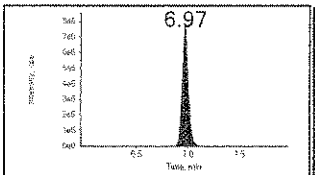
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



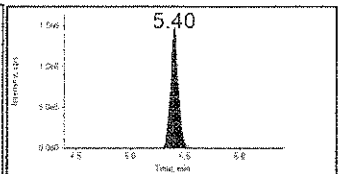
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



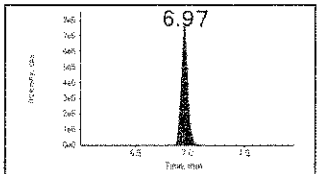
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



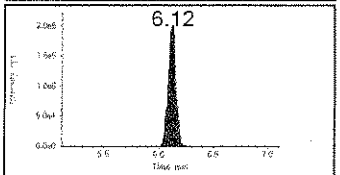
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



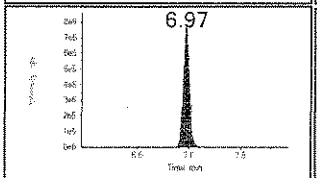
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



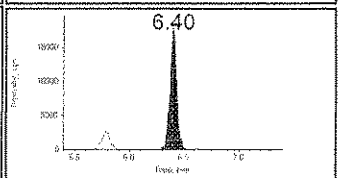
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



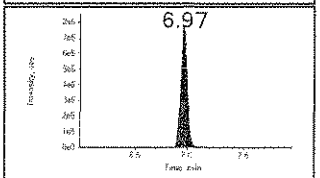
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

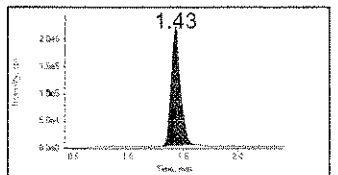


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

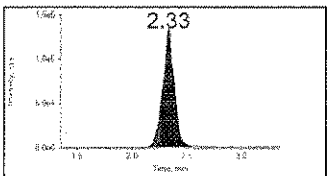


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

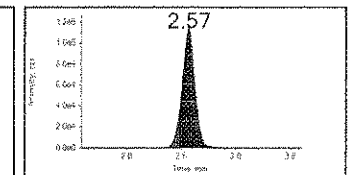
Ion Ratio Confirmation



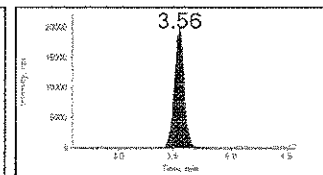
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



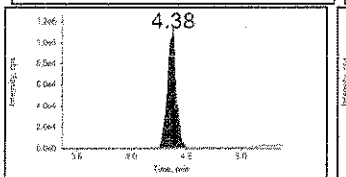
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



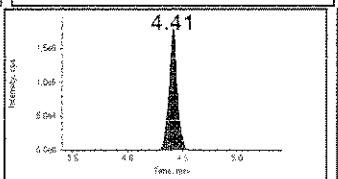
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



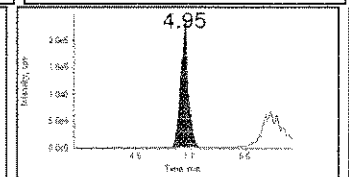
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



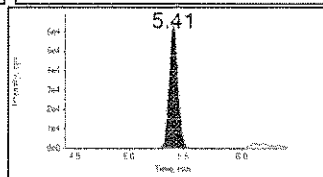
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



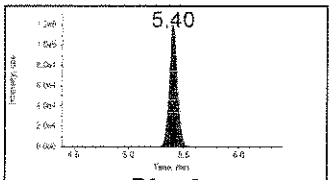
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



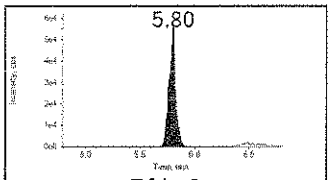
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



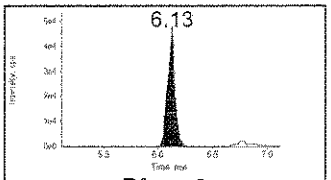
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



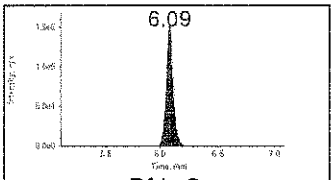
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



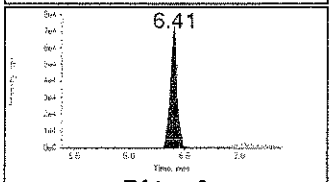
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Methanol

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2015.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 10.0ppb	Injection Vial	20006
Acquisition Date	4/18/2016 10:11:36 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Standard
Sample ID	15-OLC-02-38F	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.43 (1.43)	13C-PFBA	6767571	3048448	10.00	9.8910	99	No
Pfpea 1	2.34 (2.34)	13C-PFHxA	6280358	1979075	10.00	9.9500	100	No
Pfbs 1	2.59 (2.59)	18O_PFHS	3444635	4766282	10.00	9.9480	100	No
Pfhxa 1	3.57 (3.57)	13C-PFHxA	6280358	2790164	10.00	9.0490	91	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	6280358	3652963	10.00	10.0440	100	No
Pfhxs 1	4.41 (4.41)	18O_PFHS	3444635	5086152	10.00	9.9930	100	No
Pfoa 1	4.94 (4.94)	13C-PFOA	4658605	1156648	10.00	9.2070	92	No
Pfna 1	5.40 (5.40)	13C-PFNA	5177139	3051067	10.00	11.3010	113	No
Pfos 1	5.40 (5.40)	13C_PFOS	7655186	3754294	10.00	9.9070	99	No
Pfda 1	5.78 (5.78)	13C-PFDA	4353963	2172016	10.00	9.1120	91	No
Pfuna 1	6.12 (6.12)	13C-PFUnA	1071167	1628752	10.00	8.5100	85	No
Pfds 1	6.09 (6.09)	13C_PFOS	7655186	4740062	10.00	9.9350	99	No
Pfdoa 1	6.39 (6.39)	13C-PFDoA	63912	1775409	10.00	8.8830	89	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d3	3077079	6767571	20.00	20.7610	104	No
S_phhxa 1	3.58 (3.58)	N_MeFOSA_d3	3077079	6280358	20.00	20.3710	102	No
S_pfhs 1	4.41 (4.41)	N_MeFOSA_d3	3077079	3444635	20.00	20.2890	101	No
S_pfoa 1	4.94 (4.94)	N_MeFOSA_d3	3077079	4658605	20.00	19.9000	100	No

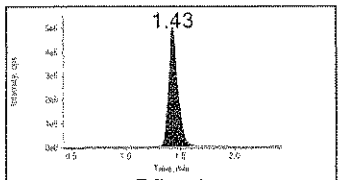
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.38 (5.38)	N_MeFOSA_d 3	3077079	5177139	20.00	19.0050	95	No
S_pfda 1	5.79 (5.79)	N_MeFOSA_d 3	3077079	4353963	20.00	20.8040	104	No
S_pfos 1	5.39 (5.39)	N_MeFOSA_d 3	3077079	7655186	20.00	20.7660	104	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d 3	3077079	1071167	20.00	20.5500	103	No
S_pfdoda 1	6.40 (6.40)	N_MeFOSA_d 3	3077079	63912	20.00	19.9300	100	No

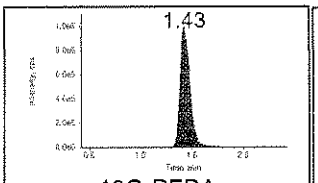
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.42 (1.42)	2759737	No	0.91
Pfpea 2	2.36 (2.36)	2079577	No	1.05
Pfbs 2	2.59 (2.59)	1967895	No	0.41
Pfhxa 2	3.58 (3.58)	267875	No	0.10
Pfhpa 2	4.37 (4.37)	1311567	No	0.36
Pfhxs 2	4.41 (4.41)	2019833	No	0.40
Pfoa 2	4.94 (4.94)	2511936	No	2.17
Pfna 2	5.40 (5.41)	734176	No	0.24
Pfos 2	5.39 (5.39)	1249311	No	0.33
Pfda 2	5.79 (5.79)	442071	No	0.20
Pfuna 2	6.11 (6.11)	493255	No	0.30
Pfds 2	6.09 (6.09)	1466887	No	0.31
Pfdoa 2	6.39 (6.39)	591740	No	0.33

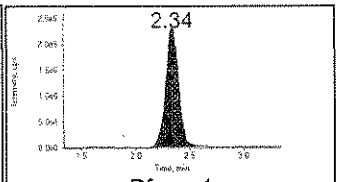
Quantitative Peak Review PFC 10.0ppb 15-OLC-02-38F



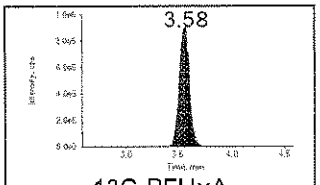
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



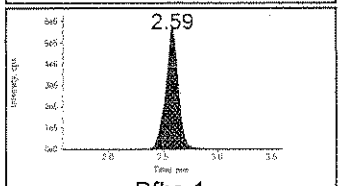
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



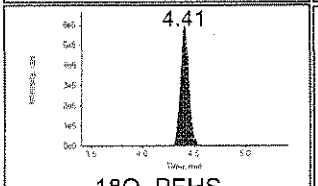
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



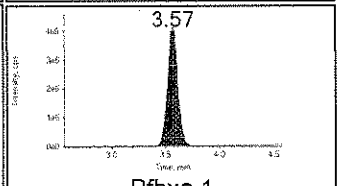
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



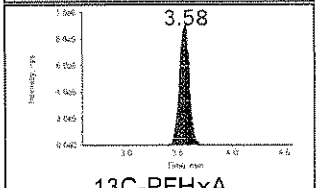
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



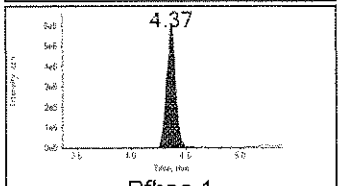
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



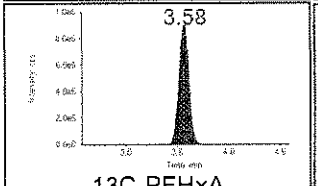
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



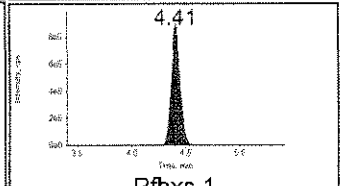
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



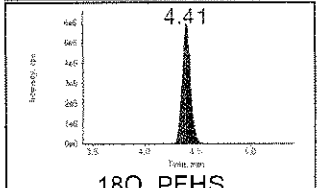
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



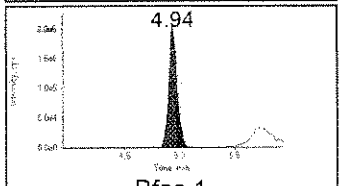
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



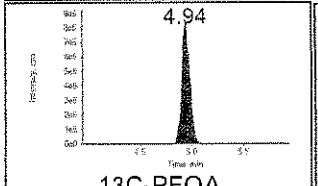
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



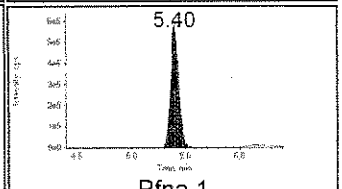
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



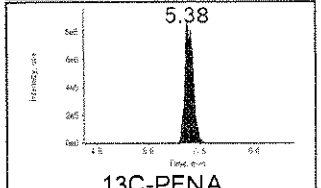
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



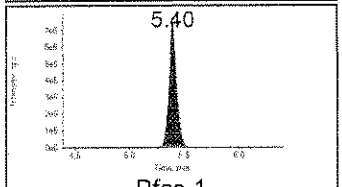
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



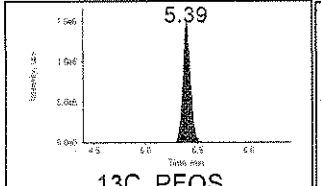
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



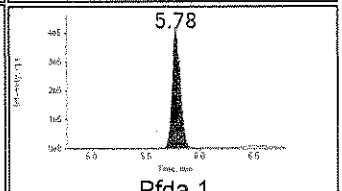
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



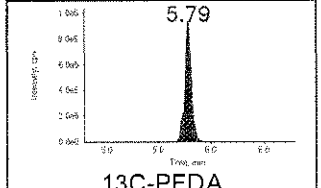
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



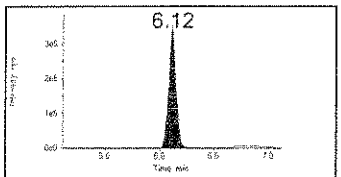
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



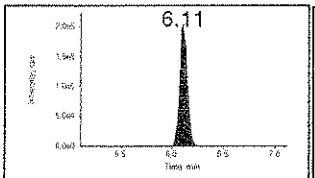
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



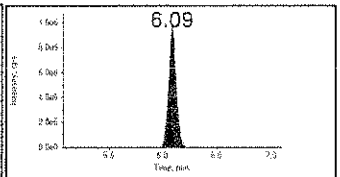
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



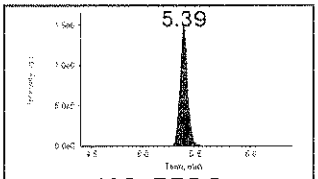
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



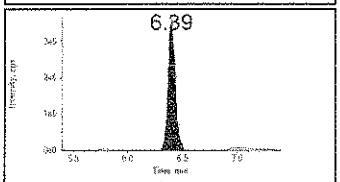
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



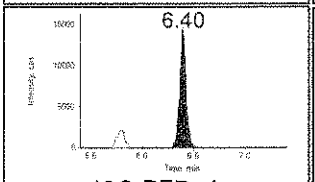
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



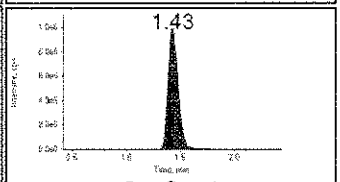
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



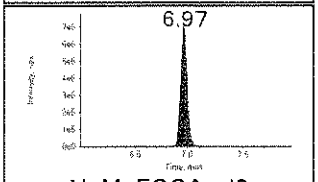
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



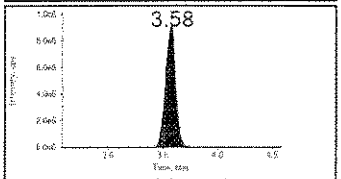
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



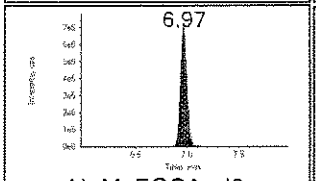
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



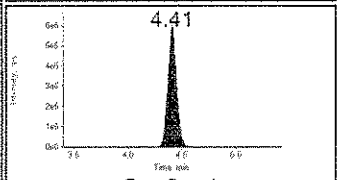
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



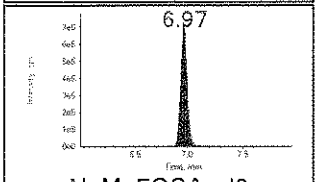
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



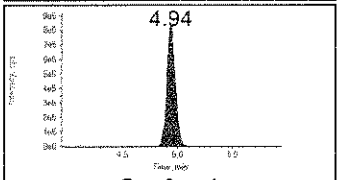
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



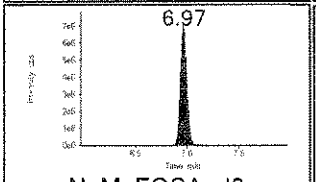
S_pfhs 1
403.000/103.000 Da
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□ Wrong Peak



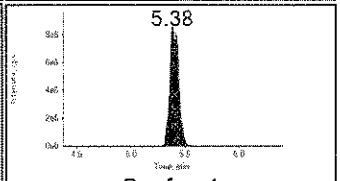
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



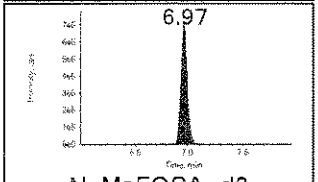
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



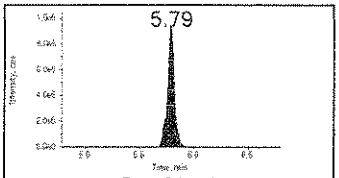
N_MeFOSA_d3
515.000/169.000 Da
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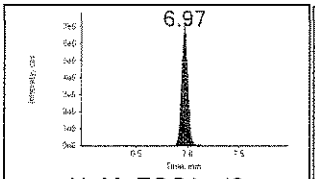
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



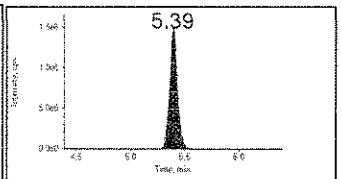
N_MeFOSA_d3
515.000/169.000 Da
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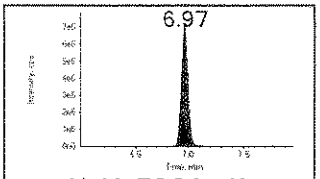
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



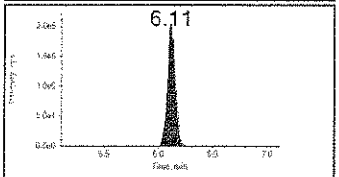
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



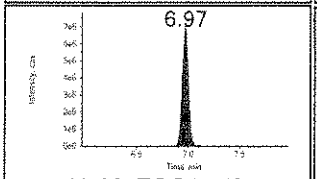
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



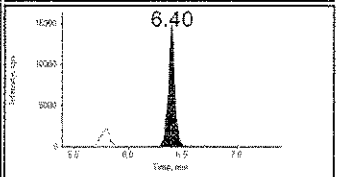
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



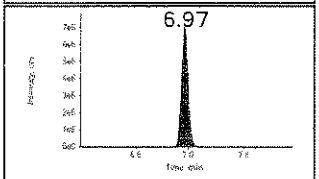
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

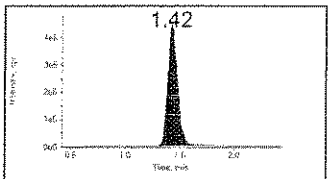


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

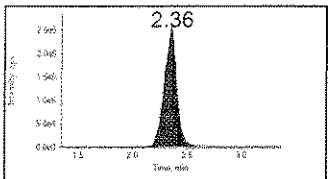


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

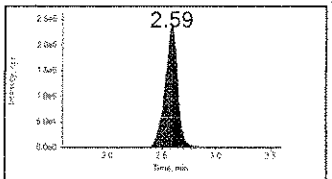
Ion Ratio Confirmation



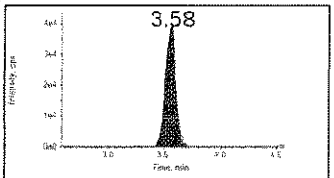
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



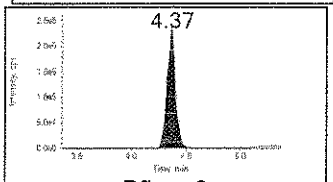
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



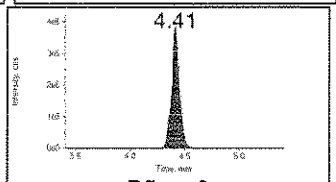
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



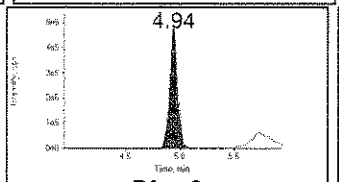
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



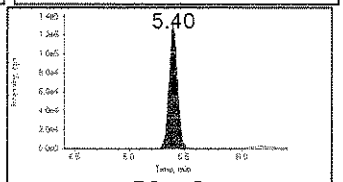
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



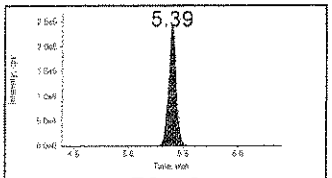
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



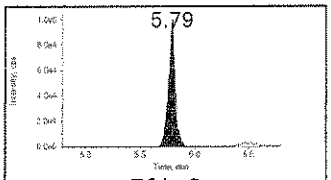
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



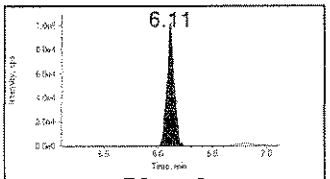
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



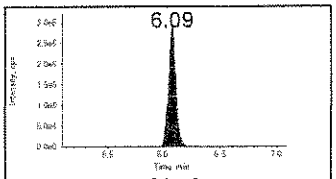
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



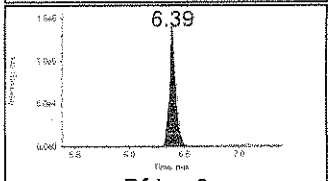
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2016.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 20.0ppb	Injection Vial	20007
Acquisition Date	4/18/2016 10:21:38 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Standard
Sample ID	15-OLC-02-39B	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.43 (1.43)	13C-PFBA	6402351	5051066	20.00	17.3230	87	No
Pfpea 1	2.33 (2.34)	13C-PFHxA	5710318	3463794	20.00	19.1540	96	No
Pfbs 1	2.58 (2.59)	18O_PFHS	3158968	8041497	20.00	18.3010	92	No
Pfhxa 1	3.57 (3.57)	13C-PFHxA	5710318	4313590	20.00	15.3860	77	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	5710318	5838219	20.00	17.6540	88	No
Pfhxs 1	4.42 (4.41)	18O_PFHS	3158968	8246226	20.00	17.6660	88	No
Pfoa 1	4.95 (4.94)	13C-PFOA	4435471	2157508	20.00	18.0390	90	No
Pfna 1	5.41 (5.40)	13C-PFNA	4996926	4601847	20.00	17.6600	88	No
Pfos 1	5.40 (5.40)	13C_PFOS	7152373	6185680	20.00	17.4710	87	No
Pfda 1	5.79 (5.78)	13C-PFDA	3996327	3923929	20.00	17.9340	90	No
Pfuna 1	6.12 (6.12)	13C-PFUnA	910848	2860204	20.00	17.5740	88	No
Pfds 1	6.09 (6.09)	13C_PFOS	7152373	8035130	20.00	18.0250	90	No
Pfdoa 1	6.40 (6.39)	13C-PFDoA	55537	3532085	20.00	20.3370	102	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d 3	3112509	6402351	20.00	19.4170	97	No
S_phhxa 1	3.57 (3.58)	N_MeFOSA_d 3	3112509	5710318	20.00	18.3110	92	No
S_pfhs 1	4.42 (4.41)	N_MeFOSA_d 3	3112509	3158968	20.00	18.3940	92	No
S_pfoa 1	4.96 (4.94)	N_MeFOSA_d 3	3112509	4435471	20.00	18.7310	94	No

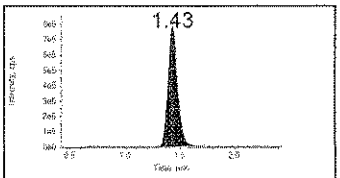
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.41 (5.38)	N_MeFOSA_d 3	3112509	4996926	20.00	18.1340	91	No
S_pfda 1	5.79 (5.79)	N_MeFOSA_d 3	3112509	3996327	20.00	18.8780	94	No
S_pfos 1	5.40 (5.39)	N_MeFOSA_d 3	3112509	7152373	20.00	19.1810	96	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d 3	3112509	910848	20.00	17.2750	86	No
S_pfdoda 1	6.40 (6.40)	N_MeFOSA_d 3	3112509	55537	20.00	17.1210	86	No

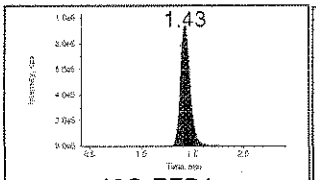
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.43 (1.43)	4442885	No	0.88
Pfpea 2	2.34 (2.36)	3441277	No	0.99
Pfbs 2	2.58 (2.59)	3357969	No	0.42
Pfhxa 2	3.58 (3.58)	440513	No	0.10
Pfhpa 2	4.36 (4.37)	2214910	No	0.38
Pfhxs 2	4.42 (4.41)	3287187	No	0.40
Pfoa 2	4.96 (4.94)	3749174	No	1.74
Pfna 2	5.41 (5.41)	1269728	No	0.28
Pfos 2	5.40 (5.39)	2090427	No	0.34
Pfda 2	5.79 (5.79)	761949	No	0.19
Pfuna 2	6.12 (6.11)	811516	No	0.28
Pfds 2	6.09 (6.09)	2519023	No	0.31
Pfdoa 2	6.41 (6.39)	1034888	No	0.29

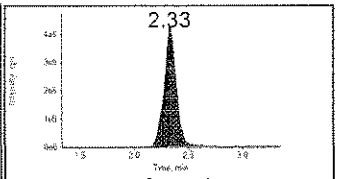
Quantitative Peak Review PFC 20.0ppb 15-OLC-02-39B



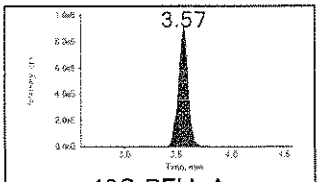
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



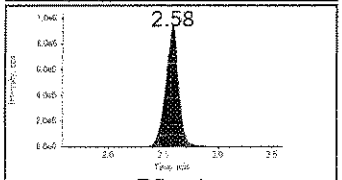
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



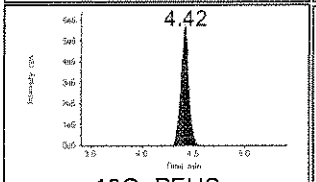
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



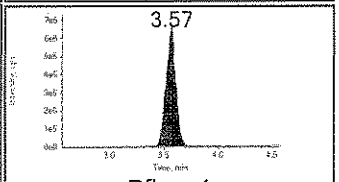
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



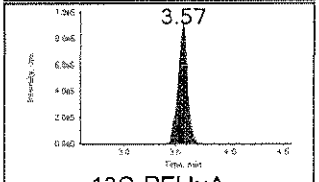
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



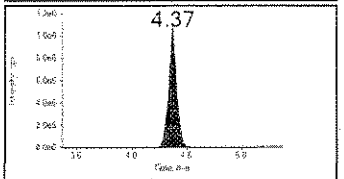
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



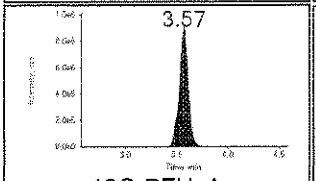
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



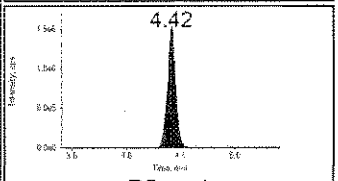
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



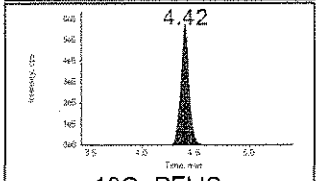
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



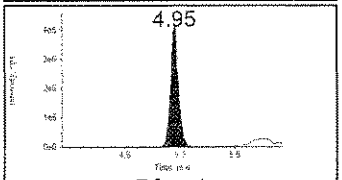
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



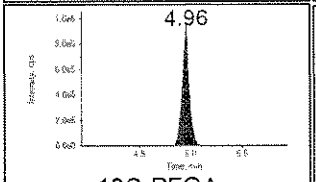
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



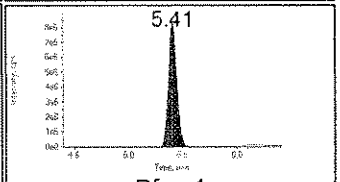
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



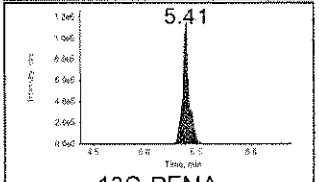
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



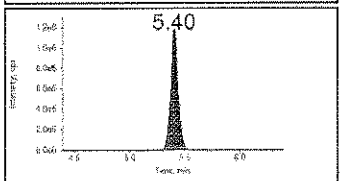
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



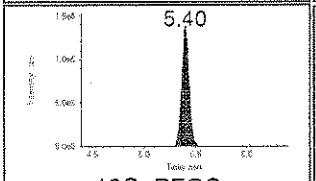
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



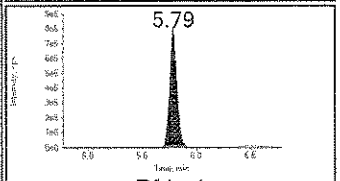
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



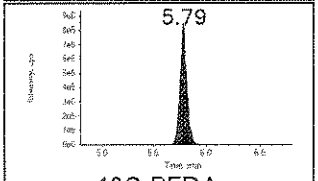
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



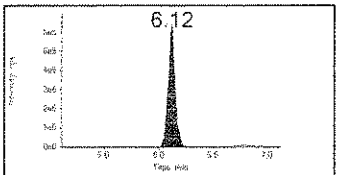
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



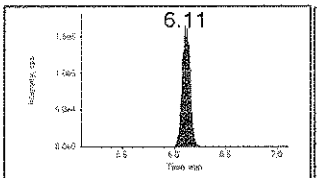
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



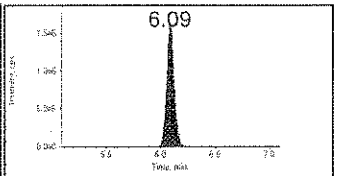
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



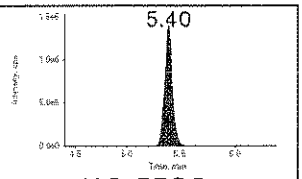
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



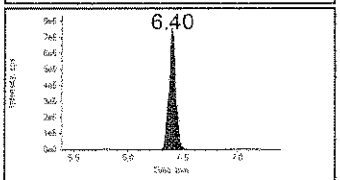
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



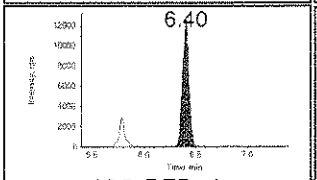
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



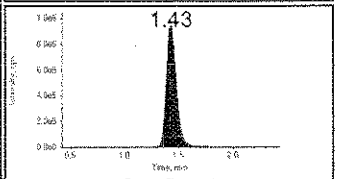
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



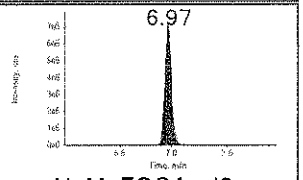
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



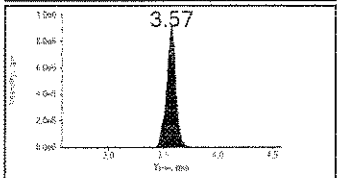
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



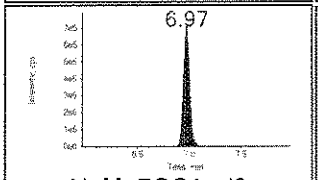
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



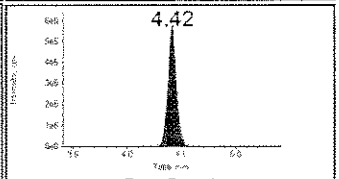
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



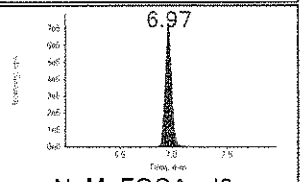
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



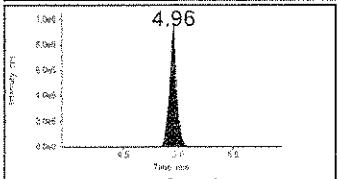
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



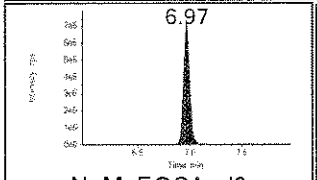
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



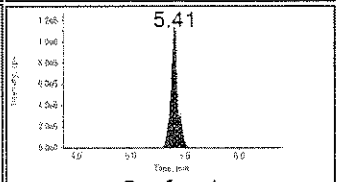
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



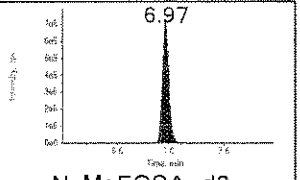
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



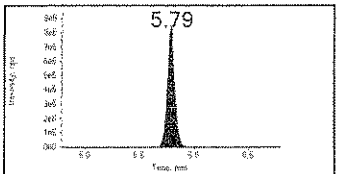
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



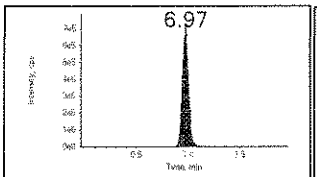
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



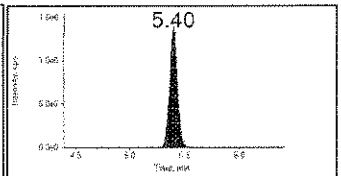
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



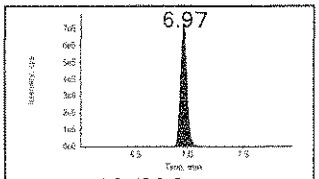
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



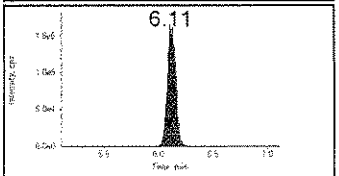
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



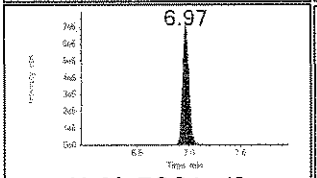
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



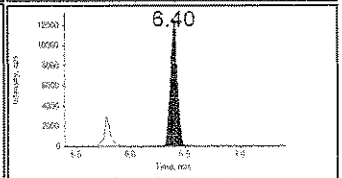
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



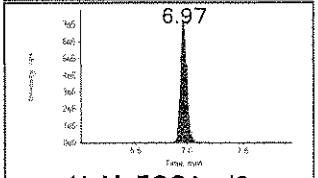
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

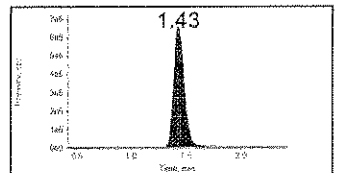


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

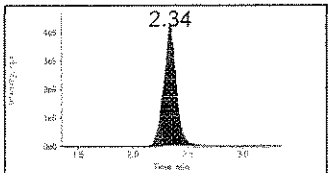


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

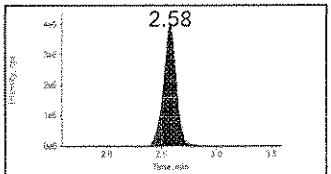
Ion Ratio Confirmation



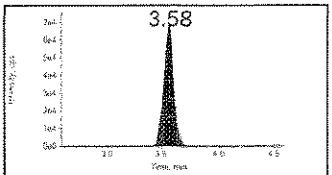
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



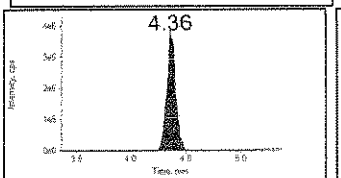
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



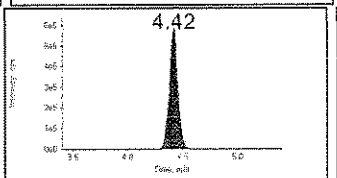
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



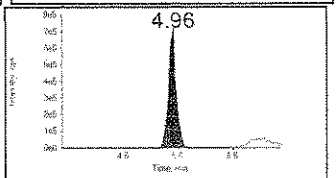
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



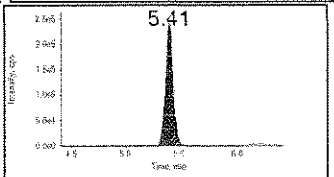
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



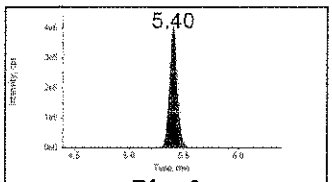
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



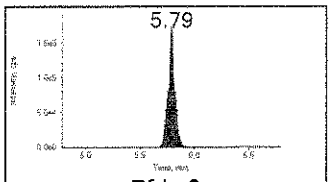
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



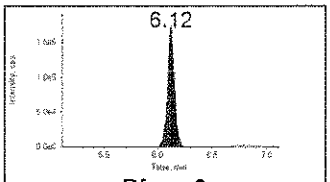
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



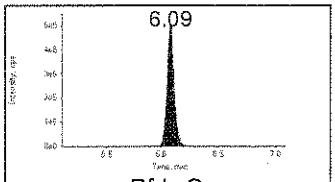
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



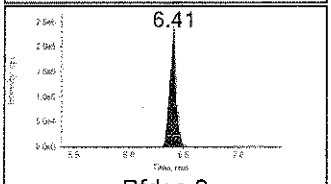
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	**Result Table**	041816.rdb
Data File	041816\2017.wiff	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02

Sample Name	PFC 50.0ppb	**Injection Vial**	20008
Acquisition Date	4/18/2016 10:31:46 PM	**Injection Volume**	5
Acquisition Method	PFC_122812.dam	**Sample Type**	Standard
Sample ID	15-OLC-02-39C	**Dilution Factor**	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.43 (1.43)	13C-PFBA	6599721	12347612	50.00	41.0820	82	No
Pfpea 1	2.34 (2.34)	13C-PFHxA	5823865	8065973	50.00	43.7330	88	No
Pfbs 1	2.58 (2.59)	18O_PFHS	3400435	18461084	50.00	39.0300	78	No
Pfhxa 1	3.57 (3.57)	13C-PFHxA	5823865	11063397	50.00	38.6920	77	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	5823865	14204978	50.00	42.1170	84	No
Pfhxs 1	4.42 (4.41)	18O_PFHS	3400435	19234233	50.00	38.2800	77	No
Pfoa 1	4.95 (4.94)	13C-PFOA	4594889	5193253	50.00	41.9130	84	No
Pfna 1	5.41 (5.40)	13C-PFNA	5119408	11186594	50.00	41.9030	84	No
Pfos 1	5.40 (5.40)	13C_PFOS	7280362	14874745	50.00	41.2740	83	No
Pfda 1	5.79 (5.78)	13C-PFDA	4110021	8505145	50.00	37.7980	76	No
Pfuna 1	6.11 (6.12)	13C-PFUnA	1062893	6879846	50.00	36.2240	72	No
Pfds 1	6.09 (6.09)	13C_PFOS	7280362	18404949	50.00	40.5620	81	No
Pfdoa 1	6.39 (6.39)	13C-PFDoA	39327	7533384	50.00	61.2540	123	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d3	3188454	6599721	20.00	19.5390	98	No
S_phhxa 1	3.57 (3.58)	N_MeFOSA_d3	3188454	5823865	20.00	18.2300	91	No
S_pfhs 1	4.42 (4.41)	N_MeFOSA_d3	3188454	3400435	20.00	19.3290	97	No
S_pfoa 1	4.95 (4.94)	N_MeFOSA_d3	3188454	4594889	20.00	18.9420	95	No

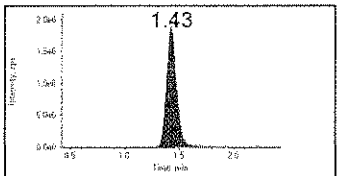
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.39 (5.38)	N_MeFOSA_d 3	3188454	5119408	20.00	18.1360	91	No
S_pfda 1	5.79 (5.79)	N_MeFOSA_d 3	3188454	4110021	20.00	18.9530	95	No
S_pfos 1	5.40 (5.39)	N_MeFOSA_d 3	3188454	7280362	20.00	19.0590	95	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d 3	3188454	1062893	20.00	19.6790	98	No
S_pfdoda 1	6.39 (6.40)	N_MeFOSA_d 3	3188454	39327	20.00	11.8350	59	No

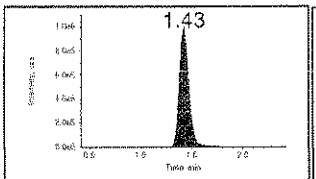
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.42 (1.43)	10926145	No	0.88
Pfpea 2	2.35 (2.36)	7916268	No	0.98
Pfbs 2	2.58 (2.59)	7898491	No	0.43
Pfhxa 2	3.56 (3.58)	1010624	No	0.09
Pfhpa 2	4.37 (4.37)	5350577	No	0.38
Pfhxs 2	4.42 (4.41)	7987809	No	0.42
Pfoa 2	4.95 (4.94)	9495397	No	1.83
Pfna 2	5.41 (5.41)	3067030	No	0.27
Pfos 2	5.40 (5.39)	5058615	No	0.34
Pfda 2	5.79 (5.79)	1891920	No	0.22
Pfuna 2	6.11 (6.11)	2277846	No	0.33
Pfds 2	6.09 (6.09)	5992613	No	0.33
Pfdoa 2	6.39 (6.39)	2627637	No	0.35

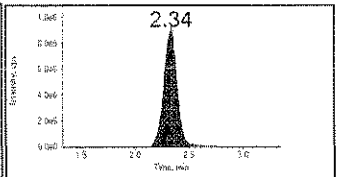
Quantitative Peak Review PFC 50.0ppb 15-OLC-02-39C



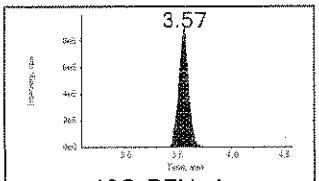
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



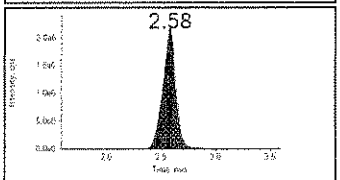
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



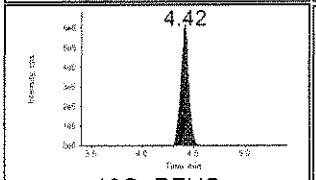
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



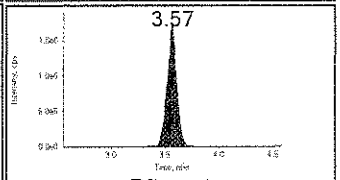
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



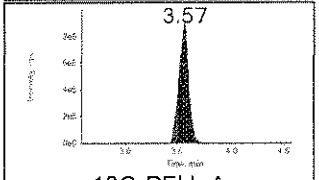
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



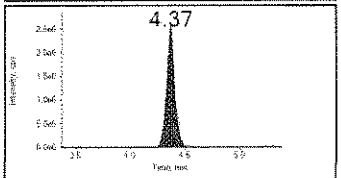
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



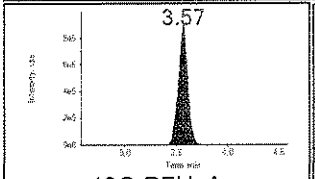
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



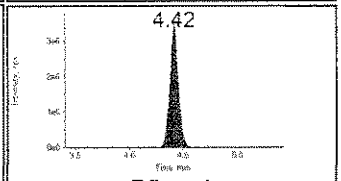
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



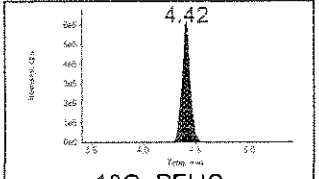
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



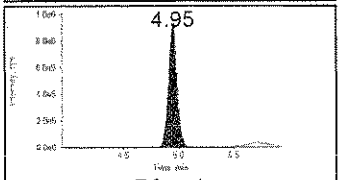
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



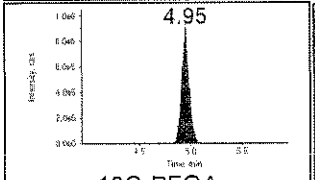
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



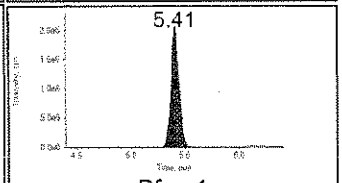
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



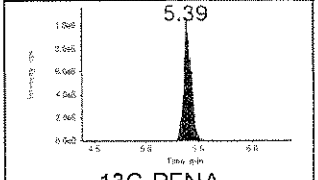
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



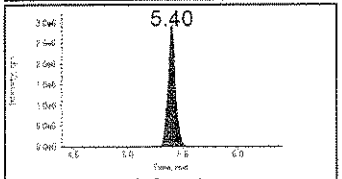
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



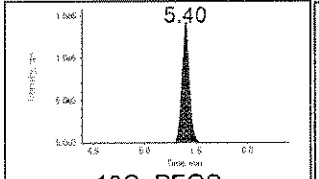
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



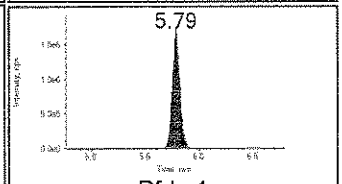
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



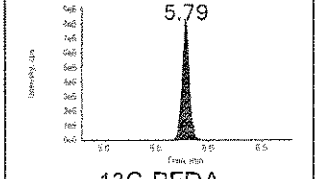
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



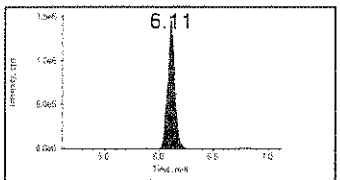
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



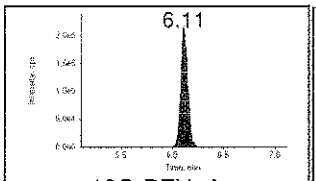
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



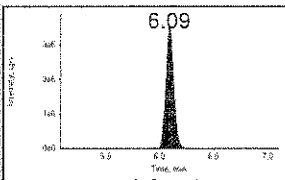
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



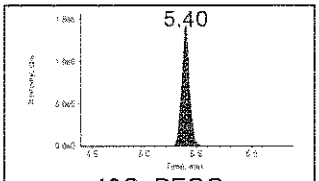
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



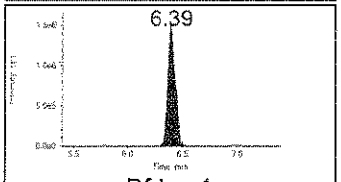
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



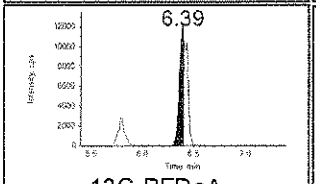
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



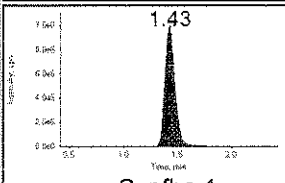
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



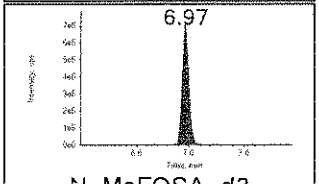
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



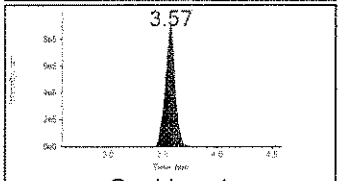
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



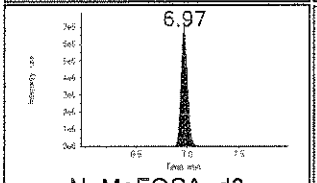
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



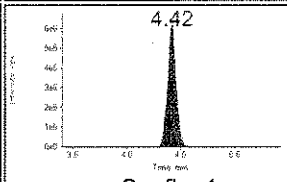
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



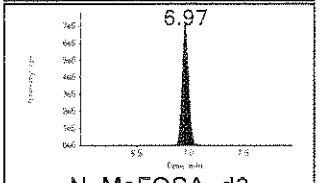
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



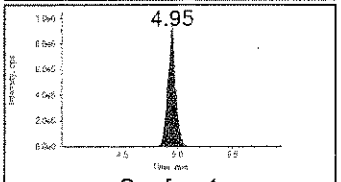
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



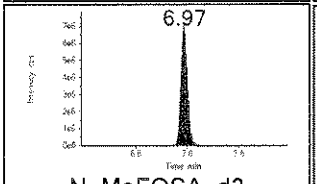
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



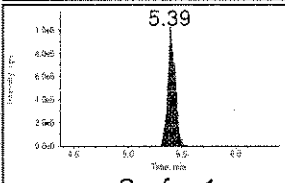
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



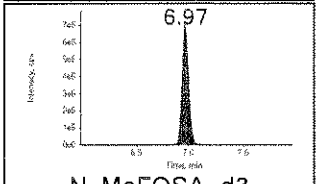
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



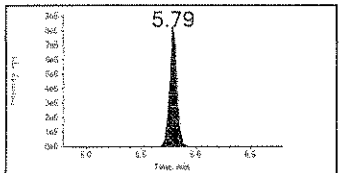
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
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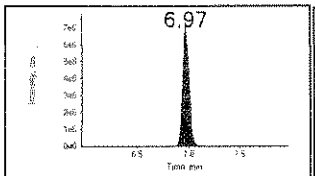
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



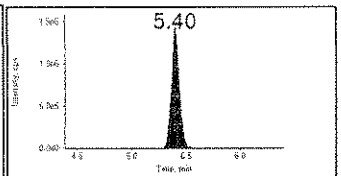
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



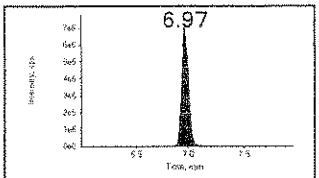
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



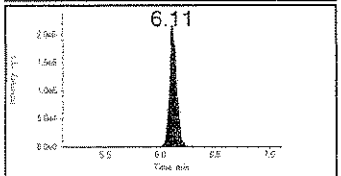
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



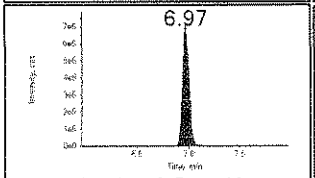
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



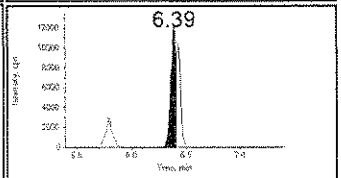
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



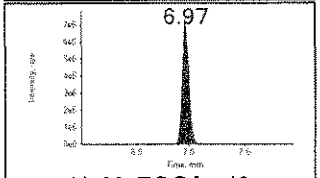
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

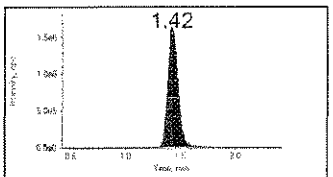


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

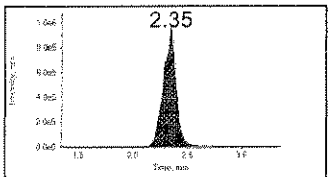


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

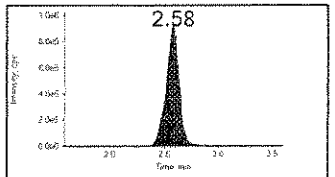
Ion Ratio Confirmation



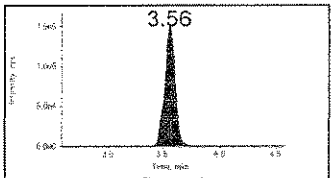
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



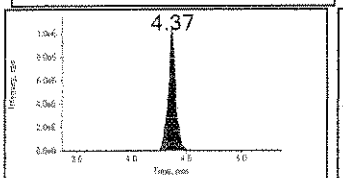
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



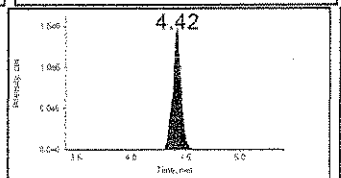
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



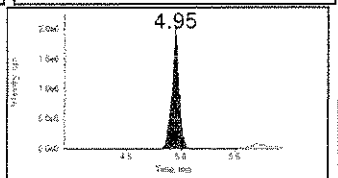
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



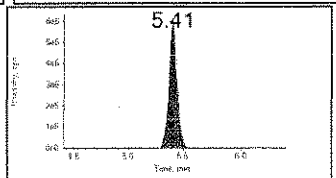
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



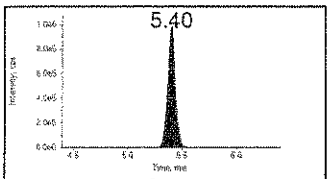
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



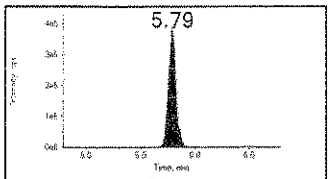
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



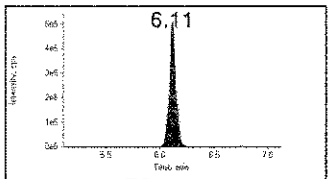
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



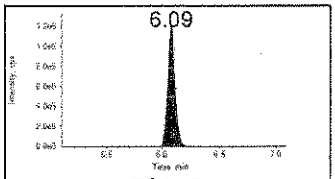
Pfos 2
Mod?
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□ Wrong Peak



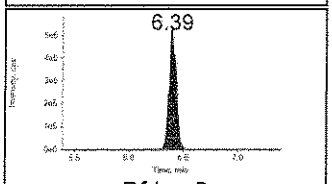
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2018.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 100ppb	Injection Vial	20009
Acquisition Date	4/18/2016 10:41:50 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Standard
Sample ID	15-OLC-02-39D	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.43 (1.43)	13C-PFBA	4759140	23326253	100.00	107.6240	108	No
Pfpea 1	2.34 (2.34)	13C-PFHxA	4183561	15982126	100.00	120.6280	121	No
Pfbs 1	2.58 (2.59)	18O_PFHS	2345249	35612813	100.00	109.1680	109	No
Pfhxa 1	3.56 (3.57)	13C-PFHxA	4183561	20846240	100.00	101.4900	101	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	4183561	25531071	100.00	105.3780	105	No
Pfhxs 1	4.42 (4.41)	18O_PFHS	2345249	35103772	100.00	101.2960	101	No
Pfoa 1	4.95 (4.94)	13C-PFOA	3354022	10677199	100.00	118.0540	118	No
Pfna 1	5.41 (5.40)	13C-PFNA	3475888	19222674	100.00	106.0500	106	No
Pfos 1	5.41 (5.40)	13C_PFOS	5295707	26769275	100.00	102.1170	102	No
Pfda 1	5.78 (5.78)	13C-PFDA	2889488	17446978	100.00	110.2880	110	No
Pfuna 1	6.12 (6.12)	13C-PFUnA	677414	12363078	100.00	102.1370	102	No
Pfds 1	6.09 (6.09)	13C_PFOS	5295707	32027370	100.00	97.0370	97	No
Pfdoa 1	6.40 (6.39)	13C-PFDoA	50814	13747965	100.00	86.5150	87	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d3	3101823	4759140	20.00	14.4840	72	No
S_phhxa 1	3.57 (3.58)	N_MeFOSA_d3	3101823	4183561	20.00	13.4620	67	No
S_pfhs 1	4.42 (4.41)	N_MeFOSA_d3	3101823	2345249	20.00	13.7030	69	No
S_pfoa 1	4.95 (4.94)	N_MeFOSA_d3	3101823	3354022	20.00	14.2130	71	No

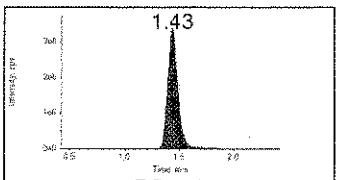
APR 21 2016

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
S_pfna 1	5.41 (5.38)	N_MeFOSA_d 3	3101823	3475888	20.00	12.6580	63	No
S_pfda 1	5.79 (5.79)	N_MeFOSA_d 3	3101823	2889488	20.00	13.6970	69	No
S_pfos 1	5.40 (5.39)	N_MeFOSA_d 3	3101823	5295707	20.00	14.2510	71	No
S_pfuna 1	6.12 (6.11)	N_MeFOSA_d 3	3101823	677414	20.00	12.8920	65	No
S_pfdoda 1	6.40 (6.40)	N_MeFOSA_d 3	3101823	50814	20.00	15.7190	79	No

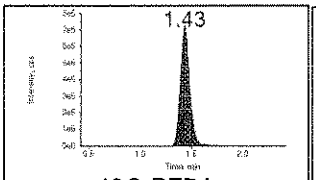
IRC Summary

Analyte Peak Name	RT (Expected)	Area	Modified?	Calculated Ion Ratio (Expected Value)
Pfba 2	1.43 (1.43)	20942047	No	0.90
Pfpea 2	2.34 (2.36)	16526272	No	1.03
Pfbs 2	2.58 (2.59)	15788830	No	0.44
Pfhxa 2	3.57 (3.58)	2165258	No	0.10
Pfhpa 2	4.37 (4.37)	9837499	No	0.39
Pfhxs 2	4.41 (4.41)	15456206	No	0.44
Pfoa 2	4.95 (4.94)	19163069	No	1.79
Pfna 2	5.41 (5.41)	5969676	No	0.31
Pfos 2	5.40 (5.39)	9949707	No	0.37
Pfda 2	5.78 (5.79)	3926534	No	0.23
Pfuna 2	6.13 (6.11)	3879618	No	0.31
Pfds 2	6.09 (6.09)	11569776	No	0.36
Pfdoa 2	6.39 (6.39)	4412984	No	0.32

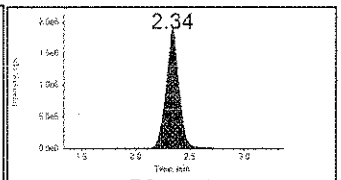
Quantitative Peak Review PFC 100ppb 15-OLC-02-39D



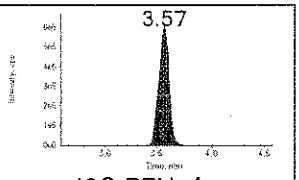
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



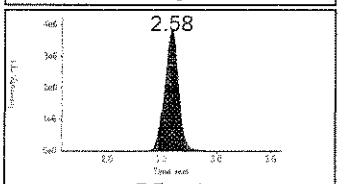
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



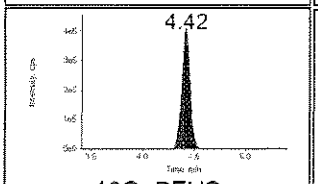
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



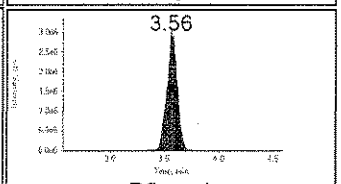
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



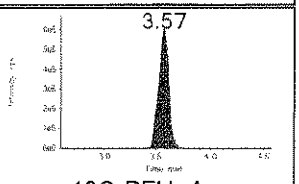
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



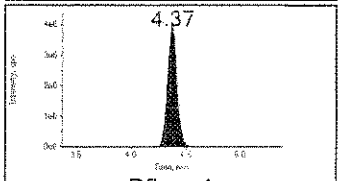
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



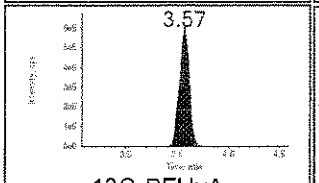
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



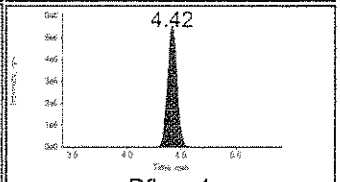
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



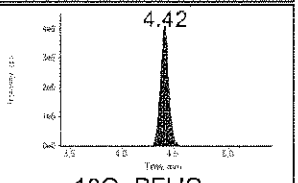
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



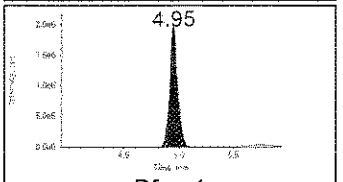
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



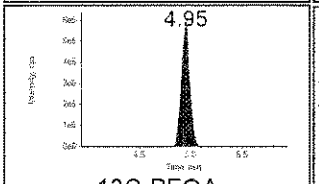
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



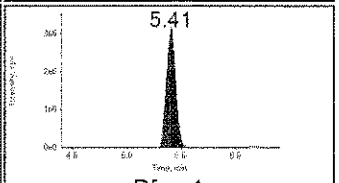
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



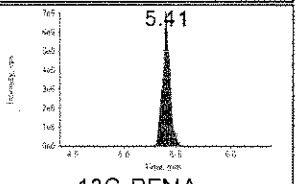
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



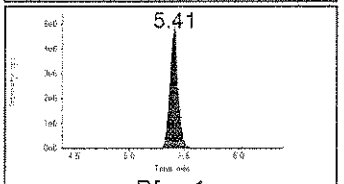
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



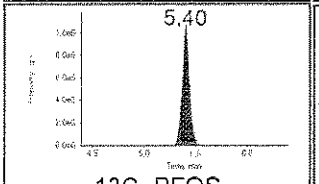
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



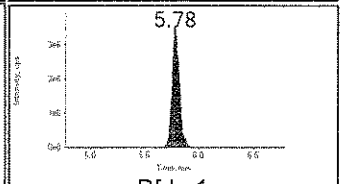
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



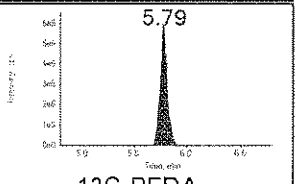
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.12

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.40

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

3.57

S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

4.95

S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.12

13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.40

13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.97

N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.97

N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.09

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

1.43

S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

4.42

S_pfns 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

5.41

S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

5.40

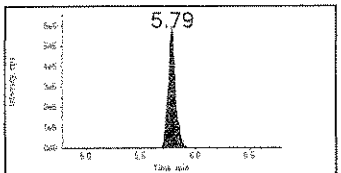
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.97

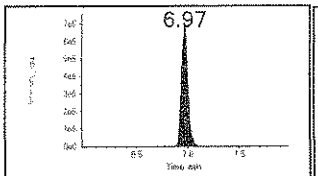
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

6.97

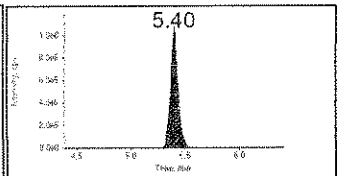
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



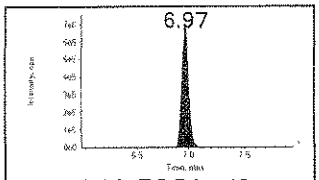
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



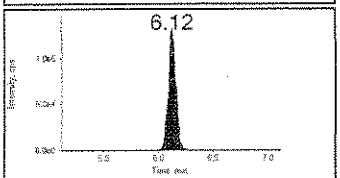
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



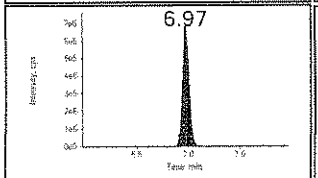
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



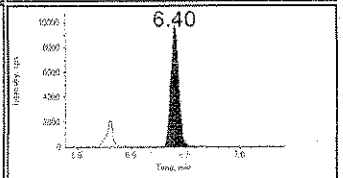
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



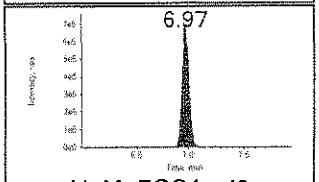
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

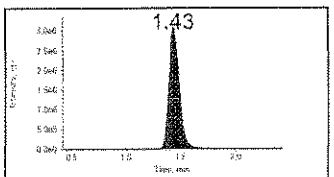


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

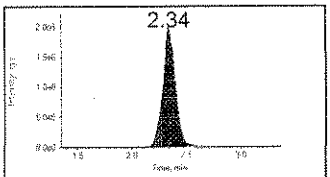


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

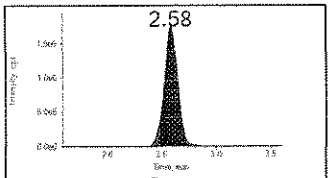
Ion Ratio Confirmation



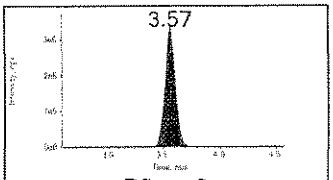
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



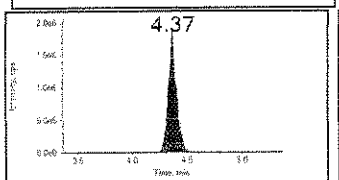
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



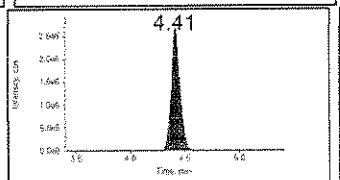
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



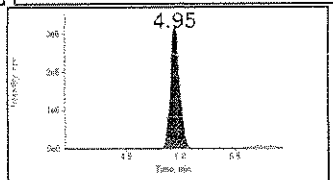
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



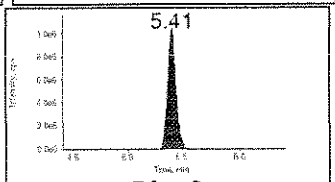
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



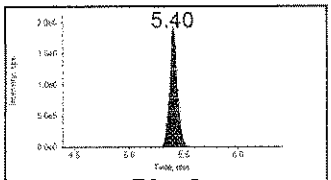
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



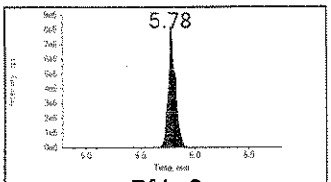
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



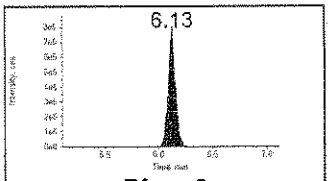
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



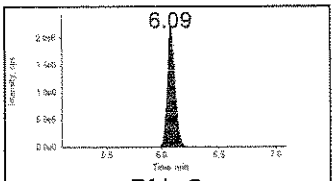
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



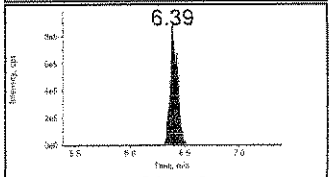
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	041816\2019.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/18/2016 10:51:58 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5043143	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	4633490	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2619768	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	4633490	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	4633490	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2619768	4.42 (4.41)	23925	0.0620	No
Pfoa 1	13C-PFOA	3332541	0.00 (4.94)	0	N/A	Yes
Pfna 1	13C-PFNA	3926582	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	5690069	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	2915889	0.00 (5.78)	0	N/A	Yes
Pfuna 1	13C-PFUnA	769229	0.00 (6.12)	0	N/A	Yes
Pfds 1	13C_PFOS	5690069	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	54046	0.00 (6.39)	0	N/A	No
S_pfba 1	N_MeFOSA d3	2931821	1.43 (1.43)	5043143	16.2380	No
S_phhxa 1	N_MeFOSA d3	2931821	3.57 (3.58)	4633490	15.7740	No
S_pfhs 1	N_MeFOSA d3	2931821	4.42 (4.41)	2619768	16.1950	No
S_pfoa 1	N_MeFOSA d3	2931821	4.96 (4.94)	3332541	14.9410	No
S_pfna 1	N_MeFOSA d3	2931821	5.39 (5.38)	3926582	15.1280	No
S_pfda 1	N_MeFOSA d3	2931821	5.79 (5.79)	2915889	14.6230	No

APR 21 2016

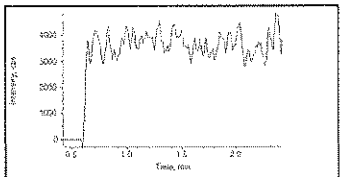
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfos 1	N_MeFOSA d3	2931821	5.40 (5.39)	5690069	16.2000	No
S_pfuna 1	N_MeFOSA d3	2931821	6.12 (6.11)	769229	15.4880	No
S_pfdoda 1	N_MeFOSA d3	2931821	6.40 (6.40)	54046	17.6880	No

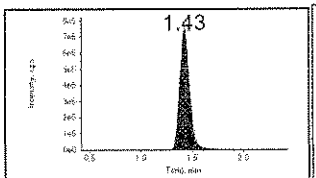
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.43)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.43 (4.41)	11249	No	0.47 (0.39)	YES
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	Yes	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

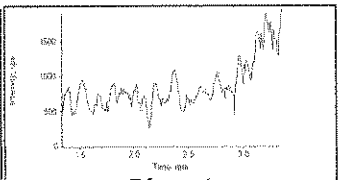
Quantitative Peak Review

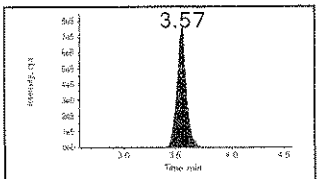
IB *No data for Sample ID*


Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

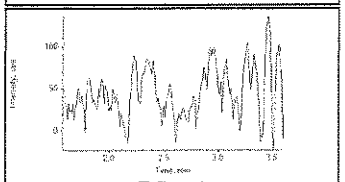


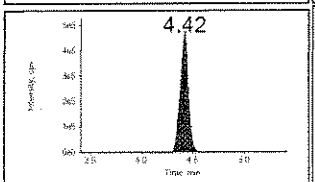
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

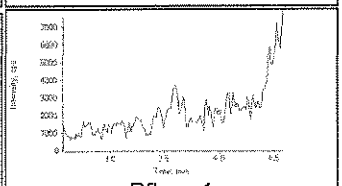


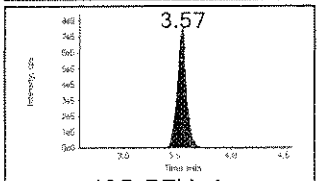
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

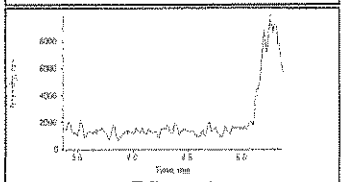


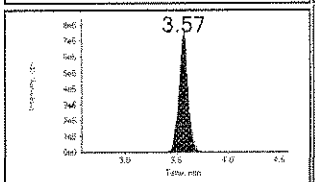
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

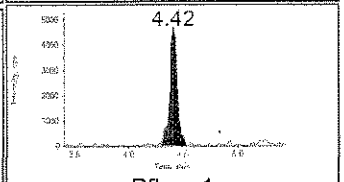


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

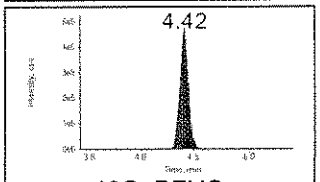

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



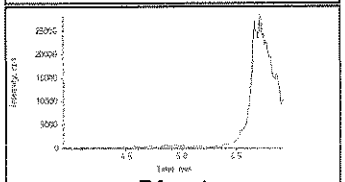
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

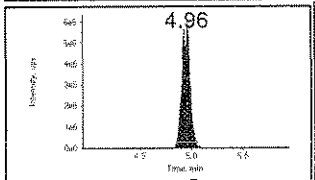


Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

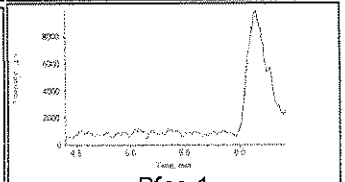


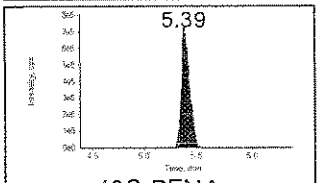
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

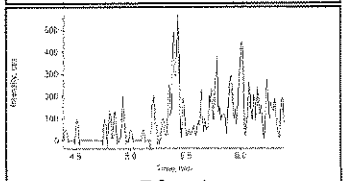


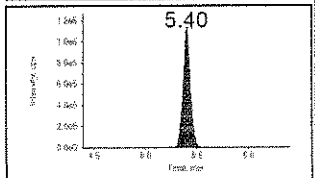
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

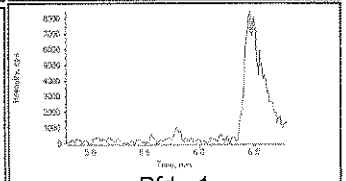


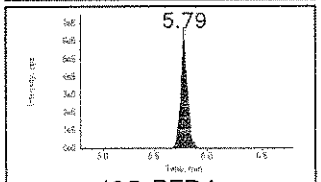
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

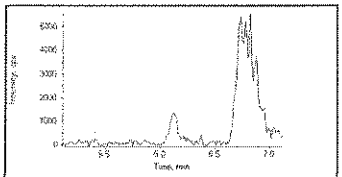


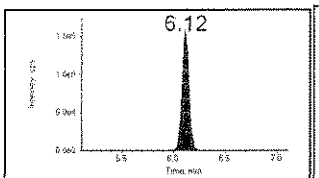
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

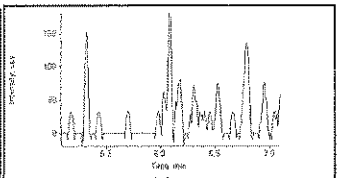


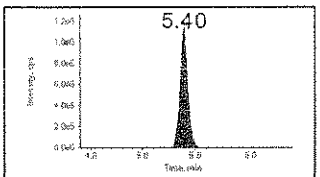
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

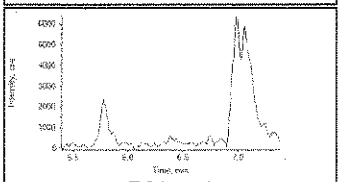


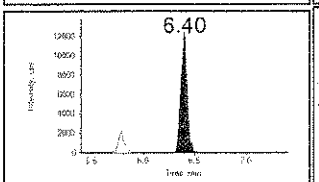
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

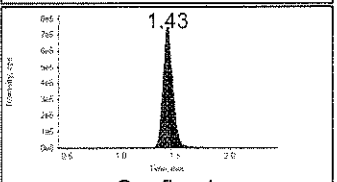


13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

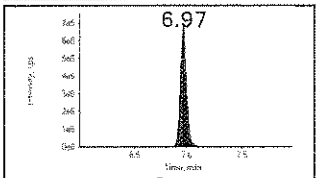

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



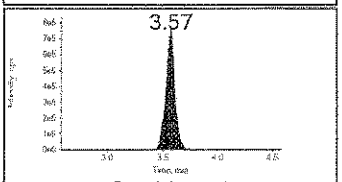
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



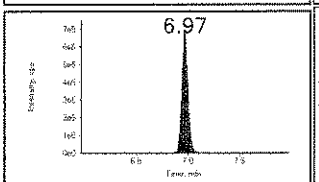
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



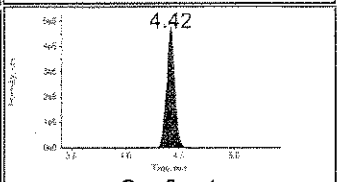
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



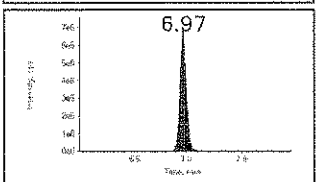
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



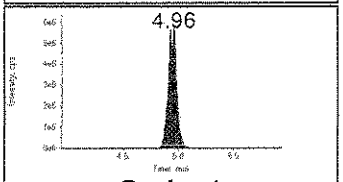
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



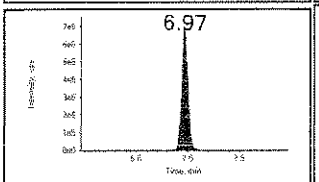
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



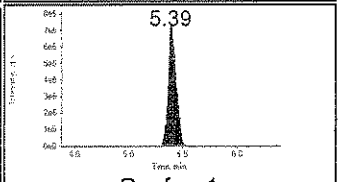
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



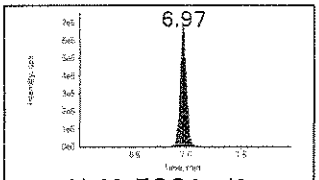
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



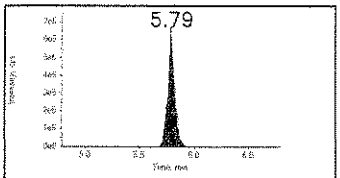
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



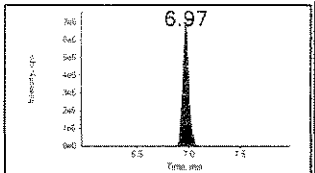
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



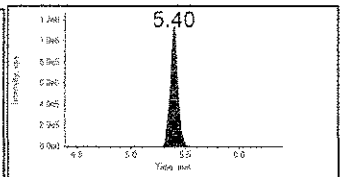
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



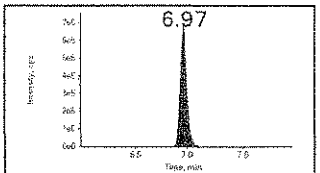
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



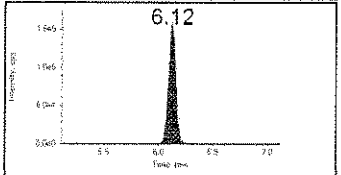
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



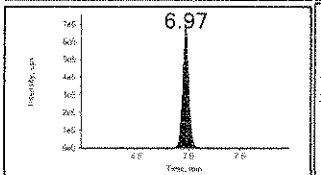
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



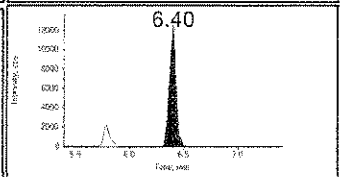
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



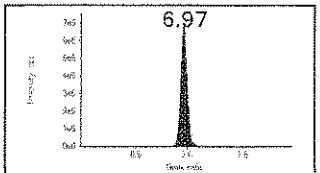
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

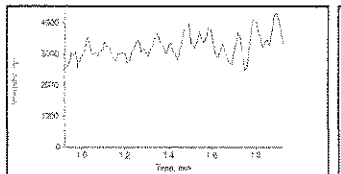


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

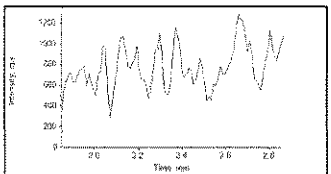


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

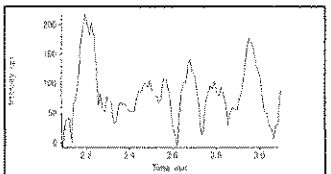
Ion Ratio Confirmation



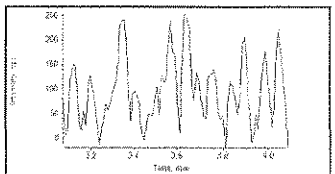
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



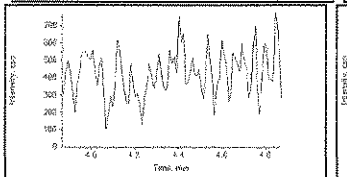
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



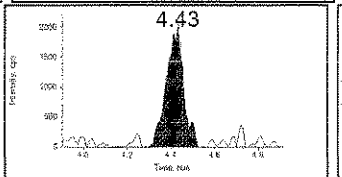
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



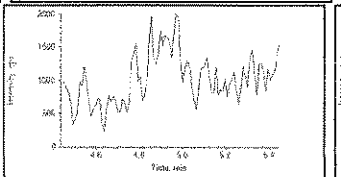
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



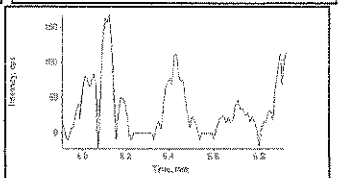
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



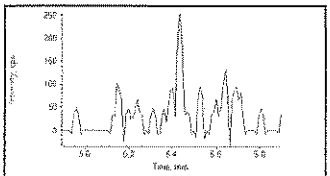
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



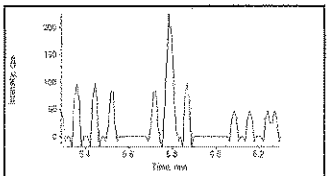
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



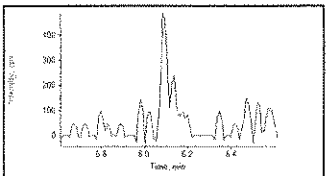
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



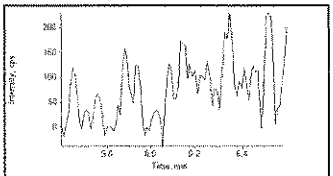
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



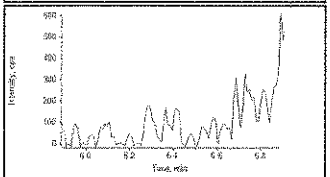
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2020.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 20.0ppb ICV	Injection Vial	20010
Acquisition Date	4/18/2016 11:02:02 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Quality Control
Sample ID	15-OLC-02-39A	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.42 (1.43)	13C-PFBA	5854051	5595393	20.00	20.9880	105	No
Pfpea 1	2.34 (2.34)	13C-PFHxA	5678822	3540780	20.00	19.6880	98	No
Pfbs 1	2.58 (2.59)	18O_PFHS	3192932	9016494	20.00	20.3010	102	No
Pfhxa 1	3.57 (3.57)	13C-PFHxA	5678822	5097816	20.00	18.2840	91	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	5678822	6081890	20.00	18.4930	93	No
Pfhxs 1	4.42 (4.41)	18O_PFHS	3192932	9478911	20.00	20.0910	100	No
Pfoa 1	4.94 (4.94)	13C-PFOA	3963635	2313004	20.00	21.6410	108	No
Pfna 1	5.41 (5.40)	13C-PFNA	4440200	4635010	20.00	20.0180	100	No
Pfos 1	5.40 (5.40)	13C_PFOS	7156302	7208741	20.00	20.3500	102	No
Pfda 1	5.79 (5.78)	13C-PFDA	3393328	3697951	20.00	19.9050	100	No
Pfuna 1	6.12 (6.12)	13C-PFUnA	733953	2940537	20.00	22.4220	112	No
Pfds 1	6.09 (6.09)	13C_PFOS	7156302	8932268	20.00	20.0270	100	No
Pfdoa 1	6.39 (6.39)	13C-PFDoA	53391	3004138	20.00	17.9920	90	No
S_pfba 1	1.43 (1.43)	N_MeFOSA_d3	3176765	5854051	20.00	17.3950	87	No
S_phhxa 1	3.57 (3.58)	N_MeFOSA_d3	3176765	5678822	20.00	17.8420	89	No
S_pfhs 1	4.42 (4.41)	N_MeFOSA_d3	3176765	3192932	20.00	18.2160	91	No
S_pfoa 1	4.95 (4.94)	N_MeFOSA_d3	3176765	3963635	20.00	16.4000	82	No
S_pfna 1	5.40 (5.38)	N_MeFOSA_d3	3176765	4440200	20.00	15.7880	79	No
S_pfda 1	5.79 (5.79)	N_MeFOSA_d3	3176765	3393328	20.00	15.7050	79	No
S_pfos 1	5.41 (5.39)	N_MeFOSA_d3	3176765	7156302	20.00	18.8030	94	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d3	3176765	733953	20.00	13.6380	68	No
S_pfdoda 1	6.39 (6.40)	N_MeFOSA_d3	3176765	53391	20.00	16.1260	81	No

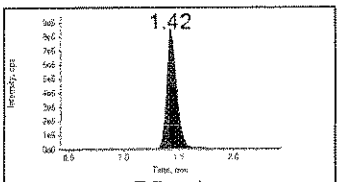
APR 21 2016

IRC Summary

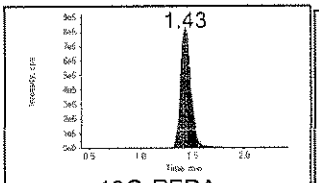
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	1.43 (1.43)	4819640	No	YES
Pfpea 2	2.33 (2.36)	3517983	No	YES
Pfbs 2	2.58 (2.59)	3715167	No	YES
Pfhxa 2	3.57 (3.58)	463078	No	YES
Pfhpa 2	4.36 (4.37)	2291717	No	YES
Pfhxs 2	4.42 (4.41)	3835066	No	YES
Pfoa 2	4.95 (4.94)	4253976	No	YES
Pfna 2	5.41 (5.41)	1358997	No	YES
Pfos 2	5.40 (5.39)	2452387	No	YES
Pfda 2	5.78 (5.79)	794979	No	YES
Pfuna 2	6.12 (6.11)	870531	No	YES
Pfds 2	6.09 (6.09)	2813411	No	YES
Pfdoa 2	6.39 (6.39)	1005220	No	YES

Quantitative Peak Review

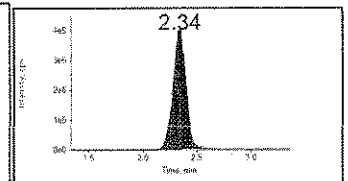
PFC 20.0ppb ICV 15-OLC-02-39A



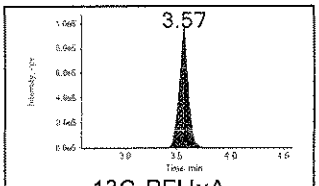
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



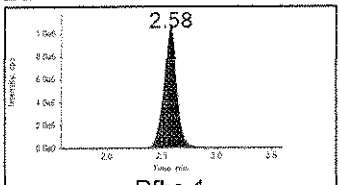
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



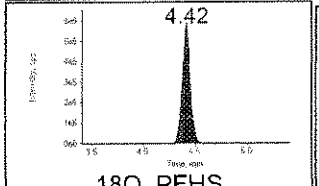
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



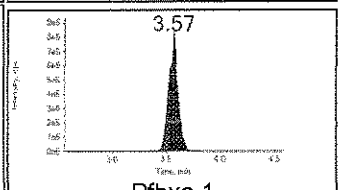
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



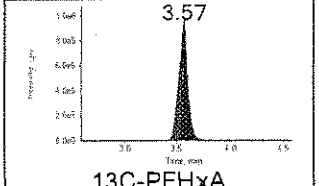
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



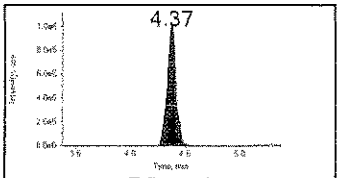
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



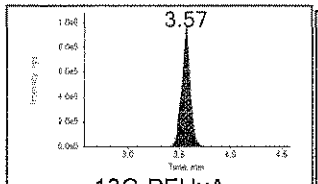
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



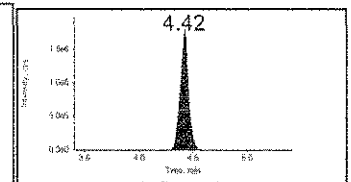
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



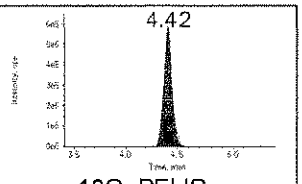
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



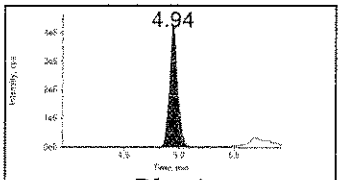
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



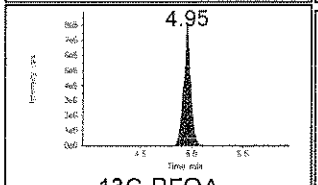
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



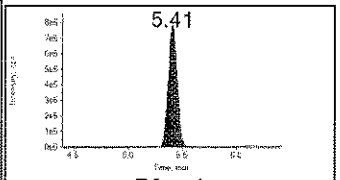
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



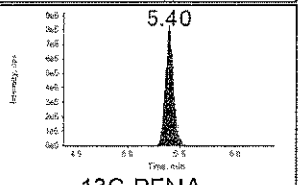
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



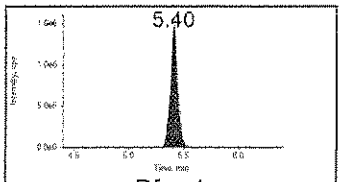
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



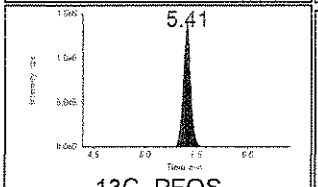
Pfna 1
463.000/419.000 Da
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□ Wrong Peak



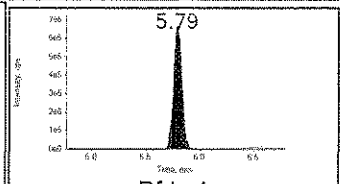
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



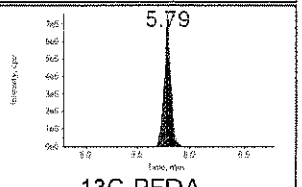
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



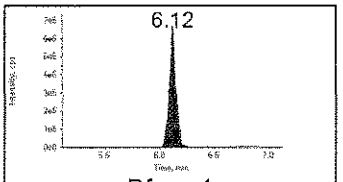
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



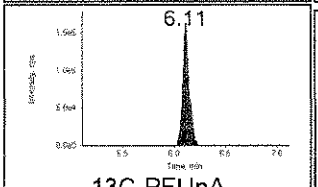
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



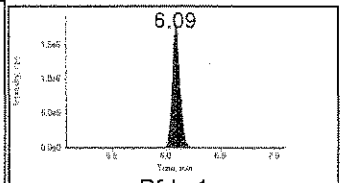
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



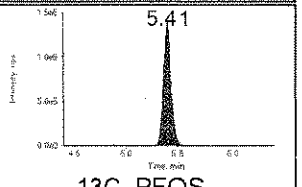
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



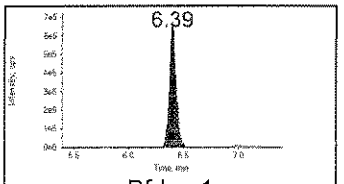
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



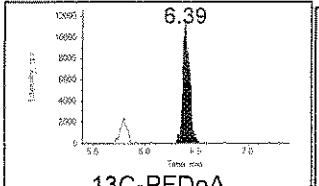
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



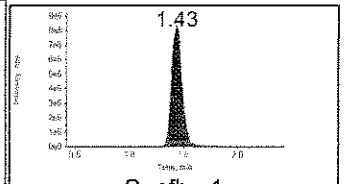
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



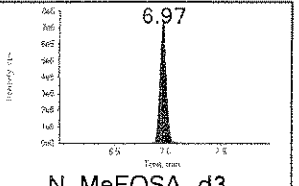
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



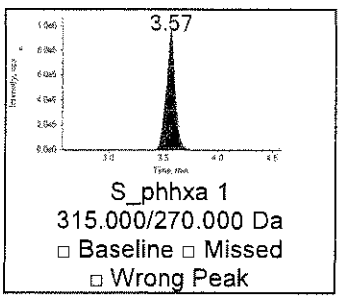
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



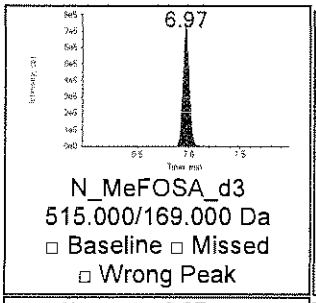
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



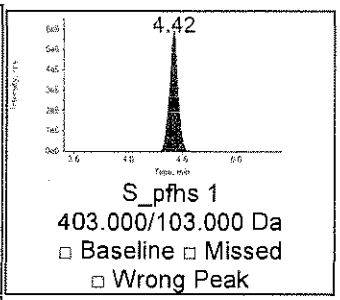
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



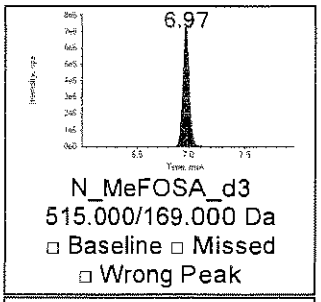
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



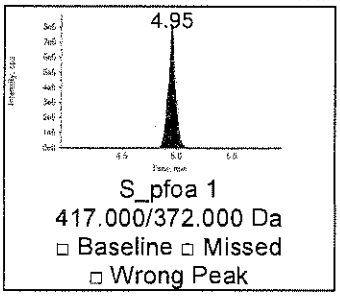
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



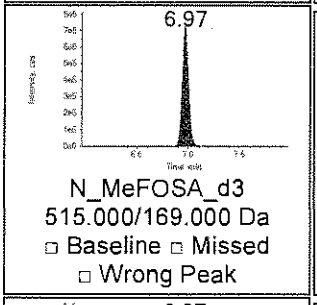
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



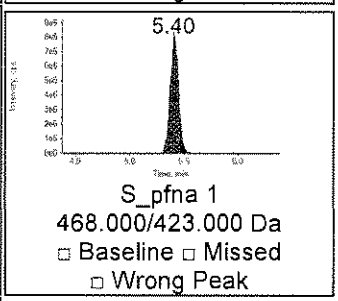
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



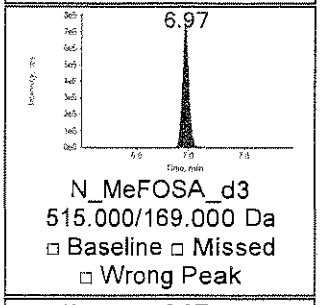
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



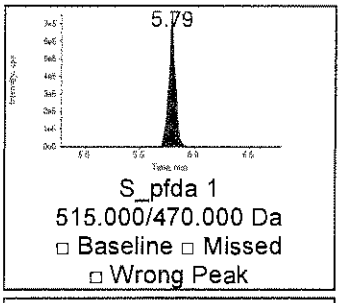
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



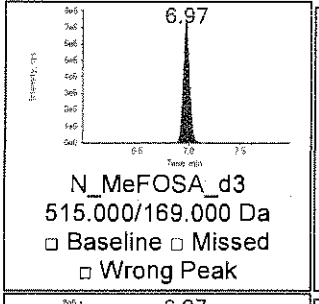
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



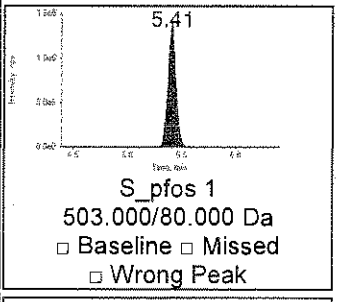
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



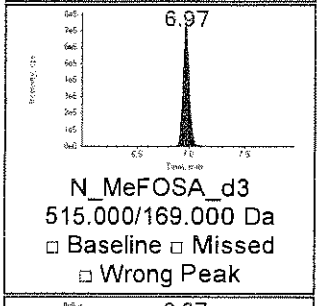
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



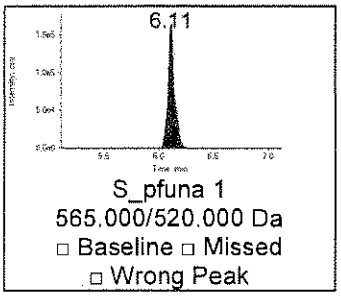
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



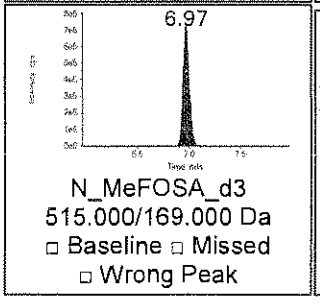
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



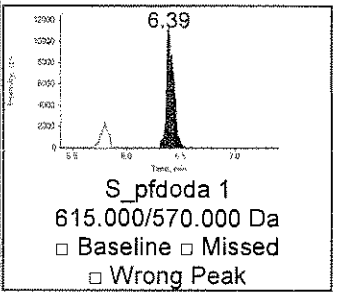
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



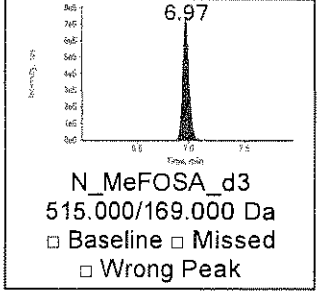
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

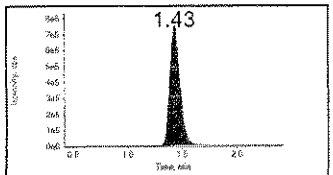


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

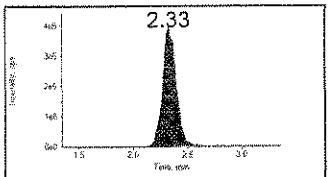


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

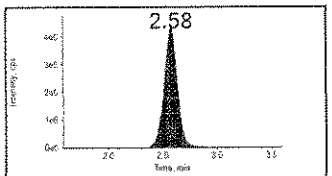
Ion Ratio Confirmation



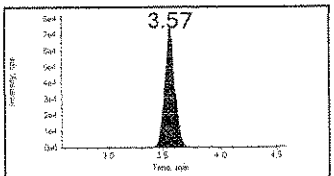
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



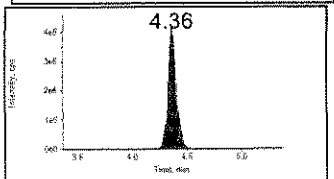
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



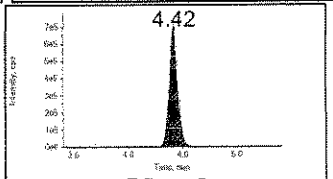
Pfbs 2
Mod?
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□ Wrong Peak



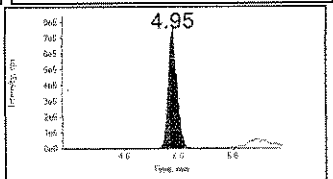
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



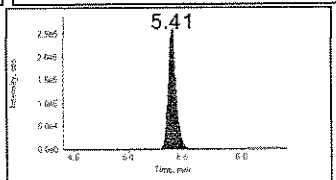
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



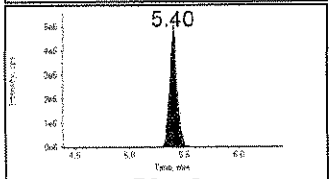
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



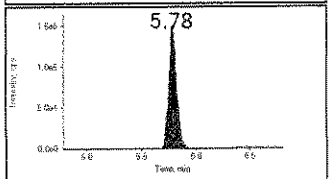
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



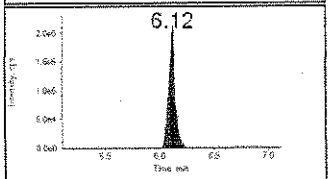
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



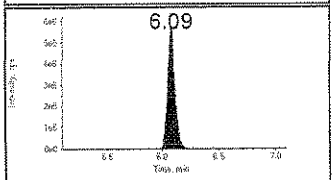
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



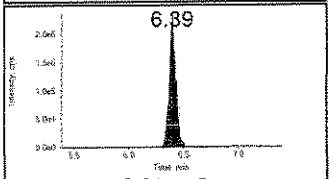
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

4/19/2016

Project	Ewan's Projects\PFCs
Data File	041816\2021.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/18/2016 11:12:10 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5104100	0.00 (1.43)	0	N/A	Yes
Pfpea 1	13C-PFHxA	4315381	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2692468	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	4315381	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	4315381	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2692468	4.42 (4.41)	26784	0.0670	No
Pfoa 1	13C-PFOA	3221908	4.95 (4.94)	3515	0.0400	No
Pfna 1	13C-PFNA	3912780	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	5882494	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	2747581	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	686411	0.00 (6.12)	0	N/A	Yes
Pfds 1	13C_PFOS	5882494	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	45916	0.00 (6.39)	0	N/A	Yes
S_pfba 1	N_MeFOSA d3	3074325	1.43 (1.43)	5104100	15.6720	No
S_phhxa 1	N_MeFOSA d3	3074325	3.56 (3.58)	4315381	14.0100	No
S_pfhs 1	N_MeFOSA d3	3074325	4.42 (4.41)	2692468	15.8730	No
S_pfoa 1	N_MeFOSA d3	3074325	4.94 (4.94)	3221908	13.7750	No
S_pfna 1	N_MeFOSA d3	3074325	5.40 (5.38)	3912780	14.3760	No
S_pfda 1	N_MeFOSA d3	3074325	5.80 (5.79)	2747581	13.1400	No
S_pfos 1	N_MeFOSA d3	3074325	5.40 (5.39)	5882494	15.9710	No

APR 21 2016

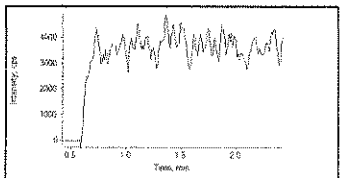
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3074325	6.12 (6.11)	686411	13.1800	No
S_pfdoda 1	N_MeFOSA d3	3074325	6.39 (6.40)	45916	14.3310	No

IRC Summary

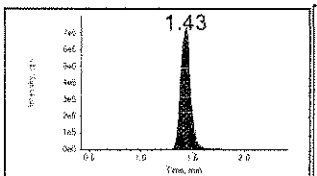
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.43)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	Yes	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	Yes	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.42 (4.41)	10470	No	0.39 (0.39)	YES
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	Yes	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

Quantitative Peak Review

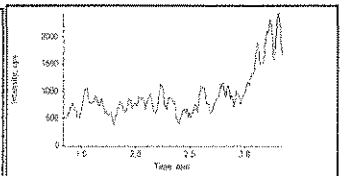
IB *No data for Sample ID*



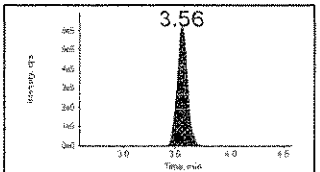
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



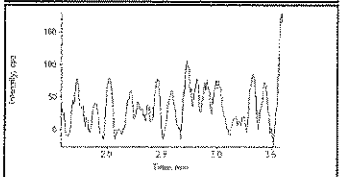
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



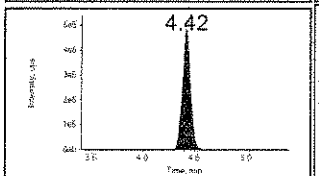
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



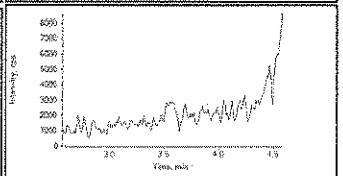
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



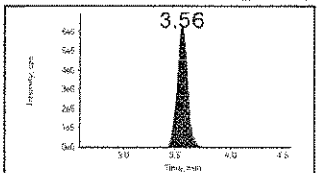
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



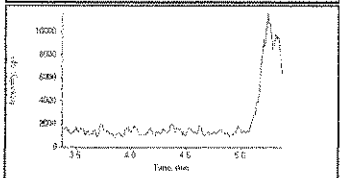
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



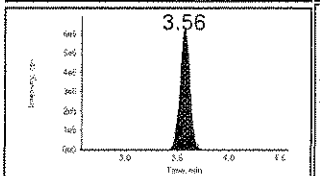
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



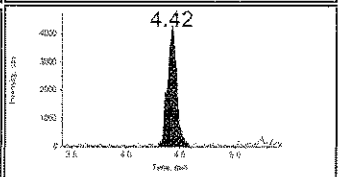
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



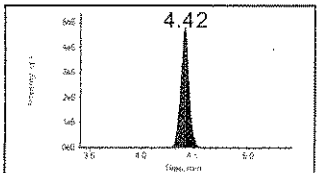
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



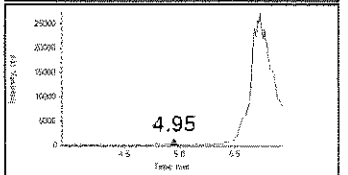
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



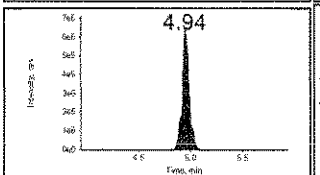
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



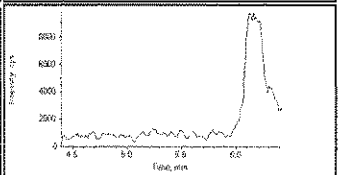
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



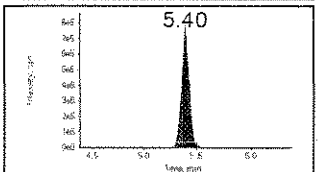
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



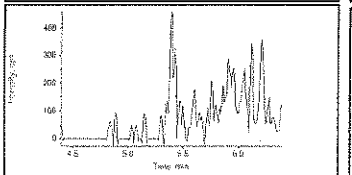
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



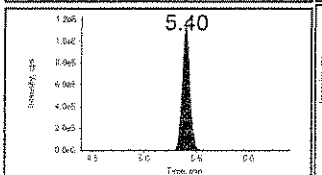
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



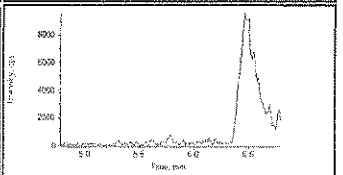
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



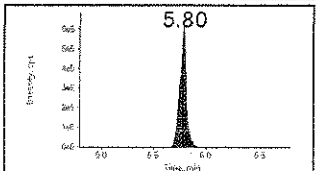
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



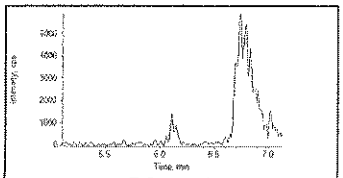
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

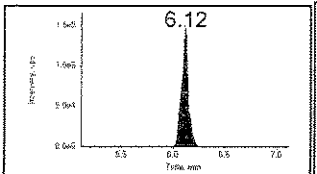


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

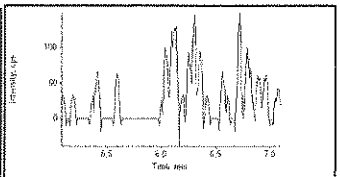


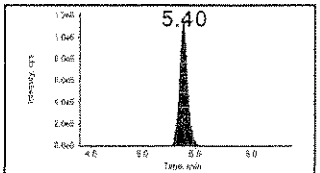
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

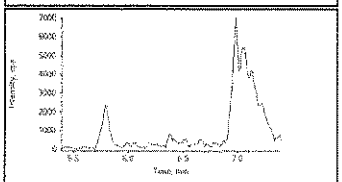


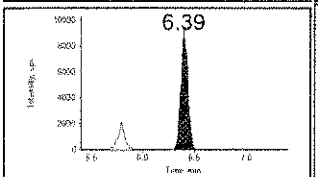
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

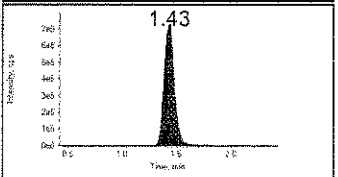


13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

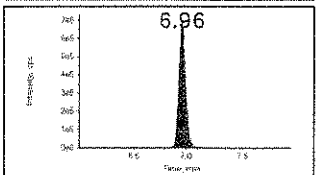

Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



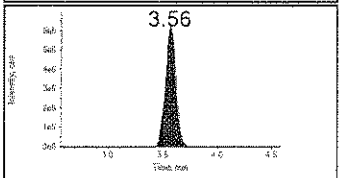
13C-PFDoA
615.000/570.000 Da
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□ Wrong Peak



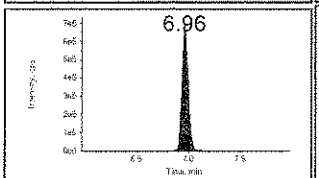
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



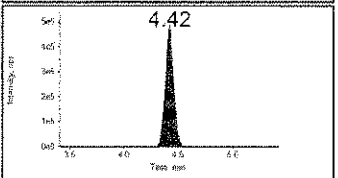
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



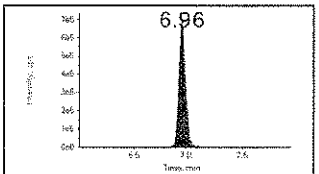
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



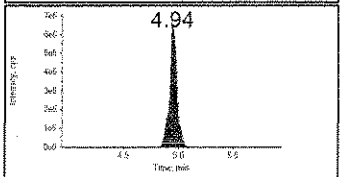
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



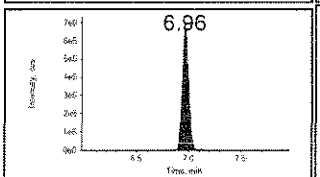
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



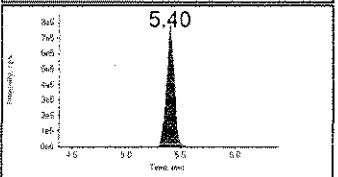
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



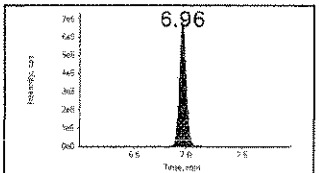
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



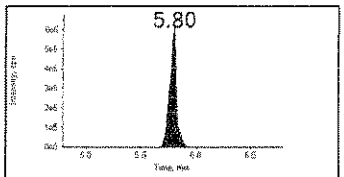
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



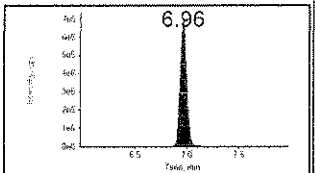
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



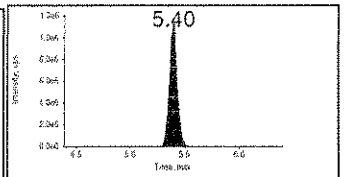
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



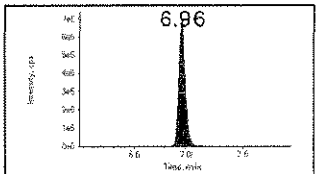
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



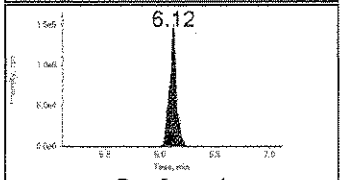
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



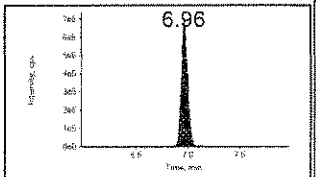
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



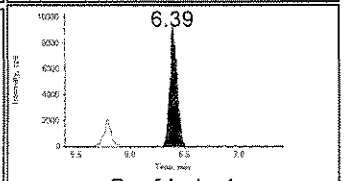
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



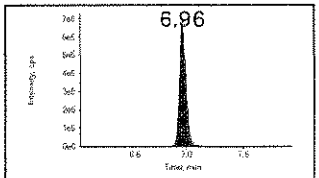
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

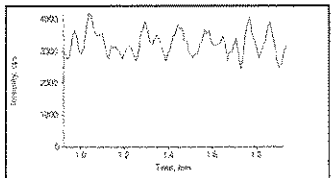


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

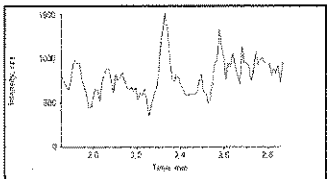


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

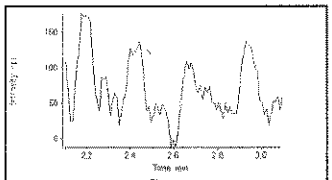
Ion Ratio Confirmation



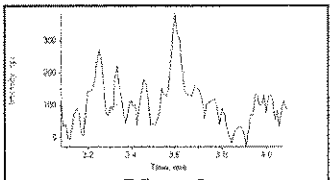
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



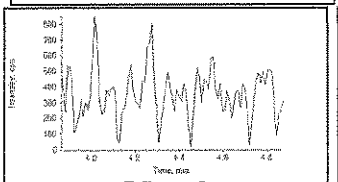
Pfpea 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



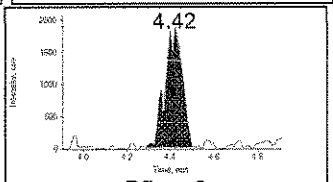
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



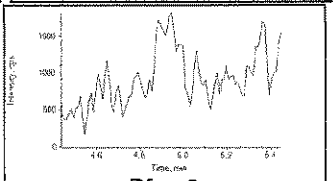
Pfhxa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



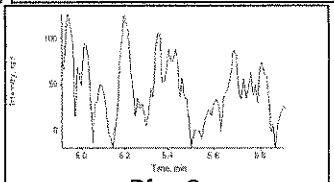
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



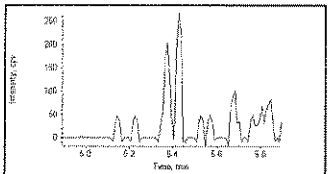
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



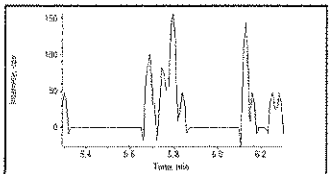
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



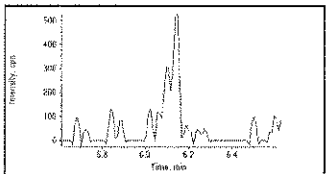
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



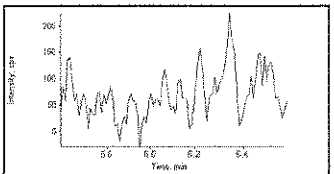
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



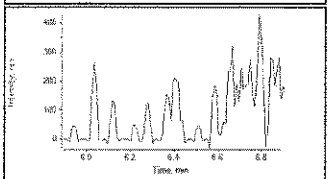
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2032.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 10.0ppb	Injection Vial	20006
Acquisition Date	4/19/2016 1:03:29 AM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Quality Control
Sample ID	15-OLC-02-38F	Dilution Factor	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.42 (1.43)	13C-PFBA	6585182	2949620	10.00	9.8350	98	No
Pfpea 1	2.33 (2.34)	13C-PFHxA	5564863	1853427	10.00	10.5170	105	No
Pfbs 1	2.57 (2.59)	18O_PFHS	3440542	4747277	10.00	9.9200	99	No
Pfhxa 1	3.55 (3.57)	13C-PFHxA	5564863	2459581	10.00	9.0020	90	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	5564863	2972613	10.00	9.2240	92	No
Pfhxs 1	4.41 (4.41)	18O_PFHS	3440542	5149391	10.00	10.1290	101	No
Pfoa 1	4.94 (4.94)	13C-PFOA	4260108	1054695	10.00	9.1810	92	No
Pfna 1	5.40 (5.40)	13C-PFNA	4533208	2341935	10.00	9.9070	99	No
Pfos 1	5.39 (5.40)	13C_PFOS	7636696	3709037	10.00	9.8120	98	No
Pfda 1	5.78 (5.78)	13C-PFDA	3753493	2127865	10.00	10.3550	104	No
Pfuna 1	6.10 (6.12)	13C-PFUnA	937516	1442994	10.00	8.6140	86	No
Pfds 1	6.09 (6.09)	13C_PFOS	7636696	4664035	10.00	9.7990	98	No
Pfdoa 1	6.40 (6.39)	13C-PFDoA	59071	1749627	10.00	9.4710	95	No
S_pfba 1	1.42 (1.43)	N_MeFOSA_d3	3297669	6585182	20.00	18.8510	94	No
S_phhxa 1	3.56 (3.58)	N_MeFOSA_d3	3297669	5564863	20.00	16.8430	84	No
S_pfhs 1	4.41 (4.41)	N_MeFOSA_d3	3297669	3440542	20.00	18.9090	95	No
S_pfoa 1	4.94 (4.94)	N_MeFOSA_d3	3297669	4260108	20.00	16.9800	85	No
S_pfna 1	5.40 (5.38)	N_MeFOSA_d3	3297669	4533208	20.00	15.5280	78	No
S_pfda 1	5.77 (5.79)	N_MeFOSA_d3	3297669	3753493	20.00	16.7350	84	No
S_pfos 1	5.39 (5.39)	N_MeFOSA_d3	3297669	7636696	20.00	19.3300	97	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d3	3297669	937516	20.00	16.7820	84	No
S_pfdoda 1	6.39 (6.40)	N_MeFOSA_d3	3297669	59071	20.00	17.1880	86	No

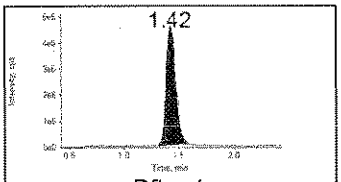
APR 21 2016

IRC Summary

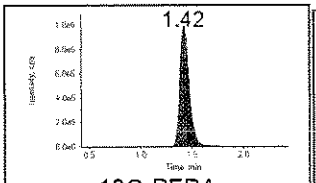
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	1.42 (1.42)	2536196	No	YES
Pfpea 2	2.33 (2.36)	1922243	No	YES
Pfbs 2	2.57 (2.59)	2030782	No	YES
Pfhxa 2	3.56 (3.58)	244957	No	YES
Pfhpa 2	4.37 (4.37)	1173523	No	YES
Pfhxs 2	4.41 (4.41)	2002436	No	YES
Pfoa 2	4.93 (4.94)	2083767	No	YES
Pfna 2	5.40 (5.41)	586880	No	YES
Pfos 2	5.39 (5.39)	1262040	No	YES
Pfda 2	5.78 (5.79)	417332	No	YES
Pfuna 2	6.12 (6.11)	454337	No	YES
Pfds 2	6.09 (6.09)	1452911	No	YES
Pfdoa 2	6.39 (6.39)	502185	No	YES

Quantitative Peak Review

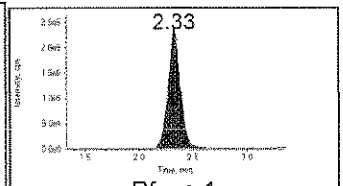
PFC 10.0ppb 15-OLC-02-38F



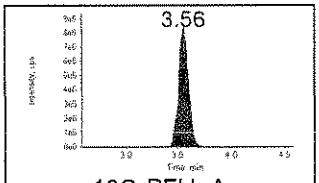
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



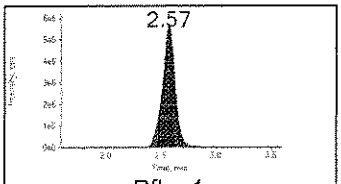
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



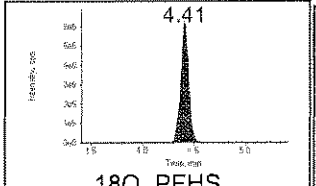
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



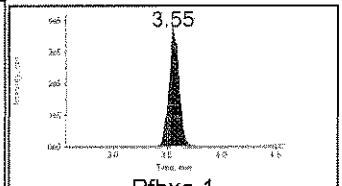
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



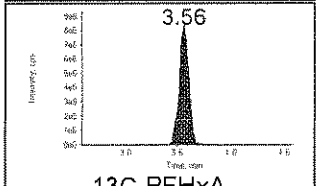
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

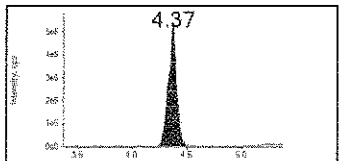


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

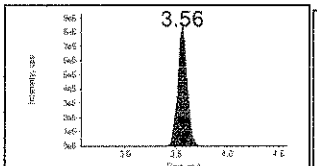


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

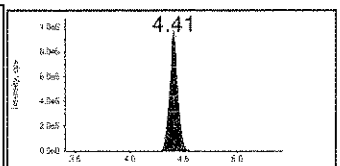
APR 21 2016



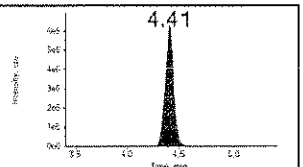
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



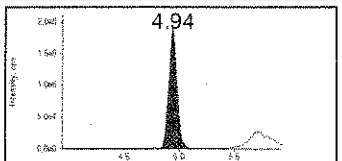
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



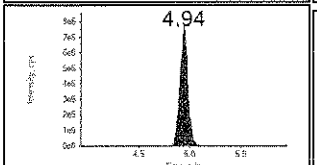
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



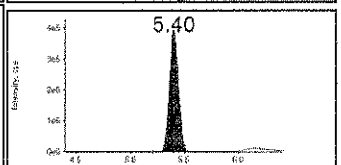
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



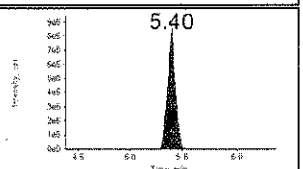
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



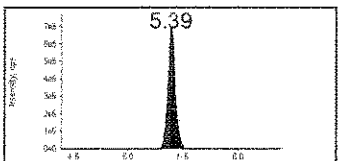
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



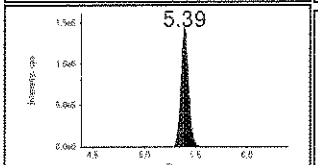
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



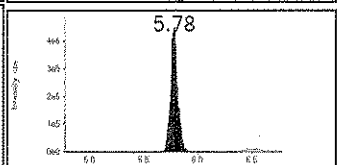
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



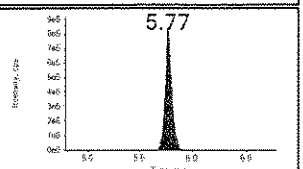
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



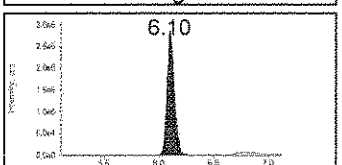
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



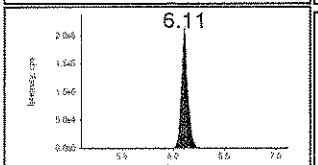
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



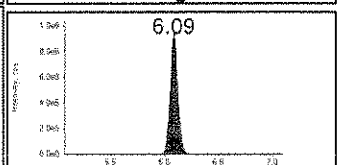
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



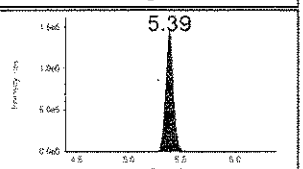
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



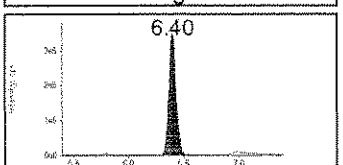
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



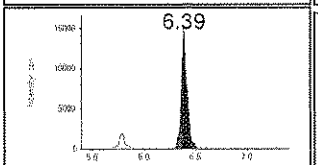
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



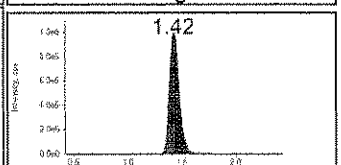
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



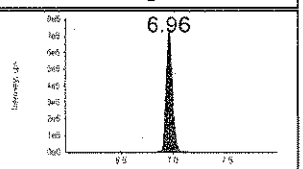
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



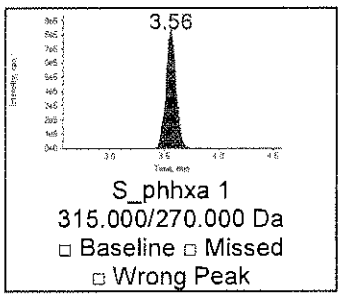
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

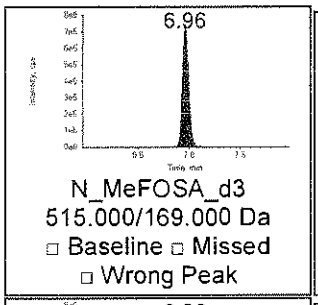


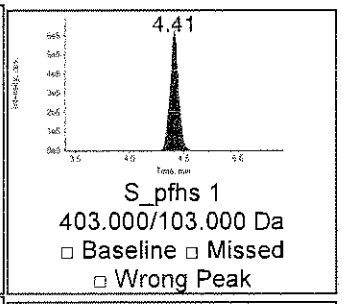
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

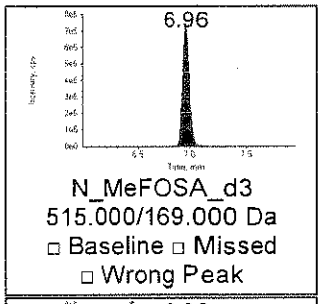


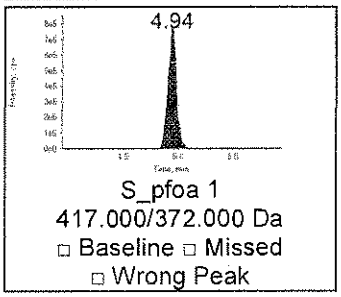
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

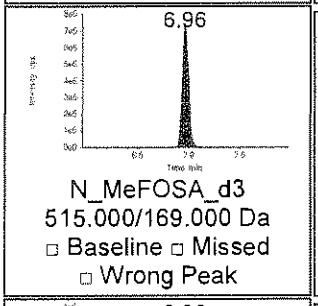


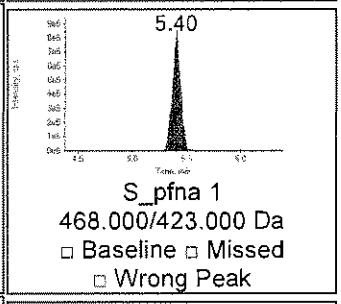


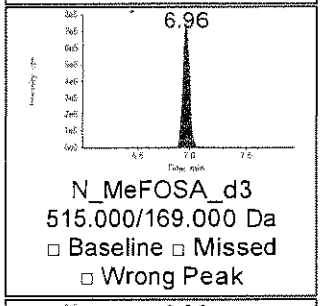


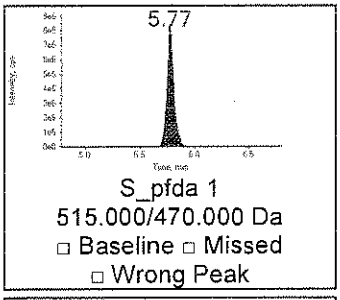


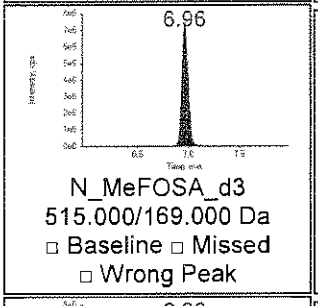


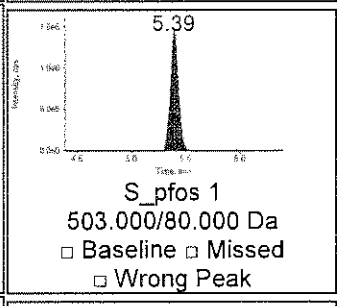


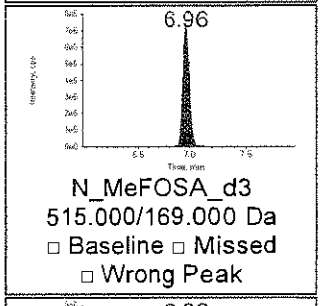


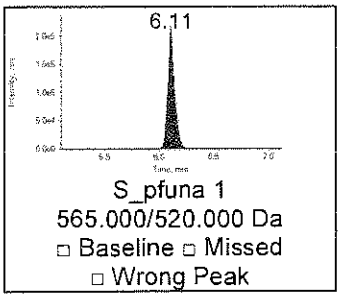


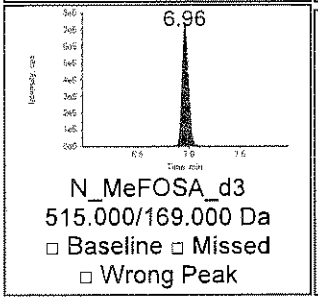


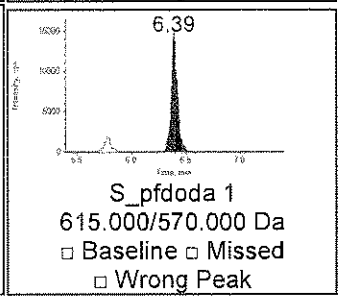


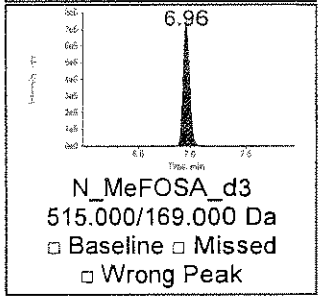




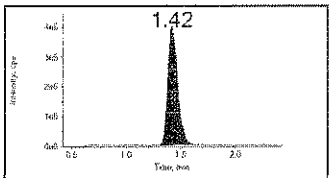




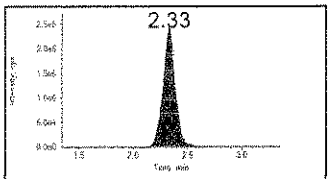




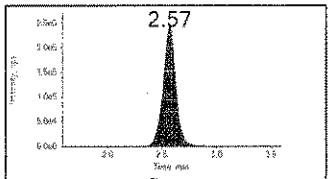
Ion Ratio Confirmation



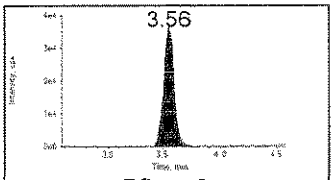
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



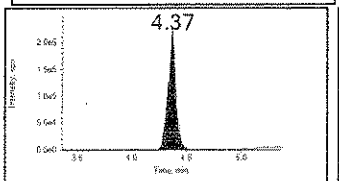
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



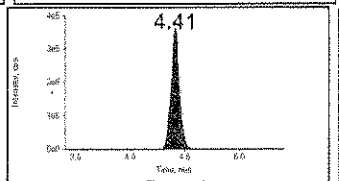
Pfbs 2
Mod?
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□ Wrong Peak



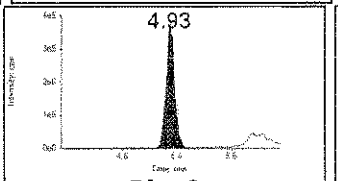
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



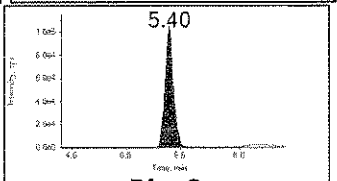
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



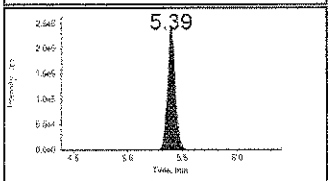
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



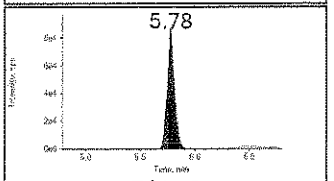
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



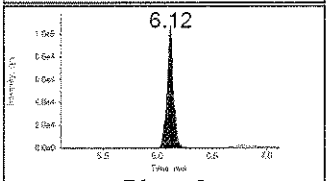
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



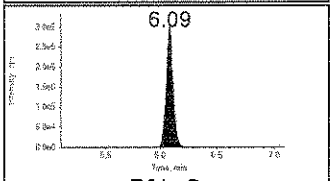
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



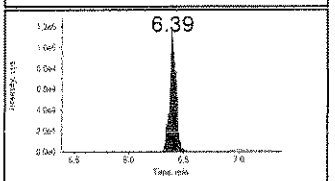
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

nm 4/20/16

Project	Ewan's Projects\PFCs
Data File	041816\2033.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	**Injection Volume**	5
Acquisition Date	4/19/2016 1:13:32 AM	**Sample Type**	Unknown
Acquisition Method	PFC_122812.dam	**Dilution Factor**	1.00
Injection Vial	1	**Weight to Volume**	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5064608	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	4119421	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2685136	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	4119421	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	4119421	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2685136	4.42 (4.41)	24650	0.0620	No
Pfoa 1	13C-PFOA	3050976	0.00 (4.94)	0	N/A	Yes
Pfna 1	13C-PFNA	3860589	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	5930223	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	2742543	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	664534	6.12 (6.12)	5870	0.0490	No
Pfds 1	13C_PFOS	5930223	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	47212	0.00 (6.39)	0	N/A	Yes
S_pfba 1	N_MeFOSA d3	3131849	1.43 (1.43)	5064608	15.2650	No
S_phhxa 1	N_MeFOSA d3	3131849	3.57 (3.58)	4119421	13.1280	No
S_pfhs 1	N_MeFOSA d3	3131849	4.42 (4.41)	2685136	15.5390	No
S_pfoa 1	N_MeFOSA d3	3131849	4.96 (4.94)	3050976	12.8050	No
S_pfna 1	N_MeFOSA d3	3131849	5.39 (5.38)	3860589	13.9240	No
S_pfda 1	N_MeFOSA d3	3131849	5.79 (5.79)	2742543	12.8750	No
S_pfos 1	N_MeFOSA d3	3131849	5.39 (5.39)	5930223	15.8050	No

APR 21 2016

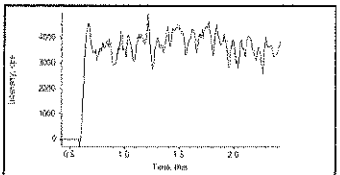
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3131849	6.12 (6.11)	664534	12.5260	No
S_pfdoda 1	N_MeFOSA d3	3131849	6.40 (6.40)	47212	14.4650	No

IRC Summary

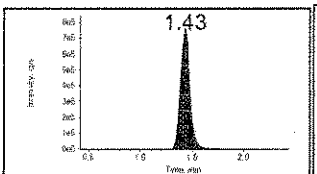
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.43)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.40 (4.41)	9990	No	0.41 (0.39)	YES
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	No	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

Quantitative Peak Review

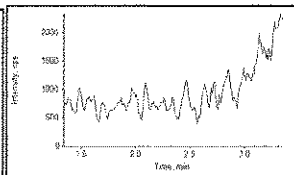
IB *No data for Sample ID*



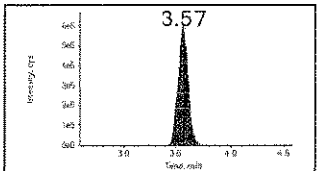
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



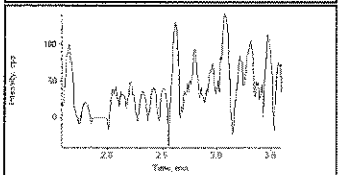
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



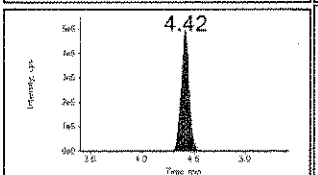
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



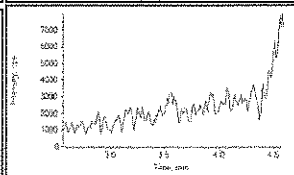
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



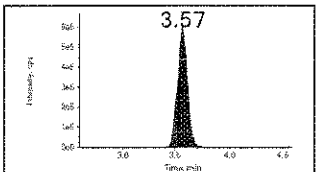
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



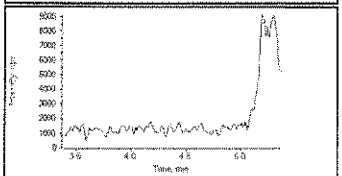
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



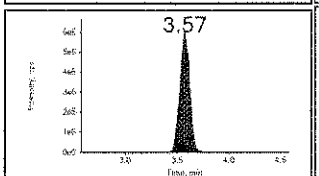
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



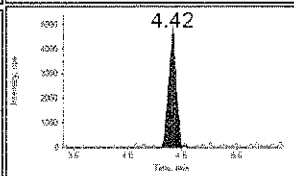
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



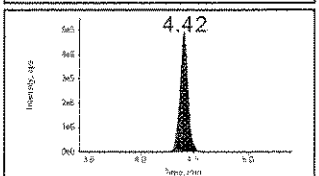
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



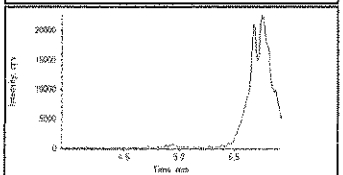
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



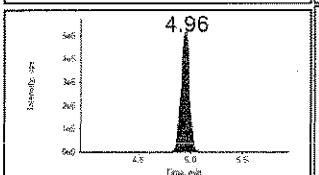
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



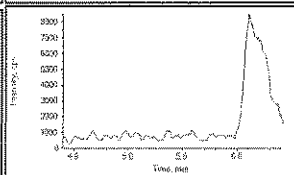
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



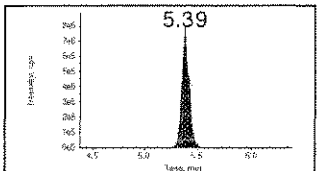
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



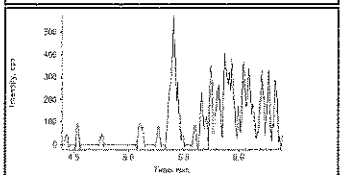
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



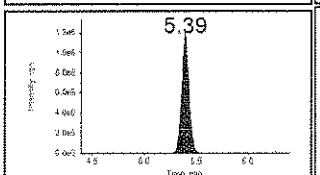
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



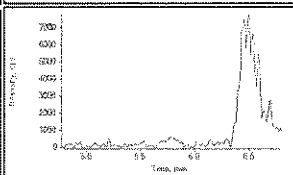
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



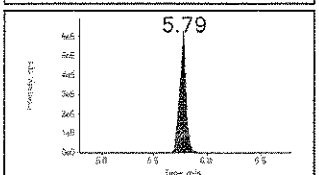
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



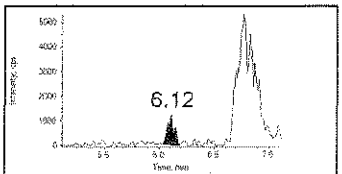
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



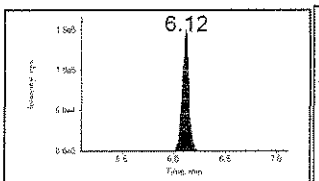
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



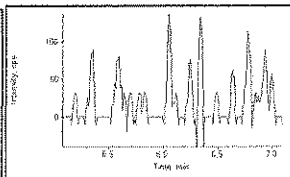
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



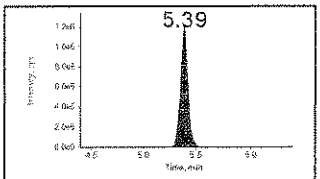
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



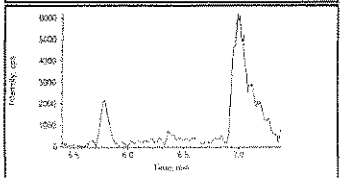
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



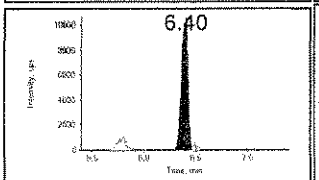
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



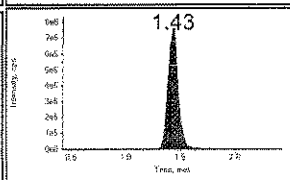
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



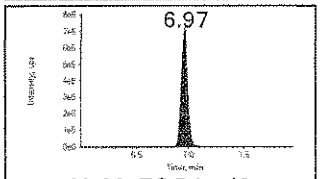
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



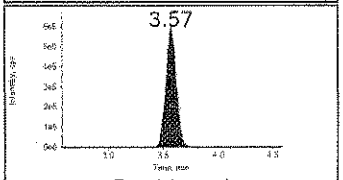
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



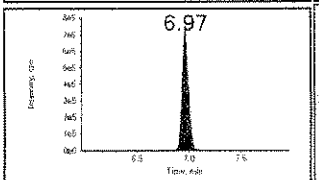
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



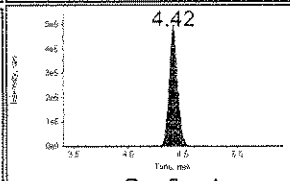
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



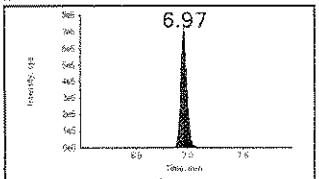
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



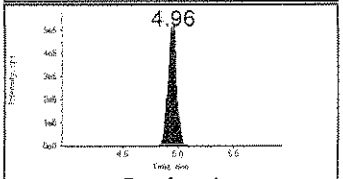
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



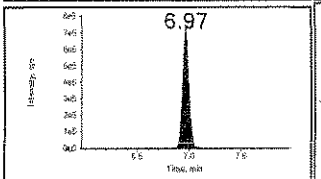
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



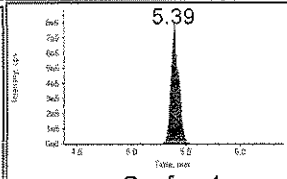
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



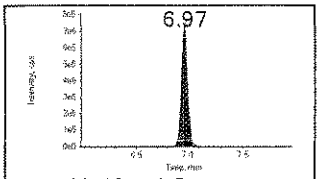
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



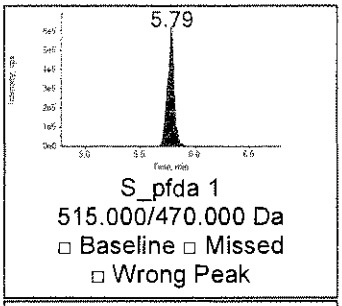
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



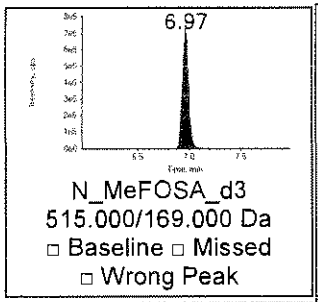
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



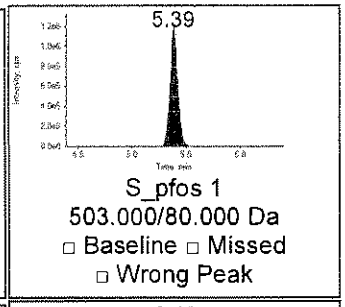
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



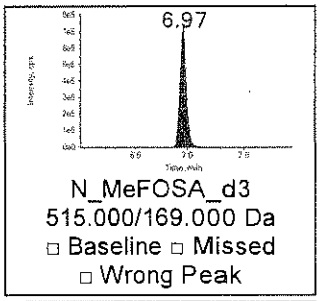
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



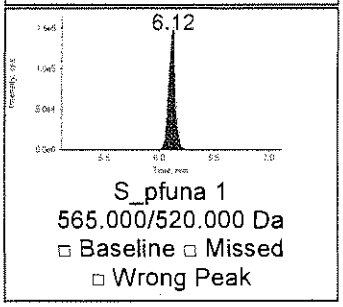
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



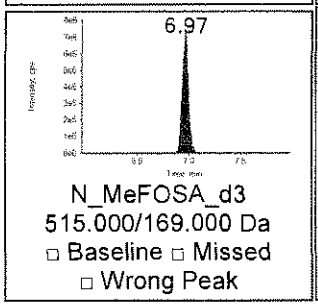
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



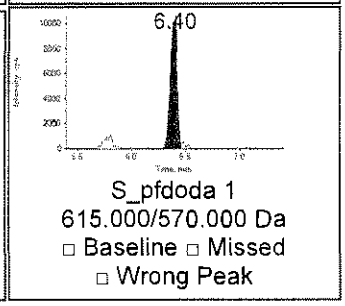
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



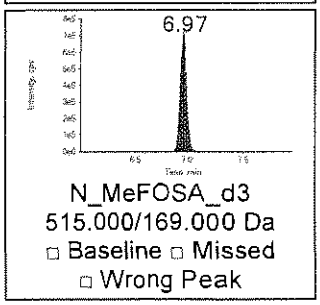
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

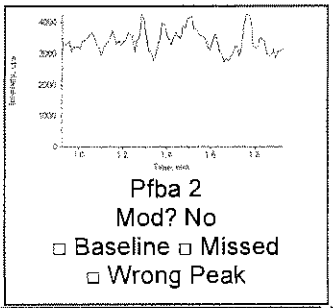


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

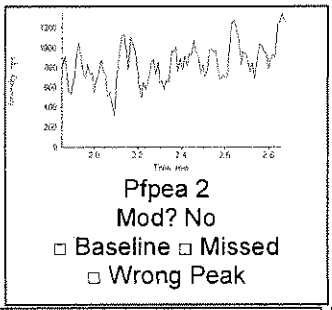


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

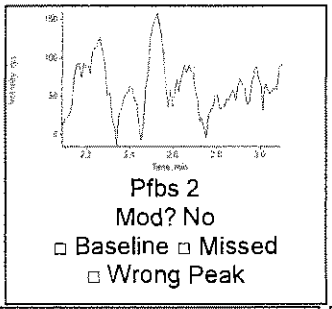
Ion Ratio Confirmation



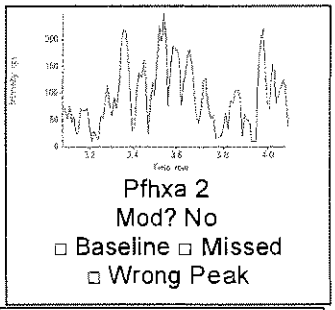
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



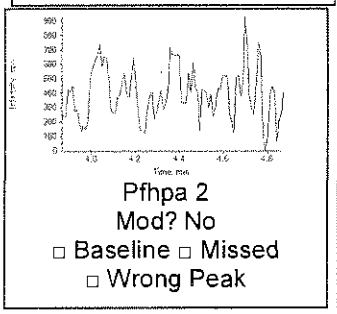
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



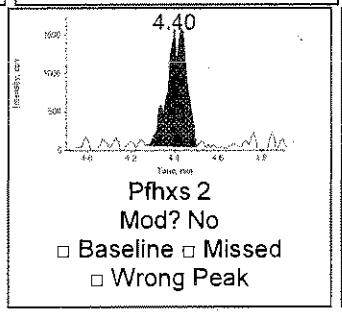
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



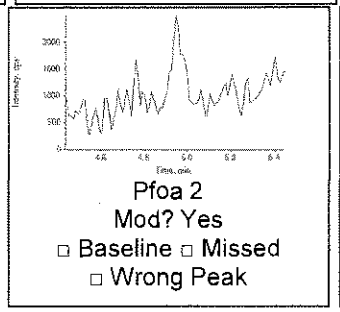
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



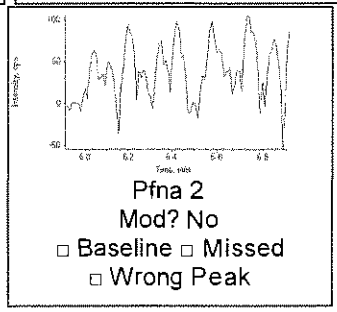
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



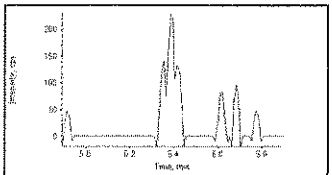
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



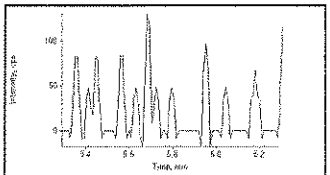
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



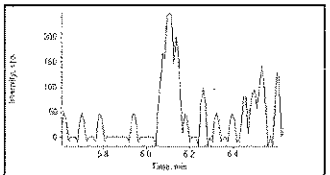
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



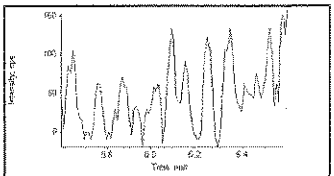
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



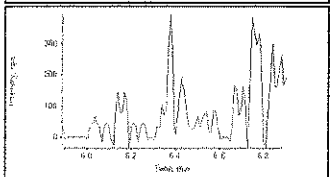
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

4/20/16

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041816\2044.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 10.0ppb	Injection Vial	20006
Acquisition Date	4/19/2016 3:04:43 AM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Quality Control
Sample ID	15-OLC-02-38F	Dilution Factor	1.00

Results Summary

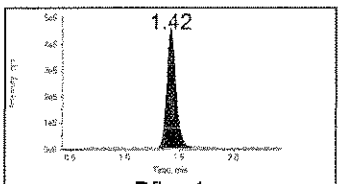
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.42 (1.43)	13C-PFBA	6251582	2896596	10.00	10.1740	102	No
Pfpea 1	2.32 (2.34)	13C-PFHxA	5712709	1782298	10.00	9.8510	99	No
Pfbs 1	2.57 (2.59)	18O_PFHS	3450538	4768751	10.00	9.9360	99	No
Pfhxa 1	3.56 (3.57)	13C-PFHxA	5712709	2422860	10.00	8.6380	86	No
Pfhpa 1	4.37 (4.37)	13C-PFHxA	5712709	3278071	10.00	9.9080	99	No
Pfhxs 1	4.41 (4.41)	18O_PFHS	3450538	5018519	10.00	9.8430	98	No
Pfoa 1	4.94 (4.94)	13C-PFOA	4230580	1118174	10.00	9.8020	98	No
Pfna 1	5.41 (5.40)	13C-PFNA	4922343	2571539	10.00	10.0180	100	No
Pfos 1	5.40 (5.40)	13C_PFOS	7852018	3763296	10.00	9.6820	97	No
Pfda 1	5.77 (5.78)	13C-PFDA	3726380	1884387	10.00	9.2370	92	No
Pfuna 1	6.10 (6.12)	13C-PFUnA	791669	1440811	10.00	10.1850	102	No
Pfds 1	6.08 (6.09)	13C_PFOS	7852018	4871487	10.00	9.9550	100	No
Pfdoa 1	6.39 (6.39)	13C-PFDoA	48384	1580627	10.00	10.4460	104	No
S_pfba 1	1.42 (1.43)	N_MeFOSA_d3	3149713	6251582	20.00	18.7360	94	No
S_phhxa 1	3.57 (3.58)	N_MeFOSA_d3	3149713	5712709	20.00	18.1020	91	No
S_pfhs 1	4.41 (4.41)	N_MeFOSA_d3	3149713	3450538	20.00	19.8550	99	No
S_pfoa 1	4.95 (4.94)	N_MeFOSA_d3	3149713	4230580	20.00	17.6550	88	No
S_pfna 1	5.41 (5.38)	N_MeFOSA_d3	3149713	4922343	20.00	17.6530	88	No
S_pfda 1	5.77 (5.79)	N_MeFOSA_d3	3149713	3726380	20.00	17.3950	87	No
S_pfos 1	5.39 (5.39)	N_MeFOSA_d3	3149713	7852018	20.00	20.8090	104	No
S_pfuna 1	6.11 (6.11)	N_MeFOSA_d3	3149713	791669	20.00	14.8370	74	No
S_pfdoda 1	6.39 (6.40)	N_MeFOSA_d3	3149713	48384	20.00	14.7400	74	No

APR 21 2016

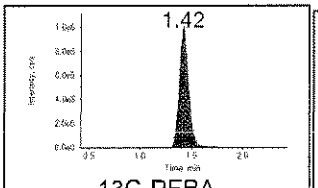
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	1.42 (1.42)	2495105	No	YES
Pfpea 2	2.32 (2.36)	1790899	No	YES
Pfbs 2	2.57 (2.59)	2007401	No	YES
Pfhxa 2	3.57 (3.58)	257048	No	YES
Pfhpa 2	4.37 (4.37)	1149850	No	YES
Pfhxs 2	4.41 (4.41)	1989584	No	YES
Pfoa 2	4.95 (4.94)	2046180	No	YES
Pfna 2	5.40 (5.41)	718039	No	YES
Pfos 2	5.40 (5.39)	1275740	No	YES
Pfda 2	5.79 (5.79)	418300	No	YES
Pfuna 2	6.11 (6.11)	423527	No	YES
Pfds 2	6.08 (6.09)	1485021	No	YES
Pfdoa 2	6.38 (6.39)	508387	No	YES

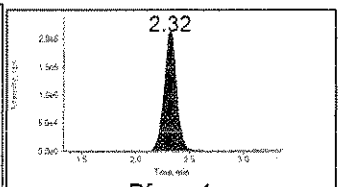
Quantitative Peak Review PFC 10.0ppb 15-OLC-02-38F



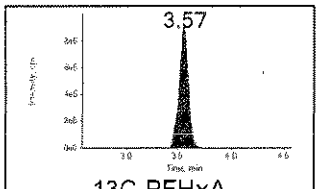
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



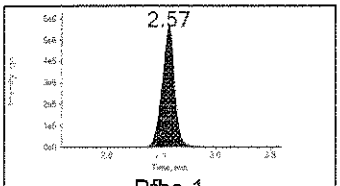
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



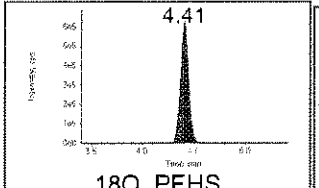
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



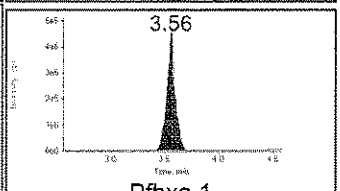
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



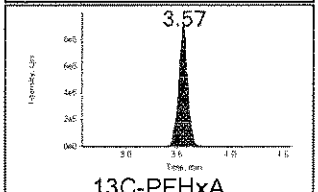
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



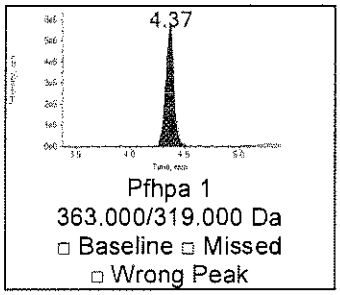
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



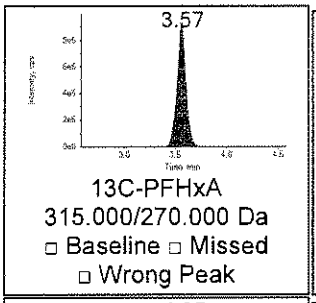
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



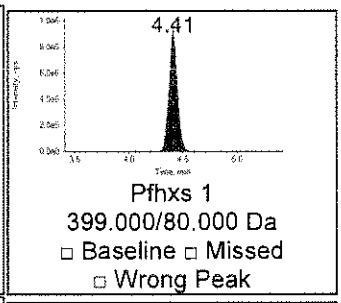
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



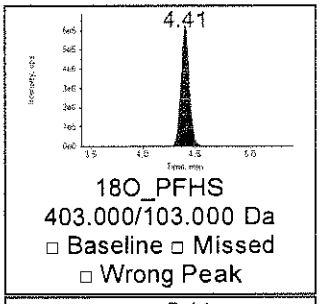
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



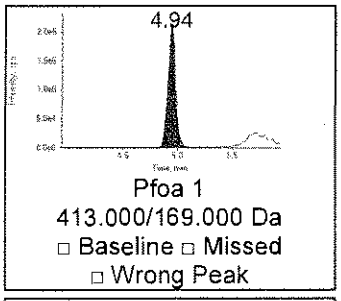
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



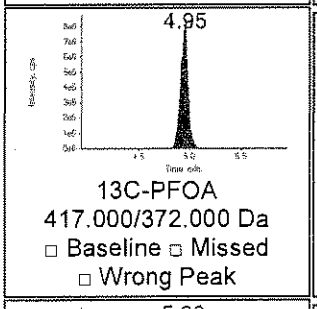
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



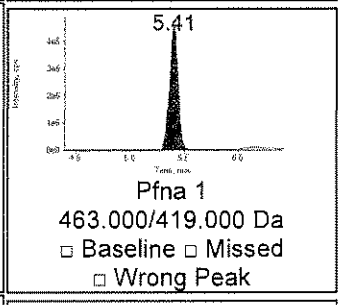
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



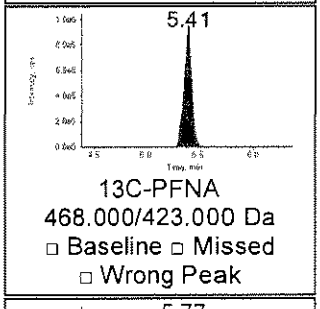
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



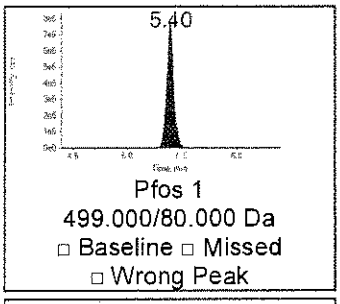
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



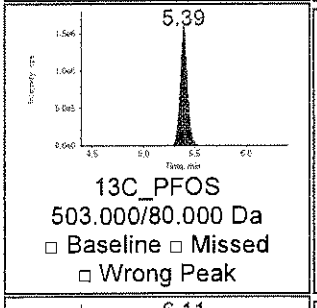
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



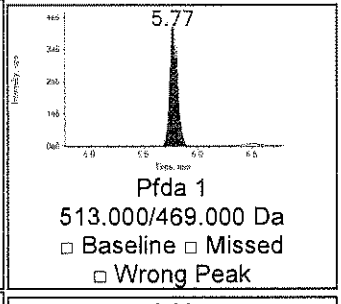
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



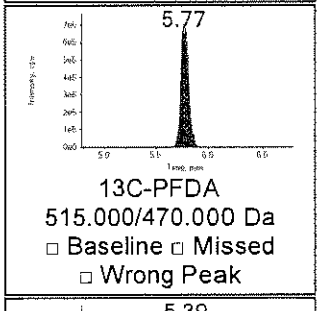
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



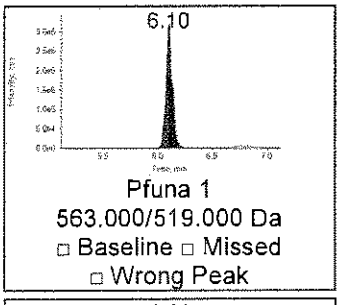
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



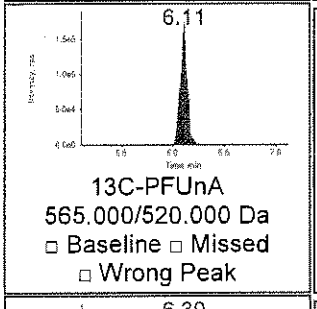
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



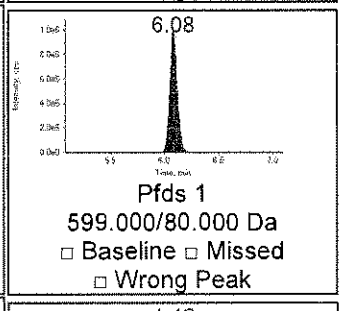
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



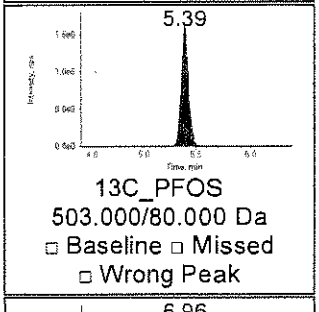
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



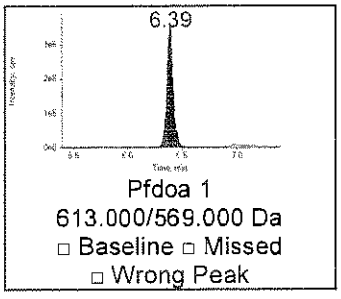
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



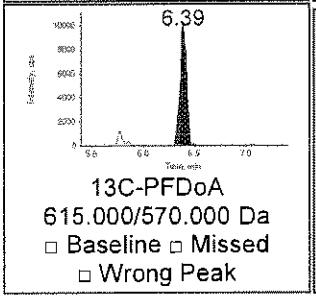
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



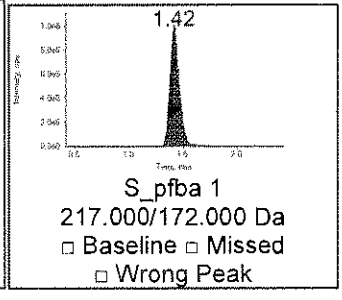
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



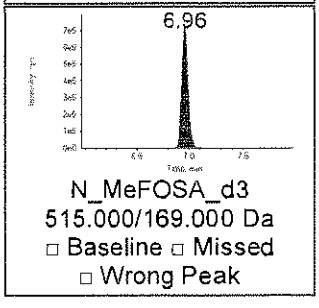
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



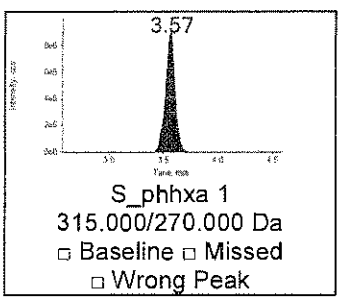
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

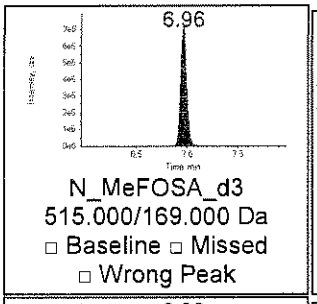


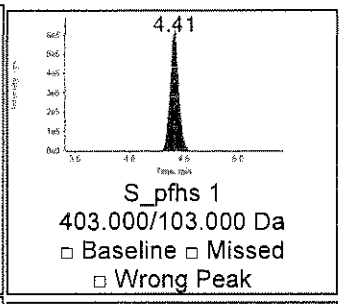
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

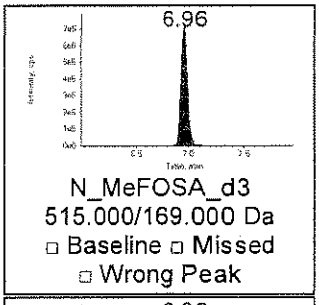


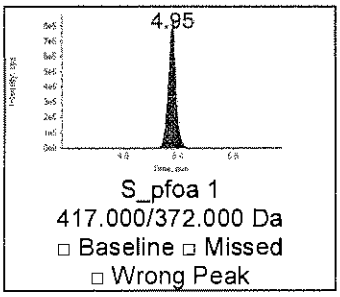
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

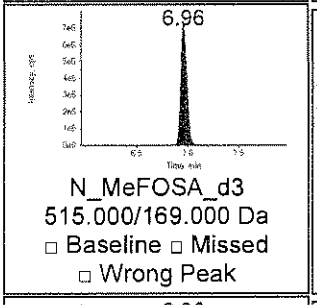


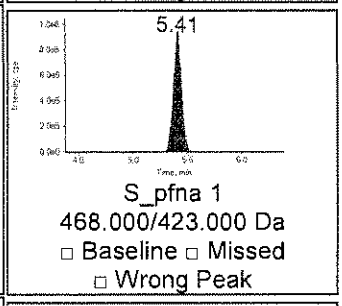


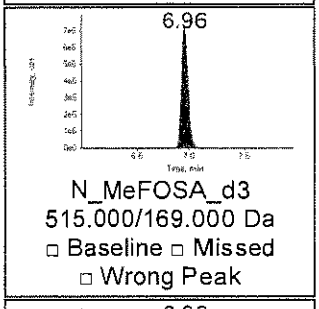


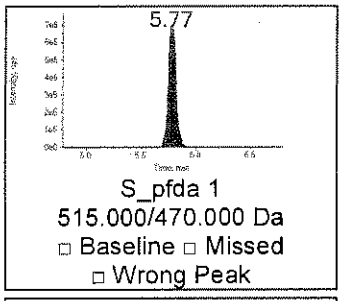


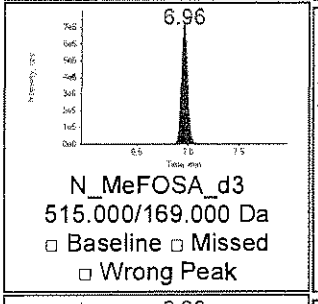


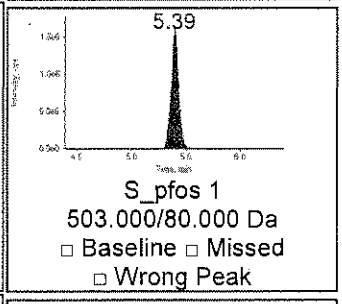


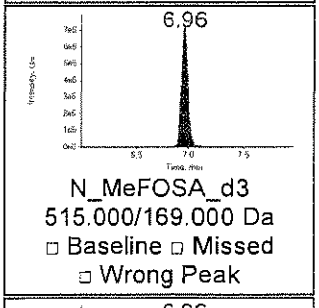


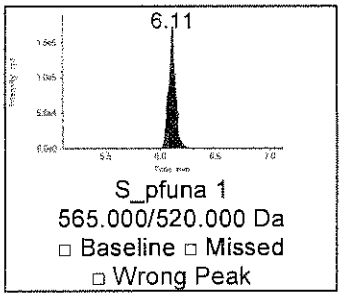


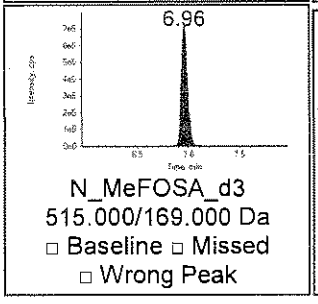


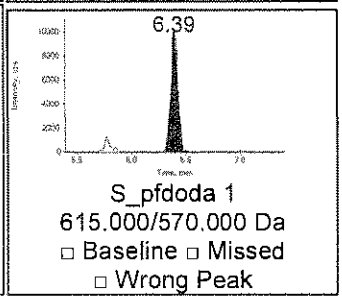


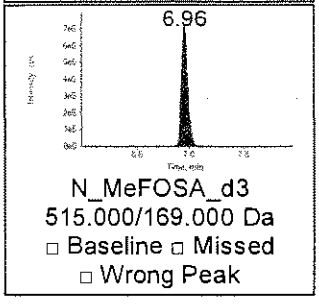




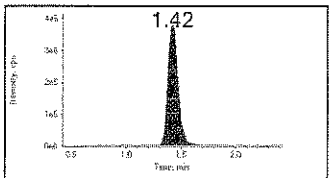




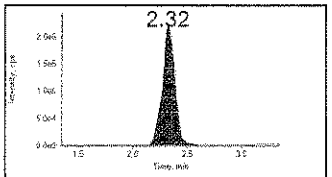




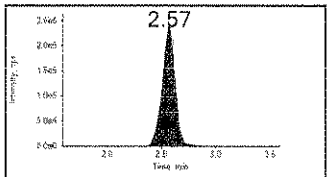
Ion Ratio Confirmation



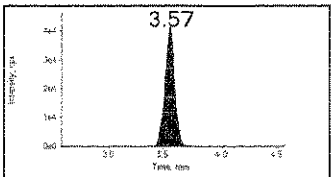
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



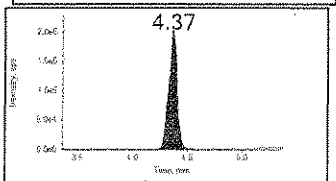
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



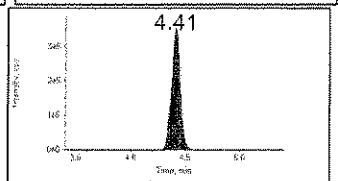
Pfbs 2
Mod?
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□ Wrong Peak



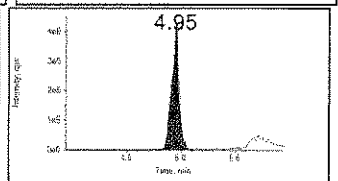
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



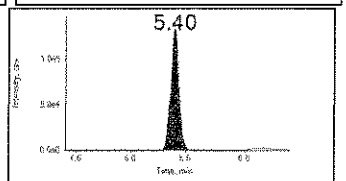
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



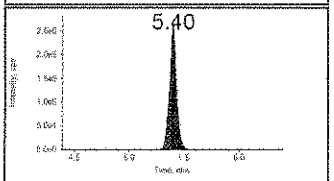
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



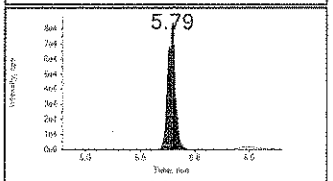
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



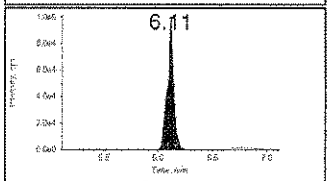
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



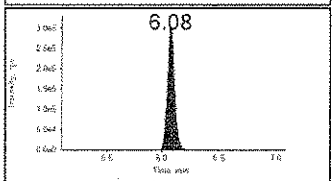
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



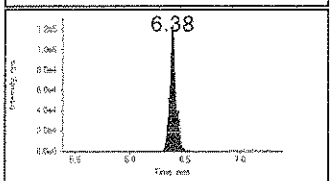
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

4/20/16

Project	Ewan's Projects\PFCs
Data File	041816\2045.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/19/2016 3:14:52 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	5021089	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	4358451	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2689628	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	4358451	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	4358451	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2689628	4.40 (4.41)	26721	0.0670	No
Pfoa 1	13C-PFOA	2872668	0.00 (4.94)	0	N/A	Yes
Pfna 1	13C-PFNA	3828298	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	5868008	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	2783832	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	580477	6.11 (6.12)	3432	0.0330	No
Pfds 1	13C_PFOS	5868008	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	43727	0.00 (6.39)	0	N/A	No
S_pfba 1	N_MeFOSA d3	2926137	1.41 (1.43)	5021089	16.1980	No
S_phhxa 1	N_MeFOSA d3	2926137	3.55 (3.58)	4358451	14.8660	No
S_pfhs 1	N_MeFOSA d3	2926137	4.40 (4.41)	2689628	16.6590	No
S_pfoa 1	N_MeFOSA d3	2926137	4.94 (4.94)	2872668	12.9040	No
S_pfna 1	N_MeFOSA d3	2926137	5.39 (5.38)	3828298	14.7780	No
S_pfda 1	N_MeFOSA d3	2926137	5.78 (5.79)	2783832	13.9880	No
S_pfos 1	N_MeFOSA d3	2926137	5.39 (5.39)	5868008	16.7390	No

APR 21 2016

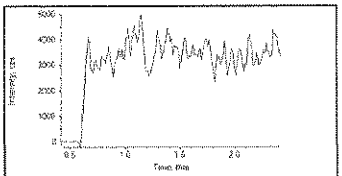
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	2926137	6.12 (6.11)	580477	11.7100	No
S_pfdoda 1	N_MeFOSA d3	2926137	6.39 (6.40)	43727	14.3390	No

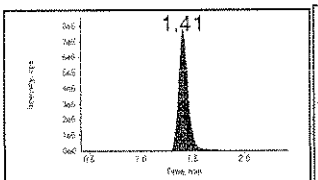
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.41)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	Yes	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.42 (4.41)	11675	No	0.44 (0.39)	YES
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.12 (6.11)	1622	No	0.47 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

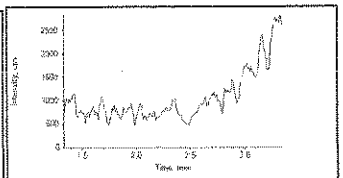
Quantitative Peak Review

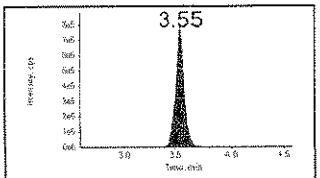
IB *No data for Sample ID*


Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

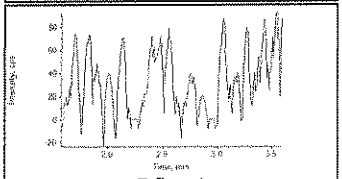


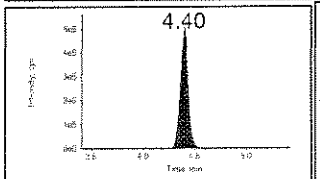
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

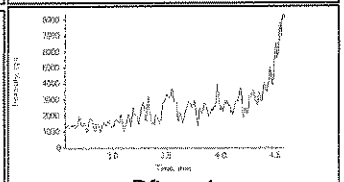


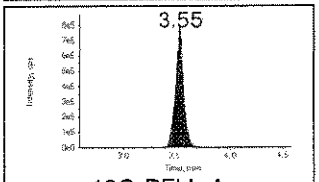
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

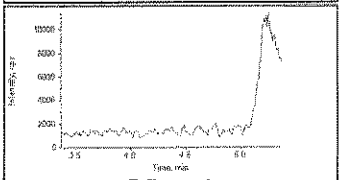


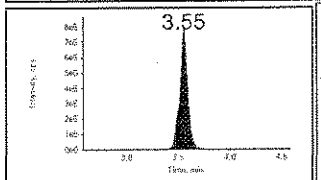
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

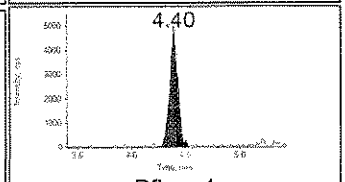


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

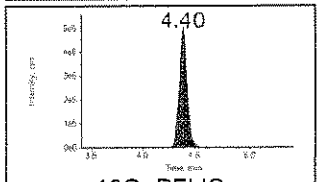

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



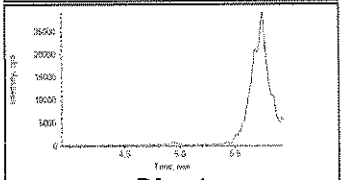
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

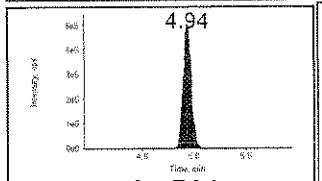


Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

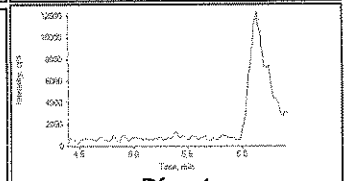


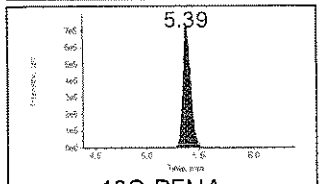
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

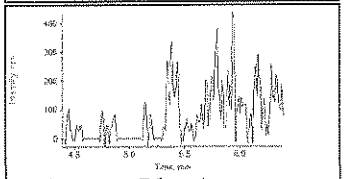


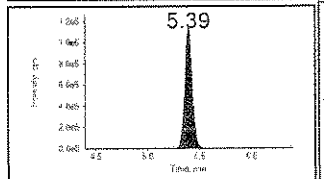
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

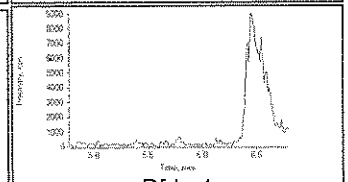


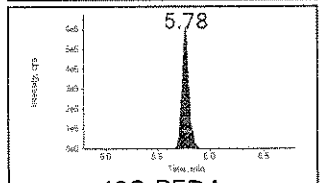
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

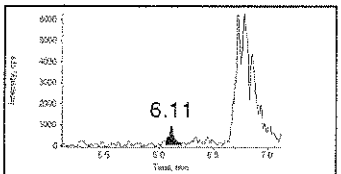


13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

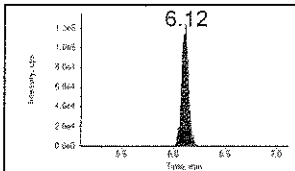

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



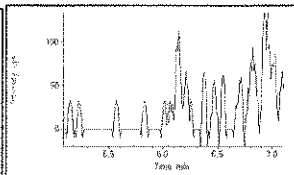
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



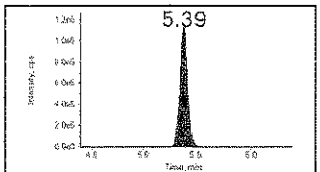
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



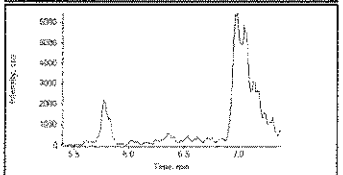
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



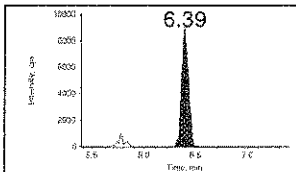
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



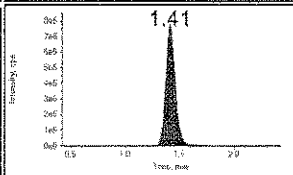
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



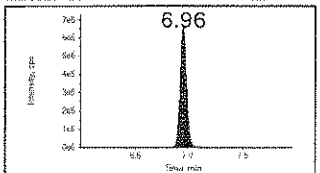
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



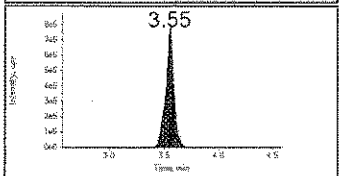
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



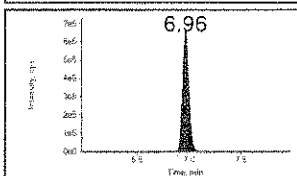
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



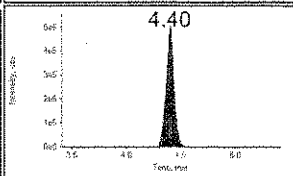
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



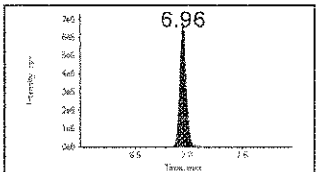
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



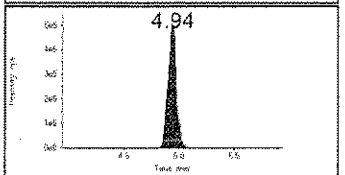
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



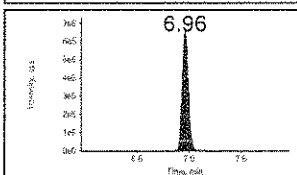
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



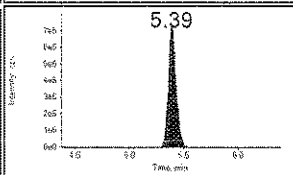
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



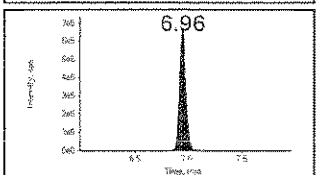
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



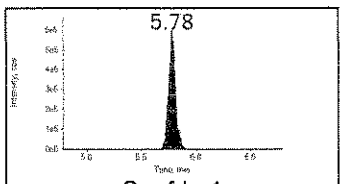
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



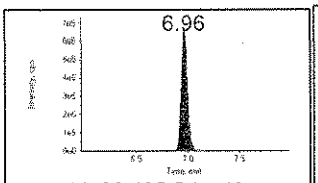
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



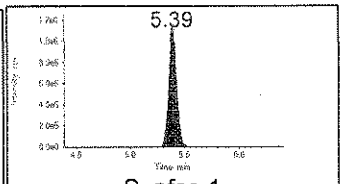
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



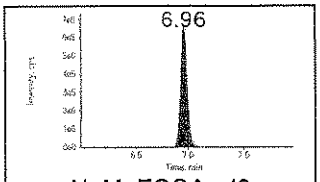
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



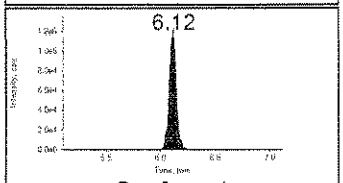
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



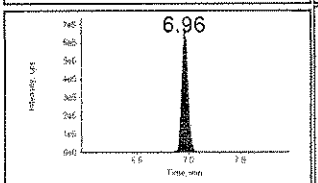
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



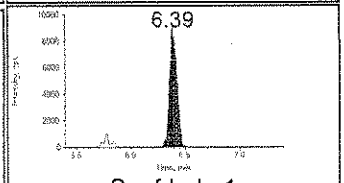
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



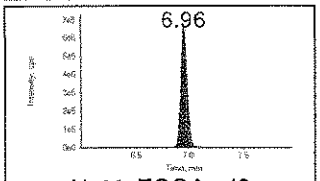
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

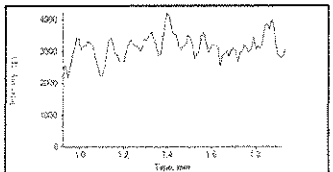


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

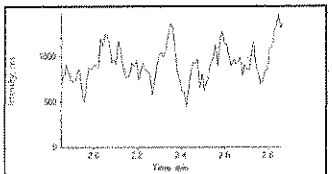


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

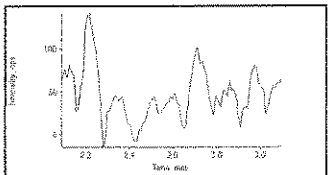
Ion Ratio Confirmation



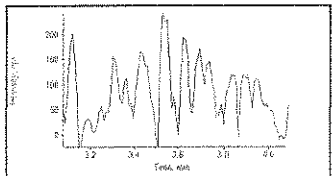
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



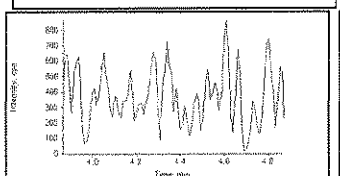
Pfpea 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



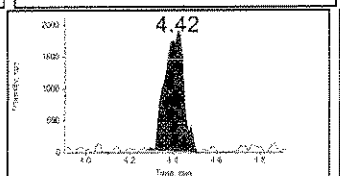
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



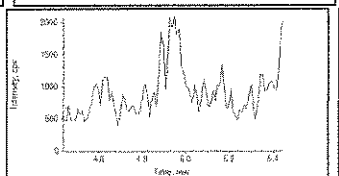
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



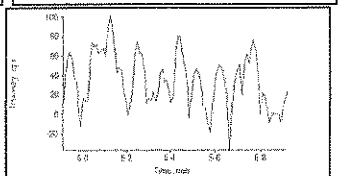
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



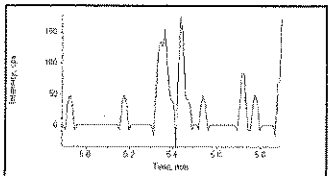
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



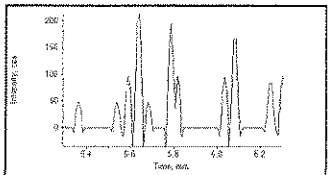
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



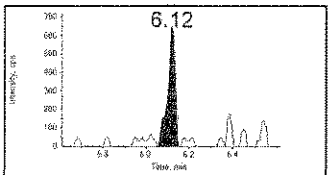
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



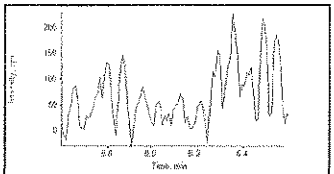
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



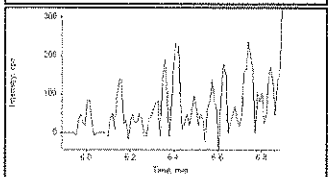
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	**Result Table**	041816.rdb
Data File	041816\2056.wiff	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02

Sample Name	PFC 10.0ppb	**Injection Vial**	20006
Acquisition Date	4/19/2016 5:05:59 AM	**Injection Volume**	5
Acquisition Method	PFC_122812.dam	**Sample Type**	Quality Control
Sample ID	15-OLC-02-38F	**Dilution Factor**	1.00

Results Summary

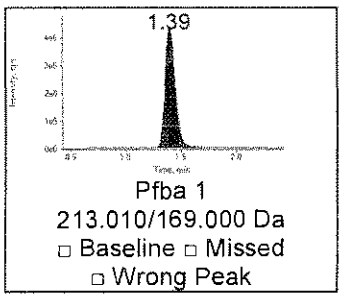
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.39 (1.43)	13C-PFBA	6787547	2953255	10.00	9.5540	96	No
Pfpea 1	2.27 (2.34)	13C-PFHxA	5796055	1915222	10.00	10.4340	104	No
Pfbs 1	2.53 (2.59)	18O_PFHS	3686108	5138125	10.00	10.0210	100	No
Pfhxa 1	3.54 (3.57)	13C-PFHxA	5796055	2354065	10.00	8.2720	83	No
Pfhpa 1	4.33 (4.37)	13C-PFHxA	5796055	3335980	10.00	9.9380	99	No
Pfhxs 1	4.38 (4.41)	18O_PFHS	3686108	5261094	10.00	9.6590	97	No
Pfoa 1	4.92 (4.94)	13C-PFOA	4281430	1161361	10.00	10.0590	101	No
Pfna 1	5.37 (5.40)	13C-PFNA	4854009	2316666	10.00	9.1520	92	No
Pfos 1	5.37 (5.40)	13C_PFOS	8110025	4087876	10.00	10.1830	102	No
Pfda 1	5.77 (5.78)	13C-PFDA	3975430	1890367	10.00	8.6850	87	No
Pfuna 1	6.11 (6.12)	13C-PFUnA	912661	763809	10.00	4.6840	47	No
Pfds 1	6.06 (6.09)	13C_PFOS	8110025	5148298	10.00	10.1850	102	No
Pfdoa 1	6.36 (6.39)	13C-PFDoA	59309	1530723	10.00	8.2530	83	No
S_pfba 1	1.40 (1.43)	N_MeFOSA_d3	3488322	6787547	20.00	18.3680	92	No
S_phhxa 1	3.53 (3.58)	N_MeFOSA_d3	3488322	5796055	20.00	16.5840	83	No
S_pfhs 1	4.38 (4.41)	N_MeFOSA_d3	3488322	3686108	20.00	19.1510	96	No
S_pfoa 1	4.91 (4.94)	N_MeFOSA_d3	3488322	4281430	20.00	16.1330	81	No
S_pfna 1	5.37 (5.38)	N_MeFOSA_d3	3488322	4854009	20.00	15.7180	79	No
S_pfda 1	5.75 (5.79)	N_MeFOSA_d3	3488322	3975430	20.00	16.7560	84	No
S_pfos 1	5.37 (5.39)	N_MeFOSA_d3	3488322	8110025	20.00	19.4060	97	No
S_pfuna 1	6.08 (6.11)	N_MeFOSA_d3	3488322	912661	20.00	15.4450	77	No
S_pfdoda 1	6.37 (6.40)	N_MeFOSA_d3	3488322	59309	20.00	16.3140	82	No

APR 2 1 2016

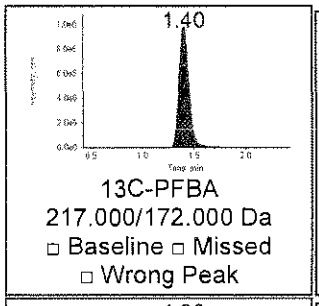
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	1.39 (1.40)	2520957	No	YES
Pfpea 2	2.28 (2.36)	1853594	No	YES
Pfbs 2	2.53 (2.59)	2080119	No	YES
Pfhxa 2	3.53 (3.58)	245768	No	YES
Pfhpa 2	4.34 (4.37)	1294616	No	YES
Pfhxs 2	4.39 (4.41)	2117539	No	YES
Pfoa 2	4.91 (4.94)	2254359	No	YES
Pfna 2	5.38 (5.41)	706236	No	YES
Pfos 2	5.38 (5.39)	1357295	No	YES
Pfda 2	5.76 (5.79)	464137	No	YES
Pfuna 2	6.09 (6.11)	446846	No	No
Pfds 2	6.06 (6.09)	1622693	No	YES
Pfdoa 2	6.36 (6.39)	491431	No	YES

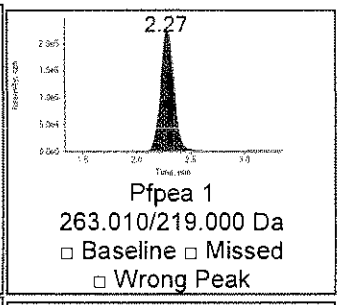
Quantitative Peak Review PFC 10.0ppb 15-OLC-02-38F



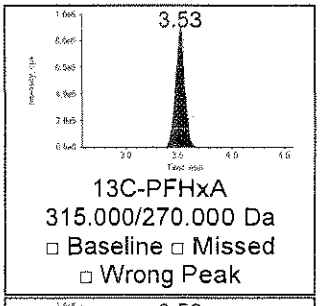
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



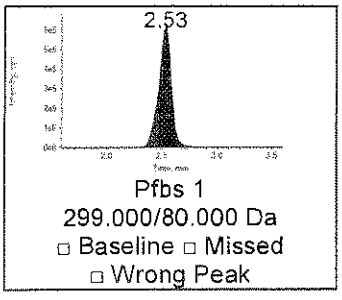
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



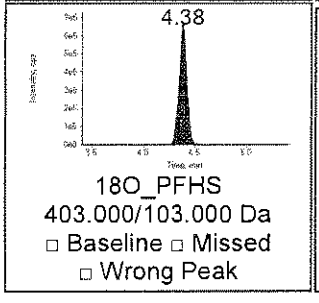
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



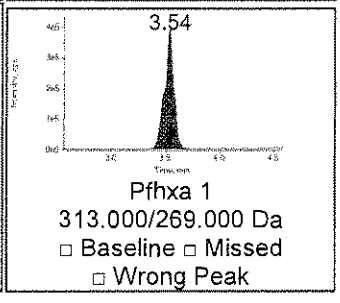
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



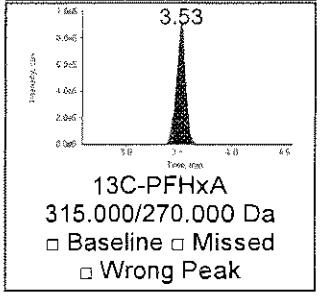
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



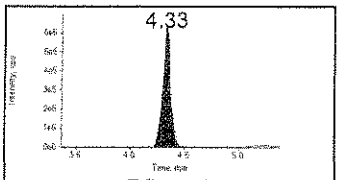
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



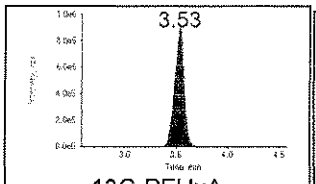
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



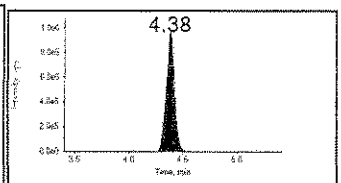
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



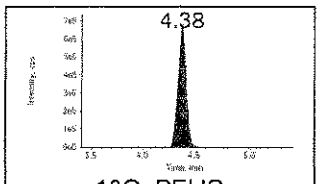
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



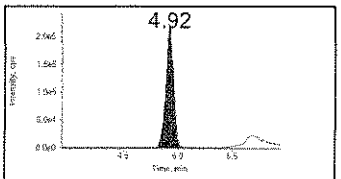
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



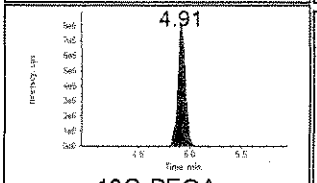
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



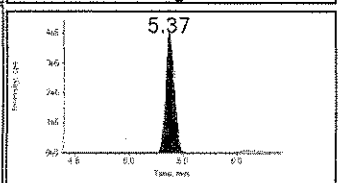
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



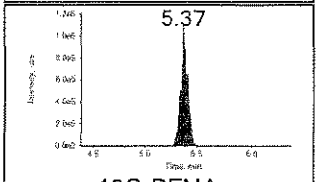
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



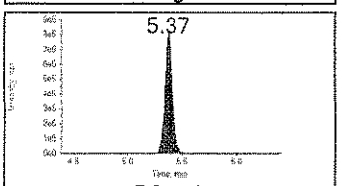
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



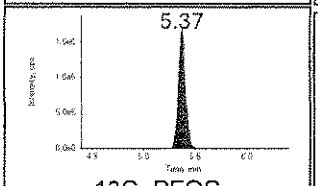
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



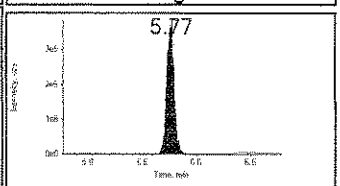
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



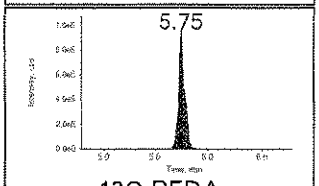
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



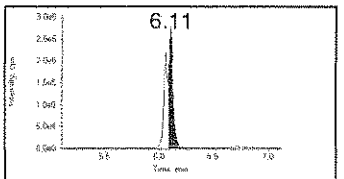
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



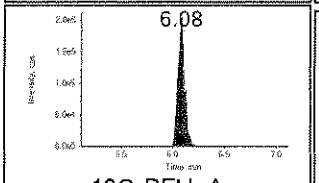
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



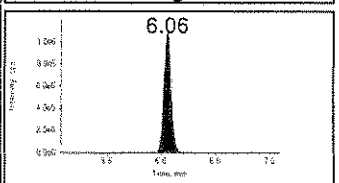
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



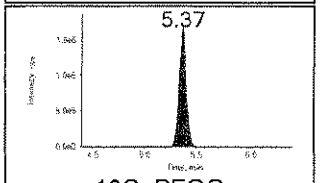
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



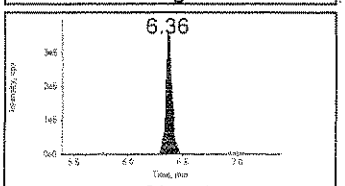
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



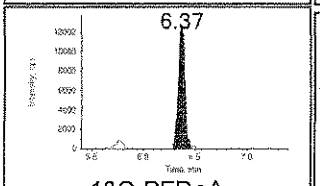
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



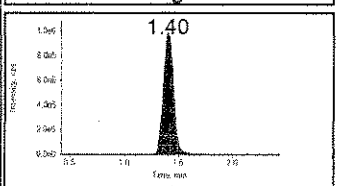
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



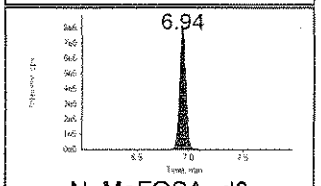
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



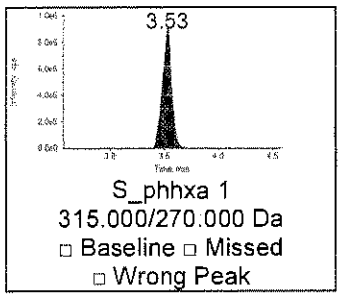
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

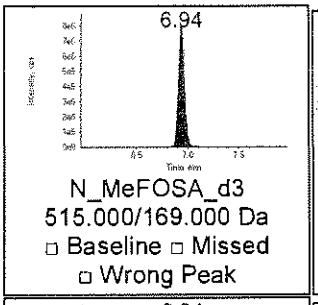


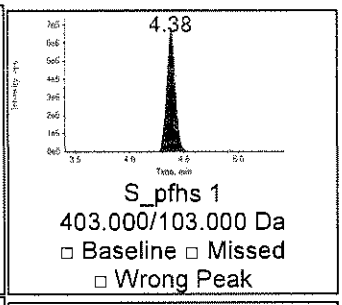
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

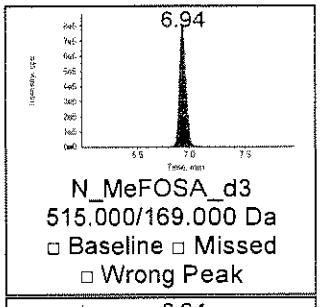


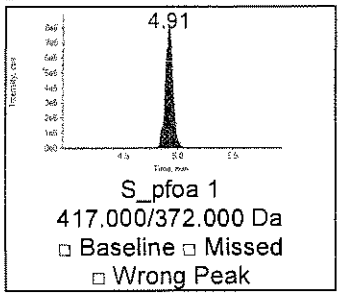
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

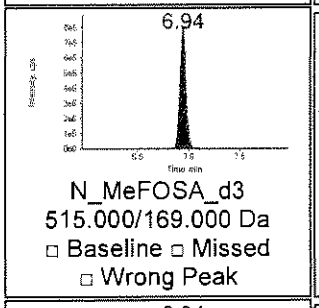


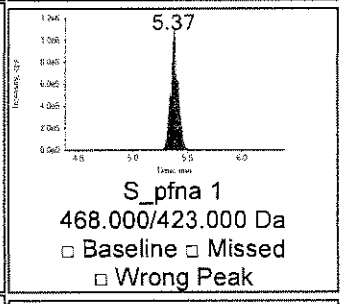


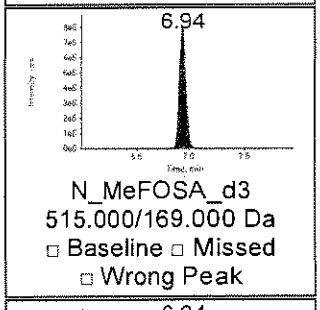


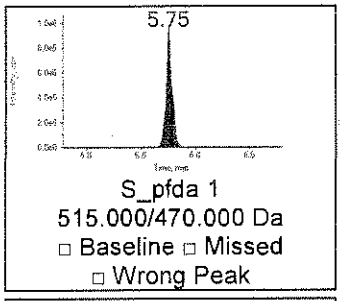


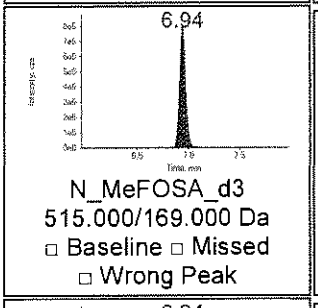


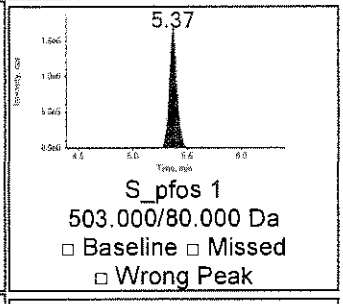


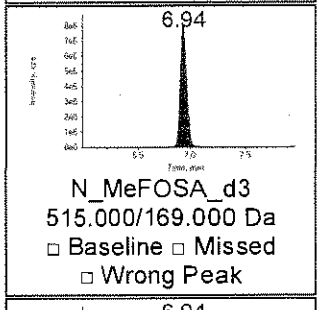


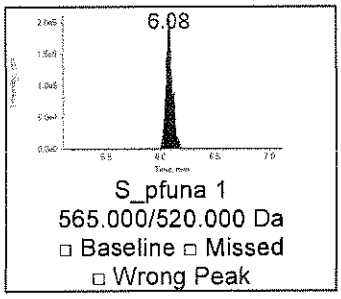


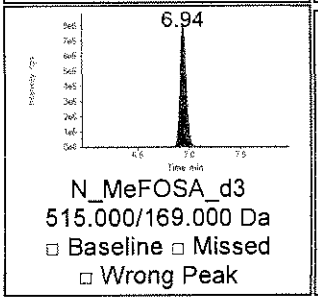


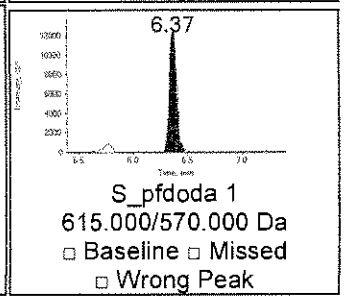


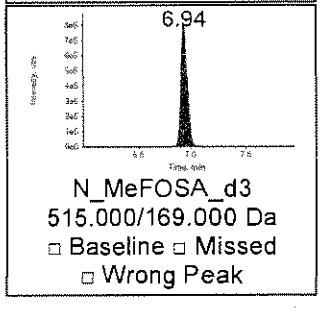




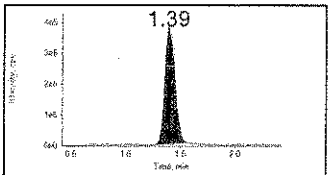




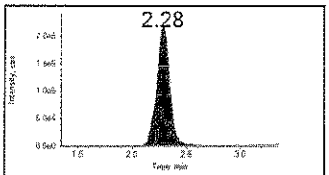




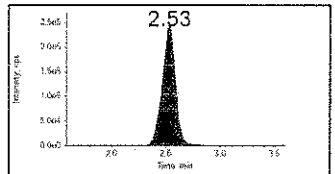
Ion Ratio Confirmation



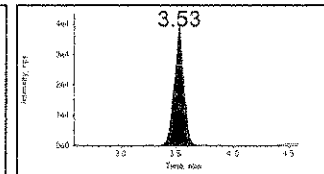
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



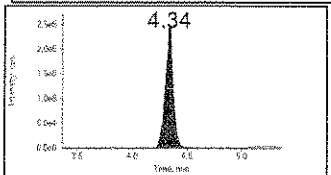
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



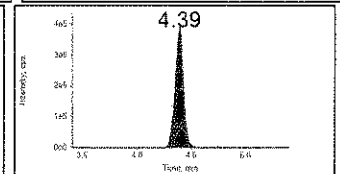
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



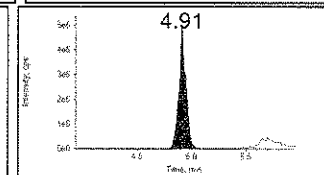
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



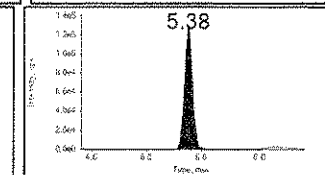
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



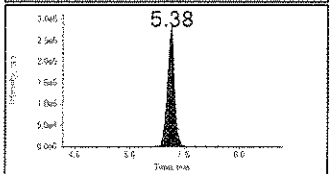
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



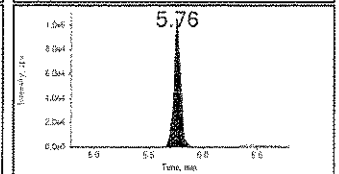
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



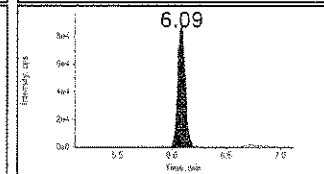
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



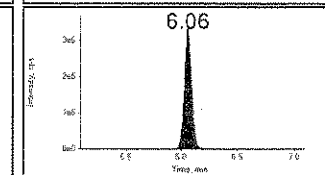
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



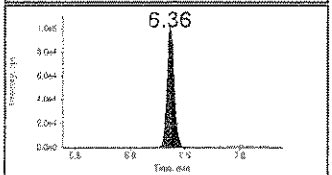
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	041816\2057.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/19/2016 5:16:07 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	4906780	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	3818674	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2644783	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	3818674	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	3818674	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2644783	4.38 (4.41)	28083	0.0720	No
Pfoa 1	13C-PFOA	2898308	0.00 (4.94)	0	N/A	Yes
Pfna 1	13C-PFNA	3836829	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	5955158	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	2681361	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	675462	6.10 (6.12)	5720	0.0470	No
Pfds 1	13C_PFOS	5955158	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	44972	0.00 (6.39)	0	N/A	No
S_pfba 1	N_MeFOSA d3	3155785	1.40 (1.43)	4906780	14.6780	No
S_phhxa 1	N_MeFOSA d3	3155785	3.52 (3.58)	3818674	12.0770	No
S_pfhs 1	N_MeFOSA d3	3155785	4.38 (4.41)	2644783	15.1890	No
S_pfoa 1	N_MeFOSA d3	3155785	4.89 (4.94)	2898308	12.0720	No
S_pfna 1	N_MeFOSA d3	3155785	5.36 (5.38)	3836829	13.7330	No
S_pfda 1	N_MeFOSA d3	3155785	5.76 (5.79)	2681361	12.4930	No
S_pfos 1	N_MeFOSA d3	3155785	5.37 (5.39)	5955158	15.7510	No

APR 2 1 2016

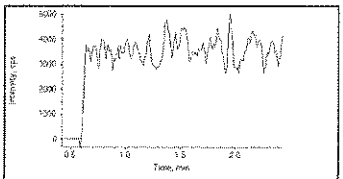
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3155785	6.09 (6.11)	675462	12.6350	No
S_pfdoda 1	N_MeFOSA d3	3155785	6.37 (6.40)	44972	13.6740	No

IRC Summary

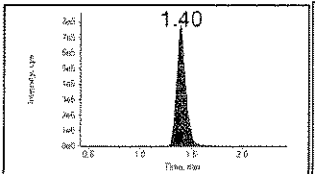
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.40)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.38 (4.41)	10997	No	0.39 (0.39)	YES
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	6.06 (6.11)	1572	No	0.27 (0.28)	YES
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

Quantitative Peak Review

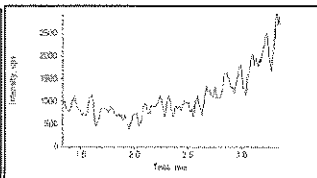
IB *No data for Sample ID*



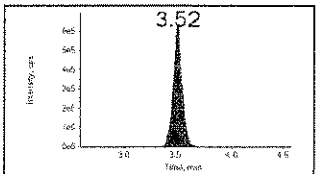
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



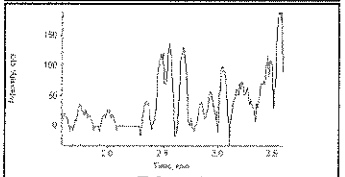
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



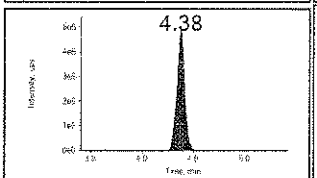
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



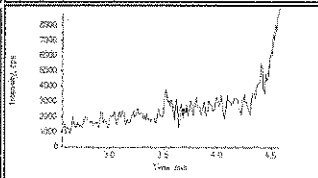
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



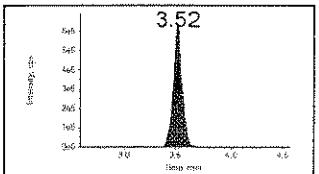
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



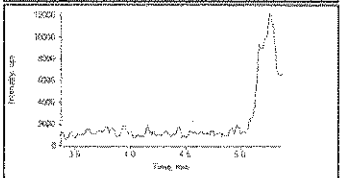
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



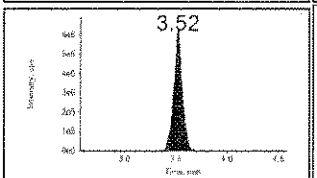
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



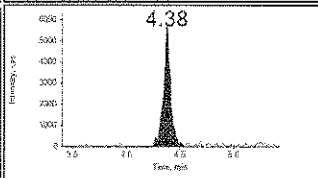
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



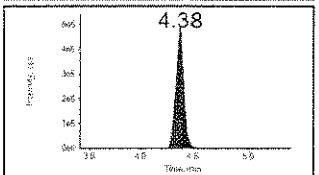
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



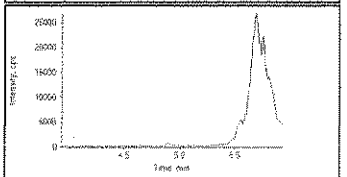
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



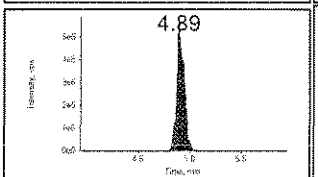
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



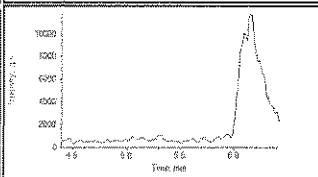
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



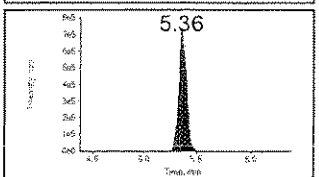
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



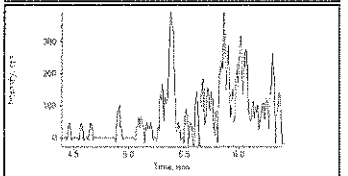
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



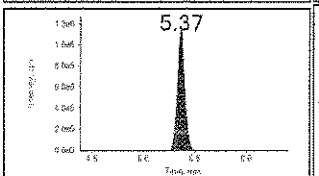
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



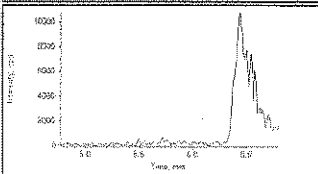
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



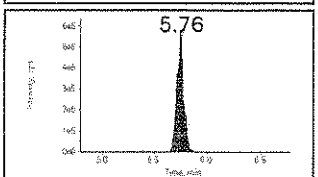
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



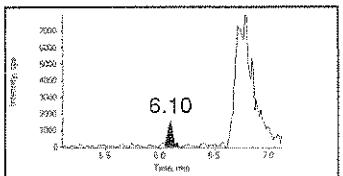
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



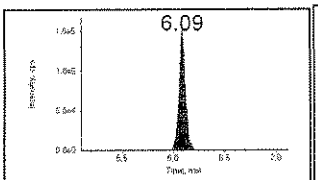
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



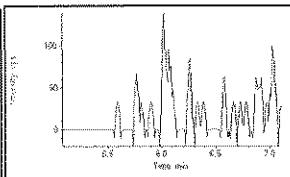
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



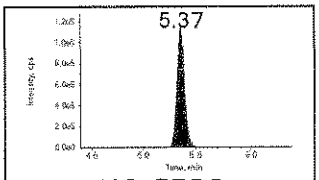
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



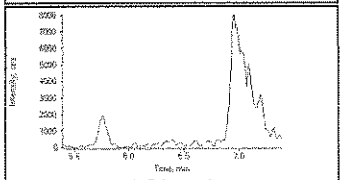
13C-PFUnA
565.000/520.000 Da
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□ Wrong Peak



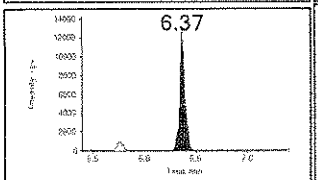
Pfds 1
599.000/80.000 Da
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□ Wrong Peak



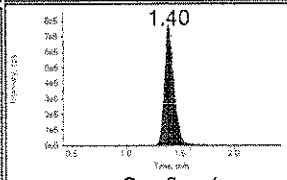
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



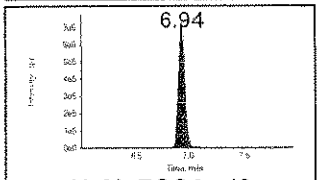
Pfdoa 1
613.000/569.000 Da
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□ Wrong Peak



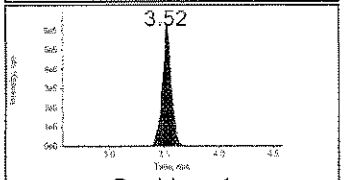
13C-PFDoA
615.000/570.000 Da
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□ Wrong Peak



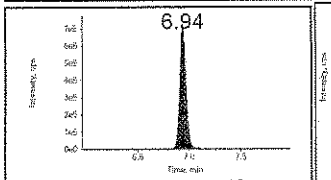
S_pfba 1
217.000/172.000 Da
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□ Wrong Peak



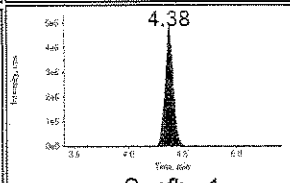
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



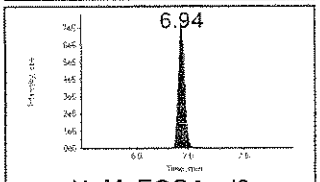
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



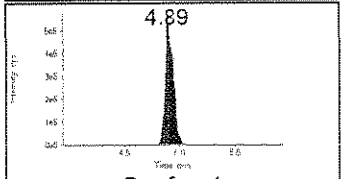
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



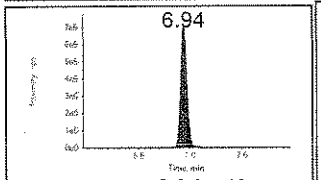
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



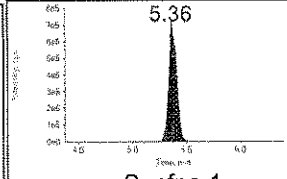
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



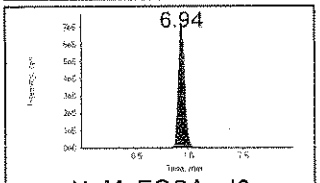
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



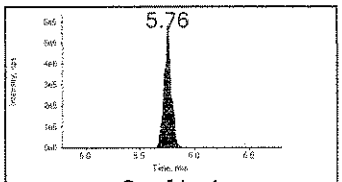
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



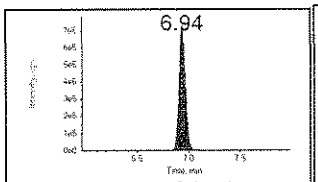
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



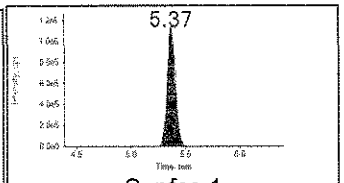
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



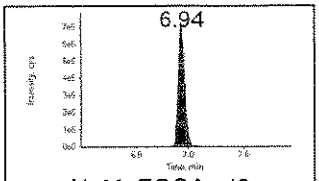
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



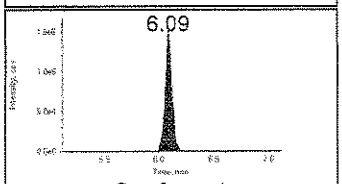
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



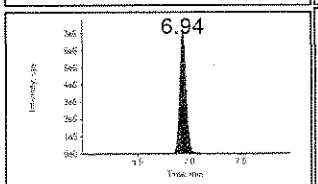
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



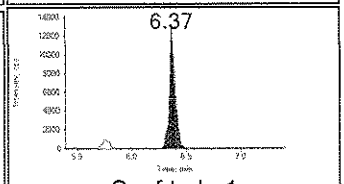
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



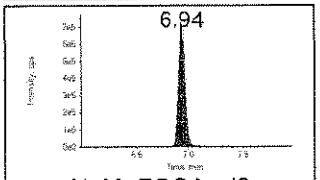
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

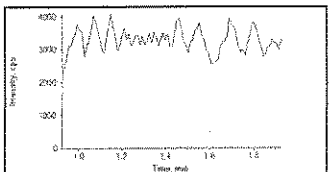


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

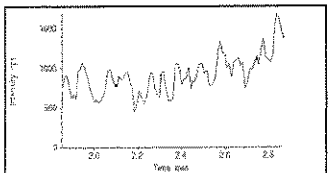


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

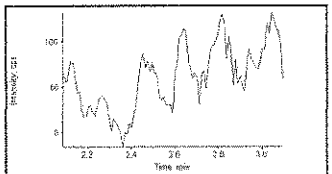
Ion Ratio Confirmation



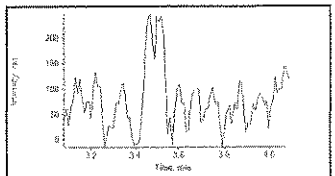
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



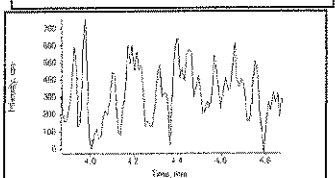
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



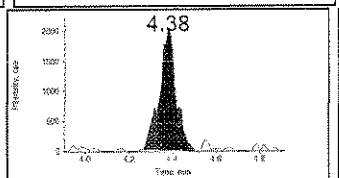
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



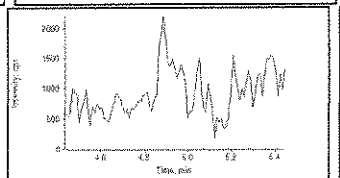
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



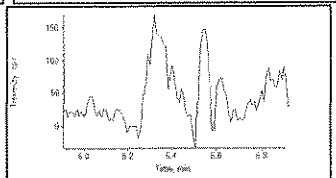
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



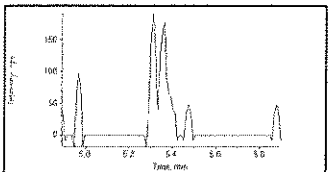
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



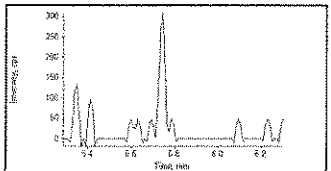
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



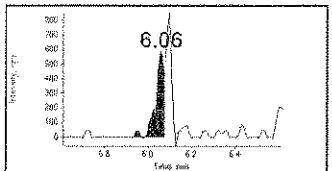
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



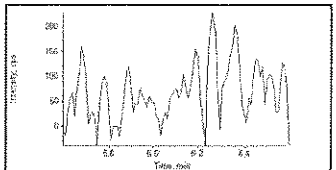
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



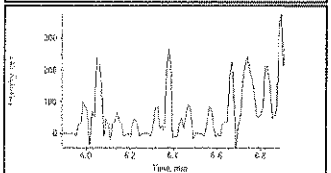
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	**Result Table**	041816.rdb
Data File	041816\2061.wiff	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02

Sample Name	PFC 10.0ppb	**Injection Vial**	20006
Acquisition Date	4/19/2016 5:56:34 AM	**Injection Volume**	5
Acquisition Method	PFC_122812.dam	**Sample Type**	Quality Control
Sample ID	15-OLC-02-38F	**Dilution Factor**	1.00

Results Summary

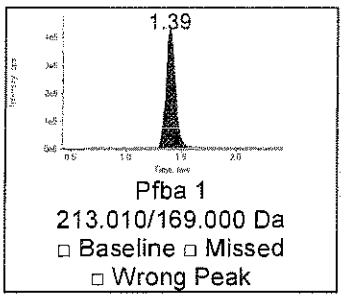
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	1.39 (1.43)	13C-PFBA	5908050	2696630	10.00	10.0220	100	No
Pfpea 1	2.28 (2.34)	13C-PFHxA	5279533	1768080	10.00	10.5750	106	No
Pfbs 1	2.53 (2.59)	18O_PFHS	3505671	4734477	10.00	9.7090	97	No
Pfhxa 1	3.53 (3.57)	13C-PFHxA	5279533	2342030	10.00	9.0350	90	No
Pfhpa 1	4.32 (4.37)	13C-PFHxA	5279533	3136843	10.00	10.2590	103	No
Pfhxs 1	4.38 (4.41)	18O_PFHS	3505671	5209816	10.00	10.0570	101	No
Pfoa 1	4.92 (4.94)	13C-PFOA	4168409	1067173	10.00	9.4940	95	No
Pfna 1	5.37 (5.40)	13C-PFNA	4764261	2600491	10.00	10.4670	105	No
Pfos 1	5.37 (5.40)	13C_PFOS	7672819	3781394	10.00	9.9560	100	No
Pfda 1	5.74 (5.78)	13C-PFDA	3254301	1777570	10.00	9.9770	100	No
Pfuna 1	6.09 (6.12)	13C-PFUnA	882836	1332888	10.00	8.4490	85	No
Pfds 1	6.06 (6.09)	13C_PFOS	7672819	4783295	10.00	10.0030	100	No
Pfdoa 1	6.36 (6.39)	13C-PFDoA	56467	1570368	10.00	8.8930	89	No
S_pfba 1	1.39 (1.43)	N_MeFOSA_d3	3358215	5908050	20.00	16.6070	83	No
S_phhxa 1	3.52 (3.58)	N_MeFOSA_d3	3358215	5279533	20.00	15.6910	79	No
S_pfhs 1	4.38 (4.41)	N_MeFOSA_d3	3358215	3505671	20.00	18.9190	95	No
S_pfoa 1	4.91 (4.94)	N_MeFOSA_d3	3358215	4168409	20.00	16.3150	82	No
S_pfna 1	5.35 (5.38)	N_MeFOSA_d3	3358215	4764261	20.00	16.0250	80	No
S_pfda 1	5.74 (5.79)	N_MeFOSA_d3	3358215	3254301	20.00	14.2480	71	No
S_pfos 1	5.36 (5.39)	N_MeFOSA_d3	3358215	7672819	20.00	19.0710	95	No
S_pfuna 1	6.10 (6.11)	N_MeFOSA_d3	3358215	882836	20.00	15.5190	78	No
S_pfdoda 1	6.38 (6.40)	N_MeFOSA_d3	3358215	56467	20.00	16.1340	81	No

APR 21 2016

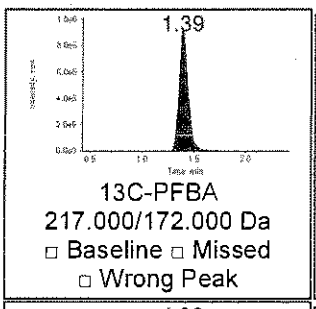
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	1.39 (1.38)	2325298	No	YES
Pfpea 2	2.28 (2.36)	1800856	No	YES
Pfbs 2	2.52 (2.59)	1943728	No	YES
Pfhxa 2	3.51 (3.58)	228499	No	YES
Pfhpa 2	4.33 (4.37)	1171271	No	YES
Pfhxs 2	4.38 (4.41)	2047409	No	YES
Pfoa 2	4.91 (4.94)	2071114	No	YES
Pfna 2	5.36 (5.41)	642017	No	YES
Pfos 2	5.36 (5.39)	1281294	No	YES
Pfda 2	5.76 (5.79)	362224	No	YES
Pfuna 2	6.09 (6.11)	479799	No	No
Pfds 2	6.06 (6.09)	1507722	No	YES
Pfdoa 2	6.35 (6.39)	434594	No	YES

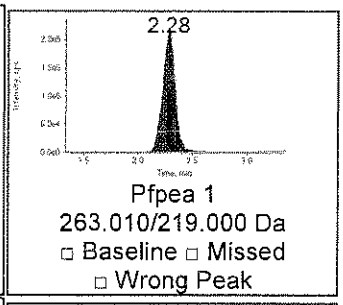
Quantitative Peak Review PFC 10.0ppb 15-OLC-02-38F



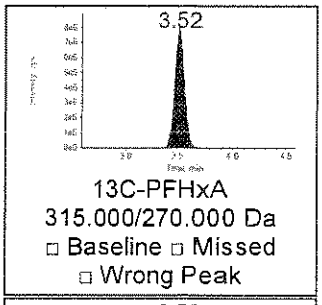
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



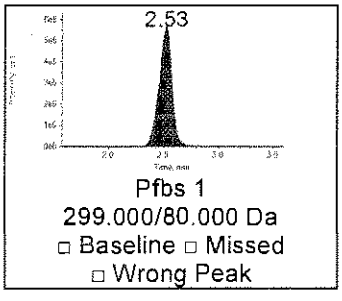
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



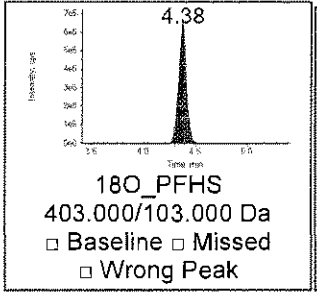
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



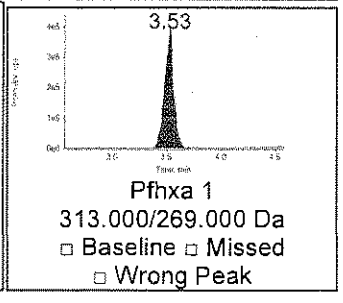
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



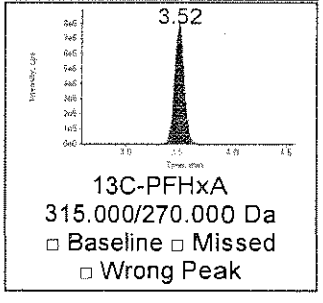
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



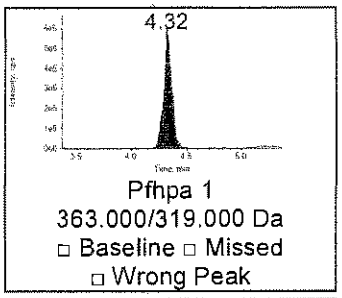
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



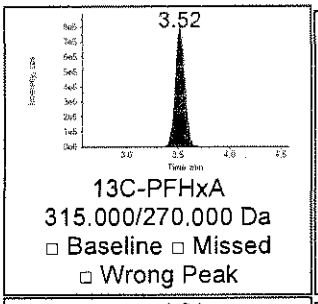
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak



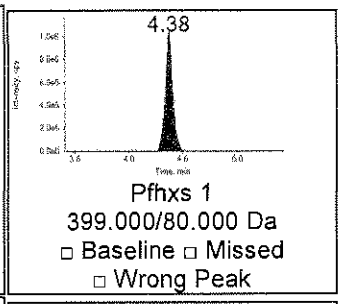
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



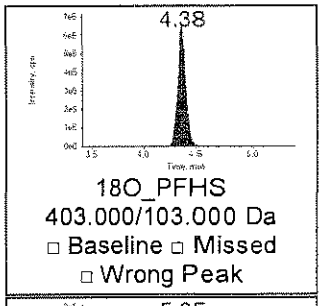
Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



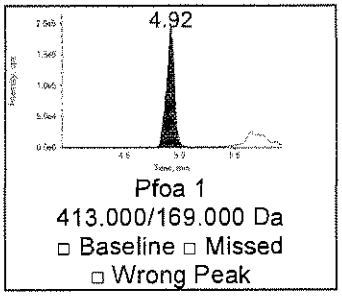
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



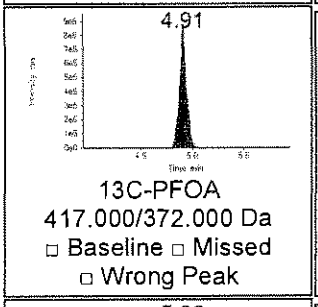
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



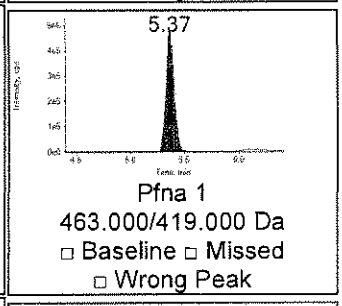
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



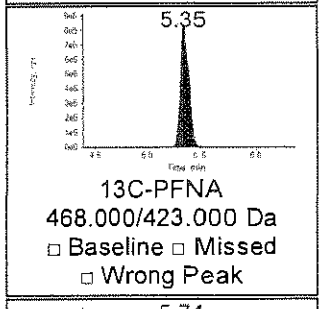
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



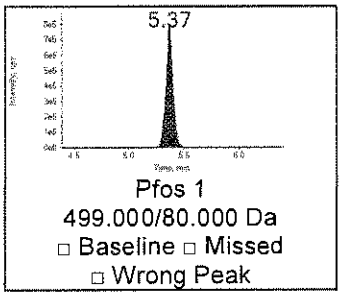
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



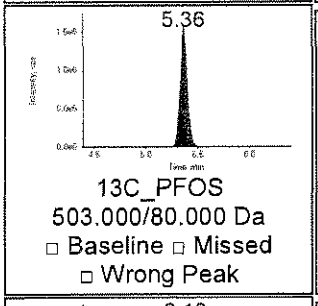
Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak



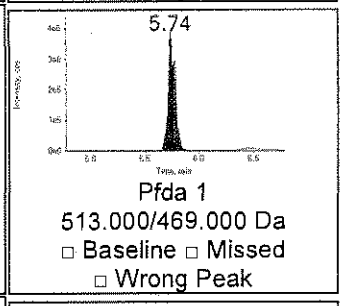
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



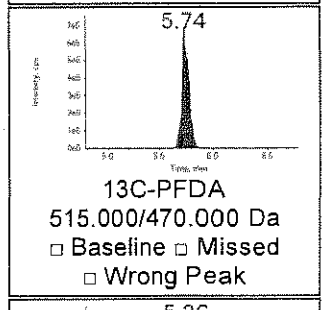
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



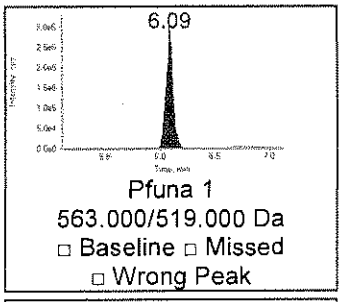
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



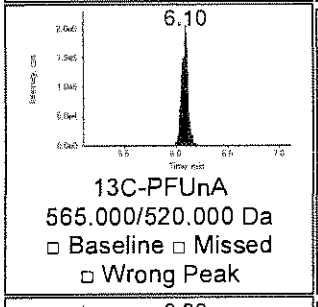
Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



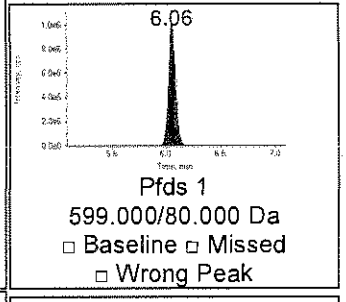
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



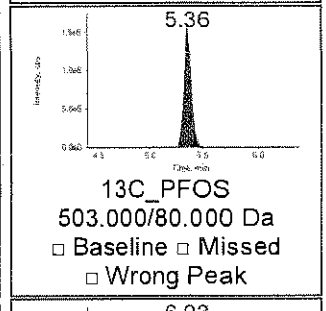
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



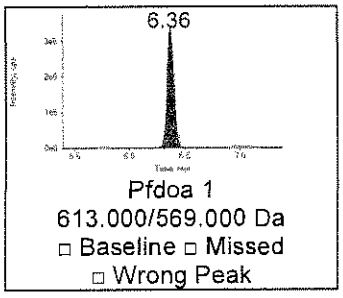
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



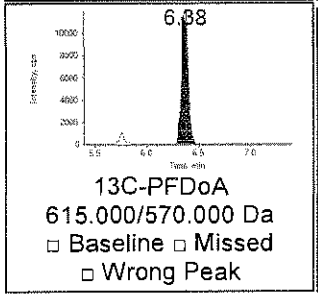
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



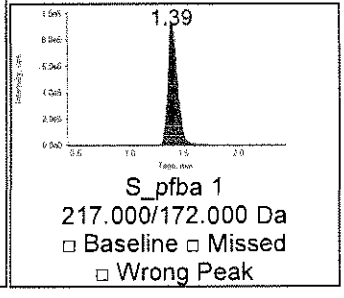
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



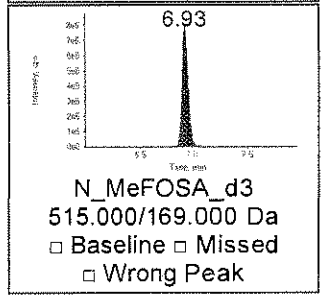
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



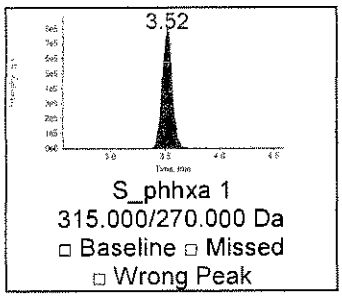
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



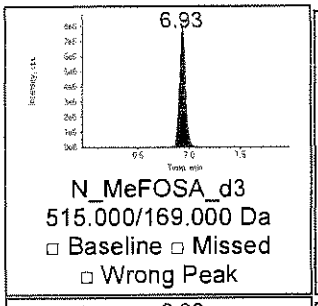
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



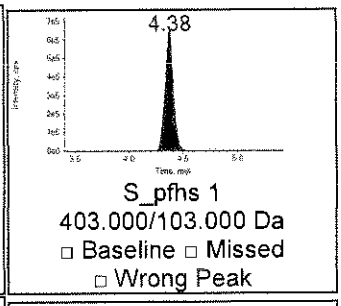
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



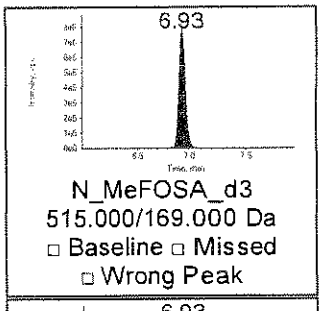
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



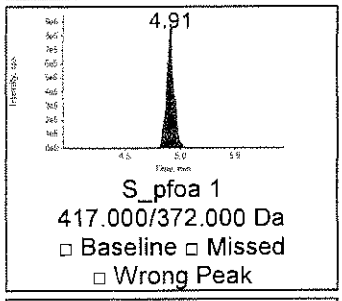
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



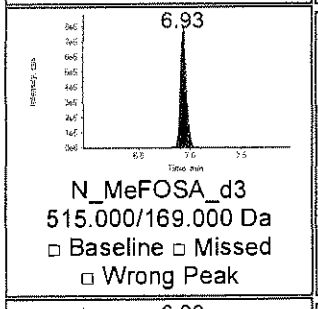
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



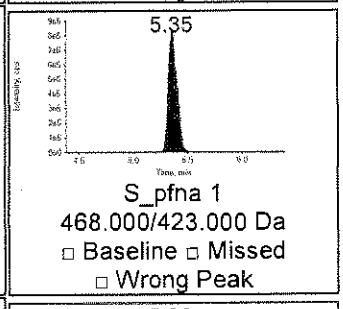
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



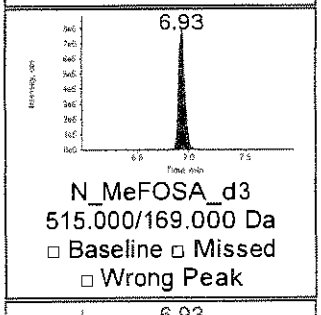
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



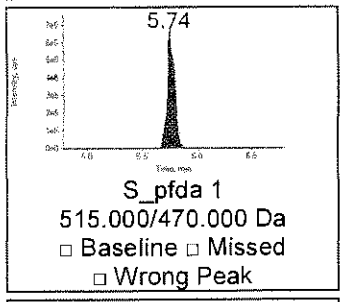
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



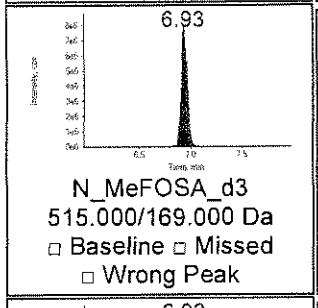
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



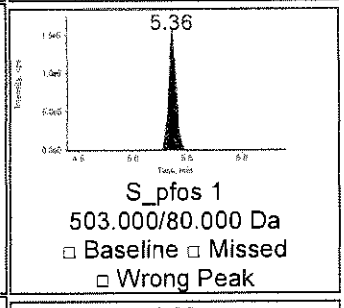
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



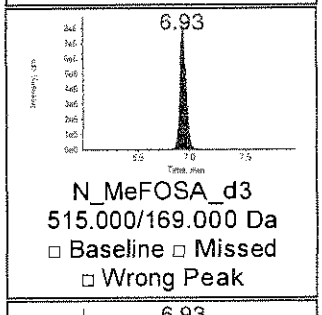
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



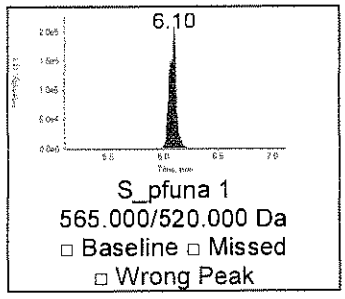
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



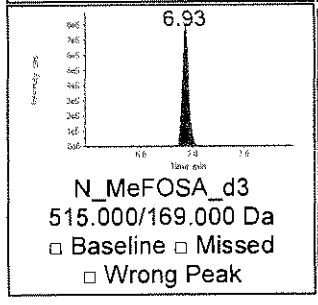
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



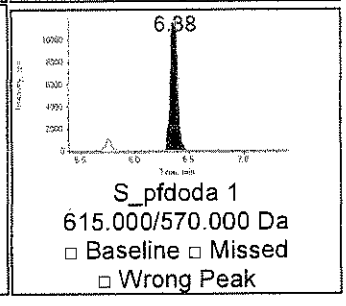
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



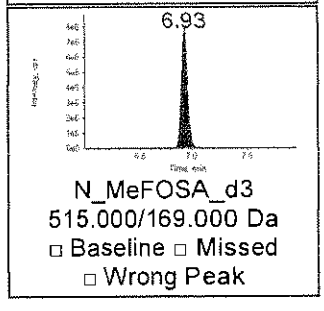
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

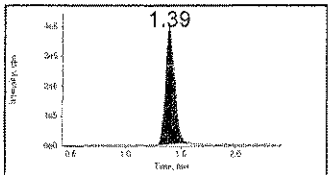


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

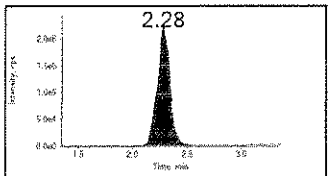


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

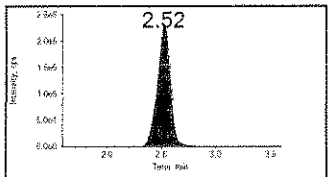
Ion Ratio Confirmation



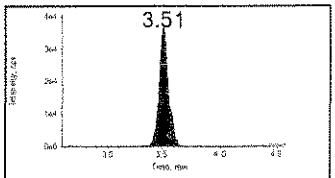
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



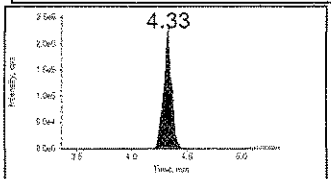
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



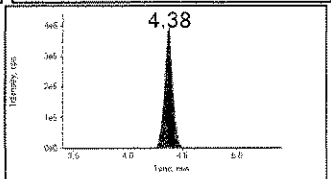
Pfbs 2
Mod?
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□ Wrong Peak



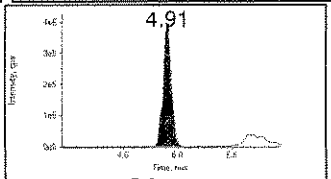
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



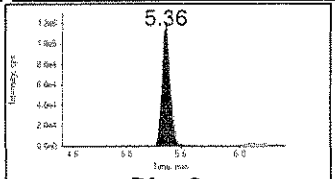
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



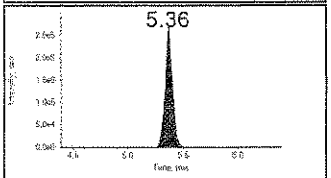
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



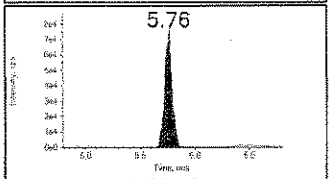
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



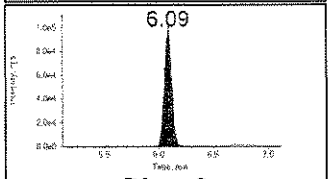
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



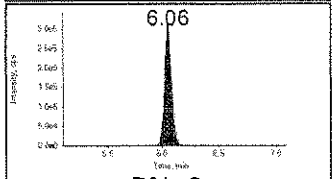
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



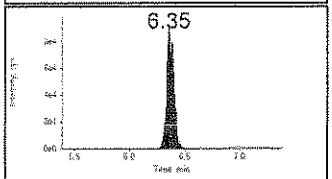
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs
Data File	041816\2062.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/19/2016 6:06:38 AM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	4844718	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	4241300	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2658196	0.00 (2.59)	0	N/A	No
Pfhxa 1	13C-PFHxA	4241300	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	4241300	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2658196	4.38 (4.41)	27592	0.0700	No
Pfoa 1	13C-PFOA	3178639	4.91 (4.94)	5328	0.0620	No
Pfna 1	13C-PFNA	4087398	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	6053031	0.00 (5.40)	0	N/A	No
Pfda 1	13C-PFDA	2401600	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	616807	6.07 (6.12)	6330	0.0570	No
Pfds 1	13C_PFOS	6053031	0.00 (6.09)	0	N/A	No
Pfdoa 1	13C-PFDoA	37835	0.00 (6.39)	0	N/A	No
S_pfba 1	N_MeFOSA d3	3291927	1.40 (1.43)	4844718	13.8930	No
S_phhxa 1	N_MeFOSA d3	3291927	3.53 (3.58)	4241300	12.8590	No
S_pfhs 1	N_MeFOSA d3	3291927	4.38 (4.41)	2658196	14.6350	No
S_pfoa 1	N_MeFOSA d3	3291927	4.92 (4.94)	3178639	12.6920	No
S_pfna 1	N_MeFOSA d3	3291927	5.38 (5.38)	4087398	14.0250	No
S_pfda 1	N_MeFOSA d3	3291927	5.76 (5.79)	2401600	10.7260	No
S_pfos 1	N_MeFOSA d3	3291927	5.37 (5.39)	6053031	15.3480	No

APR 21 2016

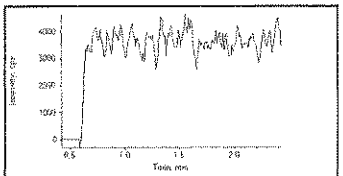
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	3291927	6.08 (6.11)	616807	11.0610	No
S_pfdoda 1	N_MeFOSA d3	3291927	6.37 (6.40)	37835	11.0280	No

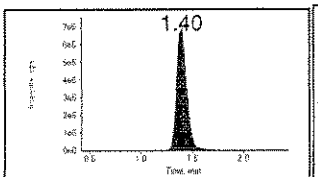
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.40)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	No	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	4.41 (4.41)	9159	No	0.33 (0.39)	YES
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	No	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	Yes	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	No	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

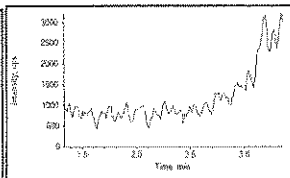
Quantitative Peak Review

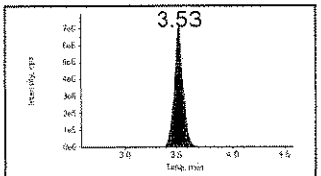
IB *No data for Sample ID*


Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

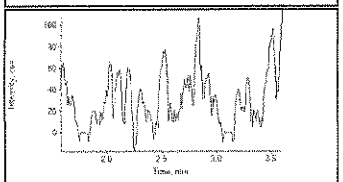


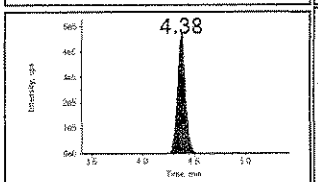
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

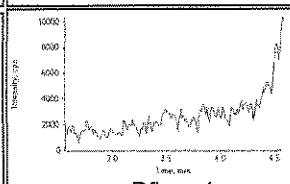


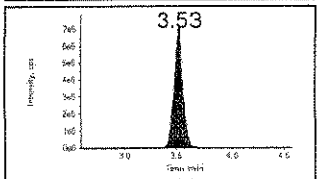
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

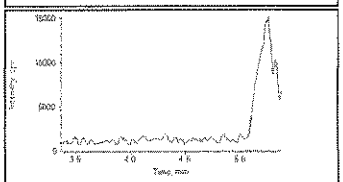


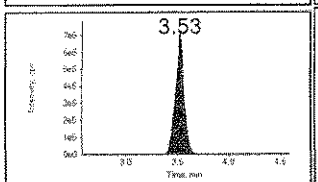
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

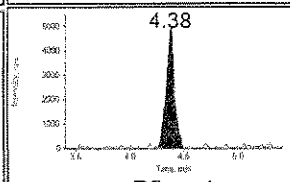


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

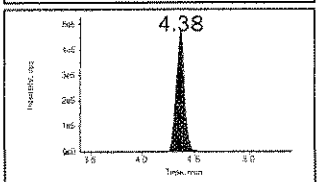

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak



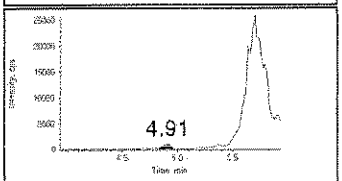
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



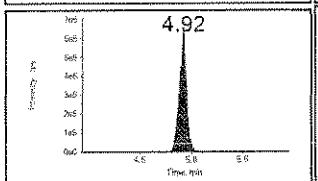
Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



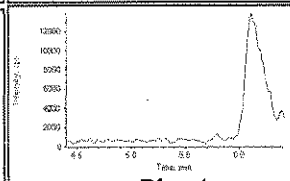
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

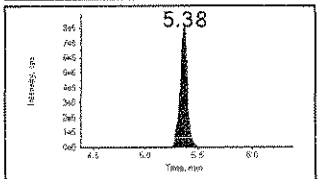


Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

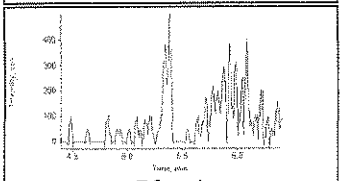


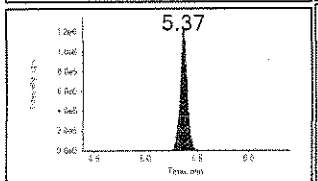
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

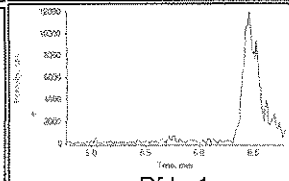


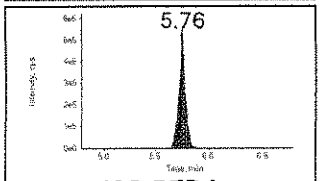
13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

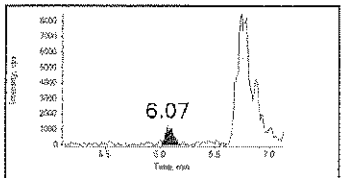


13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

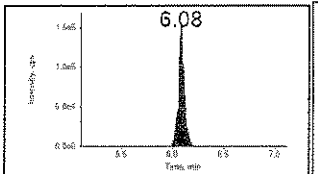

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak



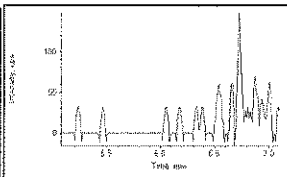
13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



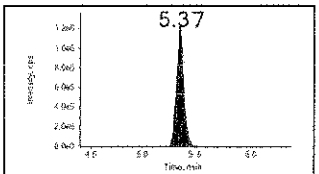
Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak



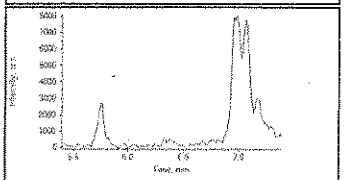
13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



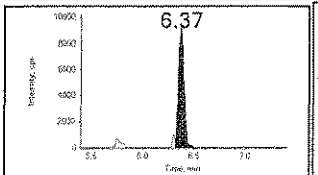
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



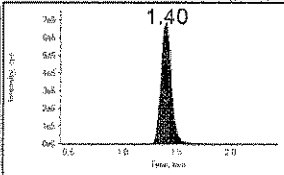
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



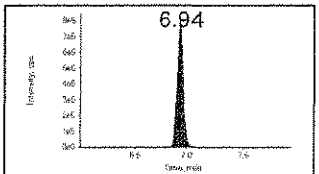
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak



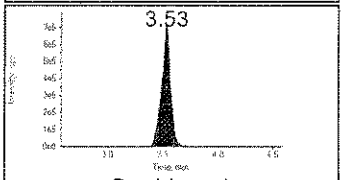
13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



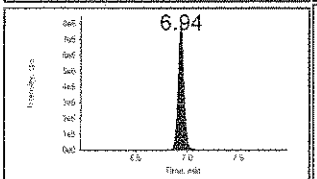
S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



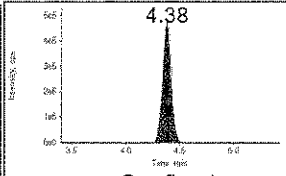
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



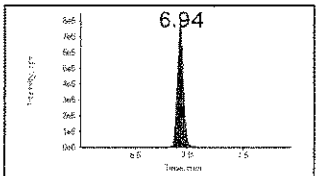
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



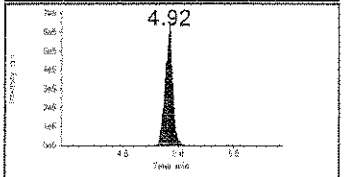
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



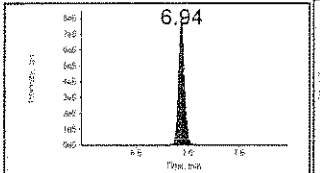
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



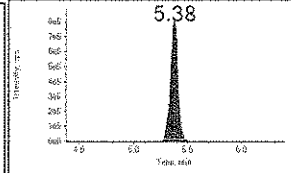
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



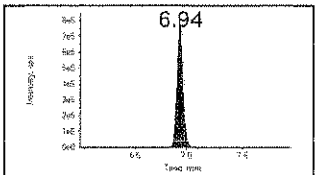
S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



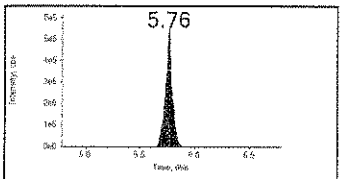
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



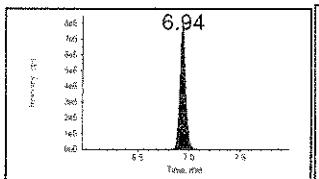
S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



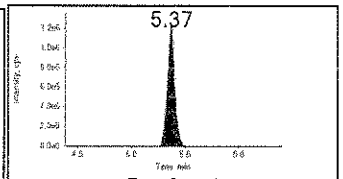
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



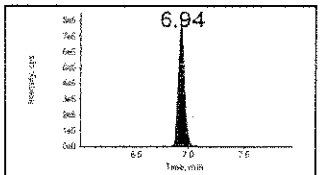
S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



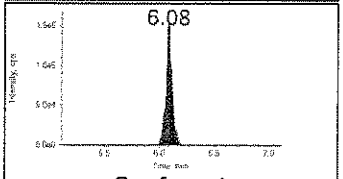
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



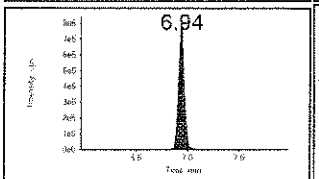
S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



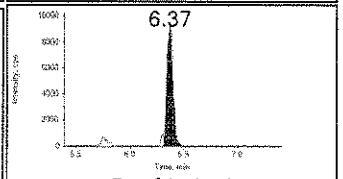
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



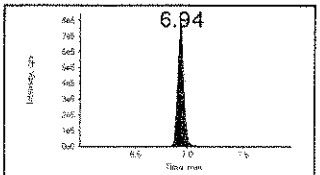
S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

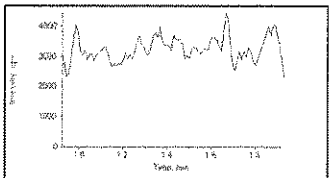


S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

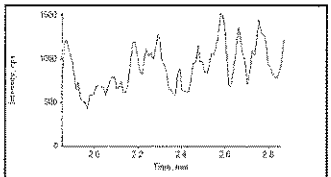


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

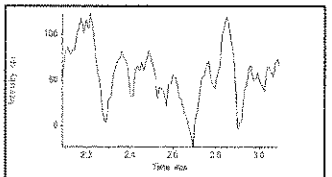
Ion Ratio Confirmation



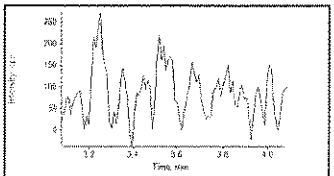
Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



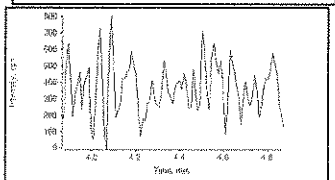
Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



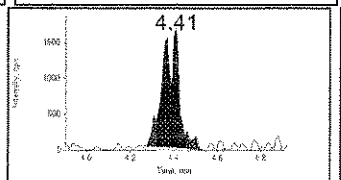
Pfbs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



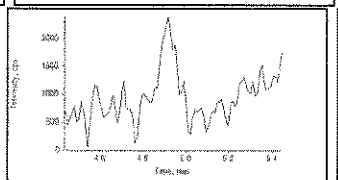
Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



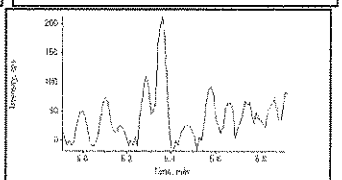
Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



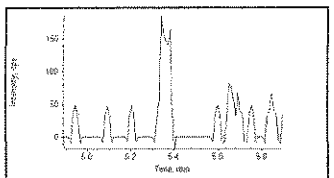
Pfhxs 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



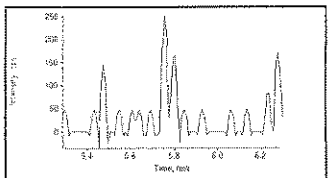
Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



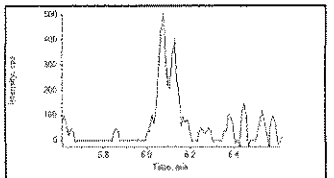
Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



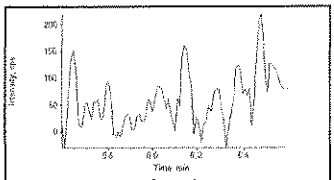
Pfos 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



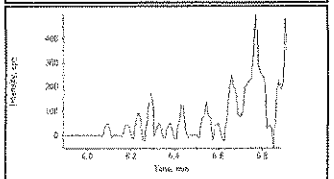
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

MH 4.20.16

Project	Ewan's Projects\PFCs	**Result Table**	041816.rdb
Data File	041916\5032.wiff	**Algorithm Used**	MQL
Acquisition Method	PFC_122812.dam	**Instrument Name**	LCMS02

Sample Name	PFC 10.0ppb	**Injection Vial**	20006
Acquisition Date	4/19/2016 1:50:40 PM	**Injection Volume**	5
Acquisition Method	PFC_122812.dam	**Sample Type**	Quality Control
Sample ID	15-OLC-02-38F	**Dilution Factor**	1.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	0.00 (1.43)	13C-PFBA	0	0	10.00	N/A	N/A	No
Pfpea 1	0.00 (2.34)	13C-PFHxA	0	0	10.00	N/A	N/A	No
Pfbs 1	1.82 (1.82)	18O_PFHS	2983372	4122877	10.00	9.9350	99	Yes
Pfhxa 1	0.00 (3.57)	13C-PFHxA	0	0	10.00	N/A	N/A	No
Pfhpa 1	0.00 (4.37)	13C-PFHxA	0	0	10.00	N/A	N/A	No
Pfhxs 1	0.00 (4.41)	18O_PFHS	2983372	0	10.00	N/A	0	Yes
Pfoa 1	4.42 (4.42)	13C-PFOA	4045891	1197342	10.00	10.9750	110	Yes
Pfna 1	0.00 (5.40)	13C-PFNA	0	0	10.00	N/A	N/A	No
Pfos 1	4.92 (4.92)	13C_PFOS	6557053	3250113	10.00	10.0130	100	Yes
Pfda 1	0.00 (5.78)	13C-PFDA	0	0	10.00	N/A	N/A	No
Pfuna 1	6.28 (6.12)	13C-PFUnA	0	922	10.00	N/A	N/A	No
Pfds 1	5.95 (6.09)	13C_PFOS	6557053	878	10.00	0.0020	0	Yes
Pfdoa 1	6.51 (6.39)	13C-PFDoA	0	15290	10.00	N/A	N/A	No
S_pfba 1	0.00 (1.43)	N_MeFOSA_d3	2913958	0	20.00	N/A	0	Yes
S_phhxa 1	2.88 (2.88)	N_MeFOSA_d3	2913958	5248494	20.00	17.9770	90	Yes
S_pfhs 1	3.85 (3.85)	N_MeFOSA_d3	2913958	2983372	20.00	18.5550	93	Yes
S_pfoa 1	4.42 (4.42)	N_MeFOSA_d3	2913958	4045891	20.00	18.2500	91	Yes
S_pfna 1	0.00 (5.38)	N_MeFOSA_d3	2913958	0	20.00	N/A	0	Yes
S_pfda 1	0.00 (5.79)	N_MeFOSA_d3	2913958	0	20.00	N/A	0	Yes
S_pfos 1	4.92 (4.92)	N_MeFOSA_d3	2913958	6557053	20.00	18.7830	94	Yes
S_pfuna 1	0.00 (6.11)	N_MeFOSA_d3	2913958	0	20.00	N/A	0	Yes
S_pfdoda 1	0.00 (6.40)	N_MeFOSA_d3	2913958	0	20.00	N/A	0	Yes

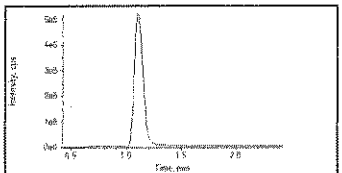
APR 21 2016

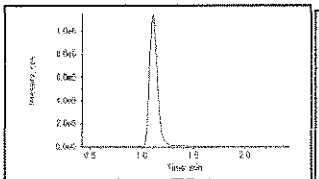
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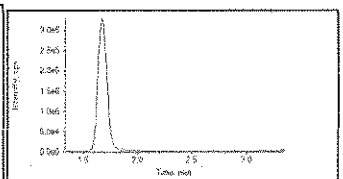
IRC Summary

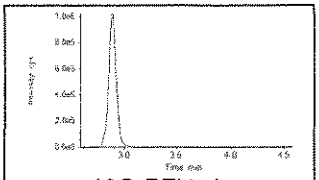
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	0.00 (1.42)	0	No	No
Pfpea 2	2.29 (2.36)	2936	No	No
Pfbs 2	1.82 (1.82)	1708240	Yes	YES
Pfhxa 2	3.67 (3.58)	1211	No	No
Pfhpa 2	0.00 (4.37)	0	No	No
Pfhxs 2	0.00 (4.41)	0	Yes	No
Pfoa 2	4.42 (4.42)	2019896	Yes	YES
Pfna 2	5.04 (5.41)	94	No	No
Pfos 2	4.92 (4.92)	1091495	Yes	YES
Pfda 2	0.00 (5.79)	0	No	No
Pfuna 2	0.00 (6.11)	0	No	No
Pfds 2	0.00 (6.09)	0	Yes	No
Pfdoa 2	0.00 (6.39)	0	No	No

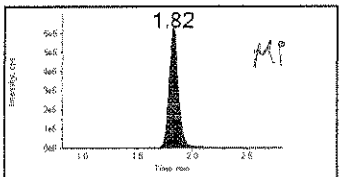
Quantitative Peak Review PFC 10.0ppb 15-OLC-02-38F


Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

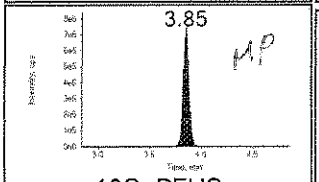

13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

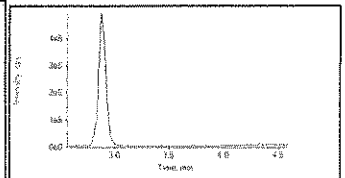

13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

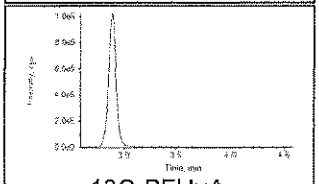


Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



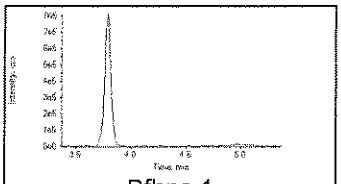
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

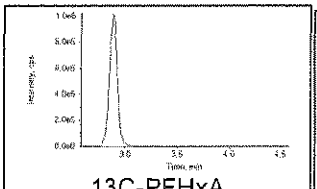

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

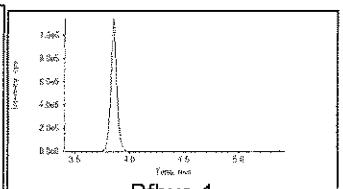

13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

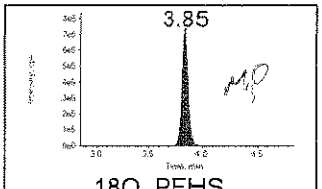
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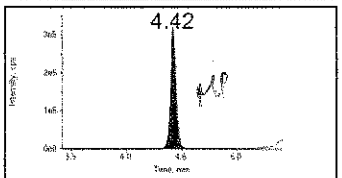

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

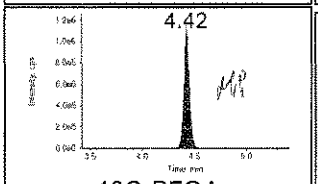

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



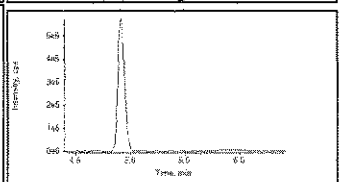
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

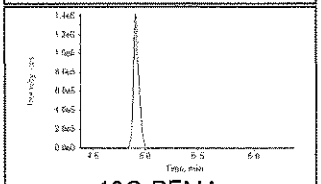


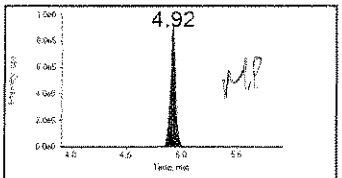
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



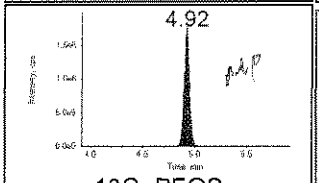
13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

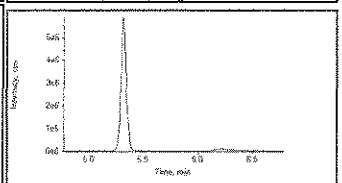

13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

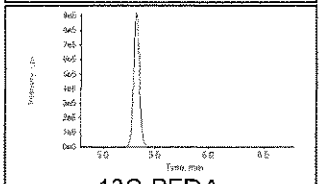


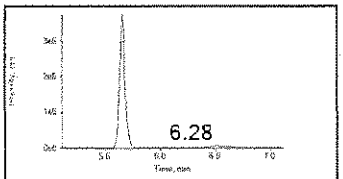
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



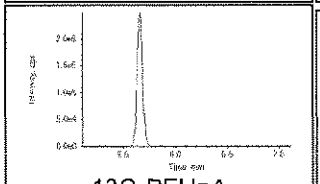
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

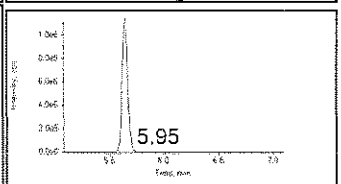

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

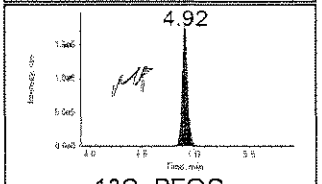


Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

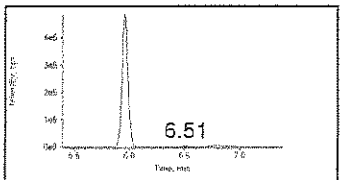

13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



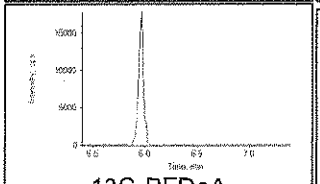
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

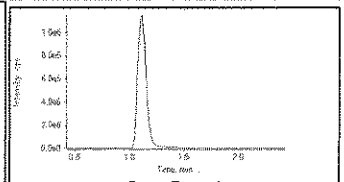


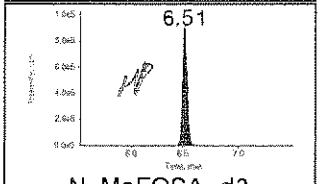
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

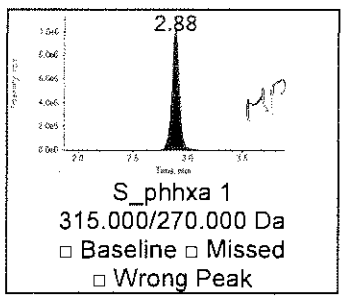

13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

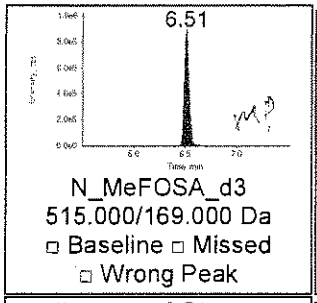


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

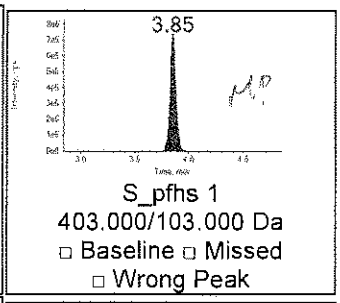
APR 21 2016



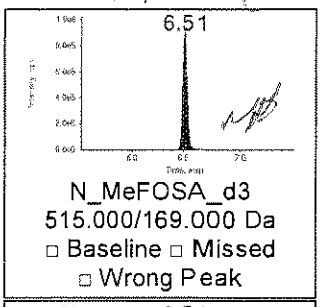
S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



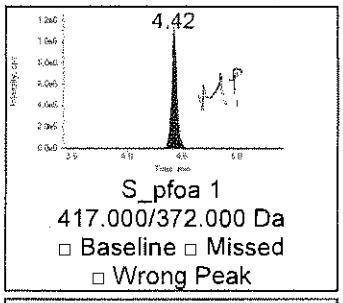
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



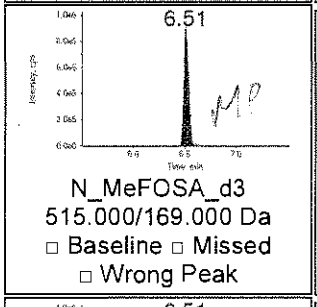
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



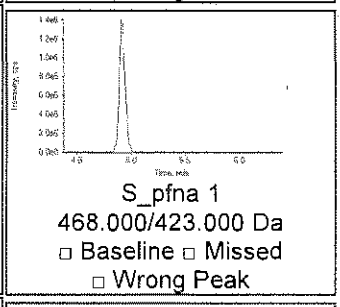
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

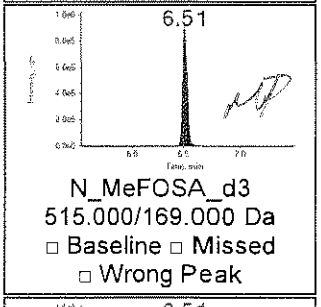


S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

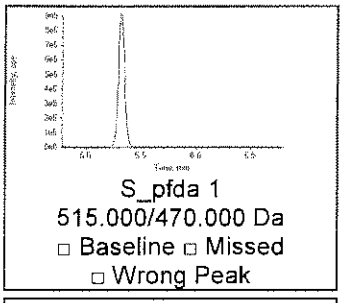


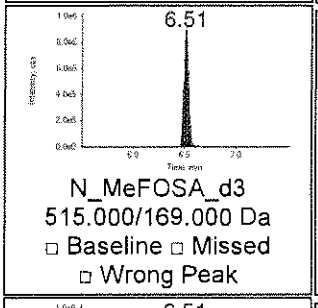
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

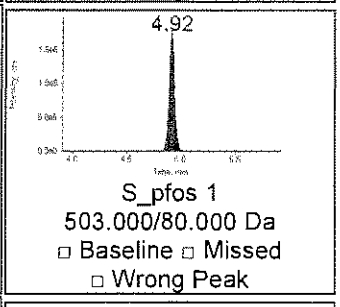


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

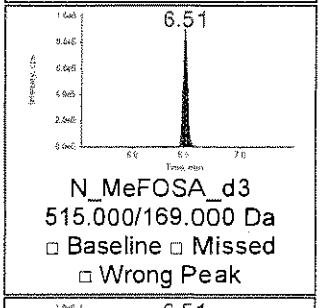

S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



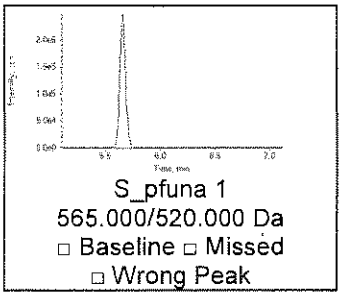
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

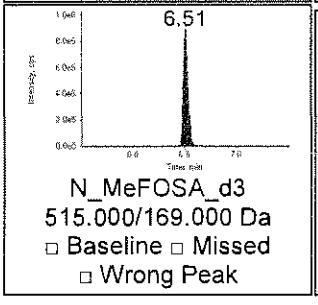


S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

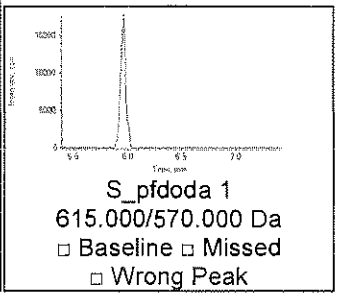


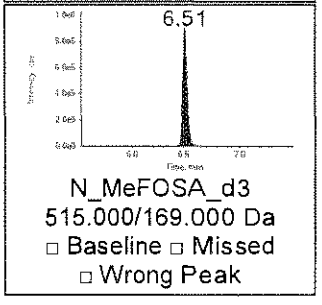
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

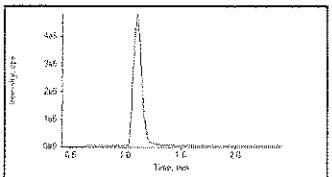

S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak



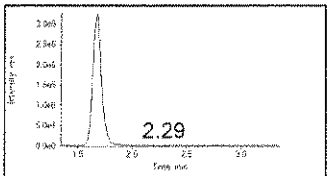
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

Ion Ratio Confirmation

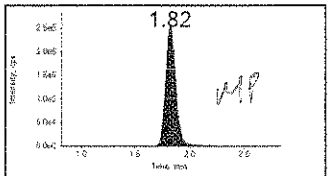
APR 21 2016



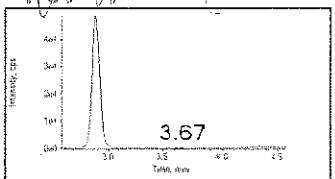
Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



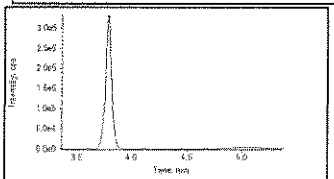
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



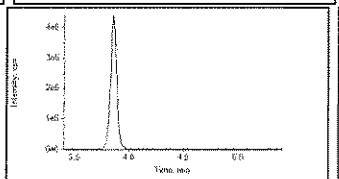
Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



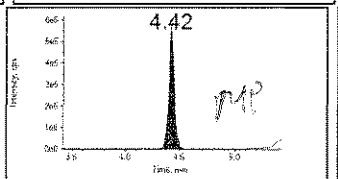
Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



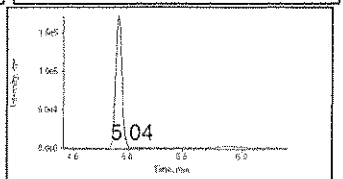
Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



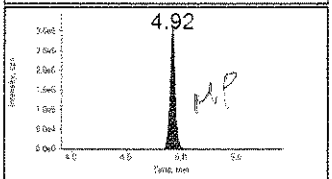
Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



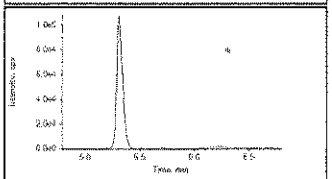
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



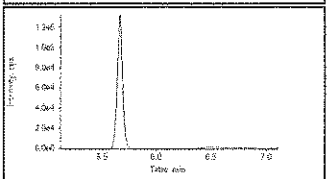
Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



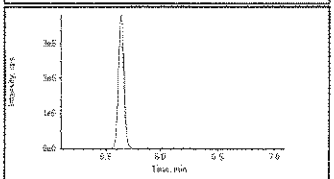
Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



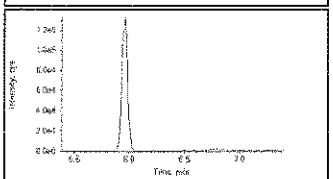
Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

APR 21 2016

Project	Ewan's Projects\PFCs
Data File	041916\5033.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/19/2016 2:00:48 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	0	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	0	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	2422100	0.00 (2.59)	0	N/A	Yes
Pfhxa 1	13C-PFHxA	0	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	0	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	2422100	0.00 (4.41)	0	N/A	Yes
Pfoa 1	13C-PFOA	3151307	0.00 (4.94)	0	N/A	Yes
Pfna 1	13C-PFNA	0	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	5478512	0.00 (5.40)	0	N/A	Yes
Pfda 1	13C-PFDA	0	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	0	0.00 (6.12)	0	N/A	No
Pfds 1	13C_PFOS	5478512	0.00 (6.09)	0	N/A	Yes
Pfdoa 1	13C-PFDoA	0	6.51 (6.39)	13945	N/A	No
S_pfba 1	N_MeFOSA d3	2948022	0.00 (1.43)	0	N/A	Yes
S_phhxa 1	N_MeFOSA d3	2948022	0.00 (3.58)	0	N/A	Yes
S_pfhs 1	N_MeFOSA d3	2948022	3.85 (3.85)	2422100	14.8900	Yes
S_pfoa 1	N_MeFOSA d3	2948022	4.42 (4.42)	3151307	14.0500	Yes
S_pfna 1	N_MeFOSA d3	2948022	0.00 (5.38)	0	N/A	Yes
S_pfda 1	N_MeFOSA d3	2948022	0.00 (5.79)	0	N/A	Yes
S_pfos 1	N_MeFOSA d3	2948022	4.92 (4.92)	5478512	15.5120	Yes

APR 21 2016

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	2948022	0.00 (6.11)	0	N/A	Yes
S_pfdoda 1	N_MeFOSA d3	2948022	0.00 (6.40)	0	N/A	Yes

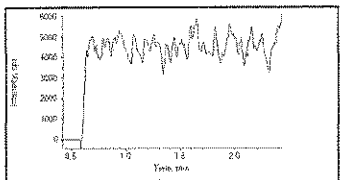
IRC Summary

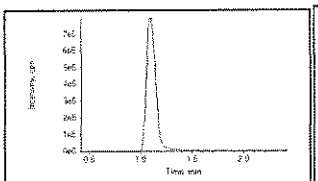
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.42)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	Yes	0.00 (0.41)	No
Pfhxa 2	0.00 (3.58)	0	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	0.00 (4.41)	0	Yes	0.00 (0.39)	No
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	Yes	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	No	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	Yes	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

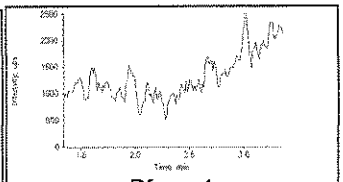
Quantitative Peak Review

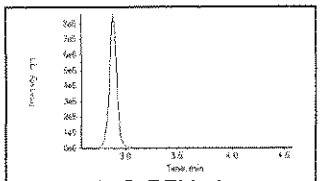
IB *No data for Sample ID*

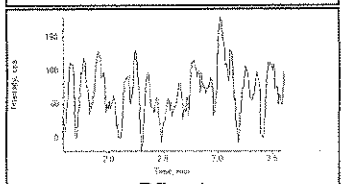
4/19/2016

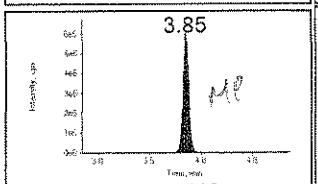

Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

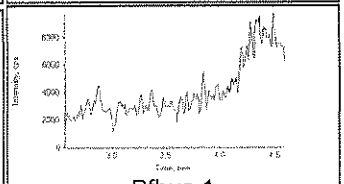

Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

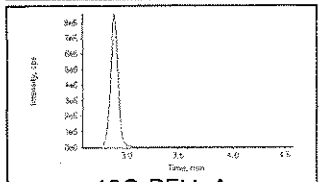

13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

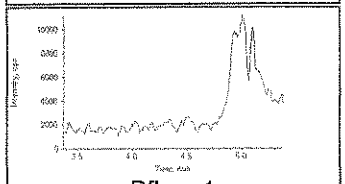

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

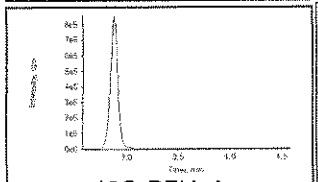


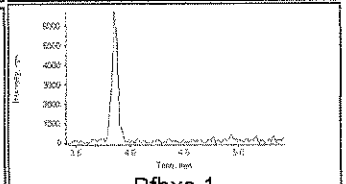
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

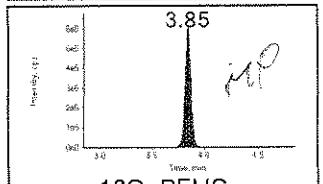

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

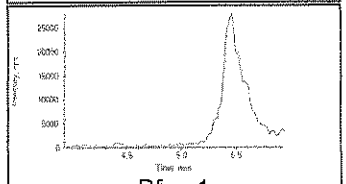

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

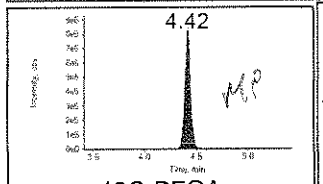

13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

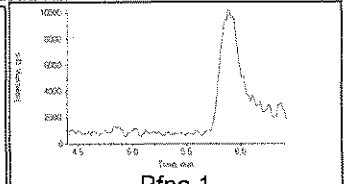


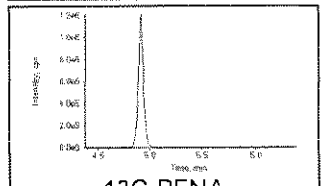
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

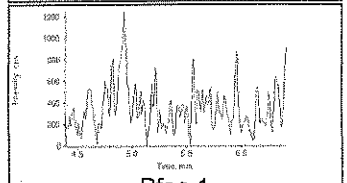

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

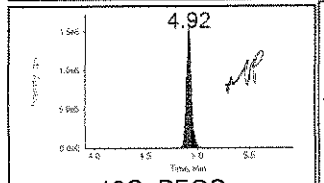


13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

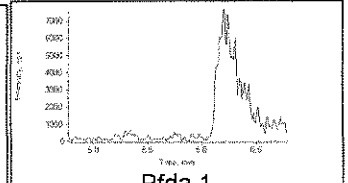

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

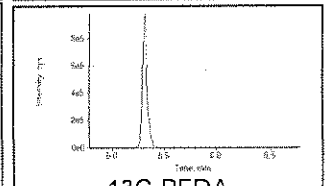

13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



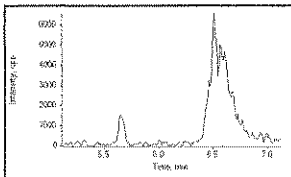
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

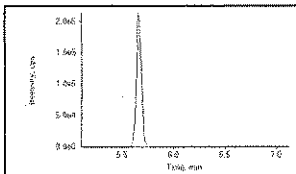

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

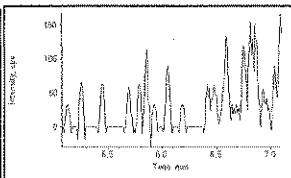

13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

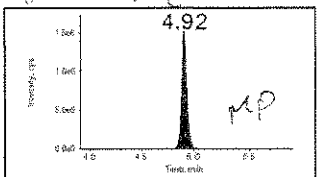
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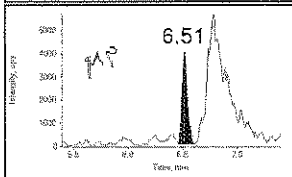

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

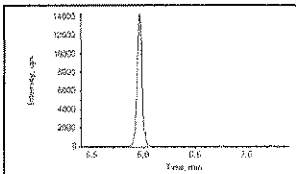

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

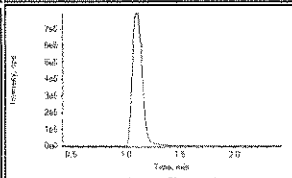


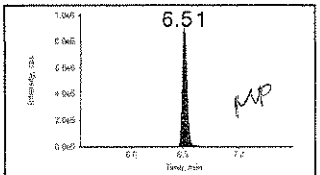
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



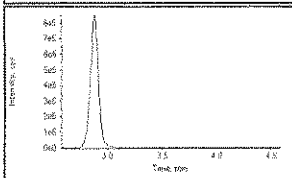
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

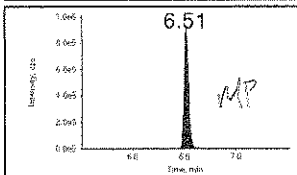

13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

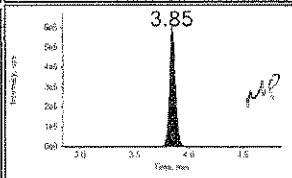


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

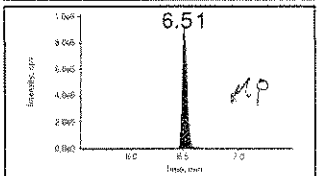

S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



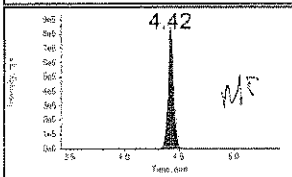
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



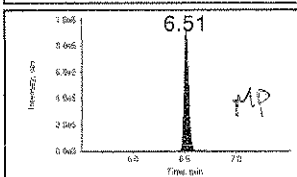
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



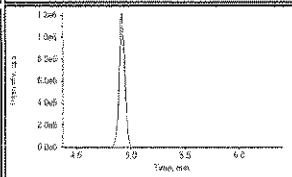
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

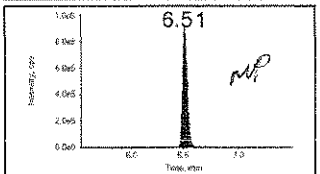


S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



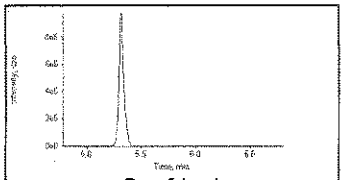
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

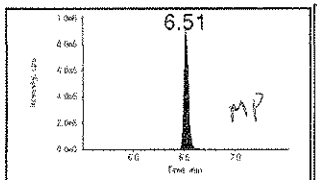

S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak



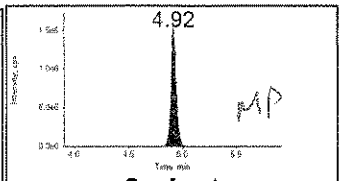
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

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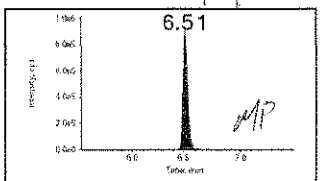

S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



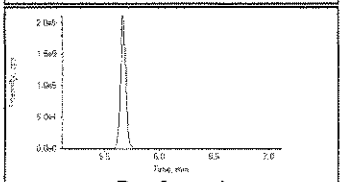
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

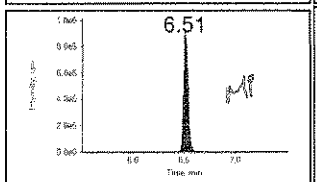


S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

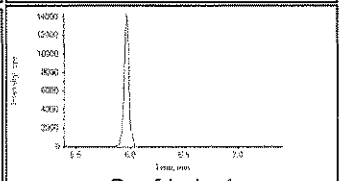


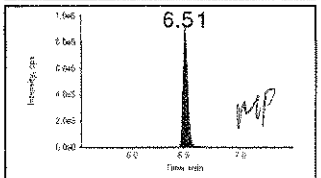
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



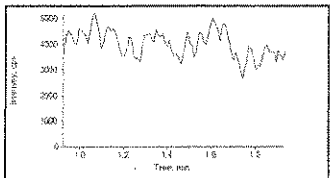
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

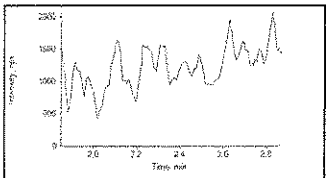

S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

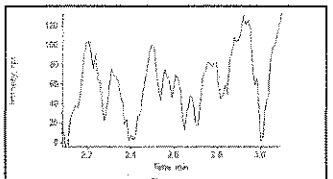


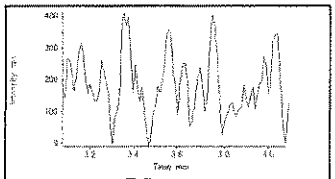
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

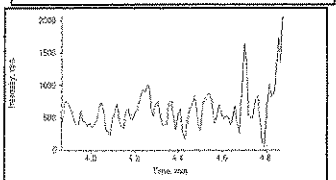
Ion Ratio Confirmation

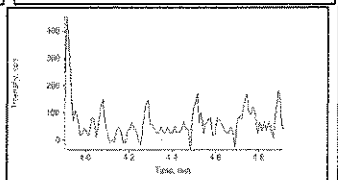

Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

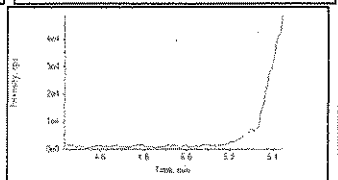

Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

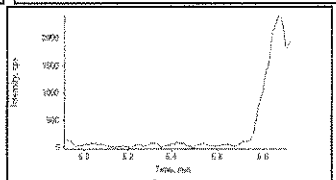

Pfbs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak


Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

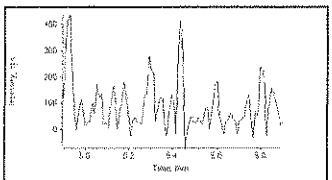

Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfhxs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak

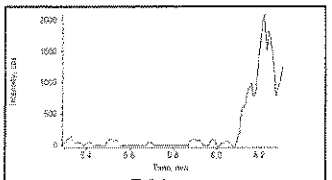

Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak


Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

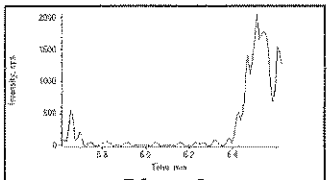
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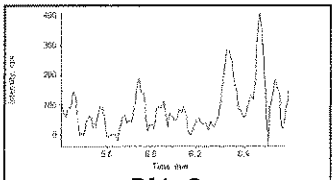
Pfos 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



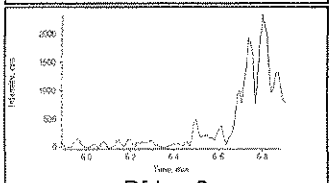
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

Project	Ewan's Projects\PFCs	Result Table	041816.rdb
Data File	041916\5038.wiff	Algorithm Used	MQL
Acquisition Method	PFC_122812.dam	Instrument Name	LCMS02

Sample Name	PFC 10.0ppb	Injection Vial	20006
Acquisition Date	4/19/2016 2:51:22 PM	Injection Volume	5
Acquisition Method	PFC_122812.dam	Sample Type	Quality Control
Sample ID	15-OLC-02-38F	Dilution Factor	1.00

Results Summary

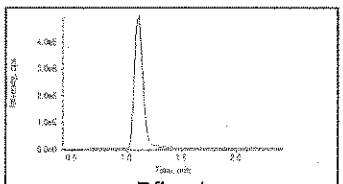
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
Pfba 1	0.00 (1.43)	13C-PFBA	0	0	10.00	N/A	N/A	No
Pfpea 1	0.00 (2.34)	13C-PFHxA	0	0	10.00	N/A	N/A	No
Pfbs 1	1.82 (1.82)	18O_PFHS	3023342	4069328	10.00	9.6760	97	Yes
Pfhxa 1	0.00 (3.57)	13C-PFHxA	0	0	10.00	N/A	N/A	No
Pfhpa 1	0.00 (4.37)	13C-PFHxA	0	0	10.00	N/A	N/A	No
Pfhxs 1	0.00 (4.41)	18O_PFHS	3023342	0	10.00	N/A	0	Yes
Pfoa 1	4.41 (4.42)	13C-PFOA	4320418	1142393	10.00	9.8060	98	Yes
Pfna 1	5.10 (5.40)	13C-PFNA	0	7202	10.00	N/A	N/A	No
Pfos 1	4.91 (4.91)	13C_PFOS	6485674	3236373	10.00	10.0810	101	Yes
Pfda 1	0.00 (5.78)	13C-PFDA	0	0	10.00	N/A	N/A	No
Pfuna 1	0.00 (6.12)	13C-PFUnA	0	0	10.00	N/A	N/A	No
Pfds 1	5.79 (6.09)	13C_PFOS	6485674	1557	10.00	0.0040	0	Yes
Pfdoa 1	6.51 (6.39)	13C-PFDoA	0	18528	10.00	N/A	N/A	No
S_pfba 1	0.00 (1.43)	N_MeFOSA_d3	2961839	0	20.00	N/A	0	Yes
S_phhxa 1	0.00 (3.58)	N_MeFOSA_d3	2961839	0	20.00	N/A	0	Yes
S_pfhs 1	3.85 (3.85)	N_MeFOSA_d3	2961839	3023342	20.00	18.5000	93	Yes
S_pfoa 1	4.41 (4.41)	N_MeFOSA_d3	2961839	4320418	20.00	19.1730	96	Yes
S_pfna 1	0.00 (5.38)	N_MeFOSA_d3	2961839	0	20.00	N/A	0	Yes
S_pfda 1	0.00 (5.79)	N_MeFOSA_d3	2961839	0	20.00	N/A	0	Yes
S_pfos 1	4.91 (4.91)	N_MeFOSA_d3	2961839	6485674	20.00	18.2780	91	Yes
S_pfuna 1	0.00 (6.11)	N_MeFOSA_d3	2961839	0	20.00	N/A	0	Yes
S_pfdoda 1	0.00 (6.40)	N_MeFOSA_d3	2961839	0	20.00	N/A	0	Yes

APR 21 2016

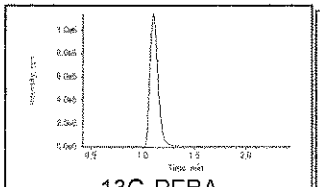
IRC Summary

Analyte Peak Name	RT (Exp RT)	Area	Modified?	Ratio Confirms ID
Pfba 2	0.00 (1.42)	0	No	No
Pfpea 2	2.37 (2.36)	2465	No	No
Pfbs 2	1.82 (1.82)	1729529	Yes	YES
Pfhxa 2	0.00 (3.58)	0	No	No
Pfhpa 2	0.00 (4.37)	0	No	No
Pfhxs 2	0.00 (4.41)	0	Yes	No
Pfoa 2	4.41 (4.41)	2169182	Yes	YES
Pfna 2	0.00 (5.41)	0	No	No
Pfos 2	4.91 (4.91)	1078169	Yes	YES
Pfda 2	0.00 (5.79)	0	No	No
Pfuna 2	0.00 (6.11)	0	No	No
Pfds 2	0.00 (6.09)	0	Yes	No
Pfdoa 2	0.00 (6.39)	0	No	No

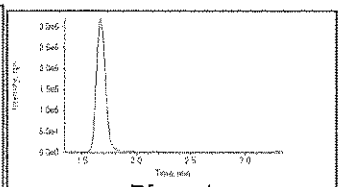
Quantitative Peak Review — PFC 10.0ppb 15-OLC-02-38F



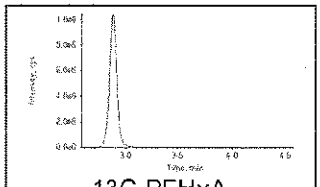
Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



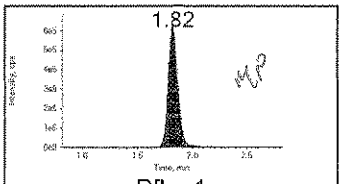
13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



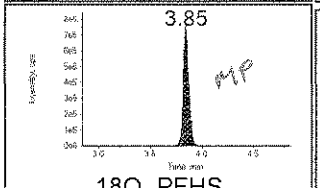
Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak



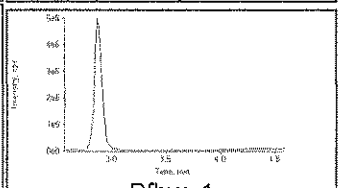
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



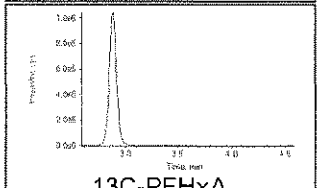
Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

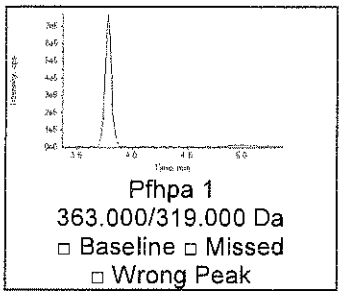


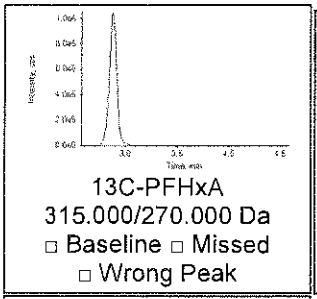
Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak

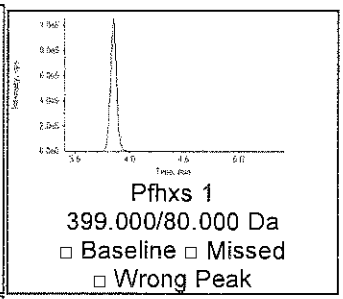


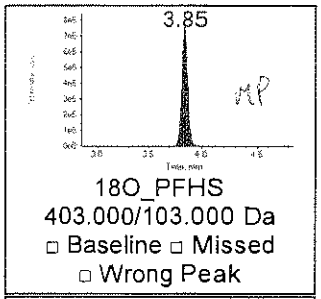
13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

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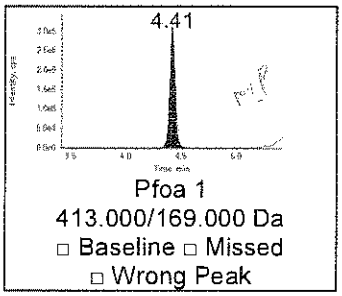

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

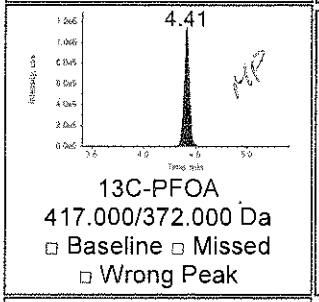

Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



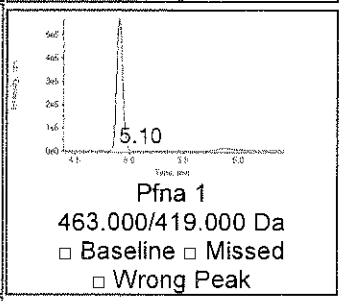
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



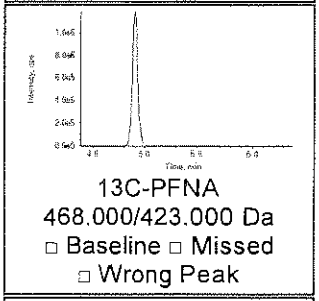
Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

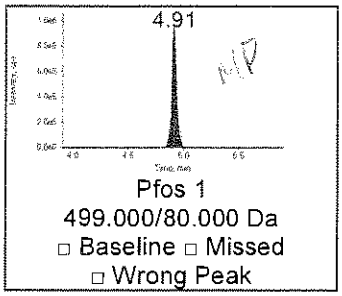


13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

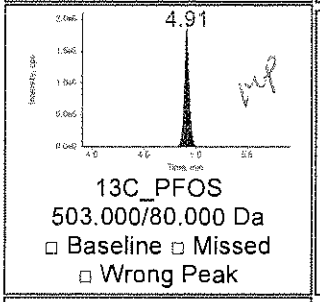


Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

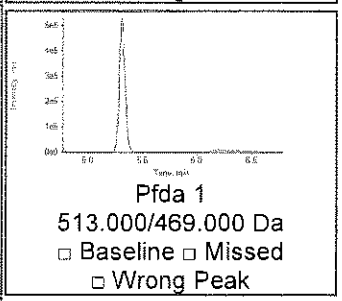

13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

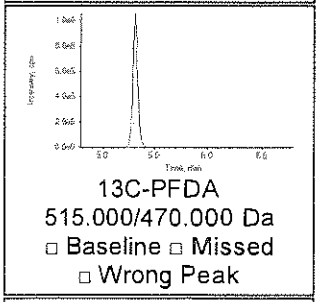


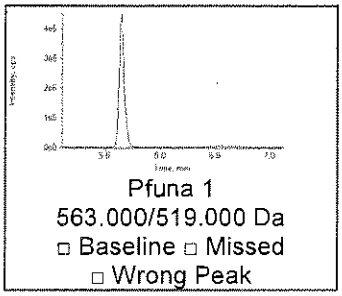
Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

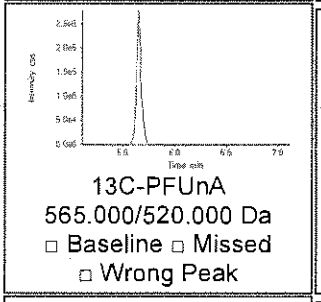


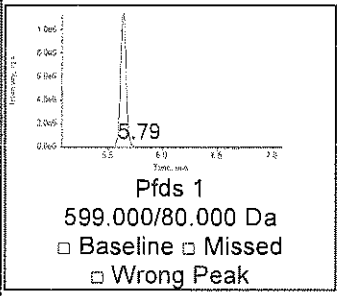
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

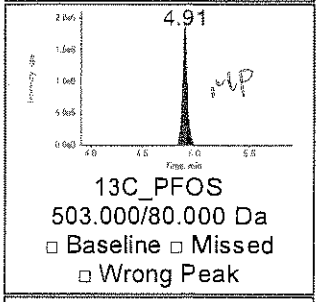

13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak

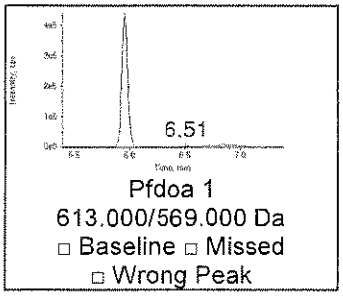

13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



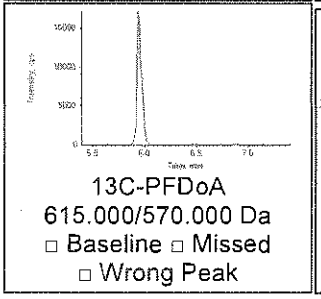
Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

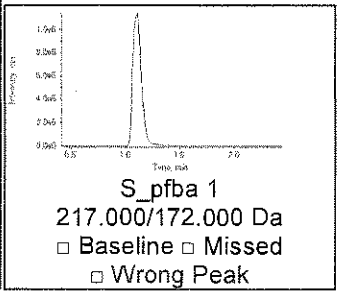


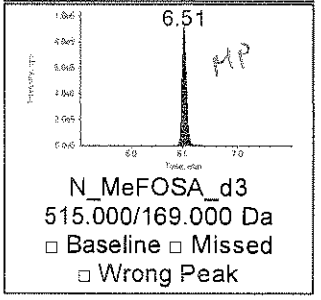
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

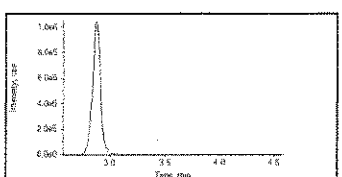

13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

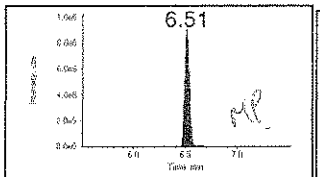

S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak



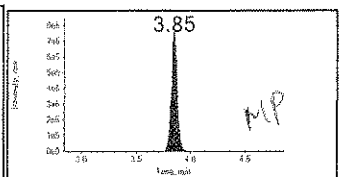
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

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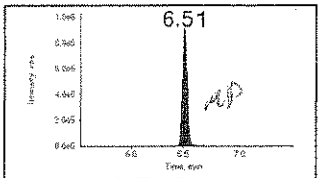

S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



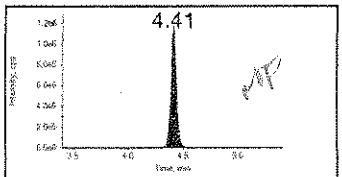
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



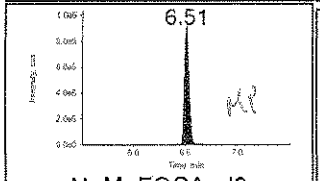
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



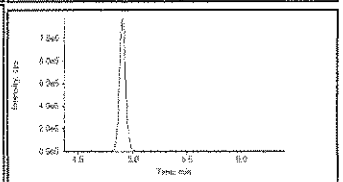
N_MeFOSA_d3
515.000/169.000 Da
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□ Wrong Peak

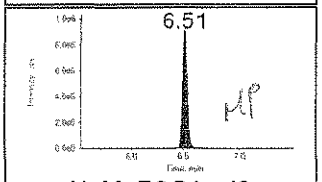


S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

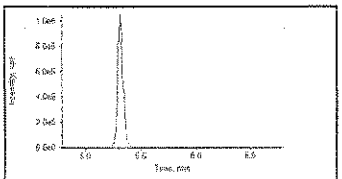


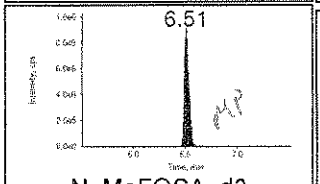
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

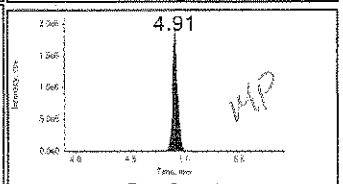


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

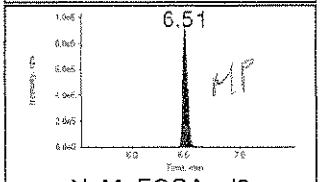

S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



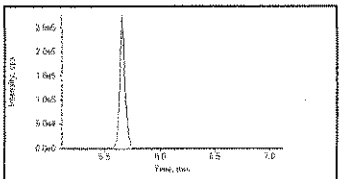
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

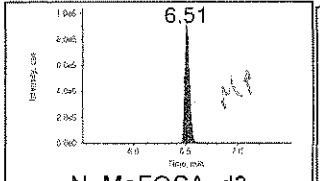


S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

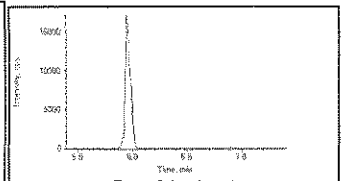


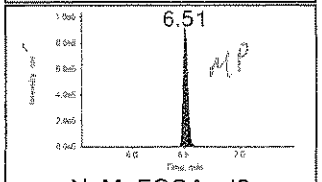
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

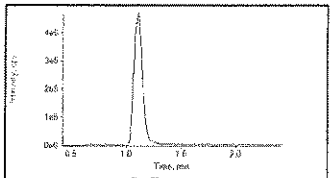

S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

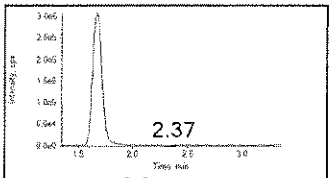


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

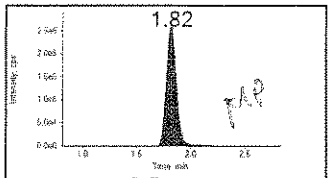
Ion Ratio Confirmation

APR 21 2016

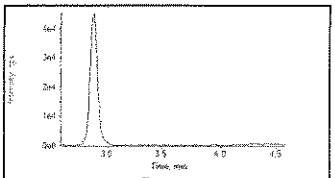

Pfba 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

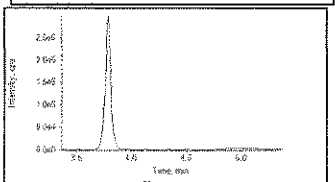


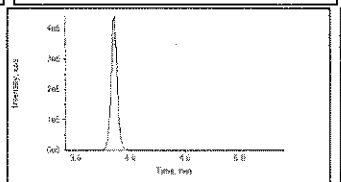
Pfpea 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

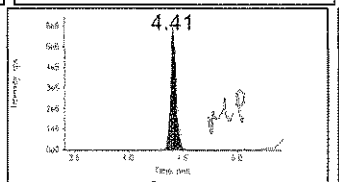


Pfbs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

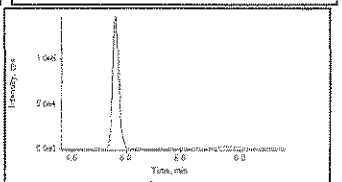

Pfhxa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

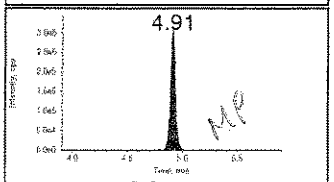

Pfhpa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfhxs 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

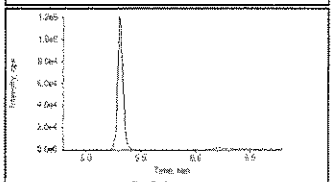


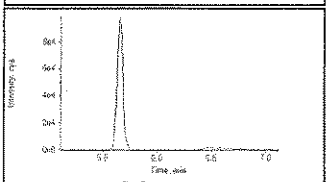
Pfoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

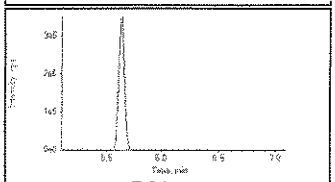

Pfna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

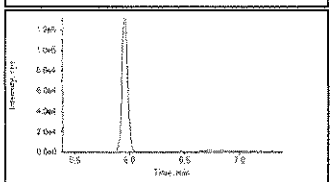


Pfos 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfda 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfuna 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfds 2
Mod?
□ Baseline □ Missed
□ Wrong Peak


Pfdoa 2
Mod?
□ Baseline □ Missed
□ Wrong Peak

APR 21 2016

Project	Ewan's Projects\PFCs
Data File	041916\5039.wiff
Result Table	041816.rdb
Instrument Name	LCMS02

Sample Name	IB	Injection Volume	5
Acquisition Date	4/19/2016 3:01:29 PM	Sample Type	Unknown
Acquisition Method	PFC_122812.dam	Dilution Factor	1.00
Injection Vial	1	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
Pfba 1	13C-PFBA	0	0.00 (1.43)	0	N/A	No
Pfpea 1	13C-PFHxA	0	0.00 (2.34)	0	N/A	No
Pfbs 1	18O_PFHS	1244234	0.00 (2.59)	0	N/A	Yes
Pfhxa 1	13C-PFHxA	0	0.00 (3.57)	0	N/A	No
Pfhpa 1	13C-PFHxA	0	0.00 (4.37)	0	N/A	No
Pfhxs 1	18O_PFHS	1244234	0.00 (4.41)	0	N/A	Yes
Pfoa 1	13C-PFOA	1830170	0.00 (4.94)	0	N/A	Yes
Pfna 1	13C-PFNA	0	0.00 (5.40)	0	N/A	No
Pfos 1	13C_PFOS	2929574	0.00 (5.40)	0	N/A	Yes
Pfda 1	13C-PFDA	0	0.00 (5.78)	0	N/A	No
Pfuna 1	13C-PFUnA	0	0.00 (6.12)	0	N/A	No
Pfds 1	13C_PFOS	2929574	0.00 (6.09)	0	N/A	Yes
Pfdoa 1	13C-PFDoA	0	6.51 (6.39)	10149	N/A	No
S_pfba 1	N_MeFOSA d3	1538478	0.00 (1.43)	0	N/A	Yes
S_phhxa 1	N_MeFOSA d3	1538478	0.00 (3.58)	0	N/A	Yes
S_pfhs 1	N_MeFOSA d3	1538478	3.85 (3.85)	1244234	14.6570	Yes
S_pfoa 1	N_MeFOSA d3	1538478	4.41 (4.41)	1830170	15.6360	Yes
S_pfna 1	N_MeFOSA d3	1538478	0.00 (5.38)	0	N/A	Yes
S_pfda 1	N_MeFOSA d3	1538478	0.00 (5.79)	0	N/A	Yes
S_pfos 1	N_MeFOSA d3	1538478	4.91 (4.92)	2929574	15.8940	Yes

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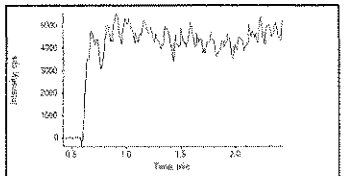
Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
S_pfuna 1	N_MeFOSA d3	1538478	0.00 (6.11)	0	N/A	Yes
S_pfdoda 1	N_MeFOSA d3	1538478	0.00 (6.40)	0	N/A	Yes

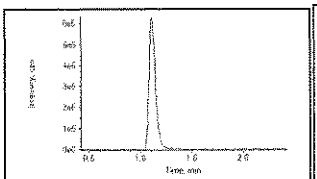
IRC Summary

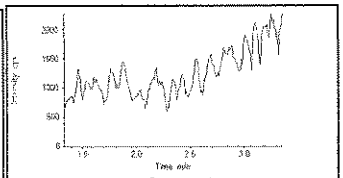
Analyte Peak Name	RT (Exp RT)	Area	Modified?	Calc (Exp) MRM Ratio	Ratio Confirms ID
Pfba 2	0.00 (1.42)	0	No	0.00 (0.89)	No
Pfpea 2	0.00 (2.36)	0	No	0.00 (1.07)	No
Pfbs 2	0.00 (2.59)	0	Yes	0.00 (0.41)	No
Pfhxa 2	3.63 (3.58)	1392	No	0.00 (0.09)	No
Pfhpa 2	0.00 (4.37)	0	No	0.00 (0.38)	No
Pfhxs 2	0.00 (4.41)	0	Yes	0.00 (0.39)	No
Pfoa 2	0.00 (4.94)	0	Yes	0.00 (1.93)	No
Pfna 2	0.00 (5.41)	0	No	0.00 (0.27)	No
Pfos 2	0.00 (5.39)	0	Yes	0.00 (0.34)	No
Pfda 2	0.00 (5.79)	0	No	0.00 (0.21)	No
Pfuna 2	0.00 (6.11)	0	No	0.00 (0.28)	No
Pfds 2	0.00 (6.09)	0	Yes	0.00 (0.32)	No
Pfdoa 2	0.00 (6.39)	0	No	0.00 (0.30)	No

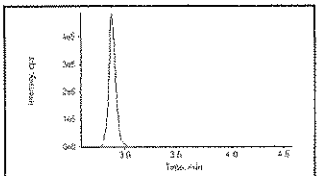
Quantitative Peak Review

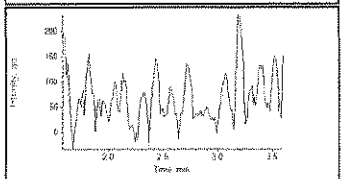
IB *No data for Sample ID*

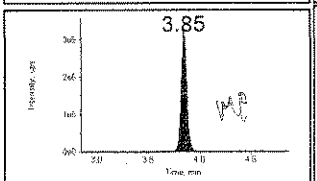

Pfba 1
213.010/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFBA
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

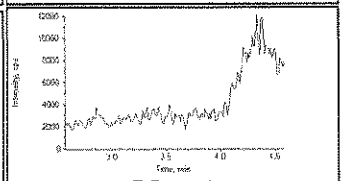

Pfpea 1
263.010/219.000 Da
□ Baseline □ Missed
□ Wrong Peak

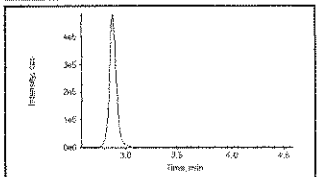

13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

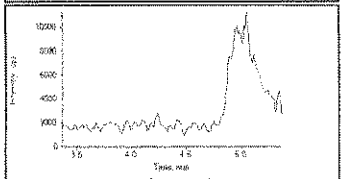

Pfbs 1
299.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

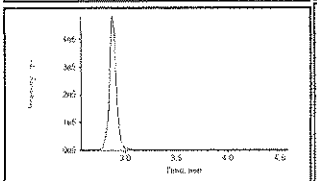


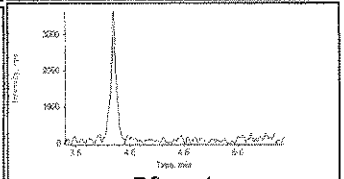
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

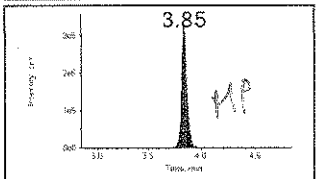

Pfhxa 1
313.000/269.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak

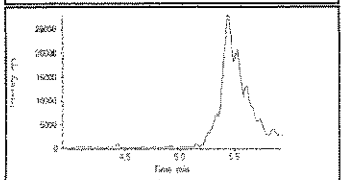

Pfhpa 1
363.000/319.000 Da
□ Baseline □ Missed
□ Wrong Peak

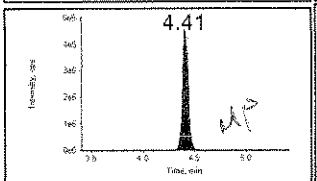

13C-PFHxA
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfhxs 1
399.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

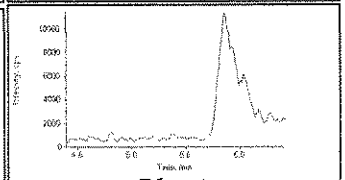


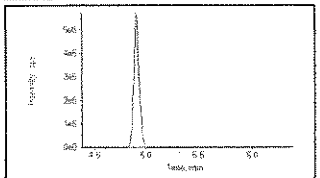
18O_PFHS
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak

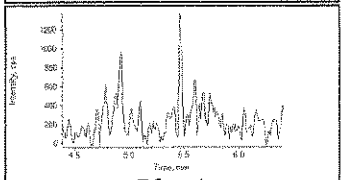

Pfoa 1
413.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

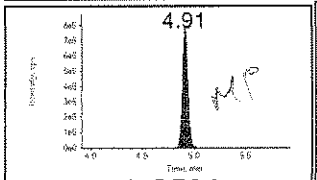


13C-PFOA
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak

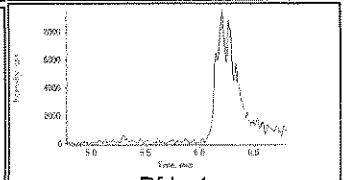

Pfna 1
463.000/419.000 Da
□ Baseline □ Missed
□ Wrong Peak

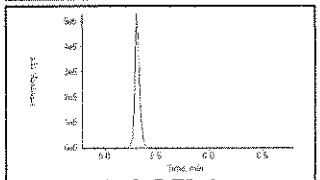

13C-PFNA
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak


Pfos 1
499.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

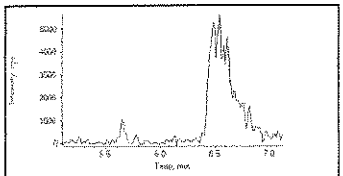


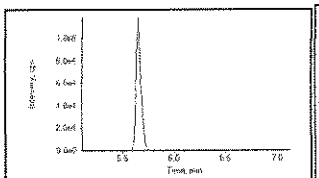
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

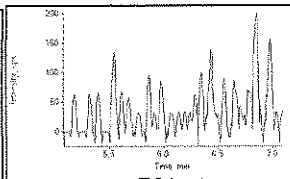

Pfda 1
513.000/469.000 Da
□ Baseline □ Missed
□ Wrong Peak

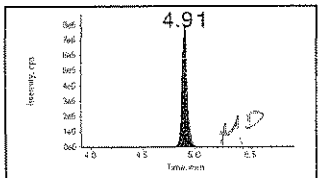

13C-PFDA
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak

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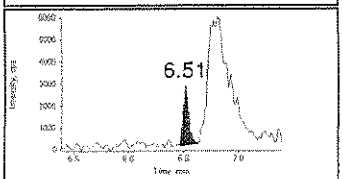

Pfuna 1
563.000/519.000 Da
□ Baseline □ Missed
□ Wrong Peak


13C-PFUnA
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak

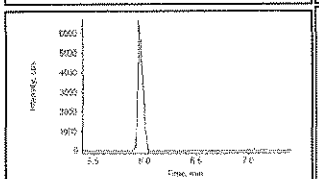

Pfds 1
599.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

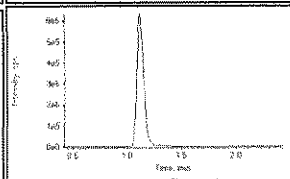


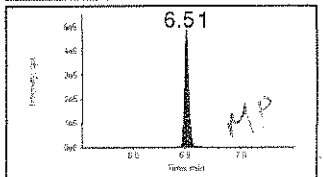
13C_PFOS
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak



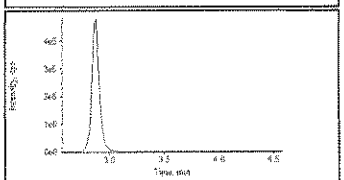
Pfdoa 1
613.000/569.000 Da
□ Baseline □ Missed
□ Wrong Peak

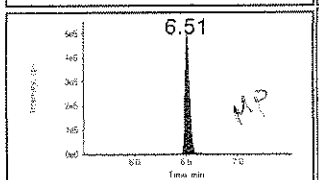

13C-PFDoA
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfba 1
217.000/172.000 Da
□ Baseline □ Missed
□ Wrong Peak

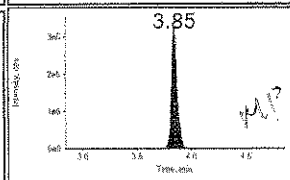


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

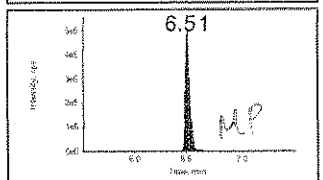

S_phhxa 1
315.000/270.000 Da
□ Baseline □ Missed
□ Wrong Peak



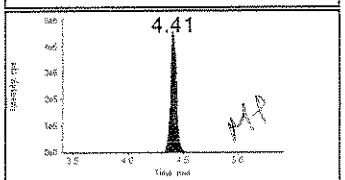
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak



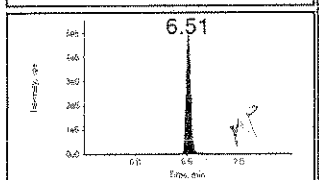
S_pfhs 1
403.000/103.000 Da
□ Baseline □ Missed
□ Wrong Peak



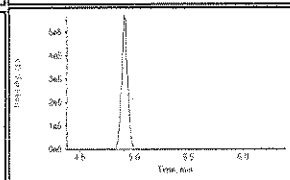
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

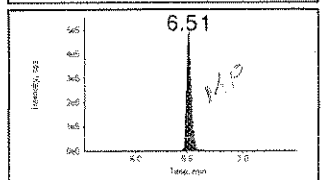


S_pfoa 1
417.000/372.000 Da
□ Baseline □ Missed
□ Wrong Peak



N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

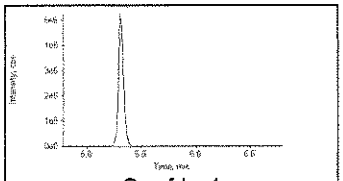

S_pfna 1
468.000/423.000 Da
□ Baseline □ Missed
□ Wrong Peak

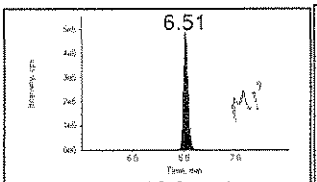


N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

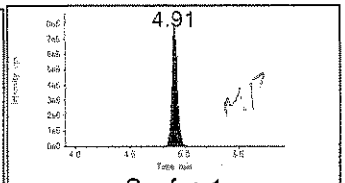
APR 2 1 2016

4/19/2016

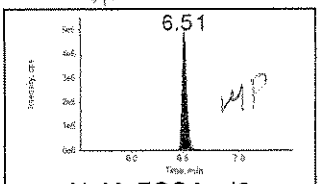

S_pfda 1
515.000/470.000 Da
□ Baseline □ Missed
□ Wrong Peak



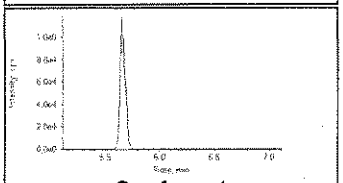
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

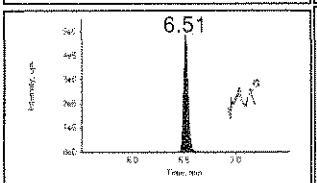


S_pfos 1
503.000/80.000 Da
□ Baseline □ Missed
□ Wrong Peak

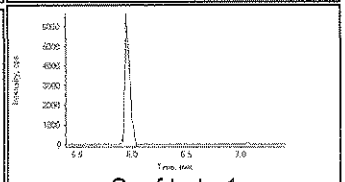


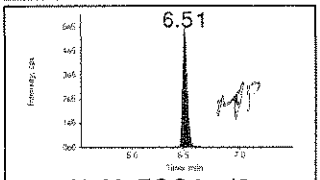
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak


S_pfuna 1
565.000/520.000 Da
□ Baseline □ Missed
□ Wrong Peak



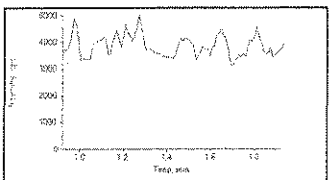
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

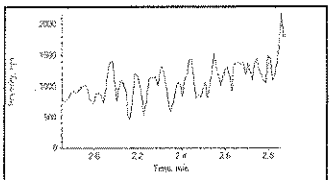

S_pfdoda 1
615.000/570.000 Da
□ Baseline □ Missed
□ Wrong Peak

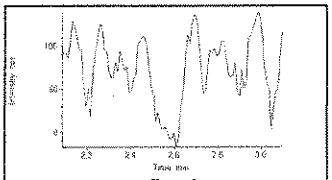


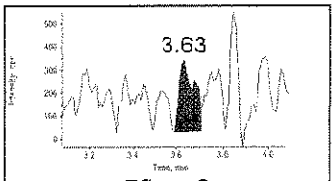
N_MeFOSA_d3
515.000/169.000 Da
□ Baseline □ Missed
□ Wrong Peak

Ion Ratio Confirmation

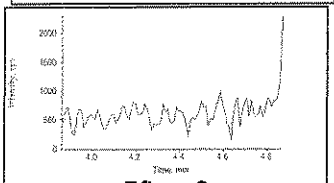

Pfba 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

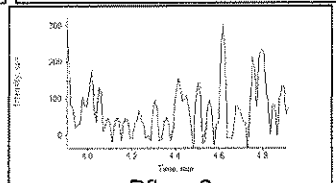

Pfpea 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

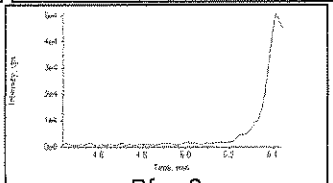

Pfbs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak

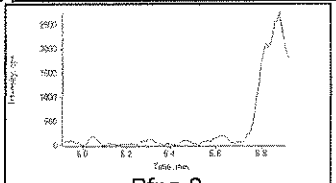


Pfhxa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

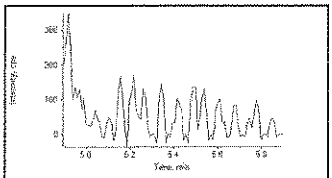

Pfhpa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak


Pfhxs 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak

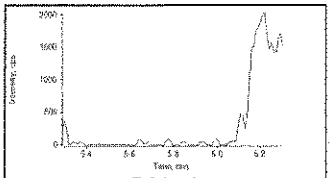

Pfoa 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak


Pfna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

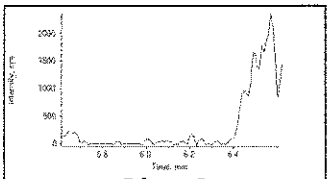
APR 21 2016



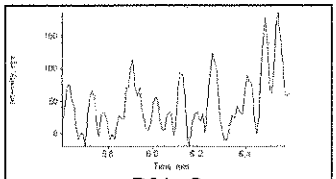
Pfos 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



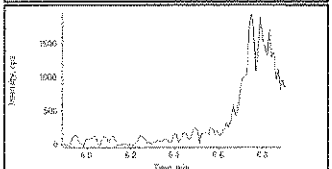
Pfda 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfuna 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak



Pfds 2
Mod? Yes
□ Baseline □ Missed
□ Wrong Peak



Pfdoa 2
Mod? No
□ Baseline □ Missed
□ Wrong Peak

APR 21 2016

Preparation Information Benchsheet

Prep Run#: 257445
Team: Organic LC/BRIGSBEY
Number of Copies to make: 1

Prep WorkFlow: OrgExtS(14)
Prep Method: EPA 3550B

Status: Draft
Prep Date/Time: 3/14/16 04:57 PM
Tc adj 4/18/16

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext. g	pH	Int. Vol	Final Vol mL	Surr Amt µL	Spike Amt µL
1	**K1602494-001**	KCH067-009 R,S	.01	✓	PFC/537M / PFOA	Soil	1.017	NA	NA	2 mL	20	—
2	**K1602494-002**	KCH067-010 R,S	.01	✓	PFC/537M / PFOA	Soil	1.094					—
3	**K1602494-003**	KCH067-011 R,S	.01	✓	PFC/537M / PFOA	Soil	1.116					—
4	**K1602494-004**	KCH067-012 R,S	.01	✓	PFC/537M / PFOA	Soil	1.086					—
5	**K1602494-005**	KCH067-013 R,S	.01	✓	PFC/537M / PFOA	Soil	1.058					—
6	**K1602494-006**	KCH067-014 R,S	.01	✓	PFC/537M / PFOA	Soil	1.064					—
7	**K1602494-007**	KCH067-015 R,S	.01	✓	PFC/537M / PFOA	Soil	1.009					—
8	**K1602494-008**	KCH067-016 R,S	.02	✓	PFC/537M / PFOA	Soil	1.080					—
9	**KQ1602426-01**	K1602494-008 MS R,S	.02	✓	PFC/537M / PFOA	Solid	1.091					20
10	**KQ1602426-02**	K1602494-008 DMS R,S	.02	✓	PFC/537M / PFOA	Solid	1.045					1
11	**KQ1602426-03**	LCS	—	✓	PFC/537M / PFOA	Solid	1.000					—
12	**KQ1602426-04**	MB	—	✓	PFC/537M / PFOA	Solid	1.000					—

Comments: R: Rocks S: sand

Surrogate ID: IS-OLC-01-270, exp 12-22-20, 2ppm, 20uL (PHCE-19)
Spike ID: IS-OLC-02-31J, exp 11/16/20, 2ppm, 20uL (PHCE-19)

Witnessed By: [signature] 3-16-16
Analyst: B Rigsbey 3.16.16
Assisted By:

Preparation Information Benchsheet

Prep Run#: 257445
Team: Organic LC/BRIGSBEY
Number of Copies to make: 1

Prep WorkFlow: OrgExtS(14)
Prep Method: EPA 3550B

Status: Prepped
Prep Date/Time: 3/14/16 04:57 PM

16 4/18/16

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	K1602494-001	KCH067-009	.01	PFC/537M/PFOA		Soil	1.0170g	2.00mL	
2	K1602494-002	KCH067-010	.01	PFC/537M/PFOA		Soil	1.0940g	2.00mL	
3	K1602494-003	KCH067-011	.01	PFC/537M/PFOA		Soil	1.1160g	2.00mL	
4	K1602494-004	KCH067-012	.01	PFC/537M/PFOA		Soil	1.0860g	2.00mL	
5	K1602494-005	KCH067-013	.01	PFC/537M/PFOA		Soil	1.0580g	2.00mL	
6	K1602494-006	KCH067-014	.01	PFC/537M/PFOA		Soil	1.0640g	2.00mL	
7	K1602494-007	KCH067-015	.01	PFC/537M/PFOA		Soil	1.0090g	2.00mL	
8	K1602494-008	KCH067-016	.02	PFC/537M/PFOA		Soil	1.0800g	2.00mL	
9	KQ1602426-01	K1602494-008 MS	.02	PFC/537M/PFOA		Solid	1.0910g	2.00mL	
10	KQ1602426-02	K1602494-008 DMS	.02	PFC/537M/PFOA		Solid	1.0450g	2.00mL	
11	KQ1602426-03	LCS		PFC/537M/PFOA		Solid	1g	2.00mL	
12	KQ1602426-04	MB		PFC/537M/PFOA		Solid	1g	2.00mL	

Spiking Solutions

Name: PFC Targets 2ppm — Inventory ID 88085 — Logbook Ref: 15-OLC-02-31J — Expires On: 11/16/2020

KQ1602426-01	20.00µL	KQ1602426-02	20.00µL	KQ1602426-03	20.00µL

Name: PFC IS — Inventory ID 88130 — Logbook Ref: 15-OLC-02-36I — Expires On: 08/16/2016

K1602494-001	1.00mL	K1602494-002	1.00mL	K1602494-003	1.00mL	K1602494-004	1.00mL	K1602494-005	1.00mL	K1602494-006	1.00mL
K1602494-007	1.00mL	K1602494-008	1.00mL	KQ1602426-01	1.00mL	KQ1602426-02	1.00mL	KQ1602426-03	1.00mL	KQ1602426-04	1.00mL

Name: PFC isotopes 2ppm — Inventory ID 88209 — Logbook Ref: 15-OLC-01-27O — Expires On: 12/22/2020

K1602494-001	20.00µL	K1602494-002	20.00µL	K1602494-003	20.00µL	K1602494-004	20.00µL	K1602494-005	20.00µL	K1602494-006	20.00µL
K1602494-007	20.00µL	K1602494-008	20.00µL	KQ1602426-01	20.00µL	KQ1602426-02	20.00µL	KQ1602426-03	20.00µL	KQ1602426-04	20.00µL

Preparation Steps

Step:	Extraction	Step:	Final Volume
Started:	3/14/16 16:57	Started:	3/16/16 16:16
Finished:	3/16/16 16:15	Finished:	3/16/16 16:16
By:	BRIGSBEY	By:	BRIGSBEY
Comments		Comments	

Preparation Information Benchsheet

Prep Run#: 257445
Team: Organic LC/BRIGSBEY

Prep WorkFlow: OrgExtS(14)
Prep Method: EPA 3550B

Status: Prepped
Prep Date/Time: 3/14/16 04:57 PM
Revised 4/18/16

Comments: _____

Reviewed By: _____ Date: 4/20/16

Chain of Custody

Relinquished By: B. Brigsbey	Date: 3-16-16	Extracts Examined	
Received By: _____	Date: 3/18/16	(Yes)	No

Additional prep information for Perfluorinated Compounds
by HPLC/MS/MS – SOP: LCP-PFC (rev. 2)

Soil/Paperboard

Service Request K1602494 **Workgroup** KQ1602426

Prep Start (Time/Date/Initial): 0950 3·16·16

Prep Stop (Time/Date/Initial): 1010 3·16·16

0.1% Acetic Acid/ACN Lot # IS-OLC-01-28A

Sonication Start (Time/Date/Initial): 1026 3·16·16 BR

Sonication Stop (Time/Date/Initial): 1326 3·16·16 BR

TurboVap Start (ID:K-TurboVap-03)(Temp/Time/Date/Initial): 50°C 1440 3·16·16 BR

TurboVap Stop (Time/Date/Initial): ~~135~~ 1550 3·16·16 BR
BR EE 3·16·16

IS (or IS/MeOH solution) Lot #: IS-OLC-02-36I

Extract Storage: Bench

Completed(Time/Date/Initial): 1610 3·16·16 BR

Comments/Observations:

Bench Sheet Review Check List
☐ Hold Times Met (if no, Reason:)
☐ Prep date, dept, method, product code correct in stealth
☐ Spike Information correct
☐ Weights/Volumes and units correct on raw and final bench sheets
☐ Sample IDs have been checked—Bottle numbers appended if required
☐ Names present for: Started by, Completed by, relinquished by, and witnessed by.
☐ Training has been circled
☐ Extract Storage recorded
☐ Additional Prep Sheet completely filled out (NA or line out Blanks)
☐ All clean-ups have been noted on additional prep sheet
☐ Signed service request with Form V, if applicable, has been attached

Preparation Information Benchsheet

Prep Run#: 257569
Team: Organic LC/RHOLDEN
Number of Copies to make: 5

Prep WorkFlow: OrgExtAq(14)
Prep Method: EPA 3535A

Status: Draft
Prep Date/Time: 3/16/16 09:29 AM
17 RKH 3-17-16

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext. (mL)	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	K1602419-001	Bathroom Sink Water A & B	.01	✓	PFC/537M / PFOA	Drinking Water	260	3.5	NA	5.0mL	20µl	
2	K1602423-001	Kitchen Tap	.01	✓	PFC/537M / PFOA	Drinking Water	270	3.5				
3	K1602533-006	CHPE08TEIX-Q0316	.04	✓	PFC/537M / PFOA	Water	290	3.5				
4	K1602533-007	CHPE087CURR-Q0316	.04	✓	PFC/537M / PFOA	Water	290	3.5				
5	K1602533-008	CHPE06SARA-Q0316	.04	✓	PFC/537M / PFOA	Water	290	3.5				
6	K1602533-009	CHPE052CAPE-Q0316	.04	✓	PFC/537M / PFOA	Water	290	3.5				
7	K1602533-010	CHPE050CAPE-Q0316	.04	✓	PFC/537M / PFOA	Water	290	3.5				
8	K1602533-013	CHPZ0003-O0316	.04	✓	PFC/537M / PFOA	Water	290	3.5				
9	K1602494-009	KCH067-019	.01	✓	PFC/537M / PFOA	Water	290	3.5				
10	K1602627-007	CHPE024MCAR-Q0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
11	K1602627-008	CHPE021MCAR-Q0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
12	K1602627-009	CHPE019MCAR-Q0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
13	K1602627-010	CHPE0109HAY-Q0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
14	K1602627-011	CHPE0171CUR-Q0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
15	K1602627-012	CHPE0119HAY-Q0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
16	K1602627-013	CHPE0018GB-Q0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
17	K1602627-014	CHPZ060VFRM-O0316	.08	✓	PFC/537M / PFOA	Water	290	3.5				
18	KQ1602477-01	LCS			PFC/537M / PFOA	Liquid	250	3.5				20µl
19	KQ1602477-02	DLCS			PFC/537M / PFOA	Liquid	250	3.5		✓		20µl
20	KQ1602477-03	MB			PFC/537M / PFOA	Liquid	250	3.5				

Comments: Strata-200mg/6ml Weak Anion, Lot # 5322-015.
I.S. – 15-0LC-02-42E 10µl, 500ppb, exp'. 5-19-16

Surrogate ID: 15-0LC-02-42J, 2ppm, exp: 9-16-16
• 15-0LC-01-270, 2ppm, exp' 12-22-20

Spike ID: 15-0LC-02-33C, 2ppm, exp: 5-16-16
• 15-0LC-02-315, 2ppm, exp' 11-16-20

Witnessed By: No Witness.

Analyst: D Holda 3-17-16

Assisted By: – NA –

Preparation Information Benchsheet

Prep Run#: 257569
Team: Organic LC/RHOLDEN
Number of Copies to make: 5

Prep WorkFlow: OrgExtAq(14)
Prep Method: EPA 3535A

Status: Prepped
Prep Date/Time: 3/17/16 09:29 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	K1602419-001	Bathroom Sink Water A & B	.01	PFC/537M/PFOA		Drinking Water	260.0000mL	8.00mL	
2	K1602423-001	Kitchen Tap	.01	PFC/537M/PFOA		Drinking Water	270.0000mL	8.00mL	
3	K1602533-006	CHPE08TEIX-Q0316	.04	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
4	K1602533-007	CHPE087CURR-Q0316	.04	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
5	K1602533-008	CHPE06SARA-Q0316	.04	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
6	K1602533-009	CHPE052CAPE-Q0316	.04	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
7	K1602533-010	CHPE050CAPE-Q0316	.04	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
8	K1602533-013	CHPZ0003-O0316	.04	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
9	K1602494-009	KCH067-019	.01	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
10	K1602627-007	CHPE024MCAR-Q0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
11	K1602627-008	CHPE021MCAR-Q0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
12	K1602627-009	CHPE019MCAR-Q0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
13	K1602627-010	CHPE0109HAY-Q0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
14	K1602627-011	CHPE0171CUR-Q0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
15	K1602627-012	CHPE0119HAY-Q0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
16	K1602627-013	CHPE0018GB-Q0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
17	K1602627-014	CHPZ060VFRM-O0316	.08	PFC/537M/PFOA		Water	290.0000mL	8.00mL	
18	KQ1602477-01	LCS		PFC/537M/PFOA		Liquid	250.0000mL	8.00mL	
19	KQ1602477-02	DLCS		PFC/537M/PFOA		Liquid	250.0000mL	8.00mL	
20	KQ1602477-03	MB		PFC/537M/PFOA		Liquid	250.0000mL	8.00mL	

Preparation Information Benchsheet

Prep Run#: 257569
Team: Organic LC/RHOLDEN
Prep WorkFlow: OrgExtAq(14)
Prep Method: EPA 3535A
Status: Prepped
Prep Date/Time: 3/17/16 09:29 AM

Spiking Solutions

Name:	PFC Targets 2ppm	Inventory ID	88085	Logbook Ref:	15-OLC-02-31J	Expires On:	11/16/2020

KQ1602477-01	20.00µL	KQ1602477-02	20.00µL								

Name:	PFC isotopes 2ppm	Inventory ID	88209	Logbook Ref:	15-OLC-01-27O	Expires On:	12/22/2020

K1602419-001	20.00µL	K1602423-001	20.00µL	K1602494-009	20.00µL	K1602533-006	20.00µL	K1602533-007	20.00µL	K1602533-008	20.00µL
K1602533-009	20.00µL	K1602533-010	20.00µL	K1602533-013	20.00µL	K1602627-007	20.00µL	K1602627-008	20.00µL	K1602627-009	20.00µL
K1602627-010	20.00µL	K1602627-011	20.00µL	K1602627-012	20.00µL	K1602627-013	20.00µL	K1602627-014	20.00µL	KQ1602477-01	20.00µL
KQ1602477-02	20.00µL	KQ1602477-03	20.00µL								

Name:	PFC Targets 2ppm	Inventory ID	88382	Logbook Ref:	15-OLC-02-33C	Expires On:	08/11/2016

KQ1602477-01	20.00µL	KQ1602477-02	20.00µL								

Name:	PFC Targets 2ppm	Inventory ID	88798	Logbook Ref:	15-OLC-02-42J	Expires On:	09/16/2016

K1602419-001	20.00µL	K1602423-001	20.00µL	K1602494-009	20.00µL	K1602533-006	20.00µL	K1602533-007	20.00µL	K1602533-008	20.00µL
K1602533-009	20.00µL	K1602533-010	20.00µL	K1602533-013	20.00µL	K1602627-007	20.00µL	K1602627-008	20.00µL	K1602627-009	20.00µL
K1602627-010	20.00µL	K1602627-011	20.00µL	K1602627-012	20.00µL	K1602627-013	20.00µL	K1602627-014	20.00µL	KQ1602477-01	20.00µL
KQ1602477-02	20.00µL	KQ1602477-03	20.00µL								

Preparation Steps

Step:	Extraction	Step:	Final Volume
Started:	3/17/16 09:29	Started:	3/17/16 10:35
Finished:	3/17/16 10:35	Finished:	3/17/16 10:35
By:	RHOLDEN	By:	RHOLDEN
Comments		Comments	

Comments: _____

Reviewed By: _____ Date: 3/21/16

Preparation Information Benchsheet

Prep Run#: 257569
Team: Organic LC/RHOLDEN

Prep WorkFlow: OrgExtAq(14)
Prep Method: EPA 3535A

Status: Prepped
Prep Date/Time: 3/17/16 09:29 AM

Chain of Custody

Relinquished By:	[signature]	Date:	3-17-16	Extracts Examined: Yes (circled) / No
Received By:	[signature]	Date:	3/17/16	

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439
ATTN: Ms. Karin Kaiser

May 25, 2016

SUBJECT: China Lake, CTO 067, Data Validation

Dear Ms. Kaiser,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on May 2, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #36282:

SDG #	Fraction
16C070 16C074 16C129 78915 78998 K1602494 K1602709	Volatiles, PAHs, Chlorinated Pesticides, PCBs, Metals, TPH as Gasoline, TPH as Extractables, Explosives, Perchlorate, Polychlorinated Dioxins/Dibenzofurans, Perfluorinated Alkyl Acids

The data validation was performed under Level III & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan, Field Sampling Plan and Quality Assurance Project Plan, Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43 and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California , February 2016
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.0, July 2013
- USEPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins, and Chlorinated Dibenzofurans Data Review, September 2011
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, August 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, August 2014
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Hold HC & CD for KK approval- EM;

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
Project Manager/Senior Chemist

6,096 pages-SF

Attachment 1

EDD Client Select IV

LDC #36282 (Kleinfelder-Evergreen, CO / China Lake, CTO 067)

LDC	SDG#	DATE REC'D	(2) DATE DUE	VOA (8260B)		PAHs (8270C-SIM)		Pest. (8081A)		PCBs (8082)		Metals (6020A/7470A)		TPH-G (8015B)		TPH-E (8015B)		Dioxins (8290A)		Expl. (8330A)		CLO_4 (6850)		PFCs (537M)		Cr(VI) (7199)													
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	16C070	05/02/16	05/16/16	1	8	0	3	0	3	0	3	0	23	1	8	0	17	-	-	0	13	0	13	-	-	0	16												
A	16C070	05/02/16	05/16/16	0	2	0	1	0	1	0	1	0	4	0	2	0	2	-	-	0	1	0	1	-	-	0	2												
B	16C074	05/02/16	05/16/16	2	0	1	0	1	0	1	0	1	0	2	0	1	0	-	-	1	0	1	0	-	-	1	0												
C	16C129	05/02/16	05/16/16	2	0	2	1	2	14	1	0	2	9	2	0	2	1	-	-	2	8	2	8	-	-	2	1												
C	16C129	05/02/16	05/16/16	0	0	0	1	0	2	0	0	0	2	0	0	0	1	-	-	0	1	0	1	-	-	0	1												
D	78915	05/02/16	05/16/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	13	-	-	-	-	-	-	-	-												
D	78915	05/02/16	05/16/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	-	-	-	-	-	-	-												
E	78998	05/02/16	05/16/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-												
E	78998	05/02/16	05/16/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	-	-	-	-	-	-	-												
F	K1602494	05/02/16	05/16/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7	-	-												
F	K1602494	05/02/16	05/16/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	-												
G	K1602709	05/02/16	05/16/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	-	-												
Total	T/PG			5	10	3	6	3	20	2	4	3	38	5	10	3	21	3	16	3	23	3	23	2	8	3	20	0	0	0	0	0	0	0	0	0	0	0	237

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

L:\Kleinfelder\China Lake\36282ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-002	16C070-02	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-006	16C070-06	Soil	03/08/16
KCH067-008	16C070-08	Soil	03/08/16
KCH067-010	16C070-10	Soil	03/08/16
KCH067-011	16C070-11	Soil	03/08/16
KCH067-013	16C070-13	Soil	03/08/16
KCH067-014	16C070-14	Soil	03/08/16
KCH067-016**	16C070-16**	Soil	03/08/16
KCH067-018	16C070-18	Soil	03/08/16
KCH067-020	16C070-19	Water	03/08/16
KCH067-016MS	16C070-16MS	Soil	03/08/16
KCH067-016MSD	16C070-16MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
02/26/16	tert-Butyl alcohol	0.007 (≤0.01)	All water samples in SDG 16C070	UJ (all non-detects)	A

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
03/14/17	tert-Butyl alcohol	0.007 (≤0.01)	All water samples in SDG 16C070	UJ (all non-detects)	A

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-020 was identified as a trip blank. No contaminants were found.

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-019	03/08/16	Carbon disulfide	0.40 ng/L	All soil samples in SDG 16C070

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated field blanks.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
KCH067-016MS/MSD (KCH067-016**)	tert-Butyl alcohol	24 (≤20)	NA	-

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration and continuing calibration RRF, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Volatiles - Data Qualification Summary - SDG 16C070

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-020	tert-Butyl alcohol	UJ (all non-detects)	A	Initial calibration (RRF) (5)
KCH067-020	tert-Butyl alcohol	UJ (all non-detects)	A	Continuing calibration (RRF) (5)

China Lake CTO 067
Volatiles - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Volatiles - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 12:10
Sample ID	: KCH067-002	Date Analyzed:	03/15/16 12:10
Lab Samp ID	: C070-02	Dilution Factor:	1.01
Lab File ID	: RCB171	Matrix	: SOIL
Ext Btch ID	: VS03C08	% Moisture	: 9.0
Calib. Ref.	: RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	5.5	0.55	1.1
1,1,1-TRICHLOROETHANE	ND	5.5	0.55	1.1
1,1,2,2-TETRACHLOROETHANE	ND	5.5	0.55	1.1
1,1,2-TRICHLOROETHANE	ND	5.5	0.55	1.1
1,1-DICHLOROETHANE	ND	5.5	0.55	1.1
1,1-DICHLOROETHENE	ND	5.5	0.55	1.1
1,1-DICHLOROPROPENE	ND	5.5	0.55	1.1
1,2,3-TRICHLOROBENZENE	ND	5.5	1.1	2.2
1,2,3-TRICHLOROPROPANE	ND	5.5	1.1	2.2
1,2,4-TRICHLOROBENZENE	ND	5.5	1.1	2.2
1,2,4-TRIMETHYLBENZENE	ND	5.5	0.61	2.2
1,2-DIBROMO-3-CHLOROPROPANE	ND	5.5	1.1	2.2
1,2-DIBROMOETHANE	ND	5.5	0.55	1.1
1,2-DICHLOROBENZENE	ND	5.5	0.55	1.1
1,2-DICHLOROETHANE	ND	5.5	0.55	1.1
1,2-DICHLOROPROPANE	ND	5.5	0.55	1.1
1,3,5-TRIMETHYLBENZENE	ND	5.5	0.65	2.2
1,3-DICHLOROBENZENE	ND	5.5	0.58	1.1
1,3-DICHLOROPROPANE	ND	5.5	0.55	1.1
1,4-DICHLOROBENZENE	ND	5.5	0.55	1.1
2,2-DICHLOROPROPANE	ND	5.5	1.1	2.2
2-BUTANONE	ND	11	2.8	5.5
2-CHLOROTOLUENE	ND	5.5	0.91	2.2
2-HEXANONE	ND	11	3.2	5.5
4-CHLOROTOLUENE	ND	5.5	0.74	2.2
ACETONE	ND	11	3.4	5.5
BENZENE	ND	5.5	0.55	1.1
BROMOBENZENE	ND	5.5	0.55	1.1
BROMOCHLOROMETHANE	ND	5.5	0.55	1.1
BROMODICHLOROMETHANE	ND	5.5	0.55	1.1
BROMOFORM	ND	5.5	1.1	2.2
BROMOMETHANE	ND	11	2.0	2.2
CARBON DISULFIDE	ND	5.5	0.55	1.1
CARBON TETRACHLORIDE	ND	5.5	0.60	1.1
CHLOROBENZENE	ND	5.5	0.55	1.1
CHLOROETHANE	ND	5.5	1.4	2.2
CHLOROFORM	ND	5.5	0.55	1.1
CHLOROMETHANE	ND	5.5	1.1	2.2
CIS-1,2-DICHLOROETHENE	ND	5.5	0.55	1.1
CIS-1,3-DICHLOROPROPENE	ND	5.5	0.55	1.1
DIBROMOCHLOROMETHANE	ND	5.5	0.55	1.1
DIBROMOMETHANE	ND	5.5	0.55	1.1
DICHLORODIFLUOROMETHANE	ND	5.5	1.3	2.2
ETHYLBENZENE	ND	5.5	0.55	1.1
HEXACHLOROBUTADIENE	ND	5.5	1.1	2.2
ISOPROPYLBENZENE	ND	5.5	0.71	2.2
M/P-XYLENES	ND	11	1.1	2.2
4-METHYL-2-PENTANONE	ND	11	3.1	5.5
METHYLENE CHLORIDE	ND	11	2.2	5.5
METHYL TERT-BUTYL ETHER	ND	5.5	0.55	1.1
NAPHTHALENE	ND	11	1.1	2.2
N-BUTYLBENZENE	ND	5.5	0.78	2.2
N-PROPYLBENZENE	ND	5.5	0.72	2.2
O-XYLENE	ND	5.5	0.55	1.1
P-ISOPROPYLTOLUENE	ND	5.5	0.69	2.2
SEC-BUTYLBENZENE	ND	5.5	0.74	2.2
STYRENE	ND	5.5	1.1	2.2
TERT-BUTYLBENZENE	ND	5.5	0.69	2.2
TETRACHLOROETHENE	ND	5.5	0.55	1.1
TOLUENE	ND	5.5	0.55	1.1
TRANS-1,2-DICHLOROETHENE	ND	5.5	0.55	1.1
TRANS-1,3-DICHLOROPROPENE	ND	5.5	0.55	1.1
TRICHLOROETHENE	ND	5.5	0.55	1.1
TRICHLOROFLUOROMETHANE	ND	5.5	1.2	2.2
VINYL CHLORIDE	ND	5.5	1.6	2.2
TERTIARY BUTYL ALCOHOL	ND	22	10	11

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	53.8	55.49	97.0	71-136
4-BROMOFLUOROBENZENE	52.0	55.49	93.8	79-119
TOLUENE-D8	53.3	55.49	96.1	85-116
DIBROMOFLUOROMETHANE	53.9	55.49	97.2	78-119

3/17/16

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 12:38
Sample ID:	KCH067-004	Date Analyzed:	03/15/16 12:38
Lab Samp ID:	C070-04	Dilution Factor:	0.91
Lab File ID:	RCB172	Matrix	: SOIL
Ext Btch ID:	VS03C08	% Moisture	: 4.9
Calib. Ref.:	RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.8	0.48	0.96
1,1,1-TRICHLOROETHANE	ND	4.8	0.48	0.96
1,1,2,2-TETRACHLOROETHANE	ND	4.8	0.48	0.96
1,1,2-TRICHLOROETHANE	ND	4.8	0.48	0.96
1,1-DICHLOROETHANE	ND	4.8	0.48	0.96
1,1-DICHLOROETHENE	ND	4.8	0.48	0.96
1,1-DICHLOROPROPENE	ND	4.8	0.48	0.96
1,2,3-TRICHLOROBENZENE	ND	4.8	0.96	1.9
1,2,3-TRICHLOROPROPANE	ND	4.8	0.96	1.9
1,2,4-TRICHLOROBENZENE	ND	4.8	0.96	1.9
1,2,4-TRIMETHYLBENZENE	ND	4.8	0.53	1.9
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.8	0.96	1.9
1,2-DIBROMOETHANE	ND	4.8	0.48	0.96
1,2-DICHLOROBENZENE	ND	4.8	0.48	0.96
1,2-DICHLOROETHANE	ND	4.8	0.48	0.96
1,2-DICHLOROPROPANE	ND	4.8	0.48	0.96
1,3,5-TRIMETHYLBENZENE	ND	4.8	0.56	1.9
1,3-DICHLOROBENZENE	ND	4.8	0.50	0.96
1,3-DICHLOROPROPANE	ND	4.8	0.48	0.96
1,4-DICHLOROBENZENE	ND	4.8	0.48	0.96
2,2-DICHLOROPROPANE	ND	4.8	0.96	1.9
2-BUTANONE	ND	9.6	2.4	4.8
2-CHLOROTOLUENE	ND	4.8	0.78	1.9
2-HEXANONE	ND	9.6	2.8	4.8
4-CHLOROTOLUENE	ND	4.8	0.64	1.9
ACETONE	ND	9.6	3.0	4.8
BENZENE	ND	4.8	0.48	0.96
BROMOBENZENE	ND	4.8	0.48	0.96
BROMOCHLOROMETHANE	ND	4.8	0.48	0.96
BROMODICHLOROMETHANE	ND	4.8	0.48	0.96
BROMOFORM	ND	4.8	0.96	1.9
BROMOMETHANE	ND	9.6	1.7	1.9
CARBON DISULFIDE	ND	4.8	0.48	0.96
CARBON TETRACHLORIDE	ND	4.8	0.52	0.96
CHLOROBENZENE	ND	4.8	0.48	0.96
CHLOROETHANE	ND	4.8	1.2	1.9
CHLOROFORM	ND	4.8	0.48	0.96
CHLOROMETHANE	ND	4.8	0.96	1.9
CIS-1,2-DICHLOROETHENE	ND	4.8	0.48	0.96
CIS-1,3-DICHLOROPROPENE	ND	4.8	0.48	0.96
DIBROMOCHLOROMETHANE	ND	4.8	0.48	0.96
DIBROMOMETHANE	ND	4.8	0.48	0.96
DICHLORODIFLUOROMETHANE	ND	4.8	1.1	1.9
ETHYLBENZENE	ND	4.8	0.48	0.96
HEXACHLOROBUTADIENE	ND	4.8	0.96	1.9
ISOPROPYLBENZENE	ND	4.8	0.61	1.9
M/P-XYLENES	ND	9.6	0.96	1.9
4-METHYL-2-PENTANONE	ND	9.6	2.7	4.8
METHYLENE CHLORIDE	ND	9.6	1.9	4.8
METHYL TERT-BUTYL ETHER	ND	4.8	0.48	0.96
NAPHTHALENE	ND	9.6	0.96	1.9
N-BUTYLBENZENE	ND	4.8	0.67	1.9
N-PROPYLBENZENE	ND	4.8	0.62	1.9
O-XYLENE	ND	4.8	0.48	0.96
P-ISOPROPYLTOLUENE	ND	4.8	0.59	1.9
SEC-BUTYLBENZENE	ND	4.8	0.64	1.9
STYRENE	ND	4.8	0.96	1.9
TERT-BUTYLBENZENE	ND	4.8	0.59	1.9
TETRACHLOROETHENE	ND	4.8	0.48	0.96
TOLUENE	ND	4.8	0.48	0.96
TRANS-1,2-DICHLOROETHENE	ND	4.8	0.48	0.96
TRANS-1,3-DICHLOROPROPENE	ND	4.8	0.48	0.96
TRICHLOROETHENE	ND	4.8	0.48	0.96
TRICHLOROFLUOROMETHANE	ND	4.8	1.1	1.9
VINYL CHLORIDE	ND	4.8	1.3	1.9
TERTIARY BUTYL ALCOHOL	ND	19	8.8	9.6

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	47.1	47.84	98.4	71-136
4-BROMOFLUOROBENZENE	45.2	47.84	94.4	79-119
TOLUENE-D8	46.1	47.84	96.3	85-116
DIBROMOFLUOROMETHANE	44.7	47.84	93.5	78-119

D5 17/16

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:06
Sample ID:	KCH067-006	Date Analyzed:	03/15/16 13:06
Lab Samp ID:	C070-06	Dilution Factor:	0.92
Lab File ID:	RCB173	Matrix	: SOIL
Ext Btch ID:	VS03C08	% Moisture	: 2.2
Calib. Ref.:	RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.7	0.47	0.94
1,1,1-TRICHLOROETHANE	ND	4.7	0.47	0.94
1,1,2,2-TETRACHLOROETHANE	ND	4.7	0.47	0.94
1,1,2-TRICHLOROETHANE	ND	4.7	0.47	0.94
1,1-DICHLOROETHANE	ND	4.7	0.47	0.94
1,1-DICHLOROETHENE	ND	4.7	0.47	0.94
1,1-DICHLOROPROPENE	ND	4.7	0.47	0.94
1,2,3-TRICHLOROBENZENE	ND	4.7	0.94	1.9
1,2,3-TRICHLOROPROPANE	ND	4.7	0.94	1.9
1,2,4-TRICHLOROBENZENE	ND	4.7	0.94	1.9
1,2,4-TRIMETHYLBENZENE	ND	4.7	0.52	1.9
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.7	0.94	1.9
1,2-DIBROMOETHANE	ND	4.7	0.47	0.94
1,2-DICHLOROBENZENE	ND	4.7	0.47	0.94
1,2-DICHLOROETHANE	ND	4.7	0.47	0.94
1,2-DICHLOROPROPANE	ND	4.7	0.47	0.94
1,3,5-TRIMETHYLBENZENE	ND	4.7	0.56	1.9
1,3-DICHLOROBENZENE	ND	4.7	0.49	0.94
1,3-DICHLOROPROPANE	ND	4.7	0.47	0.94
1,4-DICHLOROBENZENE	ND	4.7	0.47	0.94
2,2-DICHLOROPROPANE	ND	4.7	0.94	1.9
2-BUTANONE	ND	9.4	2.4	4.7
2-CHLOROTOLUENE	ND	4.7	0.77	1.9
2-HEXANONE	ND	9.4	2.7	4.7
4-CHLOROTOLUENE	ND	4.7	0.63	1.9
ACETONE	ND	9.4	2.9	4.7
BENZENE	ND	4.7	0.47	0.94
BROMOBENZENE	ND	4.7	0.47	0.94
BROMOCHLOROMETHANE	ND	4.7	0.47	0.94
BROMODICHLOROMETHANE	ND	4.7	0.47	0.94
BROMOFORM	ND	4.7	0.94	1.9
BROMOMETHANE	ND	9.4	1.7	1.9
CARBON DISULFIDE	ND	4.7	0.47	0.94
CARBON TETRACHLORIDE	ND	4.7	0.51	0.94
CHLOROBENZENE	ND	4.7	0.47	0.94
CHLOROETHANE	ND	4.7	1.2	1.9
CHLOROFORM	ND	4.7	0.47	0.94
CHLOROMETHANE	ND	4.7	0.94	1.9
CIS-1,2-DICHLOROETHENE	ND	4.7	0.47	0.94
CIS-1,3-DICHLOROPROPENE	ND	4.7	0.47	0.94
DIBROMOCHLOROMETHANE	ND	4.7	0.47	0.94
DIBROMOMETHANE	ND	4.7	0.47	0.94
DICHLORODIFLUOROMETHANE	ND	4.7	1.1	1.9
ETHYLBENZENE	ND	4.7	0.47	0.94
HEXACHLOROBUTADIENE	ND	4.7	0.94	1.9
ISOPROPYLBENZENE	ND	4.7	0.60	1.9
M/P-XYLENES	ND	9.4	0.94	1.9
4-METHYL-2-PENTANONE	ND	9.4	2.6	4.7
METHYLENE CHLORIDE	ND	9.4	1.9	4.7
METHYL TERT-BUTYL ETHER	ND	4.7	0.47	0.94
NAPHTHALENE	ND	9.4	0.94	1.9
N-BUTYLBENZENE	ND	4.7	0.66	1.9
N-PROPYLBENZENE	ND	4.7	0.61	1.9
O-XYLENE	ND	4.7	0.47	0.94
P-ISOPROPYLTOLUENE	ND	4.7	0.58	1.9
SEC-BUTYLBENZENE	ND	4.7	0.63	1.9
STYRENE	ND	4.7	0.94	1.9
TERT-BUTYLBENZENE	ND	4.7	0.58	1.9
TETRACHLOROETHENE	ND	4.7	0.47	0.94
TOLUENE	ND	4.7	0.47	0.94
TRANS-1,2-DICHLOROETHENE	ND	4.7	0.47	0.94
TRANS-1,3-DICHLOROPROPENE	ND	4.7	0.47	0.94
TRICHLOROETHENE	ND	4.7	0.47	0.94
TRICHLOROFLUOROMETHANE	ND	4.7	1.0	1.9
VINYL CHLORIDE	ND	4.7	1.3	1.9
TERTIARY BUTYL ALCOHOL	ND	19	8.7	9.4

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	44.1	47.03	93.9	71-136
4-BROMOFLUOROBENZENE	44.7	47.03	95.0	79-119
TOLUENE-D8	44.9	47.03	95.6	85-116
DIBROMOFLUOROMETHANE	44.2	47.03	94.0	78-119

3/25/16

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:34
Sample ID	: KCH067-008	Date Analyzed:	03/15/16 13:34
Lab Samp ID	: C070-08	Dilution Factor:	1.05
Lab File ID	: RCB174	Matrix	: SOIL
Ext Btch ID	: VS03C08	% Moisture	: 1.5
Calib. Ref.	: RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	5.3	0.53	1.1
1,1,1-TRICHLOROETHANE	ND	5.3	0.53	1.1
1,1,2,2-TETRACHLOROETHANE	ND	5.3	0.53	1.1
1,1,2-TRICHLOROETHANE	ND	5.3	0.53	1.1
1,1-DICHLOROETHANE	ND	5.3	0.53	1.1
1,1-DICHLOROETHENE	ND	5.3	0.53	1.1
1,1-DICHLOROPROPENE	ND	5.3	0.53	1.1
1,2,3-TRICHLOROBENZENE	ND	5.3	1.1	2.1
1,2,3-TRICHLOROPROPANE	ND	5.3	1.1	2.1
1,2,4-TRICHLOROBENZENE	ND	5.3	1.1	2.1
1,2,4-TRIMETHYLBENZENE	ND	5.3	0.59	2.1
1,2-DIBROMO-3-CHLOROPROPANE	ND	5.3	1.1	2.1
1,2-DIBROMOETHANE	ND	5.3	0.53	1.1
1,2-DICHLOROBENZENE	ND	5.3	0.53	1.1
1,2-DICHLOROETHANE	ND	5.3	0.53	1.1
1,2-DICHLOROPROPANE	ND	5.3	0.53	1.1
1,3,5-TRIMETHYLBENZENE	ND	5.3	0.63	2.1
1,3-DICHLOROBENZENE	ND	5.3	0.55	1.1
1,3-DICHLOROPROPANE	ND	5.3	0.53	1.1
1,4-DICHLOROBENZENE	ND	5.3	0.53	1.1
2,2-DICHLOROPROPANE	ND	5.3	1.1	2.1
2-BUTANONE	ND	11	2.7	5.3
2-CHLOROTOLUENE	ND	5.3	0.87	2.1
2-HEXANONE	ND	11	3.1	5.3
4-CHLOROTOLUENE	ND	5.3	0.71	2.1
ACETONE	ND	11	3.3	5.3
BENZENE	ND	5.3	0.53	1.1
BROMOBENZENE	ND	5.3	0.53	1.1
BROMOCHLOROMETHANE	ND	5.3	0.53	1.1
BROMODICHLOROMETHANE	ND	5.3	0.53	1.1
BROMOFORM	ND	5.3	1.1	2.1
BROMOMETHANE	ND	11	1.9	2.1
CARBON DISULFIDE	ND	5.3	0.53	1.1
CARBON TETRACHLORIDE	ND	5.3	0.58	1.1
CHLOROBENZENE	ND	5.3	0.53	1.1
CHLOROETHANE	ND	5.3	1.4	2.1
CHLOROFORM	ND	5.3	0.53	1.1
CHLOROMETHANE	ND	5.3	1.1	2.1
CIS-1,2-DICHLOROETHENE	ND	5.3	0.53	1.1
CIS-1,3-DICHLOROPROPENE	ND	5.3	0.53	1.1
DIBROMOCHLOROMETHANE	ND	5.3	0.53	1.1
DIBROMOMETHANE	ND	5.3	0.53	1.1
DICHLORODIFLUOROMETHANE	ND	5.3	1.3	2.1
ETHYLBENZENE	ND	5.3	0.53	1.1
HEXACHLOROBUTADIENE	ND	5.3	1.1	2.1
ISOPROPYLBENZENE	ND	5.3	0.68	2.1
M/P-XYLENES	ND	11	1.1	2.1
4-METHYL-2-PENTANONE	ND	11	3.0	5.3
METHYLENE CHLORIDE	ND	11	2.1	5.3
METHYL TERT-BUTYL ETHER	ND	5.3	0.53	1.1
NAPHTHALENE	ND	11	1.1	2.1
N-BUTYLBENZENE	ND	5.3	0.75	2.1
N-PROPYLBENZENE	ND	5.3	0.69	2.1
O-XYLENE	ND	5.3	0.53	1.1
P-ISOPROPYLTOLUENE	ND	5.3	0.66	2.1
SEC-BUTYLBENZENE	ND	5.3	0.71	2.1
STYRENE	ND	5.3	1.1	2.1
TERT-BUTYLBENZENE	ND	5.3	0.66	2.1
TETRACHLOROETHENE	ND	5.3	0.53	1.1
TOLUENE	ND	5.3	0.53	1.1
TRANS-1,2-DICHLOROETHENE	ND	5.3	0.53	1.1
TRANS-1,3-DICHLOROPROPENE	ND	5.3	0.53	1.1
TRICHLOROETHENE	ND	5.3	0.53	1.1
TRICHLOROFLUOROMETHANE	ND	5.3	1.2	2.1
VINYL CHLORIDE	ND	5.3	1.5	2.1
TERTIARY BUTYL ALCOHOL	ND	21	9.8	11

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	51.6	53.30	96.9	71-136
4-BROMOFLUOROBENZENE	52.1	53.30	97.7	79-119
TOLUENE-D8	51.7	53.30	97.0	85-116
DIBROMOFLUOROMETHANE	49.3	53.30	92.5	78-119

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METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 14:02
Sample ID	: KCH067-010	Date Analyzed:	03/15/16 14:02
Lab Samp ID	: C070-10	Dilution Factor:	0.91
Lab File ID	: RCB175	Matrix	: SOIL
Ext Btch ID	: VS03C08	% Moisture	: 3.8
Calib. Ref.	: RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.7	0.47	0.95
1,1,1-TRICHLOROETHANE	ND	4.7	0.47	0.95
1,1,2,2-TETRACHLOROETHANE	ND	4.7	0.47	0.95
1,1,2-TRICHLOROETHANE	ND	4.7	0.47	0.95
1,1-DICHLOROETHANE	ND	4.7	0.47	0.95
1,1-DICHLOROETHENE	ND	4.7	0.47	0.95
1,1-DICHLOROPROPENE	ND	4.7	0.47	0.95
1,2,3-TRICHLOROBENZENE	ND	4.7	0.95	1.9
1,2,3-TRICHLOROPROPANE	ND	4.7	0.95	1.9
1,2,4-TRICHLOROBENZENE	ND	4.7	0.95	1.9
1,2,4-TRIMETHYLBENZENE	ND	4.7	0.52	1.9
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.7	0.95	1.9
1,2-DIBROMOETHANE	ND	4.7	0.47	0.95
1,2-DICHLOROBENZENE	ND	4.7	0.47	0.95
1,2-DICHLOROETHANE	ND	4.7	0.47	0.95
1,2-DICHLOROPROPANE	ND	4.7	0.47	0.95
1,3,5-TRIMETHYLBENZENE	ND	4.7	0.56	1.9
1,3-DICHLOROBENZENE	ND	4.7	0.49	0.95
1,3-DICHLOROPROPANE	ND	4.7	0.47	0.95
1,4-DICHLOROBENZENE	ND	4.7	0.47	0.95
2,2-DICHLOROPROPANE	ND	4.7	0.95	1.9
2-BUTANONE	ND	9.5	2.4	4.7
2-CHLOROTOLUENE	ND	4.7	0.78	1.9
2-HEXANONE	ND	9.5	2.7	4.7
4-CHLOROTOLUENE	ND	4.7	0.63	1.9
ACETONE	ND	9.5	2.9	4.7
BENZENE	ND	4.7	0.47	0.95
BROMOBENZENE	ND	4.7	0.47	0.95
BROMOCHLOROMETHANE	ND	4.7	0.47	0.95
BROMODICHLOROMETHANE	ND	4.7	0.47	0.95
BROMOFORM	ND	4.7	0.95	1.9
BROMOMETHANE	ND	9.5	1.7	1.9
CARBON DISULFIDE	ND	4.7	0.47	0.95
CARBON TETRACHLORIDE	ND	4.7	0.51	0.95
CHLOROBENZENE	ND	4.7	0.47	0.95
CHLOROETHANE	ND	4.7	1.2	1.9
CHLOROFORM	ND	4.7	0.47	0.95
CHLOROMETHANE	ND	4.7	0.95	1.9
CIS-1,2-DICHLOROETHENE	ND	4.7	0.47	0.95
CIS-1,3-DICHLOROPROPENE	ND	4.7	0.47	0.95
DIBROMOCHLOROMETHANE	ND	4.7	0.47	0.95
DIBROMOMETHANE	ND	4.7	0.47	0.95
DICHLORODIFLUOROMETHANE	ND	4.7	1.1	1.9
ETHYLBENZENE	ND	4.7	0.47	0.95
HEXACHLOROBUTADIENE	ND	4.7	0.95	1.9
ISOPROPYLBENZENE	ND	4.7	0.61	1.9
M/P-XYLENES	ND	9.5	0.95	1.9
4-METHYL-2-PENTANONE	ND	9.5	2.6	4.7
METHYLENE CHLORIDE	ND	9.5	1.9	4.7
METHYL TERT-BUTYL ETHER	ND	4.7	0.47	0.95
NAPHTHALENE	ND	9.5	0.95	1.9
N-BUTYLBENZENE	ND	4.7	0.66	1.9
N-PROPYLBENZENE	ND	4.7	0.61	1.9
O-XYLENE	ND	4.7	0.47	0.95
P-ISOPROPYLTOLUENE	ND	4.7	0.59	1.9
SEC-BUTYLBENZENE	ND	4.7	0.63	1.9
STYRENE	ND	4.7	0.95	1.9
TERT-BUTYLBENZENE	ND	4.7	0.59	1.9
TETRACHLOROETHENE	ND	4.7	0.47	0.95
TOLUENE	ND	4.7	0.47	0.95
TRANS-1,2-DICHLOROETHENE	ND	4.7	0.47	0.95
TRANS-1,3-DICHLOROPROPENE	ND	4.7	0.47	0.95
TRICHLOROETHENE	ND	4.7	0.47	0.95
TRICHLOROFLUOROMETHANE	ND	4.7	1.0	1.9
VINYL CHLORIDE	ND	4.7	1.3	1.9
TERTIARY BUTYL ALCOHOL	ND	19	8.7	9.5

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	46.9	47.30	99.1	71-136
4-BROMOFLUOROBENZENE	45.6	47.30	96.3	79-119
TOLUENE-D8	45.2	47.30	95.5	85-116
DIBROMOFLUOROMETHANE	46.4	47.30	98.2	78-119

8051716

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/15/16 14:29
Sample ID: KCH067-011	Date Analyzed: 03/15/16 14:29
Lab Samp ID: C070-11	Dilution Factor: 0.9
Lab File ID: RCB176	Matrix : SOIL
Ext Btch ID: VS03C08	% Moisture : 3.1
Calib. Ref.: RCB100	Instrument ID : T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.6	0.46	0.93
1,1,1-TRICHLOROETHANE	ND	4.6	0.46	0.93
1,1,2,2-TETRACHLOROETHANE	ND	4.6	0.46	0.93
1,1,2-TRICHLOROETHANE	ND	4.6	0.46	0.93
1,1-DICHLOROETHANE	ND	4.6	0.46	0.93
1,1-DICHLOROETHENE	ND	4.6	0.46	0.93
1,1-DICHLOROPROPENE	ND	4.6	0.46	0.93
1,2,3-TRICHLOROBENZENE	ND	4.6	0.93	1.9
1,2,3-TRICHLOROPROPANE	ND	4.6	0.93	1.9
1,2,4-TRICHLOROBENZENE	ND	4.6	0.93	1.9
1,2,4-TRIMETHYLBENZENE	0.68J	4.6	0.51	1.9
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.6	0.93	1.9
1,2-DIBROMOETHANE	ND	4.6	0.46	0.93
1,2-DICHLOROBENZENE	ND	4.6	0.46	0.93
1,2-DICHLOROETHANE	ND	4.6	0.46	0.93
1,2-DICHLOROPROPANE	ND	4.6	0.46	0.93
1,3,5-TRIMETHYLBENZENE	ND	4.6	0.55	1.9
1,3-DICHLOROBENZENE	ND	4.6	0.48	0.93
1,3-DICHLOROPROPANE	ND	4.6	0.46	0.93
1,4-DICHLOROBENZENE	ND	4.6	0.46	0.93
2,2-DICHLOROPROPANE	ND	4.6	0.93	1.9
2-BUTANONE	ND	9.3	2.3	4.6
2-CHLOROTOLUENE	ND	4.6	0.76	1.9
2-HEXANONE	ND	9.3	2.7	4.6
4-CHLOROTOLUENE	ND	4.6	0.62	1.9
ACETONE	5.0J	9.3	2.9	4.6
BENZENE	ND	4.6	0.46	0.93
BROMOBENZENE	ND	4.6	0.46	0.93
BROMOCHLOROMETHANE	ND	4.6	0.46	0.93
BROMODICHLOROMETHANE	ND	4.6	0.46	0.93
BROMOFORM	ND	4.6	0.93	1.9
BROMOMETHANE	ND	9.3	1.7	1.9
CARBON DISULFIDE	ND	4.6	0.46	0.93
CARBON TETRACHLORIDE	ND	4.6	0.50	0.93
CHLOROBENZENE	ND	4.6	0.46	0.93
CHLOROETHANE	ND	4.6	1.2	1.9
CHLOROFORM	ND	4.6	0.46	0.93
CHLOROMETHANE	ND	4.6	0.93	1.9
CIS-1,2-DICHLOROETHENE	ND	4.6	0.46	0.93
CIS-1,3-DICHLOROPROPENE	ND	4.6	0.46	0.93
DIBROMOCHLOROMETHANE	ND	4.6	0.46	0.93
DIBROMOMETHANE	ND	4.6	0.46	0.93
DICHLORODIFLUOROMETHANE	ND	4.6	1.1	1.9
ETHYLBENZENE	ND	4.6	0.46	0.93
HEXACHLOROBUTADIENE	ND	4.6	0.93	1.9
ISOPROPYLBENZENE	ND	4.6	0.59	1.9
M/P-XYLENES	ND	9.3	0.93	1.9
4-METHYL-2-PENTANONE	ND	9.3	2.6	4.6
METHYLENE CHLORIDE	ND	9.3	1.9	4.6
METHYL TERT-BUTYL ETHER	ND	4.6	0.46	0.93
NAPHTHALENE	2.6J	9.3	0.93	1.9
N-BUTYLBENZENE	ND	4.6	0.65	1.9
N-PROPYLBENZENE	ND	4.6	0.60	1.9
O-XYLENE	ND	4.6	0.46	0.93
P-ISOPROPYLTOLUENE	ND	4.6	0.58	1.9
SEC-BUTYLBENZENE	ND	4.6	0.62	1.9
STYRENE	ND	4.6	0.93	1.9
TERT-BUTYLBENZENE	ND	4.6	0.58	1.9
TETRACHLOROETHENE	ND	4.6	0.46	0.93
TOLUENE	0.48J	4.6	0.46	0.93
TRANS-1,2-DICHLOROETHENE	ND	4.6	0.46	0.93
TRANS-1,3-DICHLOROPROPENE	ND	4.6	0.46	0.93
TRICHLOROETHENE	ND	4.6	0.46	0.93
TRICHLOROFLUOROMETHANE	ND	4.6	1.0	1.9
VINYL CHLORIDE	ND	4.6	1.3	1.9
TERTIARY BUTYL ALCOHOL	ND	19	8.5	9.3

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	47.5	46.44	102	71-136
4-BROMOFLUOROBENZENE	51.2	46.44	110	79-119
TOLUENE-D8	48.7	46.44	105	85-116
DIBROMOFLUOROMETHANE	46.7	46.44	101	78-119

8/25/16

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 17:03
Sample ID	: KCH067-013	Date Analyzed:	03/15/16 17:03
Lab Samp ID	: C070-13	Dilution Factor:	0.82
Lab File ID	: RCB181	Matrix	: SOIL
Ext Btch ID	: VS03C08	% Moisture	: 5.0
Calib. Ref.	: RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.3	0.43	0.86
1,1,1-TRICHLOROETHANE	ND	4.3	0.43	0.86
1,1,2,2-TETRACHLOROETHANE	ND	4.3	0.43	0.86
1,1,2-TRICHLOROETHANE	ND	4.3	0.43	0.86
1,1-DICHLOROETHANE	ND	4.3	0.43	0.86
1,1-DICHLOROETHENE	ND	4.3	0.43	0.86
1,1-DICHLOROPROPENE	ND	4.3	0.43	0.86
1,2,3-TRICHLOROBENZENE	ND	4.3	0.86	1.7
1,2,3-TRICHLOROPROPANE	ND	4.3	0.86	1.7
1,2,4-TRICHLOROBENZENE	ND	4.3	0.86	1.7
1,2,4-TRIMETHYLBENZENE	ND	4.3	0.47	1.7
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.3	0.86	1.7
1,2-DIBROMOETHANE	ND	4.3	0.43	0.86
1,2-DICHLOROBENZENE	ND	4.3	0.43	0.86
1,2-DICHLOROETHANE	ND	4.3	0.43	0.86
1,2-DICHLOROPROPANE	ND	4.3	0.43	0.86
1,3,5-TRIMETHYLBENZENE	ND	4.3	0.51	1.7
1,3-DICHLOROBENZENE	ND	4.3	0.45	0.86
1,3-DICHLOROPROPANE	ND	4.3	0.43	0.86
1,4-DICHLOROBENZENE	ND	4.3	0.43	0.86
2,2-DICHLOROPROPANE	ND	4.3	0.86	1.7
2-BUTANONE	ND	8.6	2.2	4.3
2-CHLOROTOLUENE	ND	4.3	0.71	1.7
2-HEXANONE	ND	8.6	2.5	4.3
4-CHLOROTOLUENE	ND	4.3	0.58	1.7
ACETONE	ND	8.6	2.7	4.3
BENZENE	ND	4.3	0.43	0.86
BROMOBENZENE	ND	4.3	0.43	0.86
BROMOCHLOROMETHANE	ND	4.3	0.43	0.86
BROMODICHLOROMETHANE	ND	4.3	0.43	0.86
BROMOFORM	ND	4.3	0.86	1.7
BROMOMETHANE	ND	8.6	1.6	1.7
CARBON DISULFIDE	ND	4.3	0.43	0.86
CARBON TETRACHLORIDE	ND	4.3	0.47	0.86
CHLOROBENZENE	ND	4.3	0.43	0.86
CHLOROETHANE	ND	4.3	1.1	1.7
CHLOROFORM	ND	4.3	0.43	0.86
CHLOROMETHANE	ND	4.3	0.86	1.7
CIS-1,2-DICHLOROETHENE	ND	4.3	0.43	0.86
CIS-1,3-DICHLOROPROPENE	ND	4.3	0.43	0.86
DIBROMOCHLOROMETHANE	ND	4.3	0.43	0.86
DIBROMOMETHANE	ND	4.3	0.43	0.86
DICHLORODIFLUOROMETHANE	ND	4.3	1.0	1.7
ETHYLBENZENE	ND	4.3	0.43	0.86
HEXACHLOROBUTADIENE	ND	4.3	0.86	1.7
ISOPROPYLBENZENE	ND	4.3	0.55	1.7
M/P-XYLENES	ND	8.6	0.86	1.7
4-METHYL-2-PENTANONE	ND	8.6	2.4	4.3
METHYLENE CHLORIDE	ND	8.6	1.7	4.3
METHYL TERT-BUTYL ETHER	ND	4.3	0.43	0.86
NAPHTHALENE	ND	8.6	0.86	1.7
N-BUTYLBENZENE	ND	4.3	0.60	1.7
N-PROPYLBENZENE	ND	4.3	0.56	1.7
O-XYLENE	ND	4.3	0.43	0.86
P-ISOPROPYLTOLUENE	ND	4.3	0.54	1.7
SEC-BUTYLBENZENE	ND	4.3	0.58	1.7
STYRENE	ND	4.3	0.86	1.7
TERT-BUTYLBENZENE	ND	4.3	0.54	1.7
TETRACHLOROETHENE	ND	4.3	0.43	0.86
TOLUENE	ND	4.3	0.43	0.86
TRANS-1,2-DICHLOROETHENE	ND	4.3	0.43	0.86
TRANS-1,3-DICHLOROPROPENE	ND	4.3	0.43	0.86
TRICHLOROETHENE	ND	4.3	0.43	0.86
TRICHLOROFLUOROMETHANE	ND	4.3	0.95	1.7
VINYL CHLORIDE	ND	4.3	1.2	1.7
TERTIARY BUTYL ALCOHOL	ND	17	7.9	8.6

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	44.7	43.16	104	71-136
4-BROMOFLUOROBENZENE	39.7	43.16	92.0	79-119
TOLUENE-D8	40.4	43.16	93.6	85-116
DIBROMOFLUOROMETHANE	45.3	43.16	105	78-119

3/15/16

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 17:32
Sample ID	: KCH067-014	Date Analyzed:	03/15/16 17:32
Lab Samp ID	: C070-14	Dilution Factor:	0.87
Lab File ID	: RCB182	Matrix	: SOIL
Ext Btch ID	: VS03C08	% Moisture	: 3.9
Calib. Ref.	: RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.5	0.45	0.91
1,1,1-TRICHLOROETHANE	ND	4.5	0.45	0.91
1,1,2,2-TETRACHLOROETHANE	ND	4.5	0.45	0.91
1,1,2-TRICHLOROETHANE	ND	4.5	0.45	0.91
1,1-DICHLOROETHANE	ND	4.5	0.45	0.91
1,1-DICHLOROETHENE	ND	4.5	0.45	0.91
1,1-DICHLOROPROPENE	ND	4.5	0.45	0.91
1,2,3-TRICHLOROBENZENE	ND	4.5	0.91	1.8
1,2,3-TRICHLOROPROPANE	ND	4.5	0.91	1.8
1,2,4-TRICHLOROBENZENE	ND	4.5	0.91	1.8
1,2,4-TRIMETHYLBENZENE	ND	4.5	0.50	1.8
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.5	0.91	1.8
1,2-DIBROMOETHANE	ND	4.5	0.45	0.91
1,2-DICHLOROBENZENE	ND	4.5	0.45	0.91
1,2-DICHLOROETHANE	ND	4.5	0.45	0.91
1,2-DICHLOROPROPANE	ND	4.5	0.45	0.91
1,3,5-TRIMETHYLBENZENE	ND	4.5	0.53	1.8
1,3-DICHLOROBENZENE	ND	4.5	0.47	0.91
1,3-DICHLOROPROPANE	ND	4.5	0.45	0.91
1,4-DICHLOROBENZENE	ND	4.5	0.45	0.91
2,2-DICHLOROPROPANE	ND	4.5	0.91	1.8
2-BUTANONE	ND	9.1	2.3	4.5
2-CHLOROTOLUENE	ND	4.5	0.74	1.8
2-HEXANONE	ND	9.1	2.6	4.5
4-CHLOROTOLUENE	ND	4.5	0.61	1.8
ACETONE	ND	9.1	2.8	4.5
BENZENE	ND	4.5	0.45	0.91
BROMOBENZENE	ND	4.5	0.45	0.91
BROMOCHLOROMETHANE	ND	4.5	0.45	0.91
BROMODICHLOROMETHANE	ND	4.5	0.45	0.91
BROMOFORM	ND	4.5	0.91	1.8
BROMOMETHANE	ND	9.1	1.6	1.8
CARBON DISULFIDE	ND	4.5	0.45	0.91
CARBON TETRACHLORIDE	ND	4.5	0.49	0.91
CHLOROBENZENE	ND	4.5	0.45	0.91
CHLOROETHANE	ND	4.5	1.2	1.8
CHLOROFORM	ND	4.5	0.45	0.91
CHLOROMETHANE	ND	4.5	0.91	1.8
CIS-1,2-DICHLOROETHENE	ND	4.5	0.45	0.91
CIS-1,3-DICHLOROPROPENE	ND	4.5	0.45	0.91
DIBROMOCHLOROMETHANE	ND	4.5	0.45	0.91
DIBROMOMETHANE	ND	4.5	0.45	0.91
DICHLORODIFLUOROMETHANE	ND	4.5	1.1	1.8
ETHYLBENZENE	ND	4.5	0.45	0.91
HEXACHLOROBUTADIENE	ND	4.5	0.91	1.8
ISOPROPYLBENZENE	ND	4.5	0.58	1.8
M/P-XYLENES	ND	9.1	0.91	1.8
4-METHYL-2-PENTANONE	ND	9.1	2.5	4.5
METHYLENE CHLORIDE	ND	9.1	1.8	4.5
METHYL TERT-BUTYL ETHER	ND	4.5	0.45	0.91
NAPHTHALENE	ND	9.1	0.91	1.8
N-BUTYLBENZENE	ND	4.5	0.63	1.8
N-PROPYLBENZENE	ND	4.5	0.59	1.8
O-XYLENE	ND	4.5	0.45	0.91
P-ISOPROPYLTOLUENE	ND	4.5	0.56	1.8
SEC-BUTYLBENZENE	ND	4.5	0.61	1.8
STYRENE	ND	4.5	0.91	1.8
TERT-BUTYLBENZENE	ND	4.5	0.56	1.8
TETRACHLOROETHENE	ND	4.5	0.45	0.91
TOLUENE	ND	4.5	0.45	0.91
TRANS-1,2-DICHLOROETHENE	ND	4.5	0.45	0.91
TRANS-1,3-DICHLOROPROPENE	ND	4.5	0.45	0.91
TRICHLOROETHENE	ND	4.5	0.45	0.91
TRICHLOROFLUOROMETHANE	ND	4.5	1.0	1.8
VINYL CHLORIDE	ND	4.5	1.3	1.8
TERTIARY BUTYL ALCOHOL	ND	18	8.3	9.1

SURROGATE PARAMETERS	RESULTS	SPK AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	46.5	45.27	103	71-136
4-BROMOFLUOROBENZENE	40.1	45.27	88.5	79-119
TOLUENE-D8	43.0	45.27	95.1	85-116
DIBROMOFLUOROMETHANE	47.2	45.27	104	78-119

SK 3/17/16

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:36
Sample ID:	KCH067-016	Date Analyzed:	03/15/16 16:36
Lab Samp ID:	C070-16	Dilution Factor:	0.95
Lab File ID:	RCB180	Matrix	: SOIL
Ext Btch ID:	VS03C08	% Moisture	: 2.8
Calib. Ref.:	RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.9	0.49	0.98
1,1,1-TRICHLOROETHANE	ND	4.9	0.49	0.98
1,1,2,2-TETRACHLOROETHANE	ND	4.9	0.49	0.98
1,1,2-TRICHLOROETHANE	ND	4.9	0.49	0.98
1,1-DICHLOROETHANE	ND	4.9	0.49	0.98
1,1-DICHLOROETHENE	ND	4.9	0.49	0.98
1,1-DICHLOROPROPENE	ND	4.9	0.49	0.98
1,2,3-TRICHLOROBENZENE	ND	4.9	0.98	2.0
1,2,3-TRICHLOROPROPANE	ND	4.9	0.98	2.0
1,2,4-TRICHLOROBENZENE	ND	4.9	0.98	2.0
1,2,4-TRIMETHYLBENZENE	ND	4.9	0.54	2.0
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.9	0.98	2.0
1,2-DIBROMOETHANE	ND	4.9	0.49	0.98
1,2-DICHLOROBENZENE	ND	4.9	0.49	0.98
1,2-DICHLOROETHANE	ND	4.9	0.49	0.98
1,2-DICHLOROPROPANE	ND	4.9	0.49	0.98
1,3,5-TRIMETHYLBENZENE	ND	4.9	0.58	2.0
1,3-DICHLOROBENZENE	ND	4.9	0.51	0.98
1,3-DICHLOROPROPANE	ND	4.9	0.49	0.98
1,4-DICHLOROBENZENE	ND	4.9	0.49	0.98
2,2-DICHLOROPROPANE	ND	4.9	0.98	2.0
2-BUTANONE	ND	9.8	2.4	4.9
2-CHLOROTOLUENE	ND	4.9	0.80	2.0
2-HEXANONE	ND	9.8	2.8	4.9
4-CHLOROTOLUENE	ND	4.9	0.65	2.0
ACETONE	ND	9.8	3.0	4.9
BENZENE	ND	4.9	0.49	0.98
BROMOBENZENE	ND	4.9	0.49	0.98
BROMOCHLOROMETHANE	ND	4.9	0.49	0.98
BROMODICHLOROMETHANE	ND	4.9	0.49	0.98
BROMOFORM	ND	4.9	0.98	2.0
BROMOMETHANE	ND	9.8	1.8	2.0
CARBON DISULFIDE	ND	4.9	0.49	0.98
CARBON TETRACHLORIDE	ND	4.9	0.53	0.98
CHLOROBENZENE	ND	4.9	0.49	0.98
CHLOROETHANE	ND	4.9	1.3	2.0
CHLOROFORM	ND	4.9	0.49	0.98
CHLOROMETHANE	ND	4.9	0.98	2.0
CIS-1,2-DICHLOROETHENE	ND	4.9	0.49	0.98
CIS-1,3-DICHLOROPROPENE	ND	4.9	0.49	0.98
DIBROMOCHLOROMETHANE	ND	4.9	0.49	0.98
DIBROMOMETHANE	ND	4.9	0.49	0.98
DICHLORODIFLUOROMETHANE	ND	4.9	1.2	2.0
ETHYLBENZENE	ND	4.9	0.49	0.98
HEXACHLOROBUTADIENE	ND	4.9	0.98	2.0
ISOPROPYLBENZENE	ND	4.9	0.63	2.0
M/P-XYLENES	ND	9.8	0.98	2.0
4-METHYL-2-PENTANONE	ND	9.8	2.7	4.9
METHYLENE CHLORIDE	ND	9.8	2.0	4.9
METHYL TERT-BUTYL ETHER	ND	4.9	0.49	0.98
NAPHTHALENE	ND	9.8	0.98	2.0
N-BUTYLBENZENE	ND	4.9	0.68	2.0
N-PROPYLBENZENE	ND	4.9	0.64	2.0
O-XYLENE	ND	4.9	0.49	0.98
P-ISOPROPYLTOLUENE	ND	4.9	0.61	2.0
SEC-BUTYLBENZENE	ND	4.9	0.65	2.0
STYRENE	ND	4.9	0.98	2.0
TERT-BUTYLBENZENE	ND	4.9	0.61	2.0
TETRACHLOROETHENE	ND	4.9	0.49	0.98
TOLUENE	ND	4.9	0.49	0.98
TRANS-1,2-DICHLOROETHENE	ND	4.9	0.49	0.98
TRANS-1,3-DICHLOROPROPENE	ND	4.9	0.49	0.98
TRICHLOROETHENE	ND	4.9	0.49	0.98
TRICHLOROFLUOROMETHANE	ND	4.9	1.1	2.0
VINYL CHLORIDE	ND	4.9	1.4	2.0
TERTIARY BUTYL ALCOHOL	ND	20	9.0	9.8

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	48.8	48.87	99.8	71-136
4-BROMOFLUOROBENZENE	45.0	48.87	92.2	79-119
TOLUENE-D8	46.0	48.87	94.2	85-116
DIBROMOFLUOROMETHANE	48.7	48.87	99.7	78-119

3/25/16

METHOD SW5035A/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 18:00
Sample ID:	KCH067-018	Date Analyzed:	03/15/16 18:00
Lab Samp ID:	C070-18	Dilution Factor:	0.87
Lab File ID:	RCB183	Matrix	: SOIL
Ext Btch ID:	VS03C08	% Moisture	: 2.1
Calib. Ref.:	RCB100	Instrument ID	: T-003

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
1,1,1,2-TETRACHLOROETHANE	ND	4.4	0.44	0.89
1,1,1-TRICHLOROETHANE	ND	4.4	0.44	0.89
1,1,2,2-TETRACHLOROETHANE	ND	4.4	0.44	0.89
1,1,2-TRICHLOROETHANE	ND	4.4	0.44	0.89
1,1-DICHLOROETHANE	ND	4.4	0.44	0.89
1,1-DICHLOROETHENE	ND	4.4	0.44	0.89
1,1-DICHLOROPROPENE	ND	4.4	0.44	0.89
1,2,3-TRICHLOROBENZENE	ND	4.4	0.89	1.8
1,2,3-TRICHLOROPROPANE	ND	4.4	0.89	1.8
1,2,4-TRICHLOROBENZENE	ND	4.4	0.89	1.8
1,2,4-TRIMETHYLBENZENE	ND	4.4	0.49	1.8
1,2-DIBROMO-3-CHLOROPROPANE	ND	4.4	0.89	1.8
1,2-DIBROMOETHANE	ND	4.4	0.44	0.89
1,2-DICHLOROBENZENE	ND	4.4	0.44	0.89
1,2-DICHLOROETHANE	ND	4.4	0.44	0.89
1,2-DICHLOROPROPANE	ND	4.4	0.44	0.89
1,3,5-TRIMETHYLBENZENE	ND	4.4	0.52	1.8
1,3-DICHLOROBENZENE	ND	4.4	0.46	0.89
1,3-DICHLOROPROPANE	ND	4.4	0.44	0.89
1,4-DICHLOROBENZENE	ND	4.4	0.44	0.89
2,2-DICHLOROPROPANE	ND	4.4	0.89	1.8
2-BUTANONE	ND	8.9	2.2	4.4
2-CHLOROTOLUENE	ND	4.4	0.73	1.8
2-HEXANONE	ND	8.9	2.6	4.4
4-CHLOROTOLUENE	ND	4.4	0.60	1.8
ACETONE	ND	8.9	2.8	4.4
BENZENE	ND	4.4	0.44	0.89
BROMOBENZENE	ND	4.4	0.44	0.89
BROMOCHLOROMETHANE	ND	4.4	0.44	0.89
BROMODICHLOROMETHANE	ND	4.4	0.44	0.89
BROMOFORM	ND	4.4	0.89	1.8
BROMOMETHANE	ND	8.9	1.6	1.8
CARBON DISULFIDE	ND	4.4	0.44	0.89
CARBON TETRACHLORIDE	ND	4.4	0.48	0.89
CHLOROBENZENE	ND	4.4	0.44	0.89
CHLOROETHANE	ND	4.4	1.2	1.8
CHLOROFORM	ND	4.4	0.44	0.89
CHLOROMETHANE	ND	4.4	0.89	1.8
CIS-1,2-DICHLOROETHENE	ND	4.4	0.44	0.89
CIS-1,3-DICHLOROPROPENE	ND	4.4	0.44	0.89
DIBROMOCHLOROMETHANE	ND	4.4	0.44	0.89
DIBROMOMETHANE	ND	4.4	0.44	0.89
DICHLORODIFLUOROMETHANE	ND	4.4	1.1	1.8
ETHYLBENZENE	ND	4.4	0.44	0.89
HEXACHLOROBUTADIENE	ND	4.4	0.89	1.8
ISOPROPYLBENZENE	ND	4.4	0.57	1.8
M/P-XYLENES	ND	8.9	0.89	1.8
4-METHYL-2-PENTANONE	ND	8.9	2.5	4.4
METHYLENE CHLORIDE	ND	8.9	1.8	4.4
METHYL TERT-BUTYL ETHER	ND	4.4	0.44	0.89
NAPHTHALENE	ND	8.9	0.89	1.8
N-BUTYLBENZENE	ND	4.4	0.62	1.8
N-PROPYLBENZENE	ND	4.4	0.58	1.8
O-XYLENE	ND	4.4	0.44	0.89
P-ISOPROPYLTOLUENE	ND	4.4	0.55	1.8
SEC-BUTYLBENZENE	ND	4.4	0.60	1.8
STYRENE	ND	4.4	0.89	1.8
TERT-BUTYLBENZENE	ND	4.4	0.55	1.8
TETRACHLOROETHENE	ND	4.4	0.44	0.89
TOLUENE	ND	4.4	0.44	0.89
TRANS-1,2-DICHLOROETHENE	ND	4.4	0.44	0.89
TRANS-1,3-DICHLOROPROPENE	ND	4.4	0.44	0.89
TRICHLOROETHENE	ND	4.4	0.44	0.89
TRICHLOROFLUOROMETHANE	ND	4.4	0.98	1.8
VINYL CHLORIDE	ND	4.4	1.2	1.8
TERTIARY BUTYL ALCOHOL	ND	18	8.2	8.9

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	46.0	44.43	104	71-136
4-BROMOFLUOROBENZENE	40.6	44.43	91.3	79-119
TOLUENE-D8	42.3	44.43	95.1	85-116
DIBROMOFLUOROMETHANE	46.6	44.43	105	78-119

3/17/16

METHOD SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/14/16 13:59
Sample ID	: KCH067-020	Date Analyzed:	03/14/16 13:59
Lab Samp ID	: C070-19	Dilution Factor:	1
Lab File ID	: RCC265	Matrix	: WATER
Ext Btch ID	: VO67C11	% Moisture	: NA
Calib. Ref.	: RBC337	Instrument ID	: 67

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
1,1,1,2-TETRACHLOROETHANE	ND	1.0	0.10	0.20
1,1,1-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11	0.20
1,1,2-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHENE	ND	1.0	0.10	0.20
1,1-DICHLOROPROPENE	ND	1.0	0.10	0.20
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,3-TRICHLOROPROPANE	ND	2.0	0.25	0.50
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11	0.20
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25	0.50
1,2-DIBROMOETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROBENZENE	ND	1.0	0.10	0.20
1,2-DICHLOROETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.13	0.20
1,3-DICHLOROBENZENE	ND	1.0	0.11	0.20
1,3-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,4-DICHLOROBENZENE	ND	1.0	0.10	0.20
2,2-DICHLOROPROPANE	ND	1.0	0.16	0.30
2-BUTANONE	ND	10	2.0	5.0
2-CHLOROTOLUENE	ND	1.0	0.12	0.20
2-HEXANONE	ND	10	2.3	5.0
4-CHLOROTOLUENE	ND	1.0	0.11	0.20
ACETONE	ND	10	2.6	5.0
BENZENE	ND	1.0	0.10	0.20
BROMOBENZENE	ND	1.0	0.10	0.20
BROMOCHLOROMETHANE	ND	1.0	0.11	0.20
BROMODICHLOROMETHANE	ND	1.0	0.10	0.20
BROMOFORM	ND	1.0	0.15	0.30
BROMOMETHANE	ND	1.0	0.16	0.30
CARBON DISULFIDE	ND	1.0	0.25	0.50
CARBON TETRACHLORIDE	ND	1.0	0.10	0.20
CHLOROBENZENE	ND	1.0	0.10	0.20
CHLOROETHANE	ND	1.0	0.27	0.30
CHLOROFORM	ND	1.0	0.10	0.20
CHLOROMETHANE	ND	1.0	0.15	0.30
CIS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10	0.20
DIBROMOCHLOROMETHANE	ND	1.0	0.10	0.20
DIBROMOMETHANE	ND	1.0	0.10	0.20
DICHLORODIFLUOROMETHANE	ND	1.0	0.15	0.30
ETHYLBENZENE	ND	1.0	0.10	0.20
HEXACHLOROBUTADIENE	ND	1.0	0.22	0.30
ISOPROPYLBENZENE	ND	1.0	0.10	0.20
M/P-XYLENES	ND	2.0	0.21	0.40
4-METHYL-2-PENTANONE	ND	10	2.1	5.0
METHYLENE CHLORIDE	ND	2.0	0.50	1.0
METHYL TERT-BUTYL ETHER	ND	1.0	0.13	0.20
NAPHTHALENE	ND	2.0	0.50	1.0
N-BUTYLBENZENE	ND	1.0	0.17	0.30
N-PROPYLBENZENE	ND	1.0	0.13	0.20
O-XYLENE	ND	1.0	0.10	0.20
P-ISOPROPYLTOLUENE	ND	1.0	0.14	0.20
SEC-BUTYLBENZENE	ND	1.0	0.13	0.20
STYRENE	ND	1.0	0.25	0.50
TERT-BUTYLBENZENE	ND	1.0	0.13	0.20
TETRACHLOROETHENE	ND	1.0	0.15	0.20
TOLUENE	ND	1.0	0.10	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11	0.20
TRICHLOROETHENE	ND	1.0	0.10	0.20
TRICHLOROFLUOROMETHANE	ND	1.0	0.15	0.30
VINYL CHLORIDE	ND	1.0	0.12	0.20
TERTIARY BUTYL ALCOHOL	ND UJ(5)	10	2.5	5.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.68	10.00	96.8	81-118
4-BROMOFLUOROBENZENE	9.97	10.00	99.7	85-114
TOLUENE-D8	10.0	10.00	100	89-112
DIBROMOFLUOROMETHANE	9.97	10.00	99.7	80-119

SLC 3/17/16

LDC #: 36282A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C070 Standard/Full Page: 1 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: EM
2nd Reviewer: M

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / D	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW/A	% RSD ≤ 15 ICV ≤ 20
IV.	Continuing calibration / ending CCV	SW	CCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	SW	EB = KCH067-019 (SDG# 16C074) *TB= 11
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	was IR
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XIII.	Target compound identification	A	Not reviewed for Standard validation.
XIV.	System performance	A	Not reviewed for Standard validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
* ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-002	16C070-02	Soil	03/08/16
2	KCH067-004**	16C070-04**	Soil	03/08/16
3	KCH067-006	16C070-06	Soil	03/08/16
4	KCH067-008	16C070-08	Soil	03/08/16
5	KCH067-010	16C070-10	Soil	03/08/16
6	KCH067-011	16C070-11	Soil	03/08/16
7	KCH067-013	16C070-13	Soil	03/08/16
8	KCH067-014	16C070-14	Soil	03/08/16
9	KCH067-016**	16C070-16**	Soil	03/08/16
10	KCH067-018	16C070-18	Soil	03/08/16
11	KCH067-020 TB	16C070-19	Water	03/08/16
12	KCH067-016MS	16C070-16MS	Soil	03/08/16
13	KCH067-016MSD	16C070-16MSD	Soil	03/08/16

LDC #: 36282A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C070 Standard/Full Page: 2 of 2
Laboratory: EMAX Laboratories Inc. Reviewer:
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

	Client ID	Lab ID	Matrix	Date
14				
15				
16				
17				
18				

Notes:

	MBLK1W						
	MBLK1S						
	MBLK2S						
	MBLK3S						

LDC #: 36282A 1

VALIDATION FINDINGS CHECKLIST

Reviewer: FB
2nd Reviewer: DC

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ ~~30%~~/15% and relative response factors (RRF) ≥ 0.05?	1	✓		
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?		✓		
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks were identified in this SDG?	✓			
Were target compounds detected in the field blanks?	✓			
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	

LDC #: 36282A1

VALIDATION FINDINGS CHECKLIST

Reviewer: F
2nd Reviewer: FC

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: FT
2nd Reviewer: SC

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
Y N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
Y N N/A Did the initial calibration meet the acceptance criteria?
Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤30/15 %RSD and ≥0.05 RRF ?

code = 5

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30/15%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	2/26/16	VB67B26-ICAL	ZZZ		0.007 (20.01)	all water	J+/UJ/A (ND)

LDC #: 36282A /

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: DC

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF ?

work = 5

#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	3/14/17	RCC 257-ccv	ZZZ		0.007 (I 0.01)	All water	J/UJ/A (ND)

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: FT
2nd Reviewer: SK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

(Y) N N/A Were field blanks identified in this SDG? EB = KCH067-019 (SDG # 160074)
Y N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/Kg
Sampling date: 3/8/16
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: All soils (ND)

Compound	Blank ID	Sample Identification								
	EB									
G	0.40									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

.LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: FT
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

Code= 9

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	12 + 13	ZZZ	( )	( )	24 (20)	9	J (NA / ND)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (50 std)	Recalculated RRF (50 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	V003C1D	3/10/16	C (1st internal standard)	0.389	0.389	0.358	0.358	13.88	13.88
			CC (2nd internal standard)	1.608	1.608	1.683	1.683	6.90	6.90
			BB (3rd internal standard)	1.311	1.311	1.409	1.409	4.62	4.62
			(4th internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: AC

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	RCB162	3/15/16	C (IS1)	0.358	0.325	0.325	9.2	9.2
			CC (IS2)	1.683	1.701	1.701	1.1	1.1
			BB (IS3)	1.409	1.408	1.408	0.1	0.1
			(IS4)					
			(IS5)					
2			(IS1)					
			(IS2)					
			(IS3)					
			(IS4)					
			(IS5)					
3								
4								

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #9

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	50.0	49.86	99.7	99.7	0
1,2-Dichloroethane-d4	↓	49.89	99.8	99.8	
Toluene-d8		47.11	94.2	94.2	
Bromofluorobenzene		46.08	92.2	92.2	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD sample: 12 + 13

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	45.8	46.3	ND	48.7	45.1	106	106	97	97	9	9
Trichloroethene	↓	↓	↓	49.5	46.3	108	108	100	100	8	8
Benzene	↓	↓	↓	~~45.8~~ F1 46.1	~~46.3~~ F1 43.4	101	101	94	94	7	7
Toluene	↓	↓	↓	48.0	45.6	105	105	99	99	6	6
Chlorobenzene	↓	↓	↓	47.8	46.2	104	104	100	100	4	4

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. % RPD ~~Bet~~ Based on %R.

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: FT
2nd Reviewer:

METHOD: GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: VS03C08L1C

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	50.0	50.0	44.4	48.6	89	89	97	97	9	9
Trichloroethene	↓	↓	51.1	53.4	102	102	107	107	4	4
Benzene			47.1	49.4	94	94	99	99	5	5
Toluene			50.6	52.5	101	101	105	105	4	4
Chlorobenzene			51.2	53.6	102	102	107	107	5	5

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A1

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. VC5 , V :

Conc. = $\frac{(2869118)(50)}{(1831262)(1.663)(5.0)}$

= 47.1 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-001	16C070-01	Soil	03/08/16
KCH067-002	16C070-02	Soil	03/08/16
KCH067-003	16C070-03	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-003MS	16C070-03MS	Soil	03/08/16
KCH067-003MSD	16C070-03MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270C using Selected Ion Monitoring (SIM)

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW3550B/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 11:10
Sample ID:	KCH067-001	Date Analyzed:	03/16/16 14:09
Lab Samp ID:	C070-01	Dilution Factor:	1
Lab File ID:	RCJ209	Matrix	: SOIL
Ext Btch ID:	SVC013S	% Moisture	: 4.3
Calib. Ref.:	RBJ007	Instrument ID	: T-OE4

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ACENAPHTHENE	ND	10	1.3	2.6
ACENAPHTHYLENE	ND	10	1.3	2.6
ANTHRACENE	ND	10	1.3	2.6
BENZO(A)ANTHRACENE	ND	10	2.6	5.2
BENZO(A)PYRENE	ND	10	1.3	2.6
BENZO(B)FLUORANTHENE	1.6J	10	1.3	2.6
BENZO(K)FLUORANTHENE	ND	10	1.3	2.6
BENZO(G,H,I)PERYLENE	3.3J	10	1.3	2.6
CHRYSENE	ND	10	2.3	5.2
DIBENZO(A,H)ANTHRACENE	ND	10	1.3	2.6
FLUORANTHENE	1.6J	10	1.3	2.6
FLUORENE	ND	10	1.3	2.6
INDENO(1,2,3-CD)PYRENE	1.5J	10	1.3	2.6
NAPHTHALENE	ND	10	1.3	2.6
PHENANTHRENE	ND	10	1.3	2.6
PYRENE	1.5J	10	1.3	2.6
2-METHYLNAPHTHALENE	ND	10	1.3	2.6
1-METHYLNAPHTHALENE	ND	10	1.3	2.6

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	643	696.7	92.3	46-115
NITROBENZENE-D5	677	696.7	97.2	44-125
TERPHENYL-D14	833	696.7	120	58-133

KC01716

METHOD SW3550B/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/15/16 11:10
Sample ID: KCH067-002	Date Analyzed: 03/16/16 14:28
Lab Samp ID: C070-02	Dilution Factor: 1
Lab File ID: RCJ210	Matrix : SOIL
Ext Btch ID: SVC013S	% Moisture : 9.0
Calib. Ref.: RBJ007	Instrument ID : T-0E4

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ACENAPHTHENE	ND	11	1.4	2.7
ACENAPHTHYLENE	ND	11	1.4	2.7
ANTHRACENE	ND	11	1.4	2.7
BENZO(A)ANTHRACENE	ND	11	2.7	5.5
BENZO(A)PYRENE	ND	11	1.4	2.7
BENZO(B)FLUORANTHENE	ND	11	1.4	2.7
BENZO(K)FLUORANTHENE	ND	11	1.4	2.7
BENZO(G,H,I)PERYLENE	3.6J	11	1.4	2.7
CHRYSENE	ND	11	2.4	5.5
DIBENZO(A,H)ANTHRACENE	ND	11	1.4	2.7
FLUORANTHENE	ND	11	1.4	2.7
FLUORENE	ND	11	1.4	2.7
INDENO(1,2,3-CD)PYRENE	ND	11	1.4	2.7
NAPHTHALENE	ND	11	1.4	2.7
PHENANTHRENE	ND	11	1.4	2.7
PYRENE	ND	11	1.4	2.7
2-METHYLNAPHTHALENE	2.3J	11	1.4	2.7
1-METHYLNAPHTHALENE	2.4J	11	1.4	2.7

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	603	732.6	82.4	46-115
NITROBENZENE-D5	648	732.6	88.4	44-125
TERPHENYL-D14	815	732.6	111	58-133

8/05/16

METHOD SW3550B/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/15/16 11:10
Sample ID: KCH067-003	Date Analyzed: 03/16/16 14:48
Lab Samp ID: C070-03	Dilution Factor: 1
Lab File ID: RCJ211	Matrix : SOIL
Ext Btch ID: SVC013S	% Moisture : 6.9
Calib. Ref.: RBJ007	Instrument ID : T-OE4

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ACENAPHTHENE	2.6J	11	1.3	2.7
ACENAPHTHYLENE	2.5J	11	1.3	2.7
ANTHRACENE	ND	11	1.3	2.7
BENZO(A)ANTHRACENE	2.9J	11	2.6	5.4
BENZO(A)PYRENE	ND	11	1.3	2.7
BENZO(B)FLUORANTHENE	4.9J	11	1.3	2.7
BENZO(K)FLUORANTHENE	ND	11	1.3	2.7
BENZO(G,H,I)PERYLENE	2.6J	11	1.3	2.7
CHRYSENE	3.7J	11	2.4	5.4
DIBENZO(A,H)ANTHRACENE	ND	11	1.3	2.7
FLUORANTHENE	ND	11	1.3	2.7
FLUORENE	1.8J	11	1.3	2.7
INDENO(1,2,3-CD)PYRENE	ND	11	1.3	2.7
NAPHTHALENE	3.4J	11	1.3	2.7
PHENANTHRENE	ND	11	1.3	2.7
PYRENE	2.7J	11	1.3	2.7
2-METHYLNAPHTHALENE	2.7J	11	1.3	2.7
1-METHYLNAPHTHALENE	2.7J	11	1.3	2.7

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	653	716.1	91.3	46-115
NITROBENZENE-D5	696	716.1	97.2	44-125
TERPHENYL-D14	803	716.1	112	58-133

051716

METHOD SW3550B/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 11:10
Sample ID:	KCH067-004	Date Analyzed:	03/16/16 15:08
Lab Samp ID:	C070-04	Dilution Factor:	1
Lab File ID:	RCJ212	Matrix :	SOIL
Ext Btch ID:	SVC013S	% Moisture :	4.9
Calib. Ref.:	RBJ007	Instrument ID :	T-OE4

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ACENAPHTHENE	ND	11	1.3	2.6
ACENAPHTHYLENE	ND	11	1.3	2.6
ANTHRACENE	ND	11	1.3	2.6
BENZO(A)ANTHRACENE	ND	11	2.6	5.3
BENZO(A)PYRENE	ND	11	1.3	2.6
BENZO(B)FLUORANTHENE	ND	11	1.3	2.6
BENZO(K)FLUORANTHENE	ND	11	1.3	2.6
BENZO(G,H,I)PERYLENE	ND	11	1.3	2.6
CHRYSENE	ND	11	2.3	5.3
DIBENZO(A,H)ANTHRACENE	ND	11	1.3	2.6
FLUORANTHENE	ND	11	1.3	2.6
FLUORENE	ND	11	1.3	2.6
INDENO(1,2,3-CD)PYRENE	ND	11	1.3	2.6
NAPHTHALENE	ND	11	1.3	2.6
PHENANTHRENE	ND	11	1.3	2.6
PYRENE	ND	11	1.3	2.6
2-METHYLNAPHTHALENE	ND	11	1.3	2.6
1-METHYLNAPHTHALENE	ND	11	1.3	2.6

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	621	701.1	88.6	46-115
NITROBENZENE-D5	663	701.1	94.6	44-125
TERPHENYL-D14	803	701.1	115	58-133

3/25/16

LDC #: 36282A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C070 Standard/Full Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer:
2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/Δ	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/Δ	%RSD ≤ 15, r² ICV ≤ 20
IV.	Continuing calibration /ending ccv	Δ	ccv ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	EB= KCH067-019 (SDG # 16C071)
VII.	Surrogate spikes	Δ	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Standard validation.
XIII.	Target compound identification	Δ	Not reviewed for Standard validation.
XIV.	System performance	Δ	Not reviewed for Standard validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-001	16C070-01	Soil	03/08/16
2	KCH067-002	16C070-02	Soil	03/08/16
3	KCH067-003	16C070-03	Soil	03/08/16
4	KCH067-004**	16C070-04**	Soil	03/08/16
5	KCH067-003MS	16C070-03MS	Soil	03/08/16
6	KCH067-003MSD	16C070-03MSD	Soil	03/08/16
7				
8				
9				

Notes:

	MBLK1S						

LDC #: 36282A2b

VALIDATION FINDINGS CHECKLIST

Reviewer: EP
2nd Reviewer: K

Method: Semivolatiles (EPA SW 846 Method 8270C-SIM)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check (Not required)				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) ≥ 0.05?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent differences (%R) within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 36262Ab6 **VALIDATION FINDINGS CHECKLIST** Page: 2 of 2
Reviewer: FT
2nd Reviewer: TC

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1.
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1.
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1.
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1.
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1.
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1.
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1.
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1.
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1.
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1.
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1.
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1.
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1.
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1.
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 2,6-Dinitrotoluene	O1.
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1.
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4 Methylphenol	Q1.
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiphene (4MDT)	R1.
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1.
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1.
U. Hexachlorobutadiene	UU. Phenanthrene	UUU.Benzo(b)thiophene	UUUU.	U1.
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV.Benzonaphthothiophene	VVVV.	V1.
W. 2-Methylnaphthalene	WW. Carbazole	WWW.Benzo(e)pyrene	WWWW.	W1.
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX.	X1.
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY.	Y1.
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ.	Z1.

LDC #: 36282B2b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)
The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/2/16	S (1st IS)	3.981	3.981	4.006	4.006	3.76	3.76
			YY (2nd IS)	1.437	1.437	1.451	1.451	9.00	9.00
			III (3rd IS)	1.165	1.165	1.083	1.083	11.33	11.33
			(4th IS)						
			(5th IS)						
			(6th IS)						
2			(1st IS)						
			(2nd IS)						
			(3rd IS)						
			(4th IS)						
			(5th IS)						
			(6th IS)						
3			(1st IS)						
			(2nd IS)						
			(3rd IS)						
			(4th IS)						
			(5th IS)						
			(6th IS)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282426

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)
The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	RCA193 CCV	3/16/16	S (1st IS)	4.006	3.873	3.873	3.3	3.3
			YY (2nd IS)	1.451	1.395	1.395	3.9	3.9
			III (3rd IS)	1.083	1.149	1.149	6.1	6.1
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A2b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT
2nd reviewer: ↑

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #4

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	10	9.46	94.6	94.6	0
2-Fluorobiphenyl	↓	8.86	88.6	88.6	↓
Terphenyl-d14	↓	11.46	115	115	↓
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 36282A26

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene	1430	1430	2.61	1050	1050	73	73	73	73	0	0
Pentachlorophenol											
Pyrene	↓	↓	2.68	1370	1320	95	95	92	92	4	4

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A2b

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: SYC013SL/SC

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	1330	1330	967	932	73	73	70	70	4	4
Pentachlorophenol										
Pyrene	↓	↓	1230	1230	92	92	92	92	0	0

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A2b

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd reviewer: JT

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. LCS, Acenaphthene

Conc. = $\frac{(599770)(40)(2)(1000)}{(552251)(2.994)(30)}$

= 967 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Chlorinated Pesticides

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-001	16C070-01	Soil	03/08/16
KCH067-002	16C070-02	Soil	03/08/16
KCH067-003	16C070-03	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-003MS	16C070-03MS	Soil	03/08/16
KCH067-003MSD	16C070-03MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8081A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were established as required by the method for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation.

The sample results for detected compounds from the two columns were within 40% relative percent difference (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
KCH067-001	Aldrin Dieldrin 4,4'-DDE	109 113 66	J (all detects) J (all detects) J (all detects)	A
KCH067-003	Dieldrin 4,4'-DDT	111 156	J (all detects) J (all detects)	A
KCH067-004**	Dieldrin Endosulfan II	122 108	J (all detects) J (all detects)	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identification

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to RPD between two columns, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Chlorinated Pesticides - Data Qualification Summary - SDG 16C070

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-001	Aldrin Dieldrin 4,4'-DDE	J (all detects) J (all detects) J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-003	Dieldrin 4,4'-DDT	J (all detects) J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-004**	Dieldrin Endosulfan II	J (all detects) J (all detects)	A	Compound quantitation (RPD between two columns) (12)

China Lake CTO 067
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/14/16 14:44
Sample ID: KCH067-001	Date Analyzed: 03/19/16 07:44
Lab Samp ID: C070-01	Dilution Factor: 1
Lab File ID: RC18055A	Matrix : SOIL
Ext Btch ID: CPC011S	% Moisture : 4.3
Calib. Ref.: RC18052A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	2.1	0.21	0.42
GAMMA-BHC (LINDANE)	(ND)	0.42J	2.1	0.21	0.42
BETA-BHC	(ND)	ND	2.1	0.21	0.42
HEPTACHLOR	0.43J	(ND)	2.1	0.21	0.42
DELTA-BHC	(ND)	ND	2.1	0.28	0.42
ALDRIN	0.95J	(0.28J) J(12)	2.1	0.21	0.42
HEPTACHLOR EPOXIDE	1.2J	(ND)	2.1	0.21	0.42
GAMMA-CHLORDANE	(ND)	ND	2.1	0.21	0.42
ALPHA-CHLORDANE	(ND)	ND	2.1	0.21	0.42
ENDOSULFAN I	(ND)	0.75J	2.1	0.21	0.42
4,4'-DDE	7.7	(3.9) J(12)	2.1	0.21	0.42
DIELDRIN	4.3	(1.2J) J(12)	2.1	0.21	0.42
ENDRIN	(ND)	2.7	2.1	0.21	0.42
4,4'-DDD	(ND)	ND	2.1	0.21	0.42
ENDOSULFAN II	1.6J	(ND)	2.1	0.21	0.42
4,4'-DDT	(ND)	19	2.1	0.21	0.42
ENDRIN ALDEHYDE	(ND)	ND	2.1	0.37	0.42
ENDOSULFAN SULFATE	(ND)	ND	2.1	0.21	0.42
ENDRIN KETONE	0.31J	(ND)	2.1	0.21	0.42
METHOXYCHLOR	2.8J	(ND)	10	2.1	4.2
TOXAPHENE	(ND)	ND	52	5.2	10
TECHNICAL CHLORDANE	(ND)	ND	52	10	21

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	12.72 (14.06)	13.93	91.3 (101)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

SG 5/17/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/14/16 14:44
Sample ID: KCH067-002	Date Analyzed: 03/19/16 08:04
Lab Samp ID: C070-02	Dilution Factor: 1
Lab File ID: RC18056A	Matrix : SOIL
Ext Btch ID: CPC011S	% Moisture : 9.0
Calib. Ref.: RC18052A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND) | ND	2.2	0.22	0.44
GAMMA-BHC (LINDANE)	(ND) | ND	2.2	0.22	0.44
BETA-BHC	(ND) | ND	2.2	0.22	0.44
HEPTACHLOR	(ND) | ND	2.2	0.22	0.44
DELTA-BHC	(ND) | ND	2.2	0.30	0.44
ALDRIN	(ND) | ND	2.2	0.22	0.44
HEPTACHLOR EPOXIDE	(ND) | ND	2.2	0.22	0.44
GAMMA-CHLORDANE	(ND) | ND	2.2	0.22	0.44
ALPHA-CHLORDANE	(ND) | ND	2.2	0.22	0.44
ENDOSULFAN I	(ND) | ND	2.2	0.22	0.44
4,4'-DDE	0.39J | (ND)	2.2	0.22	0.44
DIELDRIN	0.33J | (ND)	2.2	0.22	0.44
ENDRIN	(ND) | ND	2.2	0.22	0.44
4,4'-DDD	(ND) | ND	2.2	0.22	0.44
ENDOSULFAN II	(ND) | ND	2.2	0.22	0.44
4,4'-DDT	(ND) | 1.7J	2.2	0.22	0.44
ENDRIN ALDEHYDE	(ND) | ND	2.2	0.38	0.44
ENDOSULFAN SULFATE	(ND) | ND	2.2	0.22	0.44
ENDRIN KETONE	(ND) | ND	2.2	0.22	0.44
METHOXYCHLOR	(ND) | ND	11	2.2	4.4
TOXAPHENE	(ND) | ND	55	5.5	11
TECHNICAL CHLORDANE	(ND) | ND	55	11	22

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	13.05 | (13.63)	14.65	89.1 | (93.0)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

3/21/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/14/16 14:44
Sample ID: KCH067-003	Date Analyzed: 03/19/16 08:24
Lab Samp ID: C070-03	Dilution Factor: 1
Lab File ID: RC18057A	Matrix : SOIL
Ext Btch ID: CPC011S	% Moisture : 6.9
Calib. Ref.: RC18052A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND) | ND	2.1	0.21	0.43
GAMMA-BHC (LINDANE)	(ND) | ND	2.1	0.21	0.43
BETA-BHC	(ND) | ND	2.1	0.21	0.43
HEPTACHLOR	0.32J | (ND)	2.1	0.21	0.43
DELTA-BHC	(ND) | ND	2.1	0.29	0.43
ALDRIN	3.3 | (ND)	2.1	0.21	0.43
HEPTACHLOR EPOXIDE	(ND) | ND	2.1	0.21	0.43
GAMMA-CHLORDANE	(ND) | ND	2.1	0.21	0.43
ALPHA-CHLORDANE	(ND) | ND	2.1	0.21	0.43
ENDOSULFAN I	(ND) | 1.4J	2.1	0.21	0.43
4,4'-DDE	15 | (ND)	2.1	0.21	0.43
DIELDRIN	8.4 | (2.4) J(12)	2.1	0.21	0.43
ENDRIN	(ND) | 5.9	2.1	0.21	0.43
4,4'-DDD	(ND) | 0.74J	2.1	0.21	0.43
ENDOSULFAN II	(ND) | ND	2.1	0.21	0.43
4,4'-DDT	(6.9) | 56 J(12)	2.1	0.21	0.43
ENDRIN ALDEHYDE	(ND) | ND	2.1	0.38	0.43
ENDOSULFAN SULFATE	(ND) | 1.8J	2.1	0.21	0.43
ENDRIN KETONE	0.85J | (ND)	2.1	0.21	0.43
METHOXYCHLOR	19 | (ND)	11	2.1	4.3
TOXAPHENE	(ND) | ND	54	5.4	11
TECHNICAL CHLORDANE	(ND) | ND	54	11	21

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	14.41 | (15.37)	14.32	101 | (107)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

TG 51716

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/14/16 14:44
Sample ID: KCH067-004	Date Analyzed: 03/19/16 09:25
Lab Samp ID: C070-04	Dilution Factor: 1
Lab File ID: RC18060A	Matrix : SOIL
Ext Btch ID: CPC011S	% Moisture : 4.9
Calib. Ref.: RC18052A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	2.1	0.21	0.42
GAMMA-BHC (LINDANE)	(ND)	ND	2.1	0.21	0.42
BETA-BHC	(ND)	ND	2.1	0.21	0.42
HEPTACHLOR	(ND)	ND	2.1	0.21	0.42
DELTA-BHC	(ND)	ND	2.1	0.28	0.42
ALDRIN	0.35J	(ND)	2.1	0.21	0.42
HEPTACHLOR EPOXIDE	0.35J	(ND)	2.1	0.21	0.42
GAMMA-CHLORDANE	(ND)	ND	2.1	0.21	0.42
ALPHA-CHLORDANE	0.92J	(ND)	2.1	0.21	0.42
ENDOSULFAN I	(ND)	ND	2.1	0.21	0.42
4,4'-DDE	2.2	(ND)	2.1	0.21	0.42
DIELDRIN	1.4J	(0.34J) J (12)	2.1	0.21	0.42
ENDRIN	(ND)	0.72J	2.1	0.21	0.42
4,4'-DDD	(ND)	ND	2.1	0.21	0.42
ENDOSULFAN II	(0.36J)	1.2J J(12)	2.1	0.21	0.42
4,4'-DDT	(ND)	7.2	2.1	0.21	0.42
ENDRIN ALDEHYDE	(ND)	ND	2.1	0.37	0.42
ENDOSULFAN SULFATE	(ND)	0.21J	2.1	0.21	0.42
ENDRIN KETONE	(ND)	ND	2.1	0.21	0.42
METHOXYCHLOR	(ND)	ND	11	2.1	4.2
TOXAPHENE	(ND)	ND	53	5.3	11
TECHNICAL CHLORDANE	(ND)	ND	53	11	21

SURROGATE PARAMETERS	RESULTS		SPK_AMT	% RECOVERY		QC LIMIT
TETRACHLORO-M-XYLENE	13.43	(14.66)	14.02	95.8	(105)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

LDC #: 36282A3a
SDG #: 16C070
Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard/Full

Date: 5/9/16
Page: 1 of 1
Reviewer: EJ
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC Instrument Performance Check	A	
III.	Initial calibration/ICV	A / A	%D psp / ICV ≤ 20
IV.	Continuing calibration	A	CCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB = KCH067-019 (SDG # 16C074)
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS ID
X.	Field duplicates	N	
XI.	Compound quantitation/RL/LOQ/LODs	SW	Not reviewed for Standard validation.
XII.	Target compound identification	A	Not reviewed for Standard validation.
XIII.	System Performance	A	Not reviewed for Standard validation.
XIV	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-001	16C070-01	Soil	03/08/16
2	KCH067-002	16C070-02	Soil	03/08/16
3	KCH067-003	16C070-03	Soil	03/08/16
4	KCH067-004**	16C070-04**	Soil	03/08/16
5	KCH067-003MS	16C070-03MS	Soil	03/08/16
6	KCH067-003MSD	16C070-03MSD	Soil	03/08/16
7				
8				
9				
10				
11				

Notes:

	MBLK1S						

LDC #: 36282A3a

VALIDATION FINDINGS CHECKLIST

Reviewer: FT
2nd Reviewer: M

Method: Pesticides (EPA SW 846 Method 8081)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and at beginning of each 12-hour shift?	✓			
Were endrin and 4,4'-DDT breakdowns ≤ 15% for individual breakdown in the Evaluation mix standards?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?		✓		
Were the RT windows properly established?	✓			
IIIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.			✓	
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes/Internal Standards				
Were all surrogate percent recovery (%R) within the QC limits?	✓			

LDC #: 36282A3a

VALIDATION FINDINGS CHECKLIST

Reviewer: FT
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recovery (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
Were internal standard area counts within ± 50% of the average area calculated during calibration?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓	~~✓~~	F7	
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
Were relative percent difference (RPD) of the results between two columns ≤ 40%?	F7 ~~✓~~	✓		
XII. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Arochlor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC #: 36287A3a

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

code = 12

#	Associated Samples	Compound Name	% RPD But 2 col ≤ 40 Findings	Qualifications
	1	F	109	J (all) / A
		I	113	
		J	66	
	3	I	111	
		O	156	
	4	I	122	
		L	108	

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282A3a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: A

METHOD: GC Pesticides (EPA SW 846 Method 8081)

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)/200	Recalculated CF (20 std)/200	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICA L	1/21/16	endosulfan I	431064	431064	419333.4	419333.4	12.1	12.1
	RTX cup1		Methoxychlor	146220	146220	164669.2	164669.2	15.4	15.4
2	RTX cup2		↓	107259	107259	105819.2	105819.2	5.8	5.8
				44563	44563	45652.3	45652.3	5.4	5.4
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A3a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 6 of 7
Reviewer: FT
2nd Reviewer: A

METHOD: GC Pesticides (EPA SW 846 Method 8081)

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount (ng)
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount (ng)

Standard ID	Calibration Date/Time	Compound	Average CF/ CCV Conc	Reported CF/Conc CCV	Recalculated CF/Conc CCV	Reported %D	Recalculated %D
CCV 1607	3/18/16	endosulfan / RTX cap1	20.0	17.62	17.62	12	12
		methoxychlor	200.0	211.66	211.66	6	6
		↓ RTX cap2		19.51	19.51	2	2
			↓	218.07	218.07	9	9
CCV 0643	3/19/16	↓	20.0	18.54	18.54	7	7
			200.0	226.93	226.93	13	13
				20.05	20.05	0	0
		↓	↓	231.56	231.56	16	16

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A3a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: FT
2nd reviewer: N

METHOD: GC Pesticides (EPA SW 846 Method 8081)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #4

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene	RTX CLP 1	40.0	38.310	95.8	95.8	0
Tetrachloro-m-xylene	RTX CLP II	↓	41.840	105	105	0
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 36287T3a

VALIDATION FINDINGS WORKSHEET

Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FT
2nd Reviewer: AC

METHOD: GC Pesticides (EPA SW 846 Method 8081)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery

MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD		MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
gamma-BHC	7.16	7.16	ND	8.24	8.18	115	115	114	114	1	1
4,4'-DDT	7.16	7.16	6.9	16.3	16.1	131	131	128	128	1	1

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282T3a

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: RZ
2nd Reviewer: DL

METHOD: GC Pesticides (EPA SW 846 Method 8081A)

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: OPC 0115L / SC

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
gamma-BHC	6.67	6.67	6.18	6.16	93	93	92	92	0	0
4,4'-DDT	↓	↓	6.55	7.22	98	98	108	109	10	10

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36287T3a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: EJ
2nd reviewer: JC

METHOD: GC Pesticides (EPA SW 846 Method 8081A)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. #4 , endosulfan II

Conc. = $\frac{379617 \quad (10)}{367000.6 \quad (30.01) \quad (0.951)}$

=

0.36 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Polychlorinated Biphenyls

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-001	16C070-01	Soil	03/08/16
KCH067-002	16C070-02	Soil	03/08/16
KCH067-003	16C070-03	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-003MS	16C070-03MS	Soil	03/08/16
KCH067-003MSD	16C070-03MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation.

The sample results for detected compounds from the two columns were within 40% relative percent difference (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
KCH067-001	Aroclor-1260	73	J (all detects)	A
KCH067-002	Aroclor-1254	56	J (all detects)	A
KCH067-003	Aroclor-1260	77	J (all detects)	A
KCH067-004**	Aroclor-1260	63	J (all detects)	A

Raw data were not reviewed for Level III validation.

XI. Target Compound Identification

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to RPD between two columns, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Polychlorinated Biphenyls - Data Qualification Summary - SDG 16C070

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-001 KCH067-003 KCH067-004**	Aroclor-1260	J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-002	Aroclor-1254	J (all detects)	A	Compound quantitation (RPD between two columns) (12)

China Lake CTO 067
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW3550B/8082
PCBs

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/14/16 14:44
Sample ID: KCH067-001	Date Analyzed: 03/15/16 11:36
Lab Samp ID: C070-01	Dilution Factor: 1
Lab File ID: SC15007A	Matrix : SOIL
Ext Btch ID: CPC011S	% Moisture : 4.3
Calib. Ref.: SC15002A	Instrument ID : GCT008

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
AROCLOR 1016	(ND) | ND	52	14	18
AROCLOR 1221	(ND) | ND	52	8.7	18
AROCLOR 1232	(ND) | ND	52	9.4	18
AROCLOR 1242	(ND) | ND	52	9.7	18
AROCLOR 1248	(ND) | ND	52	8.7	18
AROCLOR 1254	(260) | 260	52	8.7	18
AROCLOR 1260	69 | (32J) J (12)	52	10	18

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	14.08 | (15.37)	13.93	101 | (110)	44-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

3/16/16

METHOD SW3550B/8082
PCBs

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/14/16 14:44
Sample ID: KCH067-002	Date Analyzed: 03/15/16 11:54
Lab Samp ID: C070-02	Dilution Factor: 1
Lab File ID: SC15008A	Matrix : SOIL
Ext Btch ID: CPC011S	% Moisture : 9.0
Calib. Ref.: SC15002A	Instrument ID : GCT008

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
AROCLOR 1016	(ND) | ND	55	14	19
AROCLOR 1221	(ND) | ND	55	9.1	19
AROCLOR 1232	(ND) | ND	55	9.9	19
AROCLOR 1242	(ND) | ND	55	10	19
AROCLOR 1248	(ND) | ND	55	9.1	19
AROCLOR 1254	(23J) | 13J J (12)	55	9.1	19
AROCLOR 1260	(ND) | ND	55	11	19

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	13.20 | (14.39)	14.65	90.1 | (98.2)	44-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

8/05/16

METHOD SW3550B/8082
PCBs

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/14/16 14:44
Sample ID: KCH067-003	Date Analyzed: 03/15/16 12:11
Lab Samp ID: C070-03	Dilution Factor: 1
Lab File ID: SC15009A	Matrix : SOIL
Ext Btch ID: CPC011S	% Moisture : 6.9
Calib. Ref.: SC15002A	Instrument ID : GCT008

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
AROCLOR 1016	(ND) | ND	54	14	18
AROCLOR 1221	(ND) | ND	54	8.9	18
AROCLOR 1232	(ND) | ND	54	9.7	18
AROCLOR 1242	(ND) | ND	54	10	18
AROCLOR 1248	(ND) | ND	54	8.9	18
AROCLOR 1254	570 | (580)	54	8.9	18
AROCLOR 1260	160 | (71) J (12)	54	11	18

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	14.15 | (15.37)	14.32	98.8 | (107)	44-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

4/05/16

METHOD SW3550B/8082
PCBs

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/14/16 14:44
Sample ID	: KCH067-004	Date Analyzed:	03/15/16 13:03
Lab Samp ID	: C070-04	Dilution Factor:	1
Lab File ID	: SC15012A	Matrix	: SOIL
Ext Btch ID	: CPC011S	% Moisture	: 4.9
Calib. Ref.:	SC15002A	Instrument ID	: GCT008

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
AROCLOR 1016	(ND) | ND	53	14	18
AROCLOR 1221	(ND) | ND	53	8.7	18
AROCLOR 1232	(ND) | ND	53	9.5	18
AROCLOR 1242	(ND) | ND	53	9.8	18
AROCLOR 1248	(ND) | ND	53	8.7	18
AROCLOR 1254	(76) | 74	53	8.7	18
AROCLOR 1260	(21J) | 11J J(12)	53	10	18

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	13.56 | (14.77)	14.02	96.8 | (105)	44-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

3/17/16

LDC #: 36282A3b

SDG #: 16C070

Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET

Standard/Full

Date: 5/9/16

Page: 1 of 1

Reviewer: EM

2nd Reviewer: M

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	
III.	Continuing calibration	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB= KCH067-019 (SDG # 16C074)
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	SW	Not reviewed for Standard validation.
XI.	Target compound identification	A	Not reviewed for Standard validation.
XII.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-001	16C070-01	Soil	03/08/16
2	KCH067-002	16C070-02	Soil	03/08/16
3	KCH067-003	16C070-03	Soil	03/08/16
4	KCH067-004**	16C070-04**	Soil	03/08/16
5	KCH067-003MS	16C070-03MS	Soil	03/08/16
6	KCH067-003MSD	16C070-03MSD	Soil	03/08/16
7				
8				
9				
10				
11				
12				
13				

Notes:

	MBLK15						

LDC #: 36282A36 **VALIDATION FINDINGS CHECKLIST** Page: 1 of 2
Reviewer: FR
2nd Reviewer:

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
IIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥0.990?		✓		
Were the RT windows properly established?	✓			
IIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 20% or percent recoveries (%R) 80-120%?	✓			
III. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
IV. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
V. Field Blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VI. Surrogate spikes				
Were all surrogate percent recovery (%R) within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36282A36

VALIDATION FINDINGS CHECKLIST

Reviewer: EJ
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
X. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 36282A3b

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: FT
2nd Reviewer: A

METHOD: ✓ **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

code = 12

#	Associated Samples	Compound Name	% RPD Bet 2 col ≤ 40 Findings	Qualifications
	1	BB	73	J dil /A
	2	AA	56	↓
	3	BB	77	↓
	4	BB	63	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282A3b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer: A

METHOD: GC ✓ HPLC _____

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (100 std)	Recalculated CF (100 std)	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICAL RTX-CLP1	11/17/15	PCB-1260-1	3097.58	3097.58	3049.208	3049.208	14.2	14.2
	RTX-CLP2	↓	↓	3293.02	3293.02	3326.041	3326.041	13.6	13.6
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A36

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	CCV 10:10	3/15/16	PCB-1260	500.0	498.754	498.754	0	0
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A3b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT
2nd reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #4

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
TCMX	RTX CLP1	40.0	38.7	96.8	96.8	0
TCMX	CLP2	↓	42.14	105	105	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 36282A3b

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: A

METHOD: ✓ GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100

Where

SSC = Spiked sample concentration
SC = Sample concentration
SA = Spike added

MS = Matrix spike
MSD = Matrix spike duplicate

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											
Aroclor 1260	179	179	155	331	319	98	98	92	92	4	4

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A36

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT
2nd Reviewer: AC

METHOD: ✓ GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC/SA)
RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
LCS = Laboratory Control Sample
SA = Spike added
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 60C011SL/SC

Compound	Spike Added (ug/kg)		Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										
Aroclor 1260	167	167	169	169	101	101	101	101	0	0

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A3b

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: A

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. # 4 Compound Name AA

Concentration = $\frac{216.39\ (10)}{(30.01)(0.95)}$ =

= 76 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	1254-1 = 59267 / 1689.4	= 35.08	1254-1 =	35.08	
			2 =	48.41	
			3 =	32.74	
			4 =	48.53	
			5 =	51.62	
			Total	= 216.39	

Comments: _____

LDC Report# 36282A4a

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 24, 2016

Parameters: Metals

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-001	16C070-01	Soil	03/08/16
KCH067-002	16C070-02	Soil	03/08/16
KCH067-003	16C070-03	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-005	16C070-05	Soil	03/08/16
KCH067-006	16C070-06	Soil	03/08/16
KCH067-007	16C070-07	Soil	03/08/16
KCH067-008	16C070-08	Soil	03/08/16
KCH067-009	16C070-09	Soil	03/08/16
KCH067-010	16C070-10	Soil	03/08/16
KCH067-011	16C070-11	Soil	03/08/16
KCH067-012	16C070-12	Soil	03/08/16
KCH067-013	16C070-13	Soil	03/08/16
KCH067-014	16C070-14	Soil	03/08/16
KCH067-015	16C070-15	Soil	03/08/16
KCH067-016**	16C070-16**	Soil	03/08/16
KCH067-017	16C070-17	Soil	03/08/16
KCH067-018	16C070-18	Soil	03/08/16
KCH067-003MS	16C070-03MS	Soil	03/08/16
KCH067-003MSD	16C070-03MSD	Soil	03/08/16
KCH067-016MS	16C070-16MS	Soil	03/08/16
KCH067-016MSD	16C070-16MSD	Soil	03/08/16
KCH067-001DL	16C070-01DL	Soil	03/08/16
KCH067-002DL	16C070-02DL	Soil	03/08/16
KCH067-002RE	16C070-02RE	Soil	03/08/16
KCH067-003DL	16C070-03DL	Soil	03/08/16
KCH067-004RE**	16C070-04RE**	Soil	03/08/16

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-009RE	16C070-09RE	Soil	03/08/16
KCH067-010RE	16C070-10RE	Soil	03/08/16
KCH067-011DL	16C070-11DL	Soil	03/08/16
KCH067-016RE**	16C070-16RE**	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A
Mercury by EPA SW 846 Method 7471A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
03/29/16	CCV (14:19)	Boron	182 (80-120)	KCH067-002RE KCH067-003DL KCH067-004RE** KCH067-009RE KCH067-011DL	J+ (all detects)	P
03/29/16	CCV (15:11)	Boron	187 (80-120)	KCH067-002RE KCH067-003DL KCH067-004RE** KCH067-009RE KCH067-011DL KCH067-016RE**	J+ (all detects)	P
03/29/16	CCV (16:00)	Boron	184 (80-120)	KCH067-016RE**	J+ (all detects)	P

IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Selenium	0.100 ug/L	KCH067-001 KCH067-002 KCH067-003 KCH067-004** KCH067-005 KCH067-006 KCH067-007 KCH067-008 KCH067-009 KCH067-010 KCH067-011
ICB/CCB	Molybdenum	0.238 ug/L	KCH067-002RE KCH067-003DL KCH067-004RE** KCH067-009RE KCH067-011DL
ICB/CCB	Molybdenum	0.223 ug/L	KCH067-016RE**
ICB/CCB	Antimony	0.294	KCH067-002RE KCH067-003DL KCH067-004RE** KCH067-009RE KCH067-011DL KCH067-016RE**

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
KCH067-001	Selenium	0.130 mg/Kg	0.130U mg/Kg
KCH067-003	Selenium	0.176 mg/Kg	0.176U mg/Kg
KCH067-005	Selenium	0.0595 mg/Kg	0.0993U mg/Kg
KCH067-003DL	Molybdenum	2.92 mg/Kg	2.92U mg/Kg
KCH067-016RE**	Molybdenum	0.244 mg/Kg	0.244U mg/Kg
KCH067-003DL	Antimony	1.15 mg/Kg	2.10U mg/Kg
KCH067-004RE**	Antimony	0.350 mg/Kg	0.350U mg/Kg
KCH067-016RE**	Antimony	0.110 mg/Kg	0.198U mg/Kg

VI. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
KCH067-019	03/08/16	Boron Calcium Iron Lead Manganese Nickel Sodium	4.65 ug/L 135 ug/L 9.85 ug/L 0.225 ug/L 0.318 ug/L 0.161 ug/L 42.6 ug/L	All samples in SDG 16C070

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated field blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
KCH067-005	Boron	6.80 mg/Kg	6.80U mg/Kg
KCH067-006	Boron	4.94 mg/Kg	5.01U mg/Kg
KCH067-007	Boron	4.62 mg/Kg	4.90U mg/Kg
KCH067-008	Boron	4.50 mg/Kg	4.97U mg/Kg
KCH067-010	Boron	9.71 mg/Kg	9.71U mg/Kg
KCH067-013	Boron	8.91 mg/Kg	8.91U mg/Kg
KCH067-014	Boron	9.15 mg/Kg	9.15U mg/Kg
KCH067-016**	Boron	7.59 mg/Kg	7.59U mg/Kg
KCH067-018	Boron	9.82 mg/Kg	9.82U mg/Kg
KCH067-002DL	Boron	53.3 mg/Kg	53.3U mg/Kg
KCH067-010RE	Boron	9.62 mg/Kg	9.62U mg/Kg
KCH067-016RE**	Boron	7.20 mg/Kg	7.20U mg/Kg

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
KCH067-003MS/MSD (KCH067-003 KCH067-003DL)	Antimony	40 (72-124)	38 (72-124)	J- (all detects)	A
	Chromium	46 (83-119)	50 (83-119)	J- (all detects)	
	Copper	68 (84-119)	67 (84-119)	J- (all detects)	
	Lead	-48 (84-118)	-56 (84-118)	J- (all detects)	
	Sodium	75 (79-125)	71 (79-125)	J- (all detects)	
KCH067-016MS/MSD (KCH067-016** KCH067-016RE**)	Antimony	61 (72-124)	60 (72-124)	J- (all detects)	A
	Calcium	85 (86-118)	-	J- (all detects)	
	Chromium	83 (83-119)	-	J- (all detects)	
	Copper	80 (84-119)	78 (84-119)	J- (all detects)	
	Magnesium	56 (80-123)	67 (80-123)	J- (all detects)	
	Potassium	74 (85-119)	84 (85-119)	J- (all detects)	
	Vanadium	36 (82-116)	41 (82-116)	J- (all detects)	

For KCH067-003MS/MSD, no data were qualified for Aluminum, Boron, Calcium, Iron, Magnesium, Manganese, and Zinc percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

For KCH067-016MS/MSD, no data were qualified for Barium, Iron, and Manganese percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

VIII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

IX. Serial Dilution

Serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

X. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
KCH067-001 KCH067-003 KCH067-009 KCH067-016**	Boron	Sample result exceeded linear range.	Reported result should be within linear range.	J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-002	Boron Calcium Iron Sodium	Sample result exceeded linear range.	Reported result should be within linear range.	J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-002RE	Iron	Sample result exceeded linear range.	Reported result should be within linear range.	J (all detects)	A
KCH067-010	Calcium Iron Sodium	Sample result exceeded linear range.	Reported result should be within linear range.	J (all detects) J (all detects) J (all detects)	A
KCH067-011	Boron Zinc	Sample result exceeded linear range.	Reported result should be within linear range.	J (all detects) J (all detects)	A

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Analyte	Flag	A or P
KCH067-001 KCH067-003 KCH067-009 KCH067-016**	Boron	R	A
KCH067-002	Boron Calcium Iron Sodium	R R R R	A
KCH067-010	Calcium Iron Sodium	R R R	A
KCH067-011	Boron Zinc	R R	A
KCH067-011DL	All analytes except Boron Zinc	R R	A
KCH067-001DL KCH067-003DL KCH067-004RE** KCH067-009RE KCH067-016RE**	All analytes except Boron	R	A
KCH067-002DL	All analytes except Iron	R	A
KCH067-002RE	All analytes except Boron Calcium Sodium	R	A
KCH067-010RE	All analytes except Calcium Iron Sodium	R	A

Due to calibration and MS/MSD %R, data were qualified as estimated in eight samples.

Due to laboratory blank contamination, data were qualified as not detected in three samples.

Due to equipment blank contamination, data were qualified as not detected in nine samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Metals - Data Qualification Summary - SDG 16C070

Sample	Analyte	Flag	A or P	Reason (Code)
KCH067-002RE KCH067-003DL KCH067-004RE** KCH067-009RE KCH067-011DL KCH067-016RE**	Boron	J+ (all detects)	P	Calibration (CCV) (%R) (5)
KCH067-003	Antimony Chromium Copper Lead Sodium	J- (all detects) J- (all detects) J- (all detects) J- (all detects) J- (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (8)
KCH067-016**	Antimony Calcium Chromium Copper Magnesium Potassium Vanadium	J- (all detects) J- (all detects) J- (all detects) J- (all detects) J- (all detects) J- (all detects) J- (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (8)
KCH067-001 KCH067-003 KCH067-009 KCH067-016**	Boron	R	A	Overall assessment of data (22)
KCH067-002	Boron Calcium Iron Sodium	R R R R	A	Overall assessment of data (22)
KCH067-010	Calcium Iron Sodium	R R R	A	Overall assessment of data (22)
KCH067-011	Boron Zinc	R R	A	Overall assessment of data (22)
KCH067-011DL	All analytes except Boron Zinc	R R	A	Overall assessment of data (22)
KCH067-001DL KCH067-003DL KCH067-004RE** KCH067-009RE KCH067-016RE**	All analytes except Boron	R	A	Overall assessment of data (22)
KCH067-002DL	All analytes except Iron	R	A	Overall assessment of data (22)

Sample	Analyte	Flag	A or P	Reason (Code)
KCH067-002RE	All analytes except Boron Calcium Sodium	R	A	Overall assessment of data (22)
KCH067-010RE	All analytes except Calcium Iron Sodium	R	A	Overall assessment of data (22)

China Lake CTO 067
Metals - Laboratory Blank Data Qualification Summary - SDG 16C070

Sample	Analyte	Modified Final Concentration	A or P	Code
KCH067-001	Selenium	0.130U mg/Kg	A	7
KCH067-003	Selenium	0.176U mg/Kg	A	7
KCH067-005	Selenium	0.0993U mg/Kg	A	7

China Lake CTO 067
Metals - Field Blank Data Qualification Summary - SDG 16C070

Sample	Analyte	Modified Final Concentration	A or P	Code
KCH067-005	Boron	6.80U mg/Kg	A	6
KCH067-006	Boron	5.01U mg/Kg	A	6
KCH067-007	Boron	4.90U mg/Kg	A	6
KCH067-008	Boron	4.97U mg/Kg	A	6
KCH067-010	Boron	9.71U mg/Kg	A	6
KCH067-013	Boron	8.91U mg/Kg	A	6
KCH067-014	Boron	9.15U mg/Kg	A	6
KCH067-018	Boron	9.82U mg/Kg	A	6
KCH067-016RE**	Boron	7.20U mg/Kg	A	6

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-001	Date Analyzed:	03/28/16 15:13
Lab Samp ID:	C070-01	Dilution Factor:	0.98
Lab File ID:	98C11043	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	4.3
Calib. Ref.:	98C11038	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	8910	102	10.2	20.5
Antimony	0.423J	0.512	0.102	0.205
Arsenic	4.48	0.512	0.0512	0.102
Barium	59.8	0.512	0.0737	0.102
Beryllium	0.315J	0.512	0.0512	0.102
Boron	197E R22	10.2	2.56	5.12
Cadmium	2.28	0.512	0.0584	0.102
Calcium	5050	102	17.4	20.5
Chromium	10.5	0.512	0.0512	0.102
Cobalt	6.08	0.512	0.0512	0.102
Copper	23.9	0.512	0.102	0.205
Iron	14100	102	5.12	10.2
Lead	21.7	0.512	0.0512	0.102
Magnesium	5670	102	10.2	20.5
Manganese	202	0.512	0.157	0.205
Molybdenum	2.24	0.512	0.102	0.205
Nickel	6.34	0.512	0.0645	0.102
Potassium	4280	102	10.2	20.5
Selenium	0.130J U (T)	0.512	0.0512	0.102
Silver	0.0842J	0.512	0.0512	0.102
Sodium	4220	102	10.2	20.5
Thallium	0.117J	0.512	0.0512	0.102
Vanadium	31.6	0.512	0.195	0.256
Zinc	57.5	2.05	0.699	1.02

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-001DL	Date Analyzed:	03/28/16 17:58
Lab Samp ID:	C070-011	Dilution Factor:	9.8
Lab File ID:	98C11080	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	4.3
Calib. Ref.:	98C11074	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	9280 R22	1020	102	205
Antimony	ND	5.12	1.02	2.05
Arsenic	4.69J	5.12	0.512	1.02
Barium	59.6	5.12	0.737	1.02
Beryllium	ND	5.12	0.512	1.02
Boron	178	102	25.6	51.2
Cadmium	2.32J R22	5.12	0.584	1.02
Calcium	5530	1020	174	205
Chromium	11.2	5.12	0.512	1.02
Cobalt	6.64	5.12	0.512	1.02
Copper	26.8	5.12	1.02	2.05
Iron	15200	1020	51.2	102
Lead	23.1	5.12	0.512	1.02
Magnesium	5880	1020	102	205
Manganese	225	5.12	1.57	2.05
Molybdenum	2.20J	5.12	1.02	2.05
Nickel	6.90	5.12	0.645	1.02
Potassium	4590	1020	102	205
Selenium	ND	5.12	0.512	1.02
Silver	ND	5.12	0.512	1.02
Sodium	4550	1020	102	205
Thallium	ND	5.12	0.512	1.02
Vanadium	32.7	5.12	1.95	2.56
Zinc	63.4	20.5	6.99	10.2

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-002	Date Analyzed:	03/28/16 15:17
Lab Samp ID:	C070-02	Dilution Factor:	0.976
Lab File ID:	98C11044	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	9.0
Calib. Ref.:	98C11038	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)		LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	15200		107	10.7	21.5
Antimony	0.440J		0.536	0.107	0.215
Arsenic	10.2		0.536	0.0536	0.107
Barium	114		0.536	0.0772	0.107
Beryllium	0.535J		0.536	0.0536	0.107
Boron	53.5E	R22	10.7	2.68	5.36
Cadmium	0.574		0.536	0.0611	0.107
Calcium	16000E	R22	107	18.2	21.5
Chromium	14.3		0.536	0.0536	0.107
Cobalt	11.5		0.536	0.0536	0.107
Copper	38.5		0.536	0.107	0.215
Iron	27100E	R22	107	5.36	10.7
Lead	6.27		0.536	0.0536	0.107
Magnesium	9770		107	10.7	21.5
Manganese	342		0.536	0.164	0.215
Molybdenum	0.805		0.536	0.107	0.215
Nickel	11.0		0.536	0.0676	0.107
Potassium	5390		107	10.7	21.5
Selenium	ND		0.536	0.0536	0.107
Silver	0.0604J		0.536	0.0536	0.107
Sodium	3140E	R22	107	10.7	21.5
Thallium	0.222J		0.536	0.0536	0.107
Vanadium	67.4		0.536	0.204	0.268
Zinc	51.5		2.15	0.733	1.07

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-002RE	Date Analyzed:	03/29/16 14:27
Lab Samp ID:	C070-02N	Dilution Factor:	0.976
Lab File ID:	98C12018	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	9.0
Calib. Ref.:	98C12016	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)		LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	15100	R22	107	10.7	21.5
Antimony	0.452J		0.536	0.107	0.215
Arsenic	10.3		0.536	0.0536	0.107
Barium	110		0.536	0.0772	0.107
Beryllium	0.545		0.536	0.0536	0.107
Boron	51.5	J+	10.7 (LS)	2.68	5.36
Cadmium	0.524J	R22	0.536	0.0611	0.107
Calcium	16300		107	18.2	21.5
Chromium	14.6	R22	0.536	0.0536	0.107
Cobalt	11.5		0.536	0.0536	0.107
Copper	40.7		0.536	0.107	0.215
Iron	26100E		107	5.36	10.7
Lead	6.38		0.536	0.0536	0.107
Magnesium	10300		107	10.7	21.5
Manganese	337		0.536	0.164	0.215
Molybdenum	0.854		0.536	0.107	0.215
Nickel	10.9		0.536	0.0676	0.107
Potassium	5330		107	10.7	21.5
Selenium	ND		0.536	0.0536	0.107
Silver	0.0623J		0.536	0.0536	0.107
Sodium	3290		107	10.7	21.5
Thallium	0.241J	R22	0.536	0.0536	0.107
Vanadium	69.1		0.536	0.204	0.268
Zinc	53.6		2.15	0.733	1.07

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METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
SDG NO. : 16C070	Date Extracted: 03/17/16 15:19
Sample ID: KCH067-002DL	Date Analyzed: 03/28/16 18:03
Lab Samp ID: C070-02I	Dilution Factor: 4.88
Lab File ID: 98C11081	Matrix : SOIL
Ext Btch ID: IMC031S	% Moisture : 9.0
Calib. Ref.: 98C11074	Instrument ID : T-I98

PARAMETERS	RESULTS (mg/kg)		LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	16500	R2	536	53.6	107
Antimony	ND		2.68	0.536	1.07
Arsenic	10.3		2.68	0.268	0.536
Barium	117		2.68	0.386	0.536
Beryllium	0.553J		2.68	0.268	0.536
Boron	53.3J		53.6	13.4	26.8
Cadmium	0.502J		2.68	0.306	0.536
Calcium	17400		536	91.2	107
Chromium	15.1		2.68	0.268	0.536
Cobalt	12.5		2.68	0.268	0.536
Copper	43.8		2.68	0.536	1.07
Iron	29400		536	26.8	53.6
Lead	6.45	R2	2.68	0.268	0.536
Magnesium	10700		536	53.6	107
Manganese	373		2.68	0.820	1.07
Molybdenum	0.817J		2.68	0.536	1.07
Nickel	11.8		2.68	0.338	0.536
Potassium	5910		536	53.6	107
Selenium	ND		2.68	0.268	0.536
Silver	ND		2.68	0.268	0.536
Sodium	3380		536	53.6	107
Thallium	ND		2.68	0.268	0.536
Vanadium	69.2		2.68	1.02	1.34
Zinc	55.2		10.7	3.66	5.36

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METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
SDG NO. : 16C070	Date Extracted: 03/17/16 15:19
Sample ID: KCH067-003	Date Analyzed: 03/28/16 15:35
Lab Samp ID: C070-03	Dilution Factor: 0.976
Lab File ID: 98C11048	Matrix : SOIL
Ext Btch ID: IMC031S	% Moisture : 6.9
Calib. Ref.: 98C11038	Instrument ID : T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	11800	105	10.5	21.0
Antimony	0.728 J-(8)	0.524	0.105	0.210
Arsenic	6.99	0.524	0.0524	0.105
Barium	101	0.524	0.0755	0.105
Beryllium	0.418J	0.524	0.0524	0.105
Boron	180E R2	10.5	2.62	5.24
Cadmium	2.22	0.524	0.0598	0.105
Calcium	15600	105	17.8	21.0
Chromium	26.6 J-(8)	0.524	0.0524	0.105
Cobalt	8.28	0.524	0.0524	0.105
Copper	29.4 J-(8)	0.524	0.105	0.210
Iron	18300	105	5.24	10.5
Lead	64.1 J-(8)	0.524	0.0524	0.105
Magnesium	10100	105	10.5	21.0
Manganese	273	0.524	0.160	0.210
Molybdenum	2.72	0.524	0.105	0.210
Nickel	8.54	0.524	0.0660	0.105
Potassium	5190	105	10.5	21.0
Selenium	0.176J U (7)	0.524	0.0524	0.105
Silver	0.0775J	0.524	0.0524	0.105
Sodium	5550 J-(8)	105	10.5	21.0
Thallium	0.172J	0.524	0.0524	0.105
Vanadium	45.5	0.524	0.199	0.262
Zinc	188	2.10	0.716	1.05

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-003DL	Date Analyzed:	03/29/16 14:45
Lab Samp ID:	C070-031	Dilution Factor:	9.76
Lab File ID:	98C12022	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	6.9
Calib. Ref.:	98C12016	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	12600 R22	1050	105	210
Antimony	1.15J	5.24	1.05	2.10
Arsenic	6.86	5.24	0.524	1.05
Barium	98.4	5.24	0.755	1.05
Beryllium	ND	5.24	0.524	1.05
Boron	149 J+(S)	105	26.2	52.4
Cadmium	1.88J R22	5.24	0.598	1.05
Calcium	16900	1050	178	210
Chromium	28.0	5.24	0.524	1.05
Cobalt	9.28	5.24	0.524	1.05
Copper	34.5	5.24	1.05	2.10
Iron	18900	1050	52.4	105
Lead	71.3	5.24	0.524	1.05
Magnesium	11600	1050	105	210
Manganese	299	5.24	1.60	2.10
Molybdenum	2.92J	5.24	1.05	2.10
Nickel	9.05	5.24	0.660	1.05
Potassium	5600	1050	105	210
Selenium	ND	5.24	0.524	1.05
Silver	ND	5.24	0.524	1.05
Sodium	6250	1050	105	210
Thallium	ND	5.24	0.524	1.05
Vanadium	46.5	5.24	1.99	2.62
Zinc	204	21.0	7.16	10.5

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-004	Date Analyzed:	03/28/16 15:57
Lab Samp ID:	C070-04	Dilution Factor:	0.971
Lab File ID:	98C11053	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	4.9
Calib. Ref.:	98C11050	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	8900	102	10.2	20.4
Antimony	0.346J	0.511	0.102	0.204
Arsenic	6.46	0.511	0.0511	0.102
Barium	66.9	0.511	0.0735	0.102
Beryllium	0.293J	0.511	0.0511	0.102
Boron	35.0 R2	10.2	2.55	5.11
Cadmium	0.284J	0.511	0.0582	0.102
Calcium	7410	102	17.4	20.4
Chromium	10.9	0.511	0.0511	0.102
Cobalt	7.37	0.511	0.0511	0.102
Copper	19.7	0.511	0.102	0.204
Iron	18700	102	5.11	10.2
Lead	6.19	0.511	0.0511	0.102
Magnesium	5970	102	10.2	20.4
Manganese	193	0.511	0.156	0.204
Molybdenum	0.631	0.511	0.102	0.204
Nickel	6.95	0.511	0.0643	0.102
Potassium	3430	102	10.2	20.4
Selenium	ND	0.511	0.0511	0.102
Silver	ND	0.511	0.0511	0.102
Sodium	2080	102	10.2	20.4
Thallium	0.133J	0.511	0.0511	0.102
Vanadium	48.6	0.511	0.194	0.255
Zinc	34.1	2.04	0.697	1.02

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-004RE	Date Analyzed:	03/29/16 14:54
Lab Samp ID:	C070-04N	Dilution Factor:	0.971
Lab File ID:	98C12024	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	4.9
Calib. Ref.:	98C12016	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	8760 R22	102	10.2	20.4
Antimony	0.350J	0.511	0.102	0.204
Arsenic	6.61	0.511	0.0511	0.102
Barium	65.7	0.511	0.0735	0.102
Beryllium	0.299J	0.511	0.0511	0.102
Boron	33.5 J+(5)	10.2	2.55	5.11
Cadmium	0.274J R22	0.511	0.0582	0.102
Calcium	7590	102	17.4	20.4
Chromium	11.1	0.511	0.0511	0.102
Cobalt	7.29	0.511	0.0511	0.102
Copper	20.5	0.511	0.102	0.204
Iron	17500	102	5.11	10.2
Lead	6.25	0.511	0.0511	0.102
Magnesium	6230	102	10.2	20.4
Manganese	188	0.511	0.156	0.204
Molybdenum	0.630	0.511	0.102	0.204
Nickel	6.91	0.511	0.0643	0.102
Potassium	3380	102	10.2	20.4
Selenium	ND	0.511	0.0511	0.102
Silver	ND	0.511	0.0511	0.102
Sodium	2210	102	10.2	20.4
Thallium	0.136J	0.511	0.0511	0.102
Vanadium	49.2	0.511	0.194	0.255
Zinc	34.2	2.04	0.697	1.02

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7016

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-005	Date Analyzed:	03/28/16 16:01
Lab Samp ID:	C070-05	Dilution Factor:	0.966
Lab File ID:	98C11054	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	2.7
Calib. Ref.:	98C11050	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7320	99.3	9.93	19.9
Antimony	0.116J	0.496	0.0993	0.199
Arsenic	2.64	0.496	0.0496	0.0993
Barium	68.4	0.496	0.0715	0.0993
Beryllium	0.323J	0.496	0.0496	0.0993
Boron	6.80J U(6)	9.93	2.48	4.96
Cadmium	0.139J	0.496	0.0566	0.0993
Calcium	4790	99.3	16.9	19.9
Chromium	6.91	0.496	0.0496	0.0993
Cobalt	4.41	0.496	0.0496	0.0993
Copper	13.4	0.496	0.0993	0.199
Iron	14000	99.3	4.96	9.93
Lead	3.28	0.496	0.0496	0.0993
Magnesium	2860	99.3	9.93	19.9
Manganese	161	0.496	0.152	0.199
Molybdenum	0.168J	0.496	0.0993	0.199
Nickel	4.47	0.496	0.0625	0.0993
Potassium	2240	99.3	9.93	19.9
Selenium	0.0595J 0.0993	0.496 (T)	0.0496	0.0993
Silver	0.0514J	0.496	0.0496	0.0993
Sodium	221	99.3	9.93	19.9
Thallium	0.0880J	0.496	0.0496	0.0993
Vanadium	32.9	0.496	0.189	0.248
Zinc	20.9	1.99	0.678	0.993

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-006	Date Analyzed:	03/28/16 16:06
Lab Samp ID:	C070-06	Dilution Factor:	0.98
Lab File ID:	98C11055	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	2.2
Calib. Ref.:	98C11050	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	6770	100	10.0	20.0
Antimony	0.116J	0.501	0.100	0.200
Arsenic	2.74	0.501	0.0501	0.100
Barium	73.1	0.501	0.0721	0.100
Beryllium	0.236J	0.501	0.0501	0.100
Boron	4.94J 5.1U	10.0 (16)	2.51	5.01
Cadmium	0.115J	0.501	0.0571	0.100
Calcium	6160	100	17.0	20.0
Chromium	7.83	0.501	0.0501	0.100
Cobalt	5.25	0.501	0.0501	0.100
Copper	13.4	0.501	0.100	0.200
Iron	15200	100	5.01	10.0
Lead	2.78	0.501	0.0501	0.100
Magnesium	2900	100	10.0	20.0
Manganese	220	0.501	0.153	0.200
Molybdenum	0.198J	0.501	0.100	0.200
Nickel	4.57	0.501	0.0631	0.100
Potassium	2280	100	10.0	20.0
Selenium	ND	0.501	0.0501	0.100
Silver	ND	0.501	0.0501	0.100
Sodium	199	100	10.0	20.0
Thallium	0.0811J	0.501	0.0501	0.100
Vanadium	37.6	0.501	0.190	0.251
Zinc	20.7	2.00	0.684	1.00

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METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
SDG NO. : 16C070	Date Extracted: 03/17/16 15:19
Sample ID: KCH067-007	Date Analyzed: 03/28/16 16:10
Lab Samp ID: C070-07	Dilution Factor: 0.962
Lab File ID: 98C11056	Matrix : SOIL
Ext Btch ID: IMC031S	% Moisture : 1.9
Calib. Ref.: 98C11050	Instrument ID : T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	4640	98.1	9.81	19.6
Antimony	ND	0.490	0.0981	0.196
Arsenic	1.77	0.490	0.0490	0.0981
Barium	66.6	0.490	0.0706	0.0981
Beryllium	0.169J	0.490	0.0490	0.0981
Boron	4.62J 4.90U	9.81 (6)	2.45	4.90
Cadmium	0.0987J	0.490	0.0559	0.0981
Calcium	3570	98.1	16.7	19.6
Chromium	4.75	0.490	0.0490	0.0981
Cobalt	3.12	0.490	0.0490	0.0981
Copper	8.52	0.490	0.0981	0.196
Iron	10600	98.1	4.90	9.81
Lead	2.06	0.490	0.0490	0.0981
Magnesium	2240	98.1	9.81	19.6
Manganese	118	0.490	0.150	0.196
Molybdenum	0.142J	0.490	0.0981	0.196
Nickel	2.84	0.490	0.0618	0.0981
Potassium	1700	98.1	9.81	19.6
Selenium	ND	0.490	0.0490	0.0981
Silver	ND	0.490	0.0490	0.0981
Sodium	115	98.1	9.81	19.6
Thallium	0.0589J	0.490	0.0490	0.0981
Vanadium	23.6	0.490	0.186	0.245
Zinc	15.7	1.96	0.670	0.981

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-008	Date Analyzed:	03/28/16 16:15
Lab Samp ID:	C070-08	Dilution Factor:	0.98
Lab File ID:	98C11057	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	1.5
Calib. Ref.:	98C11050	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	3920	99.5	9.95	19.9
Antimony	ND	0.497	0.0995	0.199
Arsenic	1.83	0.497	0.0497	0.0995
Barium	41.8	0.497	0.0716	0.0995
Beryllium	0.162J	0.497	0.0497	0.0995
Boron	4.50J 4.9TU	9.95 (6)	2.49	4.97
Cadmium	0.0907J	0.497	0.0567	0.0995
Calcium	2470	99.5	16.9	19.9
Chromium	5.20	0.497	0.0497	0.0995
Cobalt	2.63	0.497	0.0497	0.0995
Copper	6.78	0.497	0.0995	0.199
Iron	10800	99.5	4.97	9.95
Lead	1.99	0.497	0.0497	0.0995
Magnesium	1730	99.5	9.95	19.9
Manganese	85.7	0.497	0.152	0.199
Molybdenum	0.146J	0.497	0.0995	0.199
Nickel	2.60	0.497	0.0627	0.0995
Potassium	1290	99.5	9.95	19.9
Selenium	ND	0.497	0.0497	0.0995
Silver	ND	0.497	0.0497	0.0995
Sodium	281	99.5	9.95	19.9
Thallium	ND	0.497	0.0497	0.0995
Vanadium	25.2	0.497	0.189	0.249
Zinc	11.6	1.99	0.680	0.995

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-009	Date Analyzed:	03/28/16 16:19
Lab Samp ID:	C070-09	Dilution Factor:	0.985
Lab File ID:	98C11058	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	2.9
Calib. Ref.:	98C11050	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)		LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	8380		101	10.1	20.3
Antimony	1.70		0.507	0.101	0.203
Arsenic	2.98		0.507	0.0507	0.101
Barium	90.0		0.507	0.0730	0.101
Beryllium	0.267J		0.507	0.0507	0.101
Boron	31.5E	R22	10.1	2.54	5.07
Cadmium	4.68		0.507	0.0578	0.101
Calcium	3860		101	17.2	20.3
Chromium	19.9		0.507	0.0507	0.101
Cobalt	5.83		0.507	0.0507	0.101
Copper	60.4		0.507	0.101	0.203
Iron	19500		101	5.07	10.1
Lead	64.5		0.507	0.0507	0.101
Magnesium	3110		101	10.1	20.3
Manganese	237		0.507	0.155	0.203
Molybdenum	1.64		0.507	0.101	0.203
Nickel	18.2		0.507	0.0639	0.101
Potassium	2380		101	10.1	20.3
Selenium	ND		0.507	0.0507	0.101
Silver	2.39		0.507	0.0507	0.101
Sodium	187		101	10.1	20.3
Thallium	0.0875J		0.507	0.0507	0.101
Vanadium	34.6		0.507	0.193	0.254
Zinc	242		2.03	0.693	1.01

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-009RE	Date Analyzed:	03/29/16 14:58
Lab Samp ID:	C070-09N	Dilution Factor:	0.985
Lab File ID:	98C12025	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	2.9
Calib. Ref.:	98C12016	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	8400 R22	101	10.1	20.3
Antimony	1.67	0.507	0.101	0.203
Arsenic	2.99	0.507	0.0507	0.101
Barium	85.0	0.507	0.0730	0.101
Beryllium	0.256J	0.507	0.0507	0.101
Boron	30.3 J+(S)	10.1	2.54	5.07
Cadmium	4.35 R22	0.507	0.0578	0.101
Calcium	3920	101	17.2	20.3
Chromium	19.8	0.507	0.0507	0.101
Cobalt	5.94	0.507	0.0507	0.101
Copper	61.4	0.507	0.101	0.203
Iron	18600	101	5.07	10.1
Lead	64.8	0.507	0.0507	0.101
Magnesium	3290	101	10.1	20.3
Manganese	235	0.507	0.155	0.203
Molybdenum	1.66	0.507	0.101	0.203
Nickel	18.6	0.507	0.0639	0.101
Potassium	2370	101	10.1	20.3
Selenium	ND	0.507	0.0507	0.101
Silver	2.41	0.507	0.0507	0.101
Sodium	204	101	10.1	20.3
Thallium	0.0880J	0.507	0.0507	0.101
Vanadium	34.6	0.507	0.193	0.254
Zinc	248	2.03	0.693	1.01

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-010	Date Analyzed:	03/28/16 16:25
Lab Samp ID:	C070-10	Dilution Factor:	0.98
Lab File ID:	98C11059	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	3.8
Calib. Ref.:	98C11050	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7500	102	10.2	20.4
Antimony	0.178J	0.509	0.102	0.204
Arsenic	1.72	0.509	0.0509	0.102
Barium	105	0.509	0.0733	0.102
Beryllium	0.250J	0.509	0.0509	0.102
Boron	9.71J U(16)	10.2	2.55	5.09
Cadmium	0.284J	0.509	0.0581	0.102
Calcium	3020E R2	102	17.3	20.4
Chromium	8.10	0.509	0.0509	0.102
Cobalt	6.07	0.509	0.0509	0.102
Copper	17.5	0.509	0.102	0.204
Iron	15800E R2	102	5.09	10.2
Lead	4.12	0.509	0.0509	0.102
Magnesium	3730	102	10.2	20.4
Manganese	251	0.509	0.156	0.204
Molybdenum	0.323J	0.509	0.102	0.204
Nickel	5.31	0.509	0.0642	0.102
Potassium	2790	102	10.2	20.4
Selenium	ND	0.509	0.0509	0.102
Silver	0.0746J	0.509	0.0509	0.102
Sodium	200E R2	102	10.2	20.4
Thallium	0.0999J	0.509	0.0509	0.102
Vanadium	36.7	0.509	0.194	0.255
Zinc	35.2	2.04	0.696	1.02

4/17/16 [illegible]

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-010RE	Date Analyzed:	03/28/16 18:11
Lab Samp ID:	C070-10N	Dilution Factor:	0.98
Lab File ID:	98C11083	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	3.8
Calib. Ref.:	98C11074	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7510	102	10.2	20.4
Antimony	0.178J	0.509	0.102	0.204
Arsenic	1.73	0.509	0.0509	0.102
Barium	107	0.509	0.0733	0.102
Beryllium	0.240J	0.509	0.0509	0.102
Boron	9.62J	10.2	2.55	5.09
Cadmium	0.307J	0.509	0.0581	0.102
Calcium	2990	102	17.3	20.4
Chromium	8.15	0.509	0.0509	0.102
Cobalt	6.07	0.509	0.0509	0.102
Copper	17.6	0.509	0.102	0.204
Iron	16200	102	5.09	10.2
Lead	4.12	0.509	0.0509	0.102
Magnesium	3670	102	10.2	20.4
Manganese	254	0.509	0.156	0.204
Molybdenum	0.327J	0.509	0.102	0.204
Nickel	5.33	0.509	0.0642	0.102
Potassium	2790	102	10.2	20.4
Selenium	ND	0.509	0.0509	0.102
Silver	0.0746J	0.509	0.0509	0.102
Sodium	197	102	10.2	20.4
Thallium	0.0981J	0.509	0.0509	0.102
Vanadium	36.6	0.509	0.194	0.255
Zinc	34.6	2.04	0.696	1.02

4/7/16 [illegible]

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-011	Date Analyzed:	03/28/16 16:29
Lab Samp ID:	C070-11	Dilution Factor:	0.976
Lab File ID:	98C11060	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	3.1
Calib. Ref.:	98C11050	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	9370	101	10.1	20.1
Antimony	2.56	0.504	0.101	0.201
Arsenic	2.72	0.504	0.0504	0.101
Barium	83.2	0.504	0.0725	0.101
Beryllium	0.273J	0.504	0.0504	0.101
Boron	46.4E R2	10.1	2.52	5.04
Cadmium	9.34	0.504	0.0574	0.101
Calcium	3830	101	17.1	20.1
Chromium	22.5	0.504	0.0504	0.101
Cobalt	5.71	0.504	0.0504	0.101
Copper	99.7	0.504	0.101	0.201
Iron	22100	101	5.04	10.1
Lead	140	0.504	0.0504	0.101
Magnesium	2750	101	10.1	20.1
Manganese	245	0.504	0.154	0.201
Molybdenum	2.12	0.504	0.101	0.201
Nickel	22.5	0.504	0.0635	0.101
Potassium	2220	101	10.1	20.1
Selenium	ND	0.504	0.0504	0.101
Silver	4.05	0.504	0.0504	0.101
Sodium	283	101	10.1	20.1
Thallium	0.0779J	0.504	0.0504	0.101
Vanadium	35.8	0.504	0.191	0.252
Zinc	413E R2	2.01	0.688	1.01

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METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
SDG NO. : 16C070	Date Extracted: 03/17/16 15:19
Sample ID: KCH067-011DL	Date Analyzed: 03/29/16 15:03
Lab Samp ID: C070-11I	Dilution Factor: 1.95
Lab File ID: 98C12026	Matrix : SOIL
Ext Btch ID: IMC031S	% Moisture : 3.1
Calib. Ref.: 98C12016	Instrument ID : T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	9390	201	20.1	40.2
Antimony	2.63	1.01	0.201	0.402
Arsenic	2.84	1.01	0.101	0.201
Barium	83.1	1.01	0.145	0.201
Beryllium	0.292J	1.01	0.101	0.201
Boron	47.2	20.1	5.03	10.1
Cadmium	8.61	1.01	0.115	0.201
Calcium	3940	201	34.2	40.2
Chromium	23.4	1.01	0.101	0.201
Cobalt	6.02	1.01	0.101	0.201
Copper	106	1.01	0.201	0.402
Iron	21200	201	10.1	20.1
Lead	143	1.01	0.101	0.201
Magnesium	2940	201	20.1	40.2
Manganese	248	1.01	0.308	0.402
Molybdenum	2.09	1.01	0.201	0.402
Nickel	22.9	1.01	0.127	0.201
Potassium	2250	201	20.1	40.2
Selenium	ND	1.01	0.101	0.201
Silver	4.18	1.01	0.101	0.201
Sodium	310	201	20.1	40.2
Thallium	ND	1.01	0.101	0.201
Vanadium	36.6	1.01	0.382	0.503
Zinc	434	4.02	1.37	2.01

R22 J+(5) R22

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METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
SDG NO. : 16C070	Date Extracted: 03/17/16 15:19
Sample ID: KCH067-012	Date Analyzed: 03/28/16 16:47
Lab Samp ID: C070-12	Dilution Factor: 0.976
Lab File ID: 98C11064	Matrix : SOIL
Ext Btch ID: IMC031S	% Moisture : 3.5
Calib. Ref.: 98C11062	Instrument ID : T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	6440	101	10.1	20.2
Antimony	0.183J	0.506	0.101	0.202
Arsenic	2.43	0.506	0.0506	0.101
Barium	73.7	0.506	0.0728	0.101
Beryllium	0.253J	0.506	0.0506	0.101
Boron	14.4	10.1	2.53	5.06
Cadmium	0.190J	0.506	0.0576	0.101
Calcium	4550	101	17.2	20.2
Chromium	6.27	0.506	0.0506	0.101
Cobalt	4.19	0.506	0.0506	0.101
Copper	11.7	0.506	0.101	0.202
Iron	12100	101	5.06	10.1
Lead	5.93	0.506	0.0506	0.101
Magnesium	2590	101	10.1	20.2
Manganese	161	0.506	0.155	0.202
Molybdenum	0.235J	0.506	0.101	0.202
Nickel	3.71	0.506	0.0637	0.101
Potassium	1980	101	10.1	20.2
Selenium	ND	0.506	0.0506	0.101
Silver	ND	0.506	0.0506	0.101
Sodium	389	101	10.1	20.2
Thallium	0.0855J	0.506	0.0506	0.101
Vanadium	28.1	0.506	0.192	0.253
Zinc	37.9	2.02	0.691	1.01

METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
SDG NO. : 16C070	Date Extracted: 03/17/16 15:19
Sample ID: KCH067-013	Date Analyzed: 03/28/16 16:52
Lab Samp ID: C070-13	Dilution Factor: 0.966
Lab File ID: 98C11065	Matrix : SOIL
Ext Btch ID: IMC031S	% Moisture : 5.0
Calib. Ref.: 98C11062	Instrument ID : T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	8330	102	10.2	20.3
Antimony	0.130J	0.508	0.102	0.203
Arsenic	2.17	0.508	0.0508	0.102
Barium	145	0.508	0.0732	0.102
Beryllium	0.261J	0.508	0.0508	0.102
Boron	8.91J ~~B~~ U	10.2 (6)	2.54	5.08
Cadmium	0.110J	0.508	0.0580	0.102
Calcium	5060	102	17.3	20.3
Chromium	9.72	0.508	0.0508	0.102
Cobalt	7.44	0.508	0.0508	0.102
Copper	21.6	0.508	0.102	0.203
Iron	17900	102	5.08	10.2
Lead	3.22	0.508	0.0508	0.102
Magnesium	4360	102	10.2	20.3
Manganese	249	0.508	0.156	0.203
Molybdenum	0.280J	0.508	0.102	0.203
Nickel	5.84	0.508	0.0641	0.102
Potassium	3270	102	10.2	20.3
Selenium	0.0983J	0.508	0.0508	0.102
Silver	ND	0.508	0.0508	0.102
Sodium	471	102	10.2	20.3
Thallium	0.118J	0.508	0.0508	0.102
Vanadium	41.3	0.508	0.193	0.254
Zinc	30.6	2.03	0.695	1.02

4/05/16

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-014	Date Analyzed:	03/28/16 16:56
Lab Samp ID:	C070-14	Dilution Factor:	0.966
Lab File ID:	98C11066	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	3.9
Calib. Ref.:	98C11062	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7700	101	10.1	20.1
Antimony	0.133J	0.503	0.101	0.201
Arsenic	2.21	0.503	0.0503	0.101
Barium	174	0.503	0.0724	0.101
Beryllium	0.245J	0.503	0.0503	0.101
Boron	9.15J	10.1 (6)	2.51	5.03
Cadmium	0.123J	0.503	0.0573	0.101
Calcium	3510	101	17.1	20.1
Chromium	9.22	0.503	0.0503	0.101
Cobalt	5.79	0.503	0.0503	0.101
Copper	16.2	0.503	0.101	0.201
Iron	16400	101	5.03	10.1
Lead	3.64	0.503	0.0503	0.101
Magnesium	3610	101	10.1	20.1
Manganese	242	0.503	0.154	0.201
Molybdenum	0.243J	0.503	0.101	0.201
Nickel	5.39	0.503	0.0633	0.101
Potassium	2830	101	10.1	20.1
Selenium	0.0511J	0.503	0.0503	0.101
Silver	ND	0.503	0.0503	0.101
Sodium	325	101	10.1	20.1
Thallium	0.106J	0.503	0.0503	0.101
Vanadium	39.3	0.503	0.191	0.251
Zinc	30.1	2.01	0.687	1.01

3/31/16

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-015	Date Analyzed:	03/28/16 17:01
Lab Samp ID:	C070-15	Dilution Factor:	0.976
Lab File ID:	98C11067	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	3.6
Calib. Ref.:	98C11062	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7330	101	10.1	20.2
Antimony	0.108J	0.506	0.101	0.202
Arsenic	2.73	0.506	0.0506	0.101
Barium	80.3	0.506	0.0729	0.101
Beryllium	0.293J	0.506	0.0506	0.101
Boron	14.4	10.1	2.53	5.06
Cadmium	0.131J	0.506	0.0577	0.101
Calcium	4890	101	17.2	20.2
Chromium	8.32	0.506	0.0506	0.101
Cobalt	4.72	0.506	0.0506	0.101
Copper	15.3	0.506	0.101	0.202
Iron	15400	101	5.06	10.1
Lead	2.94	0.506	0.0506	0.101
Magnesium	3110	101	10.1	20.2
Manganese	180	0.506	0.155	0.202
Molybdenum	0.337J	0.506	0.101	0.202
Nickel	5.32	0.506	0.0638	0.101
Potassium	2470	101	10.1	20.2
Selenium	0.0596J	0.506	0.0506	0.101
Silver	ND	0.506	0.0506	0.101
Sodium	491	101	10.1	20.2
Thallium	0.0930J	0.506	0.0506	0.101
Vanadium	33.2	0.506	0.192	0.253
Zinc	23.9	2.02	0.692	1.01

SG 5/7/16

METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
SDG NO. : 16C070	Date Extracted: 03/17/16 15:19
Sample ID: KCH067-016	Date Analyzed: 03/28/16 17:18
Lab Samp ID: C070-16	Dilution Factor: 0.962
Lab File ID: 98C11071	Matrix : SOIL
Ext Btch ID: IMC031S	% Moisture : 2.8
Calib. Ref.: 98C11062	Instrument ID : T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7220	99.0	9.90	19.8
Antimony	0.112J J-(8)	0.495	0.0990	0.198
Arsenic	2.48	0.495	0.0495	0.0990
Barium	111	0.495	0.0713	0.0990
Beryllium	0.224J	0.495	0.0495	0.0990
Boron	7.59EJ R-22	9.90	2.47	4.95
Cadmium	0.117J	0.495	0.0564	0.0990
Calcium	5050 J-(8)	99.0	16.8	19.8
Chromium	7.31 J-(8)	0.495	0.0495	0.0990
Cobalt	5.65	0.495	0.0495	0.0990
Copper	16.0 J-(8)	0.495	0.0990	0.198
Iron	15400	99.0	4.95	9.90
Lead	2.39	0.495	0.0495	0.0990
Magnesium	3820 J-(8)	99.0	9.90	19.8
Manganese	221	0.495	0.151	0.198
Molybdenum	0.247J	0.495	0.0990	0.198
Nickel	5.01	0.495	0.0624	0.0990
Potassium	2840 J-(8)	99.0	9.90	19.8
Selenium	ND	0.495	0.0495	0.0990
Silver	ND	0.495	0.0495	0.0990
Sodium	384	99.0	9.90	19.8
Thallium	0.100J	0.495	0.0495	0.0990
Vanadium	36.8 J-(8)	0.495	0.188	0.247
Zinc	23.7	1.98	0.676	0.990

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-016RE	Date Analyzed:	03/29/16 15:33
Lab Samp ID:	C070-16N	Dilution Factor:	0.962
Lab File ID:	98C12033	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	2.8
Calib. Ref.:	98C12028	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)		LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7050	R2	99.0	9.90	19.8
Antimony	0.110J		0.495	0.0990	0.198
Arsenic	2.51		0.495	0.0495	0.0990
Barium	105		0.495	0.0713	0.0990
Beryllium	0.227J		0.495	0.0495	0.0990
Boron	7.20J	UJ	9.90 (5,6)	2.47	4.95
Cadmium	0.110J	R2	0.495	0.0564	0.0990
Calcium	5020		99.0	16.8	19.8
Chromium	7.33		0.495	0.0495	0.0990
Cobalt	5.68		0.495	0.0495	0.0990
Copper	16.3		0.495	0.0990	0.198
Iron	14500		99.0	4.95	9.90
Lead	2.46		0.495	0.0495	0.0990
Magnesium	3950		99.0	9.90	19.8
Manganese	214		0.495	0.151	0.198
Molybdenum	0.244J		0.495	0.0990	0.198
Nickel	4.87		0.495	0.0624	0.0990
Potassium	2820		99.0	9.90	19.8
Selenium	ND		0.495	0.0495	0.0990
Silver	ND		0.495	0.0495	0.0990
Sodium	402		99.0	9.90	19.8
Thallium	0.109J		0.495	0.0495	0.0990
Vanadium	36.6		0.495	0.188	0.247
Zinc	24.2		1.98	0.676	0.990

4/17/16

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-017	Date Analyzed:	03/28/16 17:40
Lab Samp ID:	C070-17	Dilution Factor:	0.985
Lab File ID:	98C11076	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	0.0
Calib. Ref.:	98C11074	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7350	98.5	9.85	19.7
Antimony	0.142J	0.493	0.0985	0.197
Arsenic	3.34	0.493	0.0493	0.0985
Barium	99.4	0.493	0.0709	0.0985
Beryllium	0.286J	0.493	0.0493	0.0985
Boron	9.94	9.85	2.46	4.93
Cadmium	0.201J	0.493	0.0561	0.0985
Calcium	7640	98.5	16.7	19.7
Chromium	7.30	0.493	0.0493	0.0985
Cobalt	5.17	0.493	0.0493	0.0985
Copper	16.7	0.493	0.0985	0.197
Iron	14300	98.5	4.93	9.85
Lead	9.97	0.493	0.0493	0.0985
Magnesium	3530	98.5	9.85	19.7
Manganese	220	0.493	0.151	0.197
Molybdenum	0.339J	0.493	0.0985	0.197
Nickel	6.22	0.493	0.0621	0.0985
Potassium	2620	98.5	9.85	19.7
Selenium	0.0584J	0.493	0.0493	0.0985
Silver	ND	0.493	0.0493	0.0985
Sodium	250	98.5	9.85	19.7
Thallium	0.102J	0.493	0.0493	0.0985
Vanadium	27.4	0.493	0.187	0.246
Zinc	69.7	1.97	0.673	0.985

4/25/16

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C070	Date Extracted:	03/17/16 15:19
Sample ID:	KCH067-018	Date Analyzed:	03/28/16 17:45
Lab Samp ID:	C070-18	Dilution Factor:	0.976
Lab File ID:	98C11077	Matrix :	SOIL
Ext Btch ID:	IMC031S	% Moisture :	2.1
Calib. Ref.:	98C11074	Instrument ID :	I-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	7500	99.7	9.97	19.9
Antimony	0.132J	0.498	0.0997	0.199
Arsenic	2.48	0.498	0.0498	0.0997
Barium	115	0.498	0.0718	0.0997
Beryllium	0.236J	0.498	0.0498	0.0997
Boron	9.82J ~~1.17U~~	9.97 (6)	2.49	4.98
Cadmium	0.121J	0.498	0.0568	0.0997
Calcium	6990	99.7	16.9	19.9
Chromium	8.61	0.498	0.0498	0.0997
Cobalt	5.91	0.498	0.0498	0.0997
Copper	15.9	0.498	0.0997	0.199
Iron	14200	99.7	4.98	9.97
Lead	2.97	0.498	0.0498	0.0997
Magnesium	3650	99.7	9.97	19.9
Manganese	240	0.498	0.153	0.199
Molybdenum	0.425J	0.498	0.0997	0.199
Nickel	5.78	0.498	0.0628	0.0997
Potassium	2870	99.7	9.97	19.9
Selenium	0.0528J	0.498	0.0498	0.0997
Silver	ND	0.498	0.0498	0.0997
Sodium	434	99.7	9.97	19.9
Thallium	0.107J	0.498	0.0498	0.0997
Vanadium	32.5	0.498	0.189	0.249
Zinc	27.4	1.99	0.681	0.997

8/25/16

METHOD SW7471A
MERCURY BY COLD VAPOR

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C070

Matrix : SOIL
InstrumentID : 47

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DIL'N FACTOR	MOIST (%)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1S	HGC017SB	ND	1	NA	0.10	0.010	0.020	03/25/1611:12	03/24/1618:05	M47C013011	M47C013	HGC017S	NA	NA
LCS1S	HGC017SL	0.424	1	NA	0.10	0.010	0.020	03/25/1611:14	03/24/1618:05	M47C013012	M47C013	HGC017S	NA	NA
LCD1S	HGC017SC	0.418	1	NA	0.10	0.010	0.020	03/25/1611:16	03/24/1618:05	M47C013013	M47C013	HGC017S	NA	NA
KCH067-003	C070-03	ND	1	6.9	0.11	0.011	0.021	03/25/1611:21	03/24/1618:05	M47C013015	M47C013	HGC017S	03/08/1609:40	03/10/16
KCH067-003MS	C070-03M	0.466	1	6.9	0.11	0.011	0.021	03/25/1611:25	03/24/1618:05	M47C013017	M47C013	HGC017S	03/08/1609:40	03/10/16
KCH067-003MSD	C070-03S	0.466	1	6.9	0.11	0.011	0.021	03/25/1611:28	03/24/1618:05	M47C013018	M47C013	HGC017S	03/08/1609:40	03/10/16
KCH067-016	C070-16	ND	1	2.8	0.10	0.010	0.020	03/25/1611:32	03/24/1618:05	M47C013020	M47C013	HGC017S	03/08/1615:00	03/10/16
KCH067-016MS	C070-16M	0.445	1	2.8	0.10	0.010	0.020	03/25/1611:40	03/24/1618:05	M47C013024	M47C013	HGC017S	03/08/1615:00	03/10/16
KCH067-016MSD	C070-16S	0.445	1	2.8	0.10	0.010	0.020	03/25/1611:43	03/24/1618:05	M47C013025	M47C013	HGC017S	03/08/1615:00	03/10/16
KCH067-001	C070-01	ND	1	4.3	0.10	0.010	0.021	03/25/1611:45	03/24/1618:05	M47C013026	M47C013	HGC017S	03/08/1609:15	03/10/16
KCH067-002	C070-02	ND	1	9.0	0.11	0.011	0.022	03/25/1611:47	03/24/1618:05	M47C013027	M47C013	HGC017S	03/08/1609:30	03/10/16
KCH067-004	C070-04	ND	1	4.9	0.10	0.010	0.021	03/25/1611:49	03/24/1618:05	M47C013028	M47C013	HGC017S	03/08/1609:55	03/10/16
KCH067-005	C070-05	ND	1	2.7	0.10	0.010	0.020	03/25/1611:51	03/24/1618:05	M47C013029	M47C013	HGC017S	03/08/1613:25	03/10/16
KCH067-006	C070-06	ND	1	2.2	0.10	0.010	0.020	03/25/1611:53	03/24/1618:05	M47C013030	M47C013	HGC017S	03/08/1613:40	03/10/16
KCH067-007	C070-07	ND	1	1.9	0.10	0.010	0.020	03/25/1611:55	03/24/1618:05	M47C013031	M47C013	HGC017S	03/08/1613:45	03/10/16
KCH067-008	C070-08	ND	1	1.5	0.099	0.0099	0.020	03/25/1611:58	03/24/1618:05	M47C013032	M47C013	HGC017S	03/08/1613:55	03/10/16
KCH067-009	C070-09	ND	1	2.9	0.10	0.010	0.020	03/25/1612:04	03/24/1618:05	M47C013035	M47C013	HGC017S	03/08/1614:00	03/10/16
KCH067-010	C070-10	ND	1	3.8	0.10	0.010	0.020	03/25/1612:06	03/24/1618:05	M47C013036	M47C013	HGC017S	03/08/1614:05	03/10/16
KCH067-011	C070-11	ND	1	3.1	0.10	0.010	0.020	03/25/1612:08	03/24/1618:05	M47C013037	M47C013	HGC017S	03/08/1614:10	03/10/16
KCH067-012	C070-12	ND	1	3.5	0.10	0.010	0.020	03/25/1612:11	03/24/1618:05	M47C013038	M47C013	HGC017S	03/08/1614:20	03/10/16
KCH067-013	C070-13	ND	1	5.0	0.10	0.010	0.021	03/25/1612:13	03/24/1618:05	M47C013039	M47C013	HGC017S	03/08/1614:25	03/10/16
KCH067-014	C070-14	ND	1	3.9	0.10	0.010	0.020	03/25/1612:15	03/24/1618:05	M47C013040	M47C013	HGC017S	03/08/1614:30	03/10/16
KCH067-015	C070-15	ND	1	3.6	0.10	0.010	0.020	03/25/1612:18	03/24/1618:05	M47C013041	M47C013	HGC017S	03/08/1614:50	03/10/16
KCH067-017	C070-17	ND	1	0.0	0.10	0.010	0.020	03/25/1612:20	03/24/1618:05	M47C013042	M47C013	HGC017S	03/08/1615:20	03/10/16
KCH067-018	C070-18	ND	1	2.1	0.10	0.010	0.020	03/25/1612:22	03/24/1618:05	M47C013043	M47C013	HGC017S	03/08/1615:30	03/10/16

5/17/16

LDC #: 36282A4a

SDG #: 16C070

Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET

Standard/Full

Date: 5/9/16

Page: 1 of 2

Reviewer: JO

2nd Reviewer: A

METHOD: Metals (EPA SW 846 Method 6020A/7470A) 1 30

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	3/8/16
II.	ICP/MS Tune	A	
III.	Instrument Calibration	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	EB= KCH067-019 (SDG: 16C074)
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MS/D = (19.20) (21.22)
VIII.	Duplicate sample analysis	N	
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	LCS/D
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	A	Not reviewed for Standard Validation
XIII.	Sample Result Verification 30	SW A	Not reviewed for Standard validation.
XIV.	Overall Assessment of Data ↓	SW A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-001	16C070-01	Soil	03/08/16
2	KCH067-002	16C070-02	Soil	03/08/16
3	KCH067-003	16C070-03	Soil	03/08/16
4	KCH067-004**	16C070-04**	Soil	03/08/16
5	KCH067-005	16C070-05	Soil	03/08/16
6	KCH067-006	16C070-06	Soil	03/08/16
7	KCH067-007	16C070-07	Soil	03/08/16
8	KCH067-008	16C070-08	Soil	03/08/16
9	KCH067-009	16C070-09	Soil	03/08/16
10	KCH067-010	16C070-10	Soil	03/08/16
11	KCH067-011	16C070-11	Soil	03/08/16
12	KCH067-012	16C070-12	Soil	03/08/16
13	KCH067-013	16C070-13	Soil	03/08/16
14	KCH067-014	16C070-14	Soil	03/08/16
15	KCH067-015	16C070-15	Soil	03/08/16

LDC #: 36282A4a

SDG #: 16C070

Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET

Standard/Full

Date: 5/9/16

Page: 2 of 2

Reviewer: 3D

2nd Reviewer: _____

METHOD: Metals (EPA SW 846 Method 6020A/7470A)

	Client ID	Lab ID	Matrix	Date
16	KCH067-016**	16C070-16**	Soil	03/08/16
17	KCH067-017	16C070-17	Soil	03/08/16
18	KCH067-018	16C070-18	Soil	03/08/16
19	KCH067-003MS	16C070-03MS	Soil	03/08/16
20	KCH067-003MSD	16C070-03MSD	Soil	03/08/16
21	KCH067-016MS	16C070-16MS	Soil	03/08/16
22	KCH067-016MSD	16C070-16MSD	Soil	03/08/16
23	#1DL			
24	#2DL			
25	#2RE			
26	#3DL			
27	#4RE			
28	#9RE			
29	#10RE			
30	#11DL			
31	#16RE			
32				
33				
34				
35				
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37				
38				
39				
40				

Notes: _____

LDC #: 36282A4a

VALIDATION FINDINGS CHECKLIST

Reviewer: SD
2nd Reviewer: AL

Method: Metals (EPA SW 846 Method 6010B/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. ICP/MS Tune				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution ≤5%?	✓			
III. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?		✓		
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
IV. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
V. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
VII. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?	✓			
IX. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	✓			
Were all percent differences (%Ds) < 10%?	✓			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 36282A4q

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: JD
2nd reviewer: A

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-18	S	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
RC.19-22	S	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
23-31	S	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___

Comments: Mercury by CVAA if performed

LDC #: 36282A4a

VALIDATION FINDINGS WORKSHEET
Calibration

Reviewer: SD
2nd Reviewer: 9

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?
Y N N/A Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%)?

LEVEL IV ONLY:

Y N N/A Was a midrange cyanide standard distilled?
Y N N/A Are all correlation coefficients ≥0.995?
Y N N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
	03/29/16	CCV (14:19)	B	182	25-28, 30	J+det/P (det) (05)
	03/29/16	CCV (15:11)	B	187	25-28, 30-31	J+det/P (det) (05)
	03/29/16	CCV (16:00)	B	184	31	J+det/P (det) (05)

Comments:

LDC #: 36282A4a

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: JD
2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 864 Method 6010/6020/7000) Soil preparation factor applied: 50X

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 1-11 (07)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification: 1	3	5							
Se			0.100		0.130/~~0.512~~ U	0.176/~~0.524~~ U	0.0595/~~0.496~~ 0.0993 U							

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 25-28, 30 (07)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification: 25	26								
Mo			0.238		~~0.817/2.68~~	2.92/~~5.24~~ U								

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 31 (07)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification: 31									
Mo			0.223		0.244/~~0.495~~									

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 25-28, 30-31 (07)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification: 26	27	31							
Sb			0.294		1.15/~~5.24~~ 2.10	0.350/~~0.511~~	0.110/~~0.495~~ 0.198 U							

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36282A4a

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: JD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA Method 200.7/200.8)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 03/08/16 Soil factor applied 50X
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All (06)

Analyte	Blank ID	Sample Identification											
[redacted]	KCH067-019 (SDG: 16C074)	Action Limit	5	6	7	8	10	13	14	16	18	24	
B	4.65		6.80/~~9.93~~	4.94/~~10.6~~	4.62/~~9.81~~	4.50/~~9.95~~	9.71/~~10.2~~	8.91/~~10.2~~	9.15/~~10.1~~	7.59/~~9.90~~	9.82/~~9.97~~	53.3/~~53.6~~	
Ca	135	67.5		5.01	4.90	4.97							
Fe	9.85												
Pb	0.225												
Mn	0.318												
Ni	0.161												
Na	42.6												

Analyte	Blank ID	Sample Identification											
[redacted]	KCH067-019 (SDG: 16C074)	Action Limit	29	31									
B	4.65		9.62/~~10.2~~	7.20/~~9.90~~									
Ca	135	67.5											
Fe	9.85												
Pb	0.225												
Mn	0.318												
Ni	0.161												
Na	42.6												

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 36282A4

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: SB
2nd Reviewer:

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	Postspike (75-125)
	19/20	S	Sb	40 (72-124)	38 (72-124)		3, 26	J-/UJ/A (det) (08)	
			Cr	46 (83-119)	50 (83-119)			J-/UJ/A (det) (08)	
			Cu	68 (84-119)	67 (84-119)			J-/UJ/A (det) (08)	
			Pb	-48 (84-118)	-56 (84-118)			J-/UJ/A (det) (08)	104
			Na	75 (79-125)	71 (79-125)			J-/UJ/A (det) (08)	
	21/22	S	Sb	61 (72-124)	60 (72-124)		16, 31	J-/UJ/A (det) (08)	
			Ca	85 (86-118)				J-/UJ/A (det) (08)	
			Cr	83 (83-119)				J-/UJ/A (det) (08)	
			Cu	80 (84-119)	78 (84-119)			J-/UJ/A (det) (08)	
			Mg	56 (80-123)	67 (80-123)			J-/UJ/A (det) (08)	
			K	74 (85-119)	84 (85-119)			J-/UJ/A (det) (08)	
			V	36 (82-116)	41 (82-116)			J-/UJ/A (det) (08)	

Comments: 19/20: Al, B, Ca, Fe, Mg, Mn, Zn > 4X
21/22: Ba, Fe, Mn,

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: JD
2nd Reviewer: 9

METHOD: Metals (EPA SW 846 Method 6010/6020/7000)

#	Sample ID	Analyte	Result (units)	RL (units)	Finding	Qualifications
	1	B			> Linear range	J/A (20)
	2	B, Ca, Fe, Na			> Linear range	J/A (20)
	25	Fe			> Linear range	J/A (20)
	3	B			> Linear range	J/A (20)
	9	B			> Linear range	J/A (20)
	10	Ca, Fe, Na			> Linear range	J/A (20)
	11	B, Zn			> Linear range	J/A (20)
	16	B			> Linear range	J/A (20)

Comments:

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: JD
2nd Reviewer: Q

METHOD: Trace Metals (EPA CLP SOW ILM02.1)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		1	B (exceeds calibration range)	1	R/A (22)
		2	B, Ca, Fe, Na (exceeds calibration range)	2	R/A (22)
		25	Fe (exceeds calibration range)	25	R/A (22)
		3	B (exceeds calibration range)	3	R/A (22)
		9	B (exceeds calibration range)	9	R/A (22)
		10	Ca, Fe, Na (exceeds calibration range)	10	R/A (22)
		11	B, Zn (exceeds calibration range)	11	R/A (22)
		16	B (exceeds calibration range)	16	R/A (22)

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: 3D
2nd Reviewer: Q

METHOD: Trace Metals (EPA CLP SOW ILM02.1)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable? All except... = 6020 only Do not include Hg

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		23	All Except B (Dilution not neccesary)	23	R/A (22)
		24	All Except Fe (Dilution not necessary)	24	R/A (22)
		25	All Except B, Ca, Na, (Reanalysis not necessary for other analytes except Fe exceeds calibration range)	25	R/A (22)
		26	All Except B (Dilution not necesary)	26	R/A (22)
		27	All Except B (Designated as more technically sound by lab)	27	R/A (22)
		28	All Except B (Reanalysis not necessary)	28	R/A (22)
		29	All Except Ca, Fe, Na (Reanalysis not necessary)	29	R/A (22)
		30	All Except B (Dilution not necessary)	30	R/A (22)

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: JD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA CLP SOW ILM02.1)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		31	All Except B (Reanalysis not necessary)	31	R/A (22)

Comments:

LDC #: 36282A4q

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: JD
2nd Reviewer: JC

METHOD: Trace Metals (See cover)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
	ICP (Initial calibration)						
ICV 12:43	ICP/MS (Initial calibration)	Co	296.5 ug/L	300 ug/L	99%R	99%R	Y
ICV 11:03	CVAA (Initial calibration)	Hg	2.05 ug/L	2 ug/L	103%R	103%R	↓
	ICP (Continuing calibration)						
CCV (5) 16:38	ICP/MS (Continuing calibration)	Cu	230.5 ug/L	250 ug/L	92%R	92%R	Y
CCV 11:34	CVAA (Contining calibration)	Hg	2.03 ug/L	2 ug/L	102%R	102%R	↓
	GFAA (Initial calibration)						
	GFAA (Continuing calibation)						

Comments: _____

LDC #: 36282A4a

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: JD
2nd Reviewer: JC

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB 13:05	ICP interference check	Cr	20.08 ug/L	20 ug/L	100%R	100%R	Y
LCS 11:14	Laboratory control sample	Hg	0.425 mg/kg	0.414 mg/kg	103%R	102%R	Y*
MS 17:05	Matrix spike	Se	(SSR-SR) 18.1 mg/kg	19.9 mg/kg	91%R	91%R	Y
MSD 17:09	Duplicate	Ag	18.92 mg/kg	18.73 mg/kg	1%RPD	1%RPD	↓
SER 17:23	ICP serial dilution	K	6095 ug/L	5744 ug/L	6%D	6%D	↓

Comments: *Rounding

LDC #: 36282A1q

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: JD
2nd reviewer: AA

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for (4) Al were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%\ solids)}$

Prep factor ↓
Dil = 10x
RD = 17430 ug/L
FV = 100ml
In W = 2.06g
% solids = 0.951

Recalculation: $\frac{(17430\ ug/L)(100ml)(10)}{(2.06g)(0.951)} \times \frac{1mg}{1000ug} = 8900\ mg/kg$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
	4	Al	8900	8900	Y
	10	V	36.8	36.8	Y
	27	B	33.5	33.5	Y
	31	B	7.20	7.20	Y

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Hexavalent Chromium

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-001	16C070-01	Soil	03/08/16
KCH067-002	16C070-02	Soil	03/08/16
KCH067-003	16C070-03	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-005	16C070-05	Soil	03/08/16
KCH067-006	16C070-06	Soil	03/08/16
KCH067-007	16C070-07	Soil	03/08/16
KCH067-008	16C070-08	Soil	03/08/16
KCH067-009	16C070-09	Soil	03/08/16
KCH067-010	16C070-10	Soil	03/08/16
KCH067-011	16C070-11	Soil	03/08/16
KCH067-012	16C070-12	Soil	03/08/16
KCH067-013	16C070-13	Soil	03/08/16
KCH067-014	16C070-14	Soil	03/08/16
KCH067-015	16C070-15	Soil	03/08/16
KCH067-016**	16C070-16**	Soil	03/08/16
KCH067-017	16C070-17	Soil	03/08/16
KCH067-018	16C070-18	Soil	03/08/16
KCH067-003MS	16C070-03MS	Soil	03/08/16
KCH067-003MSD	16C070-03MSD	Soil	03/08/16
KCH067-003DUP	16C070-03DUP	Soil	03/08/16
KCH067-016MS	16C070-16MS	Soil	03/08/16
KCH067-016MSD	16C070-16MSD	Soil	03/08/16
KCH067-016DUP	16C070-16DUP	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Hexavalent Chromium by Environmental Protection Agency (EPA) SW 846 Method 7199

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Hexavalent Chromium - Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW7199
HEXAVALENT CHROMIUM

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C070

Matrix : SOIL
InstrumentID : 59

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/kg)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1S	HCC002SB	ND	1	NA	100	13	40	03/18/1612:06	03/16/1614:01	IC19003	IC19001	HCC002S	NA	NA
LCS1S	CSC002SL	981	1	NA	100	13	40	03/18/1612:27	03/16/1614:01	IC19005	IC19001	HCC002S	NA	NA
KCH067-003	C070-03	1750	1	6.9	107	14	43	03/18/1613:08	03/16/1614:01	IC19009	IC19001	HCC002S	03/08/1609:40	03/10/16
KCH067-003DUP	C070-03D	1770	1	6.9	107	14	43	03/18/1613:29	03/16/1614:01	IC19011	IC19001	HCC002S	03/08/1609:40	03/10/16
KCH067-003MS	C070-03M	3840	1	6.9	107	14	43	03/18/1614:11	03/16/1614:01	IC19015	IC19013	HCC002S	03/08/1609:40	03/10/16
KCH067-003MSD	C070-03S	3730	1	6.9	107	14	43	03/18/1614:32	03/16/1614:01	IC19017	IC19013	HCC002S	03/08/1609:40	03/10/16
KCH067-001	C070-01	1780	1	4.3	104	13.6	41.8	03/18/1615:34	03/16/1614:01	IC19023	IC19013	HCC002S	03/08/1609:15	03/10/16
KCH067-002	C070-02	275	1	9.0	110	14.3	44	03/18/1616:25	03/16/1614:01	IC19027	IC19025	HCC002S	03/08/1609:30	03/10/16
KCH067-004	C070-04	424	1	4.9	105	13.7	42.1	03/18/1616:46	03/16/1614:01	IC19029	IC19025	HCC002S	03/08/1609:55	03/10/16
KCH067-005	C070-05	ND	1	2.7	103	13.4	41.1	03/18/1617:07	03/16/1614:01	IC19031	IC19025	HCC002S	03/08/1613:25	03/10/16
KCH067-006	C070-06	ND	1	2.2	102	13.3	40.9	03/18/1617:27	03/16/1614:01	IC19033	IC19025	HCC002S	03/08/1613:40	03/10/16
KCH067-007	C070-07	ND	1	1.9	102	13.3	40.8	03/18/1617:48	03/16/1614:01	IC19035	IC19025	HCC002S	03/08/1613:45	03/10/16
KCH067-008	C070-08	ND	1	1.5	102	13.2	40.6	03/18/1618:30	03/16/1614:01	IC19039	IC19037	HCC002S	03/08/1613:55	03/10/16
KCH067-009	C070-09	ND	1	2.9	103	13.4	41.2	03/18/1618:51	03/16/1614:01	IC19041	IC19037	HCC002S	03/08/1614:00	03/10/16
KCH067-010	C070-10	ND	1	3.8	104	13.5	41.6	03/18/1619:11	03/16/1614:01	IC19043	IC19037	HCC002S	03/08/1614:05	03/10/16
KCH067-011	C070-11	ND	1	3.1	103	13.4	41.3	03/18/1619:32	03/16/1614:01	IC19045	IC19037	HCC002S	03/08/1614:10	03/10/16
KCH067-012	C070-12	ND	1	3.5	104	13.5	41.5	03/18/1619:53	03/16/1614:01	IC19047	IC19037	HCC002S	03/08/1614:20	03/10/16
KCH067-013	C070-13	ND	1	5.0	105	13.7	42.1	03/18/1620:35	03/16/1614:01	IC19051	IC19049	HCC002S	03/08/1614:25	03/10/16
KCH067-014	C070-14	ND	1	3.9	104	13.5	41.6	03/18/1620:55	03/16/1614:01	IC19053	IC19049	HCC002S	03/08/1614:30	03/10/16
KCH067-015	C070-15	ND	1	3.6	104	13.5	41.5	03/18/1621:16	03/16/1614:01	IC19055	IC19049	HCC002S	03/08/1614:50	03/10/16
KCH067-017	C070-17	57.5J	1	0.0	100	13	40	03/18/1621:37	03/16/1614:01	IC19057	IC19049	HCC002S	03/08/1615:20	03/10/16
KCH067-018	C070-18	ND	1	2.1	102	13.3	40.9	03/18/1621:58	03/16/1614:01	IC19059	IC19049	HCC002S	03/08/1615:30	03/10/16
KCH067-016	C070-16	ND	1	2.8	103	13.4	41.2	03/18/1622:40	03/16/1614:01	IC19063	IC19061	HCC002S	03/08/1615:00	03/10/16
KCH067-016DUP	C070-16D	ND	1	2.8	103	13.4	41.2	03/18/1623:00	03/16/1614:01	IC19065	IC19061	HCC002S	03/08/1615:00	03/10/16
KCH067-016MS	C070-16M	1840	1	2.8	103	13.4	41.2	03/18/1623:21	03/16/1614:01	IC19067	IC19061	HCC002S	03/08/1615:00	03/10/16
KCH067-016MSD	C070-16S	1680	1	2.8	103	13.4	41.2	03/18/1623:42	03/16/1614:01	IC19069	IC19061	HCC002S	03/08/1615:00	03/10/16
KCH067-002R	C070-02R	127	1	9.0	110	14.3	44	03/22/1615:44	03/16/1614:01	IC22003	IC22001	HCC002S	03/08/1609:30	03/10/16

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LDC #: 36282A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/8/16
SDG #: 16C070 Standard/Full Page: 1 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: JD
2nd Reviewer: A

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	3/8/16
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB = KCH067-019 (SDG: 16C074)
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/D = (9,20) (22,23)
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for Standard validation.
XI	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-001	16C070-01	Soil	03/08/16
2	KCH067-002	16C070-02	Soil	03/08/16
3	KCH067-003	16C070-03	Soil	03/08/16
4	KCH067-004**	16C070-04**	Soil	03/08/16
5	KCH067-005	16C070-05	Soil	03/08/16
6	KCH067-006	16C070-06	Soil	03/08/16
7	KCH067-007	16C070-07	Soil	03/08/16
8	KCH067-008	16C070-08	Soil	03/08/16
9	KCH067-009	16C070-09	Soil	03/08/16
10	KCH067-010	16C070-10	Soil	03/08/16
11	KCH067-011	16C070-11	Soil	03/08/16
12	KCH067-012	16C070-12	Soil	03/08/16
13	KCH067-013	16C070-13	Soil	03/08/16
14	KCH067-014	16C070-14	Soil	03/08/16
15	KCH067-015	16C070-15	Soil	03/08/16
16	KCH067-016**	16C070-16**	Soil	03/08/16
17	KCH067-017	16C070-17	Soil	03/08/16

LDC #: 36282A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/11/16
SDG #: 16C070 Standard/Full Page: 2 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: JO
2nd Reviewer: M

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

	Client ID	Lab ID	Matrix	Date
18	KCH067-018	16C070-18	Soil	03/08/16
19	KCH067-003MS	16C070-03MS	Soil	03/08/16
20	KCH067-003MSD	16C070-03MSD	Soil	03/08/16
21	KCH067-003DUP	16C070-03DUP	Soil	03/08/16
22	KCH067-016MS	16C070-16MS	Soil	03/08/16
23	KCH067-016MSD	16C070-16MSD	Soil	03/08/16
24	KCH067-016DUP	16C070-16DUP	Soil	03/08/16
25				
26				
27				
28				
29				

Notes:

LDC #: 36282A6

VALIDATION FINDINGS CHECKLIST

Reviewer: JD
2nd Reviewer: AC

Method: Inorganics (EPA Method See Cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 36282A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Reviewer: JD
2nd Reviewer: AL

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr^{+6} was recalculated. Calibration date: 11/20/16

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found X 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution

True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/l)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr^{+6}	s1	0	0	*0.9998*	0.9998	Y
		s2	0.2	0.0000157			
		s3	0.5	0.0000504			
		s4	1	0.0001022			
		s5	2	0.000194			
		s6	5	0.0005014			
		s7	7.5	0.0007527			
		s8	10	0.0010231			
ICV 13:57 Calibration verification	Cr^{+6}	Found 3.725ug/L J	True 4ug/L J		93%R	93%R	
CCV 18:09 Calibration verification	Cr^{+6}	1.900ug/L	2ug/L		95%R	95%R	
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: JD
2nd Reviewer: 2

METHOD: Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found x 100 / True Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| x 100 / (S+D)/2 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS 12:27	Laboratory control sample	Cr^{+6}	981.3 ug/kg	1000 ug/kg	98%R	98%R	Y
MS	Matrix spike sample		(SSR-SR) 1838 ug/kg	2000 ug/kg	92%R	92%R	
DUP	Duplicate sample		ND	ND	0%RPD	0%RPD	

Comments: _____

LDC #: 36282A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: SD
2nd reviewer: M

METHOD: Inorganics, Method See Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for (4) Cr^{+6} reported with a positive detect were recalculated and verified using the following equation:

Concentration = $\frac{A-(-0.0000035)}{0.0001018}$

Recalculation: $\frac{0.0000787-(-0.0000035)}{0.0001018} = 0.807 ug/L$

A= 0.0000787 In. W= 12.507g FV= 100ml %solids= 0.951 Prep factor = 62.5

$\frac{(0.807 ug/L)(100ml)(62.5)}{(12.507g)(0.951)} = 424 ug/kg$

#	Sample ID	Analyte	Reported Concentration (ug/kg)	Calculated Concentration (ug/kg)	Acceptable (Y/N)
	4	Cr^{+6}	424	424	Y

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-002	16C070-02	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-006	16C070-06	Soil	03/08/16
KCH067-008	16C070-08	Soil	03/08/16
KCH067-010	16C070-10	Soil	03/08/16
KCH067-011	16C070-11	Soil	03/08/16
KCH067-013	16C070-13	Soil	03/08/16
KCH067-014	16C070-14	Soil	03/08/16
KCH067-016**	16C070-16**	Soil	03/08/16
KCH067-018	16C070-18	Soil	03/08/16
KCH067-020	16C070-19	Water	03/08/16
KCH067-016MS	16C070-16MS	Soil	03/08/16
KCH067-016MSD	16C070-16MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Gasoline by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-020 was identified as a trip blank. No contaminants were found.

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 00:42
Sample ID:	KCH067-002	Date Analyzed:	03/11/16 00:42
Lab Samp ID:	C070-02	Dilution Factor:	0.97
Lab File ID:	EC10023A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	9.0
Calib. Ref.:	EC10014A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	1.1	0.27	0.53

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.76	2.132	82.4	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:06

3/25/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 01:21
Sample ID:	KCH067-004	Date Analyzed:	03/11/16 01:21
Lab Samp ID:	C070-04	Dilution Factor:	0.85
Lab File ID:	EC10024A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	4.9
Calib. Ref.:	EC10014A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	0.89	0.22	0.45

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.48	1.788	82.9	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:06

3/25/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 02:39
Sample ID:	KCH067-006	Date Analyzed:	03/11/16 02:39
Lab Samp ID:	C070-06	Dilution Factor:	1
Lab File ID:	EC10026A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	2.2
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	1.0	0.26	0.51

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.44	2.045	70.6	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:06

8/15/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 03:18
Sample ID:	KCH067-008	Date Analyzed:	03/11/16 03:18
Lab Samp ID:	C070-08	Dilution Factor:	1.04
Lab File ID:	EC10027A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	1.5
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	1.1	0.26	0.53

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.55	2.112	73.4	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:06

8051716

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 03:56
Sample ID:	KCH067-010	Date Analyzed:	03/11/16 03:56
Lab Samp ID:	C070-10	Dilution Factor:	0.86
Lab File ID:	EC10028A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	3.8
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	0.89	0.22	0.45

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.34	1.788	75.0	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:08

3/25/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 04:35
Sample ID:	KCH067-011	Date Analyzed:	03/11/16 04:35
Lab Samp ID:	C070-11	Dilution Factor:	0.92
Lab File ID:	EC10029A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	3.1
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	0.95	0.24	0.47

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.36	1.899	71.5	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:08

3/15/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 05:14
Sample ID:	KCH067-013	Date Analyzed:	03/11/16 05:14
Lab Samp ID:	C070-13	Dilution Factor:	0.87
Lab File ID:	EC10030A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	5.0
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	0.92	0.23	0.46

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.29	1.832	70.6	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:08

SLQ 5/17/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 05:52
Sample ID:	KCH067-014	Date Analyzed:	03/11/16 05:52
Lab Samp ID:	C070-14	Dilution Factor:	0.85
Lab File ID:	EC10031A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	3.9
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	0.88	0.22	0.44

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.22	1.769	69.1	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:08

3/5/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 07:10
Sample ID:	KCH067-016	Date Analyzed:	03/11/16 07:10
Lab Samp ID:	C070-16	Dilution Factor:	0.88
Lab File ID:	EC10033A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	2.8
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	0.91	0.23	0.45

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.39	1.811	77.0	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:08

3/21/16

METHOD SW5035A/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/11/16 06:31
Sample ID:	KCH067-018	Date Analyzed:	03/11/16 06:31
Lab Samp ID:	C070-18	Dilution Factor:	0.94
Lab File ID:	EC10032A	Matrix :	SOIL
Ext Btch ID:	GMC009S	% Moisture :	2.1
Calib. Ref.:	EC10025A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
GASOLINE	ND	0.96	0.24	0.48

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	1.43	1.920	74.4	67-134

Parameter	H-C Range
Gasoline	C6-C10

METHANOL EXTRACTION: 03/10/16 15:08

3/15/16

METHOD SW5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/12/16 01:36
Sample ID:	KCH067-020	Date Analyzed:	03/12/16 01:36
Lab Samp ID:	C070-19	Dilution Factor:	1
Lab File ID:	EC11022A	Matrix :	WATER
Ext Btch ID:	VG39C07	% Moisture :	NA
Calib. Ref.:	EC11017A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
GASOLINE	ND	0.10	0.010	0.020

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	0.0347	0.04000	86.6	69-133

Parameter	H-C Range
Gasoline	C6-C10

3/25/16

LDC #: 36282A7 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C070 Standard/Full Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: EJ
2nd Reviewer: MC

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / Δ	
II.	Initial calibration/ICV	A / Δ	%RSD / ICV ≤ 20
III.	Continuing calibration	Δ	CCV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB = KCH067-019 (SDG # 16C070-14) TB = 11
VI.	Surrogate spikes	Δ	
VII.	Matrix spike/Matrix spike duplicates	Δ	
VIII.	Laboratory control samples	Δ	LCS ID
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Standard validation.
XI.	Target compound identification	Δ	Not reviewed for Standard validation.
XII	Overall assessment of data	Δ	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-002	16C070-02	Soil	03/08/16
2	KCH067-004**	16C070-04**	Soil	03/08/16
3	KCH067-006	16C070-06	Soil	03/08/16
4	KCH067-008	16C070-08	Soil	03/08/16
5	KCH067-010	16C070-10	Soil	03/08/16
6	KCH067-011	16C070-11	Soil	03/08/16
7	KCH067-013	16C070-13	Soil	03/08/16
8	KCH067-014	16C070-14	Soil	03/08/16
9	KCH067-016**	16C070-16**	Soil	03/08/16
10	KCH067-018	16C070-18	Soil	03/08/16
11	KCH067-020 TB	16C070-19	Water	03/08/16
12	KCH067-016MS	16C070-16MS	Soil	03/08/16
13	KCH067-016MSD	16C070-16MSD	Soil	03/08/16
14				
15				
16	MBLK1W			
17	MBLK1S			

LDC #: 36282A7

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: EZ
2nd Reviewer: EZ

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
IIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥0.990?		✓		
Were the RT windows properly established?			✓	
IIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 20% or percent recoveries (%R) 80-120%?	✓			
III. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
IV. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
V. Field Blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VI. Surrogate spikes				
Were all surrogate percent recovery (%R) within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36282A7

VALIDATION FINDINGS CHECKLIST

Reviewer: EJ
2nd Reviewer: AC

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
X. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 36282A7

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer:

METHOD: GC ✓ HPLC _____

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (500 std)	Recalculated CF (500 std)	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/18/16	GRO (C_6-C_{10})	17177	17177	16318.3	16318.3	4.6	4.6
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A7

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: AC

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	ccv 18:53	3/10/16	GRO C_6-C_{10}	500.0	478.39	478.39	4	4
2	ccv 0200	3/11/16	↓	500.0	431.66	431.66	14	14
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A7

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: FT
2nd reviewer: TC

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #9

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
4-BFB	✓	40	30.79	77	77	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 36282A7

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer:

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100

Where SSC = Spiked sample concentration; SC = Sample concentration; SA = Spike added; MS = Matrix spike; MSD = Matrix spike duplicate

MS/MSD samples: 12 + 13

Compound	Spike Added (mg/kg)		Sample Conc. (mg/kg)	Spike Sample Concentration (mg/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	22.9	23.1	ND	19.4	20.8	85	85	90	90	6	6
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. %RPD Passed on %R

LDC #: 36282A7

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC/SA)
RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration; LCS = Laboratory Control Sample; SA = Spike added; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: GMC0095L/SC

Compound	Spike Added (mg/kg)		Spike Sample Concentration (mg/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	25.0	25.0	21.9	25.0	87	87	100	100	13	13
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A7

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ___ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. GMC0095L Compound Name gasoline C_6-C_{10}

Concentration = $\frac{(7135846.0)(5)(5)}{(16318.3)(5.01)(0.1)}$ = 21.82 mg/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 13, 2016

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-001	16C070-01	Soil	03/08/16
KCH067-002	16C070-02	Soil	03/08/16
KCH067-003	16C070-03	Soil	03/08/16
KCH067-004**	16C070-04**	Soil	03/08/16
KCH067-005	16C070-05	Soil	03/08/16
KCH067-006	16C070-06	Soil	03/08/16
KCH067-007	16C070-07	Soil	03/08/16
KCH067-008	16C070-08	Soil	03/08/16
KCH067-009	16C070-09	Soil	03/08/16
KCH067-010	16C070-10	Soil	03/08/16
KCH067-011	16C070-11	Soil	03/08/16
KCH067-012	16C070-12	Soil	03/08/16
KCH067-013	16C070-13	Soil	03/08/16
KCH067-014	16C070-14	Soil	03/08/16
KCH067-015	16C070-15	Soil	03/08/16
KCH067-016**	16C070-16**	Soil	03/08/16
KCH067-017	16C070-17	Soil	03/08/16
KCH067-018	16C070-18	Soil	03/08/16
KCH067-003MS	16C070-03MS	Soil	03/08/16
KCH067-003MSD	16C070-03MSD	Soil	03/08/16
KCH067-016MS	16C070-16MS	Soil	03/08/16
KCH067-016MSD	16C070-16MSD	Soil	03/08/16
KCH067-001DL	16C070-01DL	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
KCH067-001DL	All compounds	R	A

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 16C070

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-001DL	All compounds	R	A	Overall assessment of data (22)

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-001	Date Analyzed:	03/16/16 12:52
Lab Samp ID:	C070-01N	Dilution Factor:	1
Lab File ID:	LC16007A	Matrix	: SOIL
Ext Btch ID:	DSC012S	% Moisture	: 4.3
Calib. Ref.:	LC16004A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.6	5.2
JP-5	3.1J	21	2.6	5.2
MOTOR OIL	91	21	2.6	5.2

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	97.0	104.5	92.8	60-130
HEXACOSANE	29.5	26.12	113	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-001	Date Analyzed:	03/15/16 19:55
Lab Samp ID:	C070-01I	Dilution Factor:	2
Lab File ID:	LC15017A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	4.3
Calib. Ref.:	LC15011A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND R(22)	21	5.2	10
JP-5	ND	42	5.2	10
MOTOR OIL	62	42	5.2	10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	93.8	104.5	89.8	60-130
HEXACOSANE	31.8	26.13	121.7	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/15/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID	: KCH067-002	Date Analyzed:	03/15/16 20:12
Lab Samp ID	: C070-02	Dilution Factor:	1
Lab File ID	: LC15018A	Matrix	: SOIL
Ext Btch ID	: DSC012S	% Moisture	: 9.0
Calib. Ref.	: LC15011A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	11	2.7	5.5
JP-5	ND	22	2.7	5.5
MOTOR OIL	ND	22	2.7	5.5

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	103	109.9	93.5	60-130
HEXACOSANE	30.9	27.47	113	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-003	Date Analyzed:	03/16/16 13:09
Lab Samp ID:	C070-03N	Dilution Factor:	1
Lab File ID:	LC16008A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	6.9
Calib. Ref.:	LC16004A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	11	2.7	5.4
JP-5	ND	21	2.7	5.4
MOTOR OIL	160	21	2.7	5.4

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	104	107.4	96.7	60-130
HEXACOSANE	29.3	26.85	109	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

SCS 17/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-004	Date Analyzed:	03/15/16 21:20
Lab Samp ID:	C070-04	Dilution Factor:	1
Lab File ID:	LC15022A	Matrix	: SOIL
Ext Btch ID:	DSC012S	% Moisture	: 4.9
Calib. Ref.:	LC15011A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	11	2.6	5.3
JP-5	ND	21	2.6	5.3
MOTOR OIL	ND	21	2.6	5.3

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	95.4	105.2	90.7	60-130
HEXACOSANE	27.6	26.29	105	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

8/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-005	Date Analyzed:	03/15/16 22:27
Lab Samp ID:	C070-05	Dilution Factor:	1
Lab File ID:	LC15026A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	2.7
Calib. Ref.:	LC15024A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.6	5.1
JP-5	ND	21	2.6	5.1
MOTOR OIL	2.6J	21	2.6	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	89.8	102.8	87.3	60-130
HEXACOSANE	26.4	25.69	103	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

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METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-006	Date Analyzed:	03/15/16 22:44
Lab Samp ID:	C070-06	Dilution Factor:	1
Lab File ID:	LC15027A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	2.2
Calib. Ref.:	LC15024A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.6	5.1
JP-5	ND	20	2.6	5.1
MOTOR OIL	ND	20	2.6	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	88.1	102.2	86.1	60-130
HEXACOSANE	26.6	25.56	104	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

8/05/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-007	Date Analyzed:	03/15/16 23:01
Lab Samp ID:	C070-07	Dilution Factor:	1
Lab File ID:	LC15028A	Matrix	: SOIL
Ext Btch ID:	DSC012S	% Moisture	: 1.9
Calib. Ref.:	LC15024A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.5	5.1
JP-5	ND	20	2.5	5.1
MOTOR OIL	ND	20	2.5	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	88.0	101.9	86.4	60-130
HEXACOSANE	26.3	25.48	103	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/17/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C070	Date Extracted: 03/15/16 13:30
Sample ID: KCH067-008	Date Analyzed: 03/15/16 23:18
Lab Samp ID: C070-08	Dilution Factor: 1
Lab File ID: LC15029A	Matrix : SOIL
Ext Btch ID: DSC012S	% Moisture : 1.5
Calib. Ref.: LC15024A	Instrument ID : D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.5	5.1
JP-5	ND	20	2.5	5.1
MOTOR OIL	ND	20	2.5	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	84.2	101.5	82.9	60-130
HEXACOSANE	26.4	25.38	104	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-009	Date Analyzed:	03/15/16 23:18
Lab Samp ID:	C070-09N	Dilution Factor:	1
Lab File ID:	LC16011A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	2.9
Calib. Ref.:	LC16004A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	210	10	2.6	5.1
JP-5	180	21	2.6	5.1
MOTOR OIL	ND	21	2.6	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	94.4	103.0	91.7	60-130
HEXACOSANE	27.6	25.75	107	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-010	Date Analyzed:	03/16/16 14:17
Lab Samp ID:	C070-10N	Dilution Factor:	1
Lab File ID:	LC16012A	Matrix	: SOIL
Ext Btch ID:	DSC012S	% Moisture	: 3.8
Calib. Ref.:	LC16004A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	84	10	2.6	5.2
JP-5	83	21	2.6	5.2
MOTOR OIL	ND	21	2.6	5.2

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	89.3	104.0	85.9	60-130
HEXACOSANE	25.0	25.99	96.2	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

5/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID	: KCH067-011	Date Analyzed:	03/16/16 14:34
Lab Samp ID	: C070-11N	Dilution Factor:	1
Lab File ID	: LC16013A	Matrix	: SOIL
Ext Btch ID	: DSC012S	% Moisture	: 3.1
Calib. Ref.	: LC16004A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	180	10	2.6	5.2
JP-5	150	21	2.6	5.2
MOTOR OIL	ND	21	2.6	5.2

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	93.7	103.2	90.8	60-130
HEXACOSANE	27.9	25.80	108	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/17/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-012	Date Analyzed:	03/16/16 00:26
Lab Samp ID:	C070-12	Dilution Factor:	1
Lab File ID:	LC15033A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	3.5
Calib. Ref.:	LC15024A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.6	5.2
JP-5	ND	21	2.6	5.2
MOTOR OIL	ND	21	2.6	5.2

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	88.2	103.6	85.1	60-130
HEXACOSANE	25.7	25.91	99.2	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

8/05/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID	: KCH067-013	Date Analyzed:	03/16/16 00:43
Lab Samp ID	: C070-13	Dilution Factor:	1
Lab File ID	: LC15034A	Matrix :	SOIL
Ext Btch ID	: DSC012S	% Moisture :	5.0
Calib. Ref.	: LC15024A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	11	2.6	5.3
JP-5	ND	21	2.6	5.3
MOTOR OIL	ND	21	2.6	5.3

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	89.0	105.3	84.6	60-130
HEXACOSANE	26.1	26.32	99.1	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

SG 5/17/16

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METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID	: KCH067-014	Date Analyzed:	03/16/16 14:51
Lab Samp ID	: C070-14N	Dilution Factor:	1
Lab File ID	: LC16014A	Matrix :	SOIL
Ext Btch ID	: DSC012S	% Moisture :	3.9
Calib. Ref.	: LC16004A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	8.8J	10	2.6	5.2
JP-5	7.9J	21	2.6	5.2
MOTOR OIL	ND	21	2.6	5.2

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	94.7	104.1	91.0	60-130
HEXACOSANE	28.1	26.01	108	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

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METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID	: KCH067-015	Date Analyzed:	03/16/16 01:50
Lab Samp ID	: C070-15	Dilution Factor:	1
Lab File ID	: LC15038A	Matrix :	SOIL
Ext Btch ID	: DSC012S	% Moisture :	3.6
Calib. Ref.	: LC15036A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.6	5.2
JP-5	ND	21	2.6	5.2
MOTOR OIL	ND	21	2.6	5.2

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	88.4	103.7	85.2	60-130
HEXACOSANE	24.8	25.93	95.7	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-016	Date Analyzed:	03/16/16 02:07
Lab Samp ID:	C070-16	Dilution Factor:	1
Lab File ID:	LC15039A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	2.8
Calib. Ref.:	LC15036A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.6	5.1
JP-5	ND	21	2.6	5.1
MOTOR OIL	ND	21	2.6	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	89.7	102.9	87.2	60-130
HEXACOSANE	25.3	25.72	98.5	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

SL051716

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID:	KCH067-017	Date Analyzed:	03/16/16 15:08
Lab Samp ID:	C070-17N	Dilution Factor:	1
Lab File ID:	LC16015A	Matrix :	SOIL
Ext Btch ID:	DSC012S	% Moisture :	0.0
Calib. Ref.:	LC16004A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.5	5.0
JP-5	ND	20	2.5	5.0
MOTOR OIL	69	20	2.5	5.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	90.4	100.0	90.4	60-130
HEXACOSANE	26.9	25.00	108	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/16/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 13:30
Sample ID	: KCH067-018	Date Analyzed:	03/16/16 03:15
Lab Samp ID	: C070-18	Dilution Factor:	1
Lab File ID	: LC15043A	Matrix	: SOIL
Ext Btch ID	: DSC012S	% Moisture	: 2.1
Calib. Ref.	: LC15036A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.6	5.1
JP-5	ND	20	2.6	5.1
MOTOR OIL	ND	20	2.6	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	85.1	102.1	83.3	60-130
HEXACOSANE	24.3	25.54	95.0	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

4/05/16

LDC #: 36282A8 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C070 Standard/Full Page: 1 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: EF
2nd Reviewer: AC

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	%RSD/ICV ≤20
III.	Continuing calibration	A	CCV ≤20
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB = KCH067-019 (SDG# 16C074)
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XI.	Target compound identification	A	Not reviewed for Standard validation.
XII	Overall assessment of data	SW	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-001	16C070-01	Soil	03/08/16
2	KCH067-002	16C070-02	Soil	03/08/16
3	KCH067-003	16C070-03	Soil	03/08/16
4	KCH067-004**	16C070-04**	Soil	03/08/16
5	KCH067-005	16C070-05	Soil	03/08/16
6	KCH067-006	16C070-06	Soil	03/08/16
7	KCH067-007	16C070-07	Soil	03/08/16
8	KCH067-008	16C070-08	Soil	03/08/16
9	KCH067-009	16C070-09	Soil	03/08/16
10	KCH067-010	16C070-10	Soil	03/08/16
11	KCH067-011	16C070-11	Soil	03/08/16
12	KCH067-012	16C070-12	Soil	03/08/16
13	KCH067-013	16C070-13	Soil	03/08/16
14	KCH067-014	16C070-14	Soil	03/08/16
15	KCH067-015	16C070-15	Soil	03/08/16
16	KCH067-016**	16C070-16**	Soil	03/08/16
17	KCH067-017	16C070-17	Soil	03/08/16

LDC #: 36282A8 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C070 Standard/Full Page: 2 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

	Client ID	Lab ID	Matrix	Date
18	KCH067-018	16C070-18	Soil	03/08/16
19	KCH067-003MS	16C070-03MS	Soil	03/08/16
20	KCH067-003MSD	16C070-03MSD	Soil	03/08/16
21	KCH067-016MS	16C070-16MS	Soil	03/08/16
22	KCH067-016MSD	16C070-16MSD	Soil	03/08/16
23	# 1DL	16C070-01 DL	SOIL	3/8/16
24				
25				
26				
27				

Notes:

LDC #: 36287A8

VALIDATION FINDINGS CHECKLIST

Reviewer: P
2nd Reviewer: R

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
IIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥0.990?		✓		
Were the RT windows properly established?			✓	
IIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 20% or percent recoveries (%R) 80-120%?	✓			
III. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
IV. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.			✓	
V. Field Blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VI. Surrogate spikes				
Were all surrogate percent recovery (%R) within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36282AX

VALIDATION FINDINGS CHECKLIST

Reviewer: RP
2nd Reviewer: AC

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
X. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 36282A8

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ✓ **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results? Code # 22

#	Associated Samples	Compound Name	Findings	Qualifications
	23	all	diluted	P/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282A4

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: KC

METHOD: GC ✓ HPLC ____

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (50.0 std)	Recalculated CF (50.0 std)	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICAL	3/9/16	Diesel C10-C24	33825	33825	31896.9	31896.9	12.9	12.9
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A8

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	CCV 14:48	3/15/16	Diesel $C_{10}-C_{24}$	500.0	489.25	489.25	2	2
2	CCV 0116	3/16/16	↓	500.0	493.21	493.21	1	1
3	CCV 1149	3/16/16	↓	500.0	478.36	478.36	4	4
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282AS

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: FT
2nd reviewer: PC

METHOD: ___ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #16

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Bromobenzene	✓	100	87.167	87.2	87.2	0
Hexacosane		25	24.635	98.5	98.5	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 36282A8

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: __ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100

Where SSC = Spiked sample concentration
SC = Sample concentration
SA = Spike added
MS = Matrix spike
MSD = Matrix spike duplicate

MS/MSD samples: 19 + 20

Compound	Spike Added (mg/kg)		Sample Conc. (mg/kg)	Spike Sample Concentration (mg/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	537	537	ND	519	547	97	97	102	102	5	5
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282T8

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT
2nd Reviewer:

METHOD: ✓ GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC/SA)
RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
LCS = Laboratory Control Sample
SA = Spike added
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: DSC012SL /SC

Compound	Spike Added (mg/kg)		Spike Sample Concentration (mg/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	500	500	571	523	114	114	105	105	9	9
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282AJ

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd Reviewer: AC

METHOD: ✓ **GC** __ **HPLC**

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. DSC0125L Compound Name Dieldrin

Concentration = $\frac{1822.3298 \quad (10)}{31896.87324 \quad (10)}$ =

= 57.1 mg/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Explosives

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-005	16C070-05	Soil	03/08/16
KCH067-006	16C070-06	Soil	03/08/16
KCH067-007	16C070-07	Soil	03/08/16
KCH067-008	16C070-08	Soil	03/08/16
KCH067-009	16C070-09	Soil	03/08/16
KCH067-010	16C070-10	Soil	03/08/16
KCH067-011	16C070-11	Soil	03/08/16
KCH067-012	16C070-12	Soil	03/08/16
KCH067-013	16C070-13	Soil	03/08/16
KCH067-014	16C070-14	Soil	03/08/16
KCH067-015	16C070-15	Soil	03/08/16
KCH067-016**	16C070-16**	Soil	03/08/16
KCH067-017	16C070-17	Soil	03/08/16
KCH067-018	16C070-18	Soil	03/08/16
KCH067-016MS	16C070-16MS	Soil	03/08/16
KCH067-016MSD	16C070-16MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Explosives by Environmental Protection Agency (EPA) SW 846 Method 8330A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 15.0% for all compounds.

Retention time windows were established as required by the method for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Explosives - Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Explosives - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Explosives - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID	: KCH067-005	Date Analyzed:	03/16/16 19:42
Lab Samp ID	: C070-05	Dilution Factor:	1
Lab File ID	: XC16007A	Matrix :	SOIL
Ext Btch ID	: EXC006S	% Moisture :	NA
Calib. Ref.	: XC16002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2140	2000	107	60-140

Note: All positive results are confirmed by Biphenyl column

SL 3/17/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID	: KCH067-006	Date Analyzed:	03/16/16 20:18
Lab Samp ID	: C070-06	Dilution Factor:	1
Lab File ID	: XC16008A	Matrix :	SOIL
Ext Btch ID	: EXC006S	% Moisture :	NA
Calib. Ref.	: XC16002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2310	2000	116	60-140

Note: All positive results are confirmed by Biphenyl column

3/17/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID	: KCH067-007	Date Analyzed:	03/16/16 21:01
Lab Samp ID	: C070-07	Dilution Factor:	1
Lab File ID	: XC16009A	Matrix :	SOIL
Ext Btch ID	: EXC006S	% Moisture :	NA
Calib. Ref.	: XC16002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2170	2000	108	60-140

Note: All positive results are confirmed by Biphenyl column

SC 051716

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID:	KCH067-008	Date Analyzed:	03/16/16 21:38
Lab Samp ID:	C070-08	Dilution Factor:	1
Lab File ID:	XC16010A	Matrix :	SOIL
Ext Btch ID:	EXC006S	% Moisture :	NA
Calib. Ref.:	XC16002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2130	2000	106	60-140

Note: All positive results are confirmed by Biphenyl column

Sl 03/17/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID	: KCH067-009	Date Analyzed:	03/16/16 22:21
Lab Samp ID	: C070-09	Dilution Factor:	1
Lab File ID	: XC16011A	Matrix :	SOIL
Ext Btch ID	: EXC006S	% Moisture :	NA
Calib. Ref.	: XC16002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	280J	400	50	100
RDX	4600	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2060	2000	103	60-140

Note: All positive results are confirmed by Biphenyl column

SG 5/7/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID:	KCH067-010	Date Analyzed:	03/16/16 22:58
Lab Samp ID:	C070-10	Dilution Factor:	1
Lab File ID:	XC16012A	Matrix :	SOIL
Ext Btch ID:	EXC006S	% Moisture :	NA
Calib. Ref.:	XC16002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2140	2000	107	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID	: KCH067-011	Date Analyzed:	03/16/16 23:41
Lab Samp ID	: C070-11	Dilution Factor:	1
Lab File ID	: XC16013A	Matrix :	SOIL
Ext Btch ID	: EXC006S	% Moisture :	NA
Calib. Ref.	: XC16002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	440	400	50	100
RDX	2000	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2100	2000	105	60-140

Note: All positive results are confirmed by Biphenyl column

3/17/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID:	KCH067-012	Date Analyzed:	03/17/16 02:21
Lab Samp ID:	C070-12	Dilution Factor:	1
Lab File ID:	XC16017A	Matrix :	SOIL
Ext Btch ID:	EXC006S	% Moisture :	NA
Calib. Ref.:	XC16015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	390J	400	50	100
RDX	620	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2250	2000	113	60-140

Note: All positive results are confirmed by Biphenyl column

8/17/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID:	KCH067-013	Date Analyzed:	03/17/16 02:58
Lab Samp ID:	C070-13	Dilution Factor:	1
Lab File ID:	XC16018A	Matrix :	SOIL
Ext Btch ID:	EXC006S	% Moisture :	NA
Calib. Ref.:	XC16015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2120	2000	106	60-140

Note: All positive results are confirmed by Biphenyl column

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID:	KCH067-014	Date Analyzed:	03/17/16 03:41
Lab Samp ID:	C070-14	Dilution Factor:	1
Lab File ID:	XC16019A	Matrix :	SOIL
Ext Btch ID:	EXC006S	% Moisture :	NA
Calib. Ref.:	XC16015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	92J	400	50	100
RDX	150J	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2180	2000	109	60-140

Note: All positive results are confirmed by Biphenyl column

Sdc 7/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID	: KCH067-015	Date Analyzed:	03/17/16 04:18
Lab Samp ID	: C070-15	Dilution Factor:	1
Lab File ID	: XC16020A	Matrix :	SOIL
Ext Btch ID	: EXC006S	% Moisture :	NA
Calib. Ref.	: XC16015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2150	2000	107	60-140

Note: All positive results are confirmed by Biphenyl column

8/6/17/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID:	KCH067-016	Date Analyzed:	03/17/16 05:01
Lab Samp ID:	C070-16	Dilution Factor:	1
Lab File ID:	XC16021A	Matrix :	SOIL
Ext Btch ID:	EXC006S	% Moisture :	NA
Calib. Ref.:	XC16015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2050	2000	102	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID:	KCH067-017	Date Analyzed:	03/17/16 06:58
Lab Samp ID:	C070-17	Dilution Factor:	1
Lab File ID:	XC16024A	Matrix :	SOIL
Ext Btch ID:	EXC006S	% Moisture :	NA
Calib. Ref.:	XC16015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2100	2000	105	60-140

Note: All positive results are confirmed by Biphenyl column.

3/21/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C070	Date Extracted:	03/15/16 16:30
Sample ID	: KCH067-018	Date Analyzed:	03/17/16 07:41
Lab Samp ID	: C070-18	Dilution Factor:	1
Lab File ID	: XC16025A	Matrix :	SOIL
Ext Btch ID	: EXC006S	% Moisture :	NA
Calib. Ref.	: XC16015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2120	2000	106	60-140

Note: All positive results are confirmed by Biphenyl column

SK 5/17/16

LDC #: 36282A40 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C070 Standard/Full Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: EJ
2nd Reviewer:

METHOD: HPLC Explosives (EPA SW 846 Method 8330)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	%D ≤ 20 ICV ≤ ~~20~~ 15 CCV ≤ ~~20~~ 15 (F7)
III.	Continuing calibration	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB- KCH067-019 (16C074)
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XI.	Target compound identification	A	Not reviewed for Standard validation.
XII.	System performance	A	Not reviewed for Standard validation.
XIII.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-005	16C070-05	Soil	03/08/16
2	KCH067-006	16C070-06	Soil	03/08/16
3	KCH067-007	16C070-07	Soil	03/08/16
4	KCH067-008	16C070-08	Soil	03/08/16
5	KCH067-009	16C070-09	Soil	03/08/16
6	KCH067-010	16C070-10	Soil	03/08/16
7	KCH067-011	16C070-11	Soil	03/08/16
8	KCH067-012	16C070-12	Soil	03/08/16
9	KCH067-013	16C070-13	Soil	03/08/16
10	KCH067-014	16C070-14	Soil	03/08/16
11	KCH067-015	16C070-15	Soil	03/08/16
12	KCH067-016**	16C070-16**	Soil	03/08/16
13	KCH067-017	16C070-17	Soil	03/08/16
14	KCH067-018	16C070-18	Soil	03/08/16
15	KCH067-016MS	16C070-16MS	Soil	03/08/16
16	KCH067-016MSD	16C070-16MSD	Soil	03/08/16

LDC #: 36282A40 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16

SDG #: 16C070 Standard/Full Page: 2 of 2

Laboratory: EMAX Laboratories Inc. Reviewer:

2nd Reviewer:

METHOD: HPLC Explosives (EPA SW 846 Method 8330)

	Client ID	Lab ID	Matrix	Date
17				
18				
19				
20				
21				

Notes:

	MBLK1S						

LDC #: 36282A40

VALIDATION FINDINGS CHECKLIST

Reviewer:
2nd Reviewer:

Method: X GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
IIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥0.990?			✓	
Were the RT windows properly established?	✓			
IIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 15%?	✓			
III. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%?	✓			
Were all the retention times within the acceptance windows?	✓			
IV. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
V. Field Blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VI. Surrogate spikes				
Were all surrogate percent recovery (%R) within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36282A4U

VALIDATION FINDINGS CHECKLIST

Reviewer: EF
2nd Reviewer: Q

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
X. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 36282A40

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC ~~HPLC~~ HPLC

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (100 std)	Recalculated CF (100 std)	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/27/16	HMX (C18)	145	145.15	151.7	151.7	6.9	6.9
			2,4,6 TNT	430	429.84	410.8	410.8	6.3	6.3
2	ICAL	1/20/16	HMX (Biphenyl)	124	123.6	122.9	122.9	9.8	9.8
			2,4,6 TNT	321	320.7	322.0	322.0	6.1	6.1
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A40

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC ~~X~~ HPLC

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	CCV 1618	3/16/16	HMX (C18)	400.0	F1 ~~151.7~~ 403.75	403.75	1	1
			2,4,6-TNT	400.0	384.47	384.47	4	4
2	CCV 01:01	3/17/17	HMX (C18)	400.0	F1 ~~151.7~~ 418.33	418.33	5	5
			2,4,6-TNT	400.0	392.95	392.95	2	2
3	CCV 1246	3/22/16	HMX (Biphenyl)	200.0	219.40	219.40	10	10
			2,4,6-TNT	200.0	183.57	183.57	8	8
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A40

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: EJ
2nd reviewer: DC

METHOD: ~~GC~~ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #12

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
3,4- Dinitrotoluene	C-18 ch A	2050	2000	102	102	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 36282A40

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FT
2nd Reviewer: A

METHOD: ~~GC~~ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100

Where SSC = Spiked sample concentration; SC = Sample concentration; SA = Spike added; MS = Matrix spike; MSD = Matrix spike duplicate

MS/MSD samples: 15 + 16

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)	2000	2000	ND	2360	2150	118	118	107	107	10	10
2,4,6-Trinitrotoluene (8330)	2000	2000	ND	1980	2020	99	99	101	101	2	2
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A40

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ~~GC~~ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC/SA)
RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration; SA = Spike added
LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: EX C0060SL/SC

Compound	Spike Added (ug/kg)		Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)	2000	2000	2190	2300	109	109	115	115	5	5
2,4,6-Trinitrotoluene (8330)	↓	↓	2110	2080	106	106	104	104	2	2
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A40

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: EJ
2nd Reviewer: EC

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 165 Compound Name HMX

Concentration = $\frac{(33210)(20)}{(151.7)(2)}$

= 2190 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Perchlorate

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C070

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-005	16C070-05	Soil	03/08/16
KCH067-006	16C070-06	Soil	03/08/16
KCH067-007	16C070-07	Soil	03/08/16
KCH067-008	16C070-08	Soil	03/08/16
KCH067-009	16C070-09	Soil	03/08/16
KCH067-010	16C070-10	Soil	03/08/16
KCH067-011	16C070-11	Soil	03/08/16
KCH067-012	16C070-12	Soil	03/08/16
KCH067-013	16C070-13	Soil	03/08/16
KCH067-014	16C070-14	Soil	03/08/16
KCH067-015	16C070-15	Soil	03/08/16
KCH067-016**	16C070-16**	Soil	03/08/16
KCH067-017	16C070-17	Soil	03/08/16
KCH067-018	16C070-18	Soil	03/08/16
KCH067-016MS	16C070-16MS	Soil	03/08/16
KCH067-016MSD	16C070-16MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perchlorate by Environmental Protection Agency (EPA) SW 846 Method 6850

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance check was performed prior to initial calibration.

All perchlorate ion signal to noise ratio requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

The isotope ratios were within QC limits.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 15.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the limit of detection verification (LODV) standard were less than or equal to 30.0%.

The isotope ratios were within QC limits.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-019 (from SDG 16C074) was identified as an equipment blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Perchlorate - Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

China Lake CTO 067
Perchlorate - Field Blank Data Qualification Summary - SDG 16C070

No Sample Data Qualified in this SDG

METHOD SW6850
PERCHLORATE

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C070

Matrix : SOIL
InstrumentID : GO

Client SAMPLE ID	EMAX SAMPLE ID	RESULT (ug/kg)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1S	PLC002SB	ND	1	NA	4	0.5	1	03/23/1615:38	03/15/1610:37	16MC23024	MC23021	16PLC002S	NA	NA
LCS1S	PLC002SL	4.50	1	NA	4	0.5	1	03/23/1615:53	03/15/1610:37	16MC23025	MC23021	16PLC002S	NA	NA
LCD1S	PLC002SC	4.48	1	NA	4	0.5	1	03/23/1616:08	03/15/1610:37	16MC23026	MC23021	16PLC002S	NA	NA
KCH067-005	C070-05	ND	1	2.7	4.11	0.514	1.03	03/23/1616:25	03/15/1610:37	16MC23027	MC23021	16PLC002S	03/08/1613:25	03/10/16
KCH067-006	C070-06	ND	1	2.2	4.09	0.511	1.02	03/23/1616:40	03/15/1610:37	16MC23028	MC23021	16PLC002S	03/08/1613:40	03/10/16
KCH067-007	C070-07	ND	1	1.9	4.08	0.51	1.02	03/23/1616:55	03/15/1610:37	16MC23029	MC23021	16PLC002S	03/08/1613:45	03/10/16
KCH067-008	C070-08	ND	1	1.5	4.06	0.508	1.02	03/23/1617:10	03/15/1610:37	16MC23030	MC23021	16PLC002S	03/08/1613:55	03/10/16
KCH067-009	C070-09	ND	1	2.9	4.12	0.515	1.03	03/23/1617:24	03/15/1610:37	16MC23031	MC23021	16PLC002S	03/08/1614:00	03/10/16
KCH067-010	C070-10	ND	1	3.8	4.16	0.52	1.04	03/23/1617:39	03/15/1610:37	16MC23032	MC23021	16PLC002S	03/08/1614:05	03/10/16
KCH067-011	C070-11	1.63J	1	3.1	4.13	0.516	1.03	03/23/1617:53	03/15/1610:37	16MC23033	MC23021	16PLC002S	03/08/1614:10	03/10/16
KCH067-012	C070-12	22.4	1	3.5	4.15	0.518	1.04	03/24/1611:54	03/15/1610:37	16MC23051	MC23046	16PLC002S	03/08/1614:20	03/10/16
KCH067-013	C070-13	2.17J	1	5.0	4.21	0.526	1.05	03/24/1612:09	03/15/1610:37	16MC23052	MC23046	16PLC002S	03/08/1614:25	03/10/16
KCH067-014	C070-14	4.79	1	3.9	4.16	0.52	1.04	03/24/1612:23	03/15/1610:37	16MC23053	MC23046	16PLC002S	03/08/1614:30	03/10/16
KCH067-015	C070-15	ND	1	3.6	4.15	0.519	1.04	03/24/1612:38	03/15/1610:37	16MC23054	MC23046	16PLC002S	03/08/1614:50	03/10/16
KCH067-016	C070-16	2.53J	1	2.8	4.12	0.514	1.03	03/24/1612:52	03/15/1610:37	16MC23055	MC23046	16PLC002S	03/08/1615:00	03/10/16
KCH067-016MS	C070-16M	7.10	1	2.8	4.12	0.514	1.03	03/24/1613:07	03/15/1610:37	16MC23056	MC23046	16PLC002S	03/08/1615:00	03/10/16
KCH067-016MSD	C070-16S	7.04	1	2.8	4.12	0.514	1.03	03/24/1613:21	03/15/1610:37	16MC23057	MC23046	16PLC002S	03/08/1615:00	03/10/16
KCH067-017	C070-17	24.4	1	0.0	4	0.5	1	03/24/1613:36	03/15/1610:37	16MC23058	MC23046	16PLC002S	03/08/1615:20	03/10/16
KCH067-018	C070-18	5.13	1	2.1	4.09	0.511	1.02	03/24/1613:51	03/15/1610:37	16MC23059	MC23046	16PLC002S	03/08/1615:30	03/10/16

K05/7/16

LDC #: 36282A87 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C070 Standard/Full Page: 1 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: FM
2nd Reviewer: AC

METHOD: LC/MS Perchlorate (EPA SW846 Method 6850)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	auto Tune
III.	Initial calibration/ICV	A/A	~~%RSD ≤20 r²~~ FM ICV ≤15 CCV ≤15 LODV ≤30
IV.	Continuing calibration	A	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB= KCH067-019 (16C074)
VII.	Surrogate spikes	N	not required
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS IP
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XIII.	Target compound identification	A	Not reviewed for Standard validation.
XIV.	System performance	A	Not reviewed for Standard validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-005	16C070-05	Soil	03/08/16
2	KCH067-006	16C070-06	Soil	03/08/16
3	KCH067-007	16C070-07	Soil	03/08/16
4	KCH067-008	16C070-08	Soil	03/08/16
5	KCH067-009	16C070-09	Soil	03/08/16
6	KCH067-010	16C070-10	Soil	03/08/16
7	KCH067-011	16C070-11	Soil	03/08/16
8	KCH067-012	16C070-12	Soil	03/08/16
9	KCH067-013	16C070-13	Soil	03/08/16
10	KCH067-014	16C070-14	Soil	03/08/16
11	KCH067-015	16C070-15	Soil	03/08/16
12	KCH067-016**	16C070-16**	Soil	03/08/16
13	KCH067-017	16C070-17	Soil	03/08/16

LDC #: 36282A87 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C070 Standard/Full Page: 2 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: FJ
2nd Reviewer: MC

METHOD: LC/MS Perchlorate (EPA SW846 Method 6850)

	Client ID	Lab ID	Matrix	Date
14	KCH067-018	16C070-18	Soil	03/08/16
15	KCH067-016MS	16C070-16MS	Soil	03/08/16
16	KCH067-016MSD	16C070-16MSD	Soil	03/08/16
17				
18				
19				
20				
21				

Notes:

LDC #: 36282A87

VALIDATION FINDINGS CHECKLIST

Reviewer: EZ
2nd Reviewer: fa

Method: Perchlorate (EPA SW 846 Method 6850)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the specified criteria?	✓			
Were the Perchlorate ions within ±0.3 m/z of mass 99,101 and 107?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓		✓	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Was the isotope ratio of $^{35}Cl/^{37}Cl$ or m/z 99/101 within 2.3 to 3.8?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 15%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the mid-range continuing calibration ≤ 15%?	✓			
Were all percent differences (%D) of the low-range continuing calibration ≤ 50%?	✓			
Was the isotope ratio of $^{35}Cl/^{37}Cl$ or m/z 99/101 within 2.3 to 3.8?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36282A87

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: FD
2nd Reviewer: AC

Validation Area	Yes	No	NA	Findings/Comments
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?.			✓	
XI. Internal standards				
Were internal standard area counts within ± 50% of the associated calibration standard?	✓			
Were retention times of m/z 89 ($Cl^{18}O_3^-$) within 0.2 minutes of m/z 83 (ClO_3^-)?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within 0.98 to 1.02?	✓			
Was the isotope ratio of $^{35}Cl/^{37}Cl$ or m/z 99/101 within 2.3 to 3.8?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC#: 36282A87
SDG#: pe cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: PD
2nd Reviewer: AL

Method: LCMS Perchlorate (Method 6850)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
3/3/2016	LCMS	Perchlorate	1	0.092049784	0.1
			2	0.181001406	0.2
			3	0.473018348	0.5
			4	0.958156512	1
			5	1.944112791	2
			6	4.823551117	5
			7	6.972141437	7.5

Regression Output		*Reported*
Constant	*0.022419*	*-0.002295*
Std Err of Y Est		
R Squared	*0.999451*	*0.999500*
Degrees of Freedom		
X Coefficient(s)	*0.937859*	*0.948471*
Std Err of Coef.		
Correlation Coefficient	*0.999725*	
Coefficient of Determination (r^2)	*0.999451*	*0.999500*

LDC #: 36282187

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: PR
2nd Reviewer: [illegible]

METHOD: LC/MS Perchlorate (EPA Method 6850)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	MC23021	3/23/16	Perchlorate	2.0	1.970	1.970	1.5	1.5
	CCV							
2	MC23046	3/24/16	Perchlorate	2.0	2.031	2.031	1.6	1.6
	CCV							
3								

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A87

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AC

METHOD: LC/MS perchlorate(EPA Method 6850)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSR - SR)/SA Where: SSR = Spiked sample result, SR = Sample result
SA = Spike added

RPD = | MSR - MSDR | * 2/(MSR + MSDR) MSR = Matrix spike percent recovery MSDR = Matrix spike duplicate percent recovery

MS/MSD samples: 15 + 16

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		Reported RPD	Recalculated RPD
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	----	----
Perchlorate	4.115	4.115	2.53	7.10	7.04	111	111	110	110	1	1

Comments: Refer to Matrix Spike/Matrix Spike Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282187

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: DC

METHOD: LC/MS Perchlorate (EPA Method 6850)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: lcs ID

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCSD		LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Perchlorate	4	4	4.50	4.48	112	112	112	112	0	0

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282A87

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd reviewer: A

METHOD: LCMS (EPA SW 846 Method 6850)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. #12, Perchlorate

Conc. = $\frac{\left(\frac{14039}{122932} + 0.00229468\right)(40)}{(0.948471)(2)(0.972)}$

=

2.53 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Volatiles

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16
KCH067-021	16C074-02	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
02/26/16	tert-Butyl alcohol	0.007 (≥0.01)	All samples in SDG 16C074	UJ (all non-detects)	A

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
03/14/16	tert-Butyl alcohol	0.007 (≥0.01)	All samples in SDG 16C074	UJ (all non-detects)	A

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-021 was identified as a trip blank. No contaminants were found.

Sample KCH067-019 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-019	03/08/16	Carbon disulfide	0.40 ug/L	No associated samples in this SDG

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-042	03/15/16	Acetone	4.1 ug/L	KCH067-019

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIV. System Performance

Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration and continuing calibration RRF, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Volatiles - Data Qualification Summary - SDG 16C074

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-019 KCH067-021	tert-Butyl alcohol	UJ (all non-detects)	A	Initial calibration (RRF) (5)
KCH067-019 KCH067-021	tert-Butyl alcohol	UJ (all non-detects)	A	Continuing calibration (RRF) (5)

China Lake CTO 067
Volatiles - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Volatiles - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C074	Date Extracted: 03/14/16 20:46
Sample ID: KCH067-019	Date Analyzed: 03/14/16 20:46
Lab Samp ID: C074-01	Dilution Factor: 1
Lab File ID: RCC281	Matrix : WATER
Ext Btch ID: V067C11	% Moisture : NA
Calib. Ref.: RBC337	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
1,1,1,2-TETRACHLOROETHANE	ND	1.0	0.10	0.20
1,1,1-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11	0.20
1,1,2-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHENE	ND	1.0	0.10	0.20
1,1-DICHLOROPROPENE	ND	1.0	0.10	0.20
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,3-TRICHLOROPROPANE	ND	2.0	0.25	0.50
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11	0.20
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25	0.50
1,2-DIBROMOETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROBENZENE	ND	1.0	0.10	0.20
1,2-DICHLOROETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.13	0.20
1,3-DICHLOROBENZENE	ND	1.0	0.11	0.20
1,3-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,4-DICHLOROBENZENE	ND	1.0	0.10	0.20
2,2-DICHLOROPROPANE	ND	1.0	0.16	0.30
2-BUTANONE	ND	10	2.0	5.0
2-CHLOROTOLUENE	ND	1.0	0.12	0.20
2-HEXANONE	ND	10	2.3	5.0
4-CHLOROTOLUENE	ND	1.0	0.11	0.20
ACETONE	ND	10	2.6	5.0
BENZENE	ND	1.0	0.10	0.20
BROMOBENZENE	ND	1.0	0.10	0.20
BROMOCHLOROMETHANE	ND	1.0	0.11	0.20
BROMODICHLOROMETHANE	ND	1.0	0.10	0.20
BROMOFORM	ND	1.0	0.15	0.30
BROMOMETHANE	ND	1.0	0.16	0.30
CARBON DISULFIDE	0.40J	1.0	0.25	0.50
CARBON TETRACHLORIDE	ND	1.0	0.10	0.20
CHLOROBENZENE	ND	1.0	0.10	0.20
CHLOROETHANE	ND	1.0	0.27	0.30
CHLOROFORM	ND	1.0	0.10	0.20
CHLOROMETHANE	ND	1.0	0.15	0.30
CIS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10	0.20
DIBROMOCHLOROMETHANE	ND	1.0	0.10	0.20
DIBROMOMETHANE	ND	1.0	0.10	0.20
DICHLORODIFLUOROMETHANE	ND	1.0	0.15	0.30
ETHYLBENZENE	ND	1.0	0.10	0.20
HEXACHLOROBUTADIENE	ND	1.0	0.22	0.30
ISOPROPYLBENZENE	ND	1.0	0.10	0.20
M/P-XYLENES	ND	2.0	0.21	0.40
4-METHYL-2-PENTANONE	ND	10	2.1	5.0
METHYLENE CHLORIDE	ND	2.0	0.50	1.0
METHYL TERT-BUTYL ETHER	ND	1.0	0.13	0.20
NAPHTHALENE	ND	2.0	0.50	1.0
N-BUTYLBENZENE	ND	1.0	0.17	0.30
N-PROPYLBENZENE	ND	1.0	0.13	0.20
O-XYLENE	ND	1.0	0.10	0.20
P-ISOPROPYLTOLUENE	ND	1.0	0.14	0.20
SEC-BUTYLBENZENE	ND	1.0	0.13	0.20
STYRENE	ND	1.0	0.25	0.50
TERT-BUTYLBENZENE	ND	1.0	0.13	0.20
TETRACHLOROETHENE	ND	1.0	0.15	0.20
TOLUENE	ND	1.0	0.10	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11	0.20
TRICHLOROETHENE	ND	1.0	0.10	0.20
TRICHLOROFLUOROMETHANE	ND	1.0	0.15	0.30
VINYL CHLORIDE	ND	1.0	0.12	0.20
TERTIARY BUTYL ALCOHOL	ND UJ(5)	10	2.5	5.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.0	10.00	100	81-118
4-BROMOFLUOROBENZENE	9.88	10.00	98.8	85-114
TOLUENE-D8	10.1	10.00	101	89-112
DIBROMOFLUOROMETHANE	10.1	10.00	101	80-119

SL 03/16

METHOD SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C074	Date Extracted:	03/14/16 14:24
Sample ID:	KCH067-021	Date Analyzed:	03/14/16 14:24
Lab Samp ID:	C074-02	Dilution Factor:	1
Lab File ID:	RCC266	Matrix	: WATER
Ext Btch ID:	V067C11	% Moisture	: NA
Calib. Ref.:	RBC337	Instrument ID	: 67

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
1,1,1,2-TETRACHLOROETHANE	ND	1.0	0.10	0.20
1,1,1-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11	0.20
1,1,2-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHENE	ND	1.0	0.10	0.20
1,1-DICHLOROPROPENE	ND	1.0	0.10	0.20
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,3-TRICHLOROPROPANE	ND	2.0	0.25	0.50
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11	0.20
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25	0.50
1,2-DIBROMOETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROBENZENE	ND	1.0	0.10	0.20
1,2-DICHLOROETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.13	0.20
1,3-DICHLOROBENZENE	ND	1.0	0.11	0.20
1,3-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,4-DICHLOROBENZENE	ND	1.0	0.10	0.20
2,2-DICHLOROPROPANE	ND	1.0	0.16	0.30
2-BUTANONE	ND	10	2.0	5.0
2-CHLOROTOLUENE	ND	1.0	0.12	0.20
2-HEXANONE	ND	10	2.3	5.0
4-CHLOROTOLUENE	ND	1.0	0.11	0.20
ACETONE	ND	10	2.6	5.0
BENZENE	ND	1.0	0.10	0.20
BROMOBENZENE	ND	1.0	0.10	0.20
BROMOCHLOROMETHANE	ND	1.0	0.11	0.20
BROMODICHLOROMETHANE	ND	1.0	0.10	0.20
BROMOFORM	ND	1.0	0.15	0.30
BROMOMETHANE	ND	1.0	0.16	0.30
CARBON DISULFIDE	ND	1.0	0.25	0.50
CARBON TETRACHLORIDE	ND	1.0	0.10	0.20
CHLOROBENZENE	ND	1.0	0.10	0.20
CHLOROETHANE	ND	1.0	0.27	0.30
CHLOROFORM	ND	1.0	0.10	0.20
CHLOROMETHANE	ND	1.0	0.15	0.30
CIS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10	0.20
DIBROMOCHLOROMETHANE	ND	1.0	0.10	0.20
DIBROMOMETHANE	ND	1.0	0.10	0.20
DICHLORODIFLUOROMETHANE	ND	1.0	0.15	0.30
ETHYLBENZENE	ND	1.0	0.10	0.20
HEXACHLOROBUTADIENE	ND	1.0	0.22	0.30
ISOPROPYLBENZENE	ND	1.0	0.10	0.20
M/P-XYLENES	ND	2.0	0.21	0.40
4-METHYL-2-PENTANONE	ND	10	2.1	5.0
METHYLENE CHLORIDE	ND	2.0	0.50	1.0
METHYL TERT-BUTYL ETHER	ND	1.0	0.13	0.20
NAPHTHALENE	ND	2.0	0.50	1.0
N-BUTYLBENZENE	ND	1.0	0.17	0.30
N-PROPYLBENZENE	ND	1.0	0.13	0.20
O-XYLENE	ND	1.0	0.10	0.20
P-ISOPROPYLTOLUENE	ND	1.0	0.14	0.20
SEC-BUTYLBENZENE	ND	1.0	0.13	0.20
STYRENE	ND	1.0	0.25	0.50
TERT-BUTYLBENZENE	ND	1.0	0.13	0.20
TETRACHLOROETHENE	ND	1.0	0.15	0.20
TOLUENE	ND	1.0	0.10	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11	0.20
TRICHLOROETHENE	ND	1.0	0.10	0.20
TRICHLOROFLUOROMETHANE	ND	1.0	0.15	0.30
VINYL CHLORIDE	ND	1.0	0.12	0.20
TERTIARY BUTYL ALCOHOL	ND UJ(5)	10	2.5	5.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.73	10.00	97.3	81-118
4-BROMOFLUOROBENZENE	9.85	10.00	98.5	85-114
TOLUENE-D8	10.1	10.00	101	89-112
DIBROMOFLUOROMETHANE	9.91	10.00	99.1	80-119

8/05/16

LDC #: 36282B1 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C074 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: EF
2nd Reviewer: AL

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW / A	% RSD ≤ 15 ICV ≤ 20
IV.	Continuing calibration / ending CCV	SW	CCV ≤ 20
V.	Laboratory Blanks	A	SB= KCH067-042 (16C129)
VI.	Field blanks	SW	EB= 1 *TB= 2
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	QC Sample
IX.	Laboratory control samples	A	LCS ID
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; *ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2	KCH067-021	16C074-02	Water	03/08/16
3				
4				
5				
6				
7				
8				
9				

Notes:

	MBLKIW						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 36282B 1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
Y N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
Y N N/A Did the initial calibration meet the acceptance criteria?
Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤30/15 %RSD and ≥0.05 RRF ? cont- 5

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30/15%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	2/26/16	V867B26-ICAL	ZZZ		0.007 (≥0.01)	All	J+/UJ/A (ND)

INICAL.wpd

LDC #: 36282B1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF ?

wdl = 5

#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	3/14/16	RCC257-CCV	ZZZ		0.007 (≥0.05)	all	J/UJ/A (ND)

CONCAL.wpd

LDC #: 36282B 1

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: FT
2nd Reviewer: X

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** NA
Sampling date: 3/8/16
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: none

Compound	Blank ID	Sample Identification								
	1									
G	0.40									

Blank units: ug/L **Associated sample units:** ug/L SB = KCH067-042
Sampling date: 3/15/16
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: SB Associated Samples: 1 (ND)

Compound	Blank ID	Sample Identification								
	SB									
F	4.1									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270C using Selected Ion Monitoring (SIM)

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIV. System Performance

Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW3520C/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C074	Date Extracted:	03/14/16 13:45
Sample ID:	KCH067-019	Date Analyzed:	03/16/16 15:33
Lab Samp ID:	C074-01	Dilution Factor:	0.98
Lab File ID:	RCH084	Matrix	: WATER
Ext Btch ID:	SVC011W	% Moisture	: NA
Calib. Ref.:	RAH047	Instrument ID	: T-0E7

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
ACENAPHTHENE	ND	0.49	0.049	0.098
ACENAPHTHYLENE	ND	0.49	0.049	0.098
ANTHRACENE	ND	0.49	0.049	0.098
BENZO(A)ANTHRACENE	ND	0.49	0.088	0.20
BENZO(A)PYRENE	ND	0.49	0.049	0.098
BENZO(B)FLUORANTHENE	ND	0.49	0.049	0.098
BENZO(K)FLUORANTHENE	ND	0.49	0.049	0.098
BENZO(G,H,I)PERYLENE	ND	0.49	0.049	0.098
CHRYSENE	ND	0.49	0.059	0.20
DIBENZO(A,H)ANTHRACENE	ND	0.49	0.049	0.098
FLUORANTHENE	ND	0.49	0.049	0.098
FLUORENE	ND	0.49	0.049	0.098
INDENO(1,2,3-CD)PYRENE	ND	0.49	0.049	0.098
NAPHTHALENE	ND	0.49	0.049	0.098
PHENANTHRENE	ND	0.49	0.049	0.098
PYRENE	ND	0.49	0.049	0.098
2-METHYLNAPHTHALENE	ND	0.49	0.049	0.098
1-METHYLNAPHTHALENE	ND	0.49	0.049	0.098

SURROGATE PARAMETERS	RESULTS	SPK AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	14.0	19.60	71.5	53-106
NITROBENZENE-D5	15.4	19.60	78.3	55-111
TERPHENYL-D14	15.3	19.60	78.2	58-132

3/16

LDC #: 36282B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C074 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: FJ
2nd Reviewer: JL

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A /A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A /A	%RSD ≤ 15, r² ICV ≤ 20
IV.	Continuing calibration /ending CCV	A	CCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB = 1 SB = KCH067-042 (16C129)
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	QC sample
IX.	Laboratory control samples	A	Lab ID
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	MBLK1W						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Chlorinated Pesticides

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8081A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
03/15/16	CCV	RTX-CLP2	alpha-BHC gamma-BHC delta-BHC	28 21 21	All samples in SDG 16C074	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Compound Quantitation

Raw data were not reviewed for Level III validation.

XII. Target Compound Identification

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Chlorinated Pesticides - Data Qualification Summary - SDG 16C074

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-019	alpha-BHC gamma-BHC delta-BHC	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D) (5)

China Lake CTO 067
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW3520C/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C074	Date Extracted: 03/14/16 11:45
Sample ID: KCH067-019	Date Analyzed: 03/15/16 15:50
Lab Samp ID: C074-01	Dilution Factor: 1
Lab File ID: RC15012A	Matrix : WATER
Ext Btch ID: CPC010W	% Moisture : NA
Calib. Ref.: RC15005A	Instrument ID : F9

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
ALPHA-BHC	(ND) | ND UJ(S)	0.10	0.0050	0.010
GAMMA-BHC (LINDANE)	(ND) | ND ↓	0.10	0.0050	0.010
BETA-BHC	(ND) | ND	0.10	0.0070	0.010
HEPTACHLOR	(ND) | ND	0.10	0.0070	0.010
DELTA-BHC	(ND) | ND UJ(S)	0.10	0.0070	0.010
ALDRIN	(ND) | ND	0.10	0.0050	0.010
HEPTACHLOR EPOXIDE	(ND) | ND	0.10	0.0050	0.010
GAMMA-CHLORDANE	(ND) | ND	0.10	0.0050	0.010
ALPHA-CHLORDANE	(ND) | ND	0.10	0.0050	0.010
ENDOSULFAN I	(ND) | ND	0.10	0.0080	0.010
4,4'-DDE	(ND) | ND	0.10	0.0050	0.010
DIELDRIN	(ND) | ND	0.10	0.0050	0.010
ENDRIN	(ND) | ND	0.10	0.0080	0.010
4,4'-DDD	(ND) | ND	0.10	0.0050	0.010
ENDOSULFAN II	(ND) | ND	0.10	0.0050	0.010
4,4'-DDT	(ND) | ND	0.10	0.0050	0.010
ENDRIN ALDEHYDE	(ND) | ND	0.10	0.0050	0.010
ENDOSULFAN SULFATE	(ND) | ND	0.10	0.0050	0.010
ENDRIN KETONE	(ND) | ND	0.10	0.0050	0.010
METHOXYCHLOR	(ND) | ND	1.0	0.050	0.10
TOXAPHENE	(ND) | ND	2.0	0.25	0.50
TECHNICAL CHLORDANE	(ND) | ND	1.0	0.25	0.50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.3390 | (0.4145)	0.4000	84.8 | (104)	44-124

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

Note: Technical Chlordane result was reported from analysis run data file ID RC22008 associated with calibration file ID RC22005.

4/07/16

LDC #: 36282B3a
SDG #: 16C074
Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard

Date: 5/9/16
Page: 1 of 1
Reviewer: FD
2nd Reviewer: R

METHOD: GC Chlorinated Pesticides (EPA SW846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC Instrument Performance Check	A	
III.	Initial calibration/ICV	A / A	%RSD/ICV ≤ 20
IV.	Continuing calibration	SW	CCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB = 1 SB= KCH067-042 (16C129)
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	QC sample
IX.	Laboratory control samples	A	LCS ID
X.	Field duplicates	N	
XI.	Compound quantitation/RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System Performance	N	
XIV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

Notes:

	MBLKW						

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Arochlor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC #: 36282B3a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: FT
2nd Reviewer: PR

METHOD: ✓ **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___%R
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / %R validation criteria of ≤20.0% / 80-120%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

cont = 5

#	Date	Standard ID	Detector/ Column	Compound	%D (Limit ≤ 20.0)	RT (limit)	Associated Samples	Qualifications
	3/15/16	RC15005B-CCV	RTX-CLP2	A	28		All	J/UJ/A ND
				D	21		↓	↓
				C	21		↓	↓

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Polychlorinated Biphenyls

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

Raw data were not reviewed for Level III validation.

XI. Target Compound Identification

Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Polychlorinated Biphenyls - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW3520C/8082
PCBs

Client : KLEINFELDER	Date Collected: 03/08/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/10/16
Batch No. : 16C074	Date Extracted: 03/14/16 11:45
Sample ID: KCH067-019	Date Analyzed: 03/15/16 14:12
Lab Samp ID: C074-01	Dilution Factor: 1
Lab File ID: SC15016A	Matrix : WATER
Ext Btch ID: CPC010W	% Moisture : NA
Calib. Ref.: SC15002A	Instrument ID : GCT008

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
AROCLOR 1016	(ND)|ND	1.0	0.45	0.50
AROCLOR 1221	(ND)|ND	1.0	0.29	0.50
AROCLOR 1232	(ND)|ND	1.0	0.25	0.50
AROCLOR 1242	(ND)|ND	1.0	0.25	0.50
AROCLOR 1248	(ND)|ND	1.0	0.25	0.50
AROCLOR 1254	(ND)|ND	1.0	0.25	0.50
AROCLOR 1260	(ND)|ND	1.0	0.31	0.50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.3434|(0.3751)	0.4000	85.8|(93.8)	60-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

3/15/16

LDC #: 36282B3b
SDG #: 16C074
Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard

Date: 5/9/16
Page: 1 of 1
Reviewer: EF
2nd Reviewer: IK

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	%D/ICV ≤ 20
III.	Continuing calibration	A	CCV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB = 1 SB = KCH067-042 (16C129)
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	QC sample
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2				
3				
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12				
13				

Notes:

	MBLKW						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 13, 2016

Parameters: Metals

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A
Mercury by EPA SW 846 Method 7470A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Iron	5.17 ug/L	All samples in SDG 16C074

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
KCH067-019	Iron	9.85 ug/L	10.0U ug/L

VI. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
KCH067-019	03/08/16	Boron Calcium Iron Lead Manganese Nickel Sodium	4.65 ug/L 135 ug/L 9.85 ug/L 0.225 ug/L 0.318 ug/L 0.161 ug/L 42.6 ug/L	No associated samples in this SDG

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
KCH067-042	03/15/16	Barium Boron Calcium Chromium Copper Lead Magnesium Sodium	0.277 ug/L 4.00 ug/L 34.7 ug/L 0.101 ug/L 0.811 ug/L 0.0528 ug/L 7.51 ug/L 35.3 ug/L	All samples in SDG 16C074

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated field blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
KCH067-019	Boron Lead Sodium	4.65 ug/L 0.225 ug/L 42.6 ug/L	5.00U ug/L 0.225U ug/L 50.0U ug/L

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

IX. Serial Dilution

Serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

X. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

XIII. Sample Result Verification

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

Due to source blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Metals - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Metals - Laboratory Blank Data Qualification Summary - SDG 16C074

Sample	Analyte	Modified Final Concentration	A or P	Code
KCH067-019	Iron	10.0U ug/L	A	7

China Lake CTO 067
Metals - Field Blank Data Qualification Summary - SDG 16C074

Sample	Analyte	Modified Final Concentration	A or P	Code
KCH067-019	Boron Lead Sodium	5.00U ug/L 0.225U ug/L 50.0U ug/L	A	6

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
SDG NO.	: 16C074	Date Extracted:	03/16/16 11:07
Sample ID:	KCH067-019	Date Analyzed:	03/24/16 12:39
Lab Samp ID:	C074-01	Dilution Factor:	1
Lab File ID:	F6C08022	Matrix :	WATER
Ext Btch ID:	IMC027W	% Moisture :	NA
Calib. Ref.:	F6C08016	Instrument ID :	T-IF6

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
Aluminum	ND	100	10.0	20.0
Antimony	ND	1.00	0.250	0.500
Arsenic	ND	1.00	0.100	0.200
Barium	ND	1.00	0.250	0.500
Beryllium	ND	1.00	0.0500	0.100
Boron	4.65J 5.00 U	10.0 (6)	2.50	5.00
Cadmium	ND	1.00	0.100	0.200
Calcium	135	100	13.0	25.0
Chromium	ND	1.00	0.100	0.200
Cobalt	ND	1.00	0.100	0.200
Copper	ND	1.00	0.250	0.500
Iron	9.85J 10.0 U	100 (7)	5.00	10.0
Lead	0.225J U	1.00 (6)	0.0500	0.100
Magnesium	ND	100	5.00	10.0
Manganese	0.318J	1.00	0.100	0.200
Molybdenum	ND	2.00	0.250	0.500
Nickel	0.161J	1.00	0.100	0.200
Potassium	ND	100	10.0	20.0
Selenium	ND	1.00	0.150	0.300
Silver	ND	1.00	0.100	0.200
Sodium	42.6J 50.0 U	100 (6)	25.0	50.0
Thallium	ND	1.00	0.100	0.200
Vanadium	ND	1.00	0.250	0.500
Zinc	ND	20.0	5.00	10.0

5/17/16

METHOD SW7470A
MERCURY BY COLD VAPOR

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C074

Matrix : WATER
InstrumentID : 47

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DIL'N FACTOR	MOIST (%)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1W	HGC014WB	ND	1	NA	0.50	0.050	0.10	03/23/1610:11	03/22/1616:30	M47C011011	M47C011	HGC014W	NA	NA
LCS1W	HGC014WL	2.38	1	NA	0.50	0.050	0.10	03/23/1610:13	03/22/1616:30	M47C011012	M47C011	HGC014W	NA	NA
LCD1W	HGC014WC	2.40	1	NA	0.50	0.050	0.10	03/23/1610:15	03/22/1616:30	M47C011013	M47C011	HGC014W	NA	NA
KCH067-019	C074-01	ND	1	NA	0.50	0.050	0.10	03/23/1610:42	03/22/1616:30	M47C011025	M47C011	HGC014W	03/08/1617:35	03/10/16

t 05H1L

1 of 1

LDC #: 36282B4a
SDG #: 16C074
Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard

Date: 5/10/16
Page: 1 of 1
Reviewer: JD
2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6020A/7470A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	03/08/16
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	EB= (-); SB=KCH067-042 (SDG: 16C129)
VII.	Matrix Spike/Matrix Spike Duplicates	N	CS
VIII.	Duplicate sample analysis	N	
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	LCS/D
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	N	Not Reviewed
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Notes:

LDC #: 36828B4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: JD
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___

Comments: Mercury by CVAA if performed

LDC #: 36282B4a

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: JD
2nd Reviewer: AC

METHOD: Metals (EPA SW 864 Method 6010/6020/7000) Soil preparation factor applied: ____
Sample Concentration units, unless otherwise noted: ug/L Associated Samples: All (or)

					Sample Identification									
Analyte	**Maximum PB[a] (mg/Kg)**	**Maximum PB[a] (ug/L)**	**Maximum ICB/CCB[a] (ug/L)**	**Blank Action Limit**	1									
Fe			5.17		9.85/~~100~~ 10.0 U									

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36282B4a

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: JD
2nd Reviewer: AK

METHOD: Trace Metals (EPA Method 200.7/200.8)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 03/08/16 Soil factor applied ~~50X~~
Field blank type: (circle one) Field Blank / Rinsate / Other: (EB) Associated Samples: None (06)

Analyte	Blank ID	Sample Identification											
	1	Action Limit	No Qual.										
B	4.65												
Ca	135	67.5											
Fe	9.85												
Pb	0.225												
Mn	0.318												
Ni	0.161												
Na	42.6												

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 03/15/16 Soil factor applied
Field blank type: (circle one) Field Blank / Rinsate / Other: (SB) Associated Samples: All (06)

Analyte	Blank ID	Sample Identification											
	KCH067-042 (SDG:16C129)	Action Limit	1										
Ba	0.277												
B	4.00		4.65/~~10.0~~										
Ca	34.7												
Cr	0.101												
Cu	0.811												
Pb	0.0528		0.225/~~1.00~~										
Mg	7.51												
Na	35.3		42.6/~~100~~										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Hexavalent Chromium

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16
KCH067-019MS	16C074-01MS	Water	03/08/16
KCH067-019MSD	16C074-01MSD	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Hexavalent Chromium by Environmental Protection Agency (EPA) SW 846 Method 7199

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

Raw data were not reviewed for Level III validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Hexavalent Chromium - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW7199
HEXAVALENT CHROMIUM

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C074

Matrix : WATER
InstrumentID : 59

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1W	HCC005WB	ND	1	NA	0.2	0.05	0.1	03/15/1616:18	03/15/1616:10	IC15003	IC15001	HCC005W	NA	NA
LCS1W	HCC005WL	1.90	1	NA	0.2	0.05	0.1	03/15/1616:38	03/15/1616:10	IC15005	IC15001	HCC005W	NA	NA
LCD1W	HCC005WC	1.98	1	NA	0.2	0.05	0.1	03/15/1616:59	03/15/1616:10	IC15007	IC15001	HCC005W	NA	NA
KCH067-019	C074-01	ND	1	NA	0.2	0.05	0.1	03/15/1617:20	03/15/1616:10	IC15009	IC15001	HCC005W	03/08/1617:35	03/10/16
KCH067-019MS	C074-01M	1.10	1	NA	0.2	0.05	0.1	03/15/1618:02	03/15/1616:10	IC15013	IC15011	HCC005W	03/08/1617:35	03/10/16
KCH067-019MSD	C074-01S	1.01	1	NA	0.2	0.05	0.1	03/15/1618:22	03/15/1616:10	IC15015	IC15011	HCC005W	03/08/1617:35	03/10/16

3/25/16

Q94-7

LDC #: 36282B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C074 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: JD
2nd Reviewer: [illegible]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	3/8/16 *
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	EB=(1); SB=KCH067-042(SDG.16C129)
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/D=(2,3)
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2	KCH067-019MS	16C074-01MS	Water	03/08/16
3	KCH067-019MSD	16C074-01MSD	Water	03/08/16
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes: *preserved with ammonium buffer per email

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16
KCH067-021	16C074-02	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Gasoline by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-021 was identified as a trip blank. No contaminants were found.

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C074	Date Extracted:	03/16/16 14:42
Sample ID	: KCH067-019	Date Analyzed:	03/16/16 14:42
Lab Samp ID	: C074-01	Dilution Factor:	1
Lab File ID	: EC16008A	Matrix	: WATER
Ext Btch ID	: VG39C08	% Moisture	: NA
Calib. Ref.	: EC16003A	Instrument ID	: GCT039

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
GASOLINE	ND	0.10	0.010	0.020

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	0.0329	0.04000	82.2	69-133

Parameter	H-C Range
Gasoline	C6-C10

SCT 3/17/16

METHOD SW5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C074	Date Extracted:	03/16/16 15:21
Sample ID	: KCH067-021	Date Analyzed:	03/16/16 15:21
Lab Samp ID	: C074-02	Dilution Factor:	1
Lab File ID	: EC16009A	Matrix	: WATER
Ext Btch ID	: VG39C08	% Moisture	: NA
Calib. Ref.	: EC16003A	Instrument ID	: GCT039

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
GASOLINE	ND	0.10	0.010	0.020

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	0.0304	0.04000	76.1	69-133

Parameter	H-C Range
Gasoline	C6-C10

3/5/16

LDC #: 36282B7 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C074 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A /A	
II.	Initial calibration/ICV	A /A	
III.	Continuing calibration	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB = 1 TB = 2
VI.	Surrogate spikes	A	SB= KCH067-042 (SDG 16C129)
VII.	Matrix spike/Matrix spike duplicates	N	QC sample
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2	KCH067-021	16C074-02	Water	03/08/16
3				
4				
5				
6				
7				
8				
9				
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11				
12				
13				

Notes:

	MBLK1W						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 13, 2016

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C074	Date Extracted:	03/14/16 12:00
Sample ID:	KCH067-019	Date Analyzed:	03/15/16 14:14
Lab Samp ID:	C074-01	Dilution Factor:	0.94
Lab File ID:	LC15009A	Matrix :	WATER
Ext Btch ID:	DSC011W	% Moisture :	NA
Calib. Ref.:	LC15004A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
DIESEL	ND	0.47	0.047	0.094
JP-5	ND	0.47	0.047	0.094
MOTOR OIL	ND	0.47	0.047	0.094

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	0.957	0.9400	102	60-130
HEXACOSANE	0.253	0.2350	108	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/17/16

LDC #: 36282B8 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C074 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	%RSD/ICV ≤ 20
III.	Continuing calibration	A	CCV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB = 1 SB = KCH067-042 (SDG # 16C129)
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2				
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Notes:

	MBLK1W						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Explosives

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Explosives by Environmental Protection Agency (EPA) SW 846 Method 8330A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 15.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Explosives - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Explosives - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Explosives - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/08/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/10/16
Batch No.	: 16C074	Date Extracted:	03/11/16 12:40
Sample ID	: KCH067-019	Date Analyzed:	03/14/16 23:57
Lab Samp ID	: C074-01	Dilution Factor:	1
Lab File ID	: XC14021A	Matrix	: WATER
Ext Btch ID	: EXC004W	% Moisture	: NA
Calib. Ref.	: XC14014A	Instrument ID	: T-081

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
HMX	ND	1.0	0.10	0.20
RDX	ND	1.0	0.16	0.40
1,3,5-TNB	ND	1.0	0.10	0.20
1,3-DNB	ND	1.0	0.10	0.20
TETRYL	ND	1.0	0.10	0.20
NITROBENZENE	ND	1.0	0.10	0.20
2,4,6-TNT	ND	1.0	0.16	0.40
4-AM-2,6-DNT	ND	1.0	0.20	0.20
2-AM-4,6-DNT	ND	1.0	0.10	0.20
2,6-DNT	ND	1.0	0.10	0.20
2,4-DNT	ND	1.0	0.12	0.20
2-NITROTOLUENE	ND	1.0	0.11	0.20
3-NITROTOLUENE	ND	1.0	0.16	0.40
4-NITROTOLUENE	ND	1.0	0.10	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	4.07	4.000	102	60-140

Note: All positive results are confirmed by Biphenyl column

3/15/16

LDC #: 36282B40 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C074 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: F
2nd Reviewer: F

METHOD: HPLC Explosives (EPA SW 846 Method 8330A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	%RSD ≤ 20 ICV ≤ 15
III.	Continuing calibration	A	CCV ≤ 15
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB = 1 SB = KCH067-042 (SDG 16C129)
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	QC sample
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	System performance	N	
XIII.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Notes:

	MBLK 1W						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Perchlorate

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C074

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-019	16C074-01	Water	03/08/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perchlorate by Environmental Protection Agency (EPA) SW 846 Method 6850

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance check was performed prior to initial calibration.

All perchlorate ion signal to noise ratio requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

The isotope ratios were within QC limits.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 15.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the limit of detection verification (LODV) standard were less than or equal to 30.0%.

The isotope ratios were within QC limits.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 (from SDG 16C129) was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Compound Quantitation

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Perchlorate - Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

China Lake CTO 067
Perchlorate - Field Blank Data Qualification Summary - SDG 16C074

No Sample Data Qualified in this SDG

METHOD SW6850
PERCHLORATE

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C074

Matrix : WATER
InstrumentID : GO

Client SAMPLE ID	EMAX SAMPLE ID	RESULT (ug/L)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1W	PLC006WB	ND	1	NA	0.5	0.1	0.2	03/23/1611:28	NA	16MC23007	MC23004	16PLC006W	NA	NA
LCS1W	PLC006WL	0.588	1	NA	0.5	0.1	0.2	03/23/1611:45	NA	16MC23008	MC23004	16PLC006W	NA	NA
LCD1W	PLC006WC	0.550	1	NA	0.5	0.1	0.2	03/23/1611:59	NA	16MC23009	MC23004	16PLC006W	NA	NA
KCH067-019	C074-01	ND	1	NA	0.5	0.1	0.2	03/23/1612:14	NA	16MC23010	MC23004	16PLC006W	03/08/1617:35	03/10/16

4/05/17/16

LDC #: 36282B87 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/16
SDG #: 16C074 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: PD
2nd Reviewer: R

METHOD: LC/MS Perchlorate (EPA SW846 Method 6850)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	auto tune
III.	Initial calibration/ICV	A/A	r^2 ICV ≤ 15
IV.	Continuing calibration	A	CCV ≤ 15 LODV ≤ 30
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB = 1 SB= KCH067-042 (SDG 16C129)
VII.	Surrogate spikes	N	not required
VIII.	Matrix spike/Matrix spike duplicates	N	QC sample
IX.	Laboratory control samples	A	LCS ID
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-019	16C074-01	Water	03/08/16
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	MBLK1W						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Volatiles

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-042	16C129-19	Water	03/15/16
KCH067-043	16C129-20	Water	03/15/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
02/26/16	tert-Butyl alcohol	0.007 (≥0.01)	All samples in SDG 16C129	UJ (all non-detects)	A

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
03/22/16	tert-Butyl alcohol	0.007 (≥0.01)	All samples in SDG 16C129	UJ (all non-detects)	A

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analysis Date	Compound	Concentration	Associated Samples
MBLK1W	03/22/16	Methylene chloride	0.91 ug/L	All samples in SDG 16C129

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks.

VI. Field Blanks

Sample KCH067-043 was identified as a trip blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-042	03/15/16	Acetone	4.1 ug/L	No associated samples in this SDG

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIV. System Performance

Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration and continuing calibration RRF, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Volatiles - Data Qualification Summary - SDG 16C129

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-042 KCH067-043	tert-Butyl alcohol	UJ (all non-detects)	A	Initial calibration (RRF) (5)
KCH067-042 KCH067-043	tert-Butyl alcohol	UJ (all non-detects)	A	Continuing calibration (RRF) (5)

China Lake CTO 067
Volatiles - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Volatiles - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/22/16 15:34
Sample ID: KCH067-042	Date Analyzed: 03/22/16 15:34
Lab Samp ID: C129-19N	Dilution Factor: 1
Lab File ID: RCC442	Matrix : WATER
Ext Btch ID: V067C17	% Moisture : NA
Calib. Ref.: RBC337	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
1,1,1,2-TETRACHLOROETHANE	ND	1.0	0.10	0.20
1,1,1-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11	0.20
1,1,2-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHENE	ND	1.0	0.10	0.20
1,1-DICHLOROPROPENE	ND	1.0	0.10	0.20
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,3-TRICHLOROPROPANE	ND	2.0	0.25	0.50
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11	0.20
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25	0.50
1,2-DIBROMOETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROBENZENE	ND	1.0	0.10	0.20
1,2-DICHLOROETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.13	0.20
1,3-DICHLOROBENZENE	ND	1.0	0.11	0.20
1,3-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,4-DICHLOROBENZENE	ND	1.0	0.10	0.20
2,2-DICHLOROPROPANE	ND	1.0	0.16	0.30
2-BUTANONE	ND	10	2.0	5.0
2-CHLOROTOLUENE	ND	1.0	0.12	0.20
2-HEXANONE	ND	10	2.3	5.0
4-CHLOROTOLUENE	ND	1.0	0.11	0.20
ACETONE	4.1J	10	2.6	5.0
BENZENE	ND	1.0	0.10	0.20
BROMOBENZENE	ND	1.0	0.10	0.20
BROMOCHLOROMETHANE	ND	1.0	0.11	0.20
BROMODICHLOROMETHANE	ND	1.0	0.10	0.20
BROMOFORM	ND	1.0	0.15	0.30
BROMOMETHANE	ND	1.0	0.16	0.30
CARBON DISULFIDE	ND	1.0	0.25	0.50
CARBON TETRACHLORIDE	ND	1.0	0.10	0.20
CHLOROBENZENE	ND	1.0	0.10	0.20
CHLOROETHANE	ND	1.0	0.27	0.30
CHLOROFORM	ND	1.0	0.10	0.20
CHLOROMETHANE	ND	1.0	0.15	0.30
CIS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10	0.20
DIBROMOCHLOROMETHANE	ND	1.0	0.10	0.20
DIBROMOMETHANE	ND	1.0	0.10	0.20
DICHLORODIFLUOROMETHANE	ND	1.0	0.15	0.30
ETHYLBENZENE	ND	1.0	0.10	0.20
HEXACHLOROBUTADIENE	ND	1.0	0.22	0.30
ISOPROPYLBENZENE	ND	1.0	0.10	0.20
M/P-XYLENES	ND	2.0	0.21	0.40
4-METHYL-2-PENTANONE	ND	10	2.1	5.0
METHYLENE CHLORIDE	ND	2.0	0.50	1.0
METHYL TERT-BUTYL ETHER	ND	1.0	0.13	0.20
NAPHTHALENE	ND	2.0	0.50	1.0
N-BUTYLBENZENE	ND	1.0	0.17	0.30
N-PROPYLBENZENE	ND	1.0	0.13	0.20
O-XYLENE	ND	1.0	0.10	0.20
P-ISOPROPYLTOLUENE	ND	1.0	0.14	0.20
SEC-BUTYLBENZENE	ND	1.0	0.13	0.20
STYRENE	ND	1.0	0.25	0.50
TERT-BUTYLBENZENE	ND	1.0	0.13	0.20
TETRACHLOROETHENE	ND	1.0	0.15	0.20
TOLUENE	ND	1.0	0.10	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11	0.20
TRICHLOROETHENE	ND	1.0	0.10	0.20
TRICHLOROFLUOROMETHANE	ND	1.0	0.15	0.30
VINYL CHLORIDE	ND	1.0	0.12	0.20
TERTIARY BUTYL ALCOHOL	ND UJ(S)	10	2.5	5.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.56	10.00	95.6	81-118
4-BROMOFLUOROBENZENE	9.53	10.00	95.3	85-114
TOLUENE-D8	9.73	10.00	97.3	89-112
DIBROMOFLUOROMETHANE	9.93	10.00	99.3	80-119

5/5/16

METHOD SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/22/16 16:00
Sample ID: KCH067-043	Date Analyzed: 03/22/16 16:00
Lab Samp ID: C129-20N	Dilution Factor: 1
Lab File ID: RCC443	Matrix : WATER
Ext Btch ID: V067C17	% Moisture : NA
Calib. Ref.: RBC337	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
1,1,1,2-TETRACHLOROETHANE	ND	1.0	0.10	0.20
1,1,1-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1,2,2-TETRACHLOROETHANE	ND	1.0	0.11	0.20
1,1,2-TRICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHANE	ND	1.0	0.10	0.20
1,1-DICHLOROETHENE	ND	1.0	0.10	0.20
1,1-DICHLOROPROPENE	ND	1.0	0.10	0.20
1,2,3-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,3-TRICHLOROPROPANE	ND	2.0	0.25	0.50
1,2,4-TRICHLOROBENZENE	ND	1.0	0.15	0.30
1,2,4-TRIMETHYLBENZENE	ND	1.0	0.11	0.20
1,2-DIBROMO-3-CHLOROPROPANE	ND	2.0	0.25	0.50
1,2-DIBROMOETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROBENZENE	ND	1.0	0.10	0.20
1,2-DICHLOROETHANE	ND	1.0	0.10	0.20
1,2-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,3,5-TRIMETHYLBENZENE	ND	1.0	0.13	0.20
1,3-DICHLOROBENZENE	ND	1.0	0.11	0.20
1,3-DICHLOROPROPANE	ND	1.0	0.10	0.20
1,4-DICHLOROBENZENE	ND	1.0	0.10	0.20
2,2-DICHLOROPROPANE	ND	1.0	0.16	0.30
2-BUTANONE	ND	10	2.0	5.0
2-CHLOROTOLUENE	ND	1.0	0.12	0.20
2-HEXANONE	ND	10	2.3	5.0
4-CHLOROTOLUENE	ND	1.0	0.11	0.20
ACETONE	ND	10	2.6	5.0
BENZENE	ND	1.0	0.10	0.20
BROMOBENZENE	ND	1.0	0.10	0.20
BROMOCHLOROMETHANE	ND	1.0	0.11	0.20
BROMODICHLOROMETHANE	ND	1.0	0.10	0.20
BROMOFORM	ND	1.0	0.15	0.30
BROMOMETHANE	ND	1.0	0.16	0.30
CARBON DISULFIDE	ND	1.0	0.25	0.50
CARBON TETRACHLORIDE	ND	1.0	0.10	0.20
CHLOROBENZENE	ND	1.0	0.10	0.20
CHLOROETHANE	ND	1.0	0.27	0.30
CHLOROFORM	ND	1.0	0.10	0.20
CHLOROMETHANE	ND	1.0	0.15	0.30
CIS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
CIS-1,3-DICHLOROPROPENE	ND	1.0	0.10	0.20
DIBROMOCHLOROMETHANE	ND	1.0	0.10	0.20
DIBROMOMETHANE	ND	1.0	0.10	0.20
DICHLORODIFLUOROMETHANE	ND	1.0	0.15	0.30
ETHYLBENZENE	ND	1.0	0.10	0.20
HEXACHLOROBUTADIENE	ND	1.0	0.22	0.30
ISOPROPYLBENZENE	ND	1.0	0.10	0.20
M/P-XYLENES	ND	2.0	0.21	0.40
4-METHYL-2-PENTANONE	ND	10	2.1	5.0
METHYLENE CHLORIDE	ND	2.0	0.50	1.0
METHYL TERT-BUTYL ETHER	ND	1.0	0.13	0.20
NAPHTHALENE	ND	2.0	0.50	1.0
N-BUTYLBENZENE	ND	1.0	0.17	0.30
N-PROPYLBENZENE	ND	1.0	0.13	0.20
O-XYLENE	ND	1.0	0.10	0.20
P-ISOPROPYLTOLUENE	ND	1.0	0.14	0.20
SEC-BUTYLBENZENE	ND	1.0	0.13	0.20
STYRENE	ND	1.0	0.25	0.50
TERT-BUTYLBENZENE	ND	1.0	0.13	0.20
TETRACHLOROETHENE	ND	1.0	0.15	0.20
TOLUENE	ND	1.0	0.10	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.10	0.20
TRANS-1,3-DICHLOROPROPENE	ND	1.0	0.11	0.20
TRICHLOROETHENE	ND	1.0	0.10	0.20
TRICHLOROFLUOROMETHANE	ND	1.0	0.15	0.30
VINYL CHLORIDE	ND	1.0	0.12	0.20
TERTIARY BUTYL ALCOHOL	ND UJ(S)	10	2.5	5.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.62	10.00	96.2	81-118
4-BROMOFLUOROBENZENE	9.54	10.00	95.4	85-114
TOLUENE-D8	9.69	10.00	97.0	89-112
DIBROMOFLUOROMETHANE	9.95	10.00	99.5	80-119

8/25/16

LDC #: 36282C1 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C129 Standard Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: FJ
2nd Reviewer: AC

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	SW A	%D RSD ≤ 15 ICV ≤ 20
IV.	Continuing calibration / ending ccv	SW	ccv ≤ 20
V.	Laboratory Blanks	SW	
VI.	Field blanks	SW	SB = 1 TB = 2*
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	QC Sample
IX.	Laboratory control samples	A	LCS ID
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; *ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-042 SB	16C129-19	Water	03/15/16
2	KCH067-043 TB	16C129-20	Water	03/15/16
3				
4				
5				
6				
7				
8				
9				

Notes:

	MBLKIW						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 36282C1

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AC

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
Y N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
Y N N/A Did the initial calibration meet the acceptance criteria?
Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤30/15 %RSD and ≥0.05 RRF ?

Code = 5

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30/15%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	2/26/16	V067B26-ICAL	ZZZ		0.007 (≥0.01)	all	J+/UJ/A ND

INICAL.wpd

LDC #: 36202C1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF ?

Code = J

#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	3/22/16	RCC434-CCV	ZZZ		0.007 (≥0.01)	all	J+ / UJ / A NB

LDC #: 36282 C1

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: FT
2nd Reviewer: R

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 3/22/16
Conc. units: ug/L Associated Samples: All (ND)

Compound	Blank ID	Sample Identification								
	MBLK1W									
F	0.91									

Blank analysis date:
Conc. units: Associated Samples:

Compound	Blank ID	Sample Identification								

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 36282C1

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: FT
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were field blanks identified in this SDG?

Y N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** NA

Sampling date: 3/15/16

Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: SB Associated Samples: none

Compound	Blank ID	Sample Identification								
	1									
F	4.1									

Blank units: _____ **Associated sample units:** _____

Sampling date: _____

Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-032**	16C129-09**	Soil	03/15/16
KCH067-033	16C129-10	Soil	03/15/16
KCH067-041	16C129-18	Water	03/15/16
KCH067-042	16C129-19	Water	03/15/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270C using Selected Ion Monitoring (SIM)

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
SVC017WL/WC (All water samples in SDG 16C129)	Acenaphthene	26 (≤20)	UJ (all non-detects)	P
	Acenaphthylene	27 (≤20)	UJ (all non-detects)	
	Naphthalene	27 (≤20)	UJ (all non-detects)	
	2-Methylnaphthalene	29 (≤20)	UJ (all non-detects)	
	1-Methylnaphthalene	28 (≤20)	UJ (all non-detects)	

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD RPD, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 16C129

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-041 KCH067-042	Acenaphthene Acenaphthylene Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P	Laboratory control samples (%R) (10)

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW3520C/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 13:45
Sample ID	: KCH067-041	Date Analyzed:	03/24/16 17:44
Lab Samp ID	: C129-18	Dilution Factor:	1
Lab File ID	: RCJ395	Matrix	: WATER
Ext Btch ID	: SVC017W	% Moisture	: NA
Calib. Ref.	: RBJ007	Instrument ID	: T-OE4

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
ACENAPHTHENE	ND UJ(10)	0.50	0.050	0.10
ACENAPHTHYLENE	ND ↓	0.50	0.050	0.10
ANTHRACENE	ND	0.50	0.050	0.10
BENZO(A)ANTHRACENE	ND	0.50	0.090	0.20
BENZO(A)PYRENE	ND	0.50	0.050	0.10
BENZO(B)FLUORANTHENE	ND	0.50	0.050	0.10
BENZO(K)FLUORANTHENE	ND	0.50	0.050	0.10
BENZO(G,H,I)PERYLENE	ND	0.50	0.050	0.10
CHRYSENE	ND	0.50	0.060	0.20
DIBENZO(A,H)ANTHRACENE	ND	0.50	0.050	0.10
FLUORANTHENE	ND	0.50	0.050	0.10
FLUORENE	ND	0.50	0.050	0.10
INDENO(1,2,3-CD)PYRENE	ND	0.50	0.050	0.10
NAPHTHALENE	ND UJ(10)	0.50	0.050	0.10
PHENANTHRENE	ND	0.50	0.050	0.10
PYRENE	ND	0.50	0.050	0.10
2-METHYLNAPHTHALENE	ND UJ(10)	0.50	0.050	0.10
1-METHYLNAPHTHALENE	ND ↓	0.50	0.050	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	15.3	20.00	76.5	53-106
NITROBENZENE-D5	16.6	20.00	82.8	55-111
TERPHENYL-D14	17.9	20.00	89.6	58-132

8C 3/31/16

METHOD SW3520C/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 13:45
Sample ID	: KCH067-042	Date Analyzed:	03/24/16 18:04
Lab Samp ID	: C129-19	Dilution Factor:	1.11
Lab File ID	: RCJ396	Matrix	: WATER
Ext Btch ID	: SVC017W	% Moisture	: NA
Calib. Ref.	: RBJ007	Instrument ID	: T-OE4

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
ACENAPHTHENE	ND UJ(10)	0.56	0.056	0.11
ACENAPHTHYLENE	ND	0.56	0.056	0.11
ANTHRACENE	ND	0.56	0.056	0.11
BENZO(A)ANTHRACENE	ND	0.56	0.10	0.22
BENZO(A)PYRENE	ND	0.56	0.056	0.11
BENZO(B)FLUORANTHENE	ND	0.56	0.056	0.11
BENZO(K)FLUORANTHENE	ND	0.56	0.056	0.11
BENZO(G,H,I)PERYLENE	ND	0.56	0.056	0.11
CHRYSENE	ND	0.56	0.067	0.22
DIBENZO(A,H)ANTHRACENE	ND	0.56	0.056	0.11
FLUORANTHENE	ND	0.56	0.056	0.11
FLUORENE	ND	0.56	0.056	0.11
INDENO(1,2,3-CD)PYRENE	ND	0.56	0.056	0.11
NAPHTHALENE	ND UJ(10)	0.56	0.056	0.11
PHENANTHRENE	ND	0.56	0.056	0.11
PYRENE	ND	0.56	0.056	0.11
2-METHYLNAPHTHALENE	ND UJ(10)	0.56	0.056	0.11
1-METHYLNAPHTHALENE	ND	0.56	0.056	0.11

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	18.4	22.20	82.7	53-106
NITROBENZENE-D5	19.9	22.20	89.8	55-111
TERPHENYL-D14	20.8	22.20	93.8	58-132

8-25-16

METHOD SW3550B/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 10:39
Sample ID:	KCH067-032	Date Analyzed:	03/23/16 18:54
Lab Samp ID:	C129-09	Dilution Factor:	1
Lab File ID:	RCJ366	Matrix	: SOIL
Ext Btch ID:	SVC018S	% Moisture	: 1.7
Calib. Ref.:	RBJ007	Instrument ID	: T-OE4

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ACENAPHTHENE	ND	10	1.3	2.5
ACENAPHTHYLENE	ND	10	1.3	2.5
ANTHRACENE	3.5J	10	1.3	2.5
BENZO(A)ANTHRACENE	69	10	2.5	5.1
BENZO(A)PYRENE	73	10	1.3	2.5
BENZO(B)FLUORANTHENE	150	10	1.3	2.5
BENZO(K)FLUORANTHENE	43	10	1.3	2.5
BENZO(G,H,I)PERYLENE	55	10	1.3	2.5
CHRYSENE	130	10	2.2	5.1
DIBENZO(A,H)ANTHRACENE	13	10	1.3	2.5
FLUORANTHENE	160	10	1.3	2.5
FLUORENE	ND	10	1.3	2.5
INDENO(1,2,3-CD)PYRENE	51	10	1.3	2.5
NAPHTHALENE	ND	10	1.3	2.5
PHENANTHRENE	41	10	1.3	2.5
PYRENE	130	10	1.3	2.5
2-METHYLNAPHTHALENE	ND	10	1.3	2.5
1-METHYLNAPHTHALENE	ND	10	1.3	2.5

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	557	678.2	82.2	46-115
NITROBENZENE-D5	585	678.2	86.2	44-125
TERPHENYL-D14	720	678.2	106	58-133

4/5/16

METHOD SW3550B/8270C SIM
SEMI VOLATILE ORGANICS BY GC/MS SIM

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 10:39
Sample ID	: KCH067-033	Date Analyzed:	03/23/16 19:14
Lab Samp ID	: C129-10	Dilution Factor:	1
Lab File ID	: RCJ367	Matrix :	SOIL
Ext Btch ID	: SVC018S	% Moisture :	1.5
Calib. Ref.	: RBJ007	Instrument ID :	T-0E4

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ACENAPHTHENE	ND	10	1.3	2.5
ACENAPHTHYLENE	ND	10	1.3	2.5
ANTHRACENE	ND	10	1.3	2.5
BENZO(A)ANTHRACENE	ND	10	2.5	5.1
BENZO(A)PYRENE	ND	10	1.3	2.5
BENZO(B)FLUORANTHENE	ND	10	1.3	2.5
BENZO(K)FLUORANTHENE	ND	10	1.3	2.5
BENZO(G,H,I)PERYLENE	ND	10	1.3	2.5
CHRYSENE	ND	10	2.2	5.1
DIBENZO(A,H)ANTHRACENE	ND	10	1.3	2.5
FLUORANTHENE	ND	10	1.3	2.5
FLUORENE	ND	10	1.3	2.5
INDENO(1,2,3-CD)PYRENE	ND	10	1.3	2.5
NAPHTHALENE	ND	10	1.3	2.5
PHENANTHRENE	ND	10	1.3	2.5
PYRENE	ND	10	1.3	2.5
2-METHYLNAPHTHALENE	ND	10	1.3	2.5
1-METHYLNAPHTHALENE	ND	10	1.3	2.5

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
2-FLUOROBIPHENYL	554	676.9	81.9	46-115
NITROBENZENE-D5	584	676.9	86.3	44-125
TERPHENYL-D14	691	676.9	102	58-133

8/25/16

LDC #: 36282C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C129 Standard/Full Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	%D RSD ≤ 15, r² ICV ≤ 20
IV.	Continuing calibration / ending CCV	A	CCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB = 3 SB = 4
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	SW	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XIII.	Target compound identification	A	Not reviewed for Standard validation.
XIV.	System performance	A	Not reviewed for Standard validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID		Lab ID	Matrix	Date
1	KCH067-032**		16C129-09**	Soil	03/15/16
2	KCH067-033		16C129-10	Soil	03/15/16
3	KCH067-041	EB	16C129-18	Water	03/15/16
4	KCH067-042	SB	16C129-19	Water	03/15/16
5					
6					
7					
8					
9					

Notes:

	MBLK1W						
	MBLK1S						

LDC #: 36282C2b

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: EJ
2nd Reviewer: C

Method: Semivolatiles (EPA SW 846 Method 8270C-SIM)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check (Not required)				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) ≥ 0.05?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent differences (%R) within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 36282C2b

VALIDATION FINDINGS CHECKLIST

Reviewer: FP
2nd Reviewer: C

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1.
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1.
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1.
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1.
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1.
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1.
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1.
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1.
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1.
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1.
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1.
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1.
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1.
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1.
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 2,6-Dinitrotoluene	O1.
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1.
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4 Methylphenol	Q1.
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiphene (4MDT)	R1.
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1.
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1.
U. Hexachlorobutadiene	UU. Phenanthrene	UUU.Benzo(b)thiophene	UUUU.	U1.
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV.Benzonaphthothiophene	VVVV.	V1.
W. 2-Methylnaphthalene	WW. Carbazole	WWW.Benzo(e)pyrene	WWWW.	W1.
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX.	X1.
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY.	Y1.
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ.	Z1.

LDC #: 36282c2b

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? code= 10

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	SVC017WL/WC	GG	( )	( )	26 (20)	all water	J/UJ/P (ND)
		DD	( )	( )	27 ( )		
		S	( )	( )	27 ( )		
		W	( )	( )	29 ( )		
		TTT	( )	( )	20 ( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 36282C2b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)
The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/2/16	S (1st IS)	3.981	3.981	4.006	4.006	3.76	3.76
			YY (2nd IS)	1.437	1.437	1.451	1.451	9.00	9.00
			III (3rd IS)	1.165	1.165	1.083	1.083	11.33	11.33
			(4th IS)						
			(5th IS)						
			(6th IS)						
2			(1st IS)						
			(2nd IS)						
			(3rd IS)						
			(4th IS)						
			(5th IS)						
			(6th IS)						
3			(1st IS)						
			(2nd IS)						
			(3rd IS)						
			(4th IS)						
			(5th IS)						
			(6th IS)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c2b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)
The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CCV	3/23/16	S (1st IS)	4.006	3.851	3.851	3.9	3.9
			YY (2nd IS)	1.451	1.395	1.395	3.9	3.9
			III (3rd IS)	1.083	1.158	1.158	6.9	6.9
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282 cab

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT
2nd reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	10.0	8.62	86.2	86.2	0
2-Fluorobiphenyl	↓	8.22	82.2	82.2	↓
Terphenyl-d14	↓	10.61	106	106	↓
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 36282C2b

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: SV0018SL/SC

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	1330	1330	1010	943	76	76	71	71	7	7
Pentachlorophenol										
Pyrene	↓	↓	1320	1270	99	99	95	95	4	4

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c2b

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

2/30

Example:

Sample I.D. #1, 44:

Conc. = $\frac{(37891)(40)(2)(1000)}{(1902181)(1.330)(30)(0.983)}$

=

41 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Chlorinated Pesticides

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-022	16C129-01	Soil	03/15/16
KCH067-022DL	16C129-01DL	Soil	03/15/16
KCH067-023	16C129-02	Soil	03/15/16
KCH067-023DL	16C129-02DL	Soil	03/15/16
KCH067-024	16C129-03	Soil	03/15/16
KCH067-024DL	16C129-03DL	Soil	03/15/16
KCH067-025	16C129-04	Soil	03/15/16
KCH067-025DL	16C129-04DL	Soil	03/15/16
KCH067-026**	16C129-05**	Soil	03/15/16
KCH067-026DL**	16C129-05DL**	Soil	03/15/16
KCH067-027	16C129-06	Soil	03/15/16
KCH067-027DL	16C129-06DL	Soil	03/15/16
KCH067-028	16C129-07	Soil	03/15/16
KCH067-028DL	16C129-07DL	Soil	03/15/16
KCH067-029	16C129-08	Soil	03/15/16
KCH067-029DL	16C129-08DL	Soil	03/15/16
KCH067-041	16C129-18	Water	03/15/16
KCH067-042	16C129-19	Water	03/15/16
KCH067-022MS	16C129-01MS	Soil	03/15/16
KCH067-022MSD	16C129-01MSD	Soil	03/15/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8081A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were established as required by the method for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
03/22/16 (16:15)	CCV	RTX CLP2	alpha-BHC	22	All water samples in SDG 16C129	UJ (all non-detects)	A
03/22/16 (20:18)	CCV	RTX CLP2	alpha-BHC	23	KCH067-022 KCH067-023 KCH067-024 KCH067-025 KCH067-027 KCH067-029	UJ (all non-detects)	A

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
03/23/16 (20:25)	CCV	RTX CLP2	alpha-BHC gamma-BHC	31 25	KCH067-022DL KCH067-023DL KCH067-024DL KCH067-025DL KCH067-027DL KCH067-028 KCH067-029DL	UJ (all non-detects) UJ (all non-detects)	A
03/24/16 (20:03)	CCV	RTX CLP1	gamma-Chlordane alpha-Chlordane Endosulfan I	34 24 21	KCH067-026** KCH067-026DL** KCH067-028DL	J (all detects) UJ (all non-detects)	A
03/24/16 (20:03)	CCV	RTX CLP2	Aldrin	22	KCH067-026** KCH067-026DL** KCH067-028DL	J (all detects) UJ (all non-detects)	A

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level IV validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. Surrogate recoveries (%R) were not within QC limits for several samples. No data were qualified for samples analyzed at greater than or equal to 5X dilution.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were not within the QC limits for KCH067-022MS/MSD. No data were qualified for Dieldrin since the parent sample results were greater than 4X the spiked concentration. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Compound Quantitation

All compound quantitations met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
KCH067-022	Dieldrin Chlordane (Technical)	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
KCH067-023 KCH067-026** KCH067-028	alpha-Chlordane gamma-Chlordane Chlordane (Technical)	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects)	A
KCH067-024	alpha-Chlordane gamma-Chlordane	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
KCH067-025	alpha-Chlordane gamma-Chlordane 4,4'-DDE 4,4'-DDT Chlordane (Technical)	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-027 KCH067-029	alpha-Chlordane gamma-Chlordane Dieldrin Chlordane (Technical)	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects) J (all detects)	A

The sample results for detected compounds from the two columns were within 40% relative percent difference (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
KCH067-022	gamma-Chlordane Dieldrin 4,4'-DDT Chlordane (Technical)	52 78 45 45	J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-022DL	gamma-Chlordane alpha-Chlordane	75 67	J (all detects) J (all detects)	A

Sample	Compound	RPD	Flag	A or P
KCH067-023	gamma-Chlordane Dieldrin 4,4'-DDT Chlordane (Technical)	84 50 89 63	J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-023DL	alpha-Chlordane 4,4'-DDT	52 49	J (all detects) J (all detects)	A
KCH067-024	gamma-Chlordane alpha-Chlordane 4,4'-DDT	42 50 79	J (all detects) J (all detects) J (all detects)	A
KCH067-024DL	alpha-Chlordane	73	J (all detects)	A
KCH067-025	gamma-Chlordane 4,4'-DDE 4,4'-DDT Chlordane (Technical)	90 85 83 69	J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-025DL	alpha-Chlordane Dieldrin	78 151	J (all detects) J (all detects)	A
KCH067-026**	gamma-Chlordane alpha-Chlordane Dieldrin Endrin Chlordane (Technical)	144 147 95 102 52	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-026DL**	alpha-Chlordane	51	J (all detects)	A
KCH067-027	gamma-Chlordane alpha-Chlordane 4,4'-DDT Chlordane (Technical)	82 81 81 56	J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-027DL	alpha-Chlordane	70	J (all detects)	A
KCH067-028DL	alpha-Chlordane 4,4'-DDE	74 48	J (all detects) J (all detects)	A
KCH067-029	Aldrin gamma-Chlordane 4,4'-DDE Dieldrin	57 65 57 42	J (all detects) J (all detects) J (all detects) J (all detects)	A
KCH067-029DL	alpha-Chlordane 4,4'-DDE 4,4'-DDT	76 63 56	J (all detects) J (all detects) J (all detects)	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identification

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
KCH067-022	Dieldrin Chlordane (Technical)	R R	A
KCH067-022DL	All compounds except Dieldrin Chlordane (Technical)	R	A
KCH067-023 KCH067-026** KCH067-028	alpha-Chlordane gamma-Chlordane Chlordane (Technical)	R R R	A
KCH067-023DL KCH067-026DL** KCH067-028DL	All compounds except alpha-Chlordane gamma-Chlordane Chlordane (Technical)	R	A
KCH067-024	alpha-Chlordane gamma-Chlordane	R R	A
KCH067-024DL	All compounds except alpha-Chlordane gamma-Chlordane	R	A
KCH067-025	alpha-Chlordane gamma-Chlordane 4,4'-DDE 4,4'-DDT Chlordane (Technical)	R R R R R	A

Sample	Compound	Flag	A or P
KCH067-025DL	All compounds except alpha-Chlordane gamma-Chlordane 4,4'-DDE 4,4'-DDT Chlordane (Technical)	R	A
KCH067-027 KCH067-029	alpha-Chlordane gamma-Chlordane Dieldrin Chlordane (Technical)	R R R R	A
KCH067-027DL KCH067-029DL	All compounds except alpha-Chlordane gamma-Chlordane Dieldrin Chlordane (Technical)	R	A

Due to continuing calibration %D and RPD between two columns, data were qualified as estimated in ten samples.

The quality control criteria reviewed, as discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation, all other results are considered valid and usable for all purposes.

China Lake CTO 067
Chlorinated Pesticides - Data Qualification Summary - SDG 16C129

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-041 KCH067-042 KCH067-022 KCH067-023 KCH067-024 KCH067-025 KCH067-027 KCH067-029	alpha-BHC	UJ (all non-detects)	A	Continuing calibration (%D) (5)
KCH067-028	alpha-BHC gamma-BHC	UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D) (5)
KCH067-026** KCH067-026DL** KCH067-028DL	gamma-Chlordane alpha-Chlordane Endosulfan I Aldrin	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (5)
KCH067-022	gamma-Chlordane 4,4'-DDT	J (all detects) J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-023	Dieldrin 4,4'-DDT	J (all detects) J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-024 KCH067-027	4,4'-DDT	J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-023DL KCH067-024DL KCH067-025DL KCH067-026DL** KCH067-027DL KCH067-028DL KCH067-029DL	alpha-Chlordane	J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-026**	Dieldrin Endrin	J (all detects) J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-029	Aldrin 4,4'-DDE	J (all detects) J (all detects)	A	Compound quantitation (RPD between two columns) (12)
KCH067-022	Dieldrin Chlordane (Technical)	R R	A	Overall assessment of data (22)
KCH067-022DL	All compounds except Dieldrin Chlordane (Technical)	R	A	Overall assessment of data (22)
KCH067-023 KCH067-026** KCH067-028	alpha-Chlordane gamma-Chlordane Chlordane (Technical)	R R R	A	Overall assessment of data (22)

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-023DL KCH067-026DL** KCH067-028DL	All compounds except alpha-Chlordane gamma-Chlordane Chlordane (Technical)	R	A	Overall assessment of data (22)
KCH067-024	alpha-Chlordane gamma-Chlordane	R R	A	Overall assessment of data (22)
KCH067-024DL	All compounds except alpha-Chlordane gamma-Chlordane	R	A	Overall assessment of data (22)
KCH067-025	alpha-Chlordane gamma-Chlordane 4,4'-DDE 4,4'-DDT Chlordane (Technical)	R R R R R	A	Overall assessment of data (22)
KCH067-025DL	All compounds except alpha-Chlordane gamma-Chlordane 4,4'-DDE 4,4'-DDT Chlordane (Technical)	R	A	Overall assessment of data (22)
KCH067-027 KCH067-029	alpha-Chlordane gamma-Chlordane Dieldrin Chlordane (Technical)	R R R R	A	Overall assessment of data (22)
KCH067-027DL KCH067-029DL	All compounds except alpha-Chlordane gamma-Chlordane Dieldrin Chlordane (Technical)	R	A	Overall assessment of data (22)

China Lake CTO 067
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-022	Date Analyzed: 03/22/16 20:59
Lab Samp ID: C129-01	Dilution Factor: 1
Lab File ID: RC22025A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 1.5
Calib. Ref.: RC22023A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND UJ(5)	2.0	0.20	0.41
GAMMA-BHC (LINDANE)	(ND)	ND	2.0	0.20	0.41
BETA-BHC	(ND)	ND	2.0	0.20	0.41
HEPTACHLOR	(ND)	ND	2.0	0.20	0.41
DELTA-BHC	(ND)	ND	2.0	0.27	0.41
ALDRIN	(ND)	ND	2.0	0.20	0.41
HEPTACHLOR EPOXIDE	(ND)	ND	2.0	0.20	0.41
GAMMA-CHLORDANE	9.4	(16) J(12)	2.0	0.20	0.41
ALPHA-CHLORDANE	(17)	13	2.0	0.20	0.41
ENDOSULFAN I	(ND)	ND	2.0	0.20	0.41
4,4'-DDE	7.9	(11)	2.0	0.20	0.41
DIELDRIN	140E	(320E) R(22)	2.0	0.20	0.41
ENDRIN	(ND)	0.56J	2.0	0.20	0.41
4,4'-DDD	(ND)	0.71J	2.0	0.20	0.41
ENDOSULFAN II	0.26J	(ND)	2.0	0.20	0.41
4,4'-DDT	6.1	(9.6) J(12)	2.0	0.20	0.41
ENDRIN ALDEHYDE	(ND)	ND	2.0	0.36	0.41
ENDOSULFAN SULFATE	(ND)	0.35J	2.0	0.20	0.41
ENDRIN KETONE	(ND)	ND	2.0	0.20	0.41
METHOXYCHLOR	(ND)	ND	10	2.0	4.1
TOXAPHENE	(ND)	ND	51	5.1	10
TECHNICAL CHLORDANE	380	(600E) R(22)	51	10	20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	13.12 (14.04)	13.53	96.9 (104)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

SG 5/17/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-022DL	Date Analyzed: 03/23/16 20:45
Lab Samp ID: C129-011	Dilution Factor: 10
Lab File ID: RC22058A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 1.5
Calib. Ref.: RC22057A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	20	2.0	4.1
GAMMA-BHC (LINDANE)	(ND)	ND	20	2.0	4.1
BETA-BHC	(ND)	ND	20	2.0	4.1
HEPTACHLOR	(ND)	ND	20	2.0	4.1
DELTA-BHC	(ND)	ND	20	2.7	4.1
ALDRIN	(ND)	ND	20	2.0	4.1
HEPTACHLOR EPOXIDE	(ND)	ND	20	2.0	4.1
GAMMA-CHLORDANE	9.6J	(21)	20	2.0	4.1
ALPHA-CHLORDANE	32	(16J)	20	2.0	4.1
ENDOSULFAN I	(ND)	ND	20	2.0	4.1
4,4'-DDE	(14J)	13J	20	2.0	4.1
DIELDRIN	340	(440)	20	2.0	4.1
ENDRIN	(ND)	ND	20	2.0	4.1
4,4'-DDD	(ND)	3.1J	20	2.0	4.1
ENDOSULFAN II	(ND)	ND	20	2.0	4.1
4,4'-DDT	(13J)	12J	20	2.0	4.1
ENDRIN ALDEHYDE	(ND)	ND	20	3.6	4.1
ENDOSULFAN SULFATE	(ND)	ND	20	2.0	4.1
ENDRIN KETONE	(ND)	ND	20	2.0	4.1
METHOXYCHLOR	(ND)	ND	100	20	41
TOXAPHENE	(ND)	ND	510	51	100
TECHNICAL CHLORDANE	(930)	930	510	100	200

R(22)

R(22)

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	14.05 (15.43)	13.53	104 (114)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

4/25/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-023	Date Analyzed: 03/22/16 22:01
Lab Samp ID: C129-02	Dilution Factor: 1
Lab File ID: RC22028A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 4.3
Calib. Ref.: RC22023A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND UJ(5)	2.1	0.21	0.42
GAMMA-BHC (LINDANE)	(ND)	14	2.1	0.21	0.42
BETA-BHC	(ND)	ND	2.1	0.21	0.42
HEPTACHLOR	(ND)	ND	2.1	0.21	0.42
DELTA-BHC	(ND)	3.8	2.1	0.28	0.42
ALDRIN	2.0J	(2.2)	2.1	0.21	0.42
HEPTACHLOR EPOXIDE	(ND)	ND	2.1	0.21	0.42
GAMMA-CHLORDANE	130E	(320E) R(22)	2.1	0.21	0.42
ALPHA-CHLORDANE	190E	(270E) ↓	2.1	0.21	0.42
ENDOSULFAN I	3.2	(ND)	2.1	0.21	0.42
4,4'-DDE	(19)	18	2.1	0.21	0.42
DIELDRIN	(52)	87E J(12)	2.1	0.21	0.42
ENDRIN	(ND)	12	2.1	0.21	0.42
4,4'-DDD	(ND)	ND	2.1	0.21	0.42
ENDOSULFAN II	(ND)	ND	2.1	0.21	0.42
4,4'-DDT	8.5	(22) J(12)	2.1	0.21	0.42
ENDRIN ALDEHYDE	(ND)	ND	2.1	0.37	0.42
ENDOSULFAN SULFATE	(ND)	1.9J	2.1	0.21	0.42
ENDRIN KETONE	(ND)	ND	2.1	0.21	0.42
METHOXYCHLOR	(ND)	ND	10	2.1	4.2
TOXAPHENE	(ND)	ND	52	5.2	10
TECHNICAL CHLORDANE	1400E	(2700E) R(22)	52	10	21

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	12.11 (13.33)	13.93	87.0 (95.7)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

SC 5/17/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-023DL	Date Analyzed: 03/23/16 21:46
Lab Samp ID: C129-02I	Dilution Factor: 20
Lab File ID: RC22061A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 4.3
Calib. Ref.: RC22057A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND R(22)	42	4.2	8.4
GAMMA-BHC (LINDANE)	(ND)	ND	42	4.2	8.4
BETA-BHC	(ND)	ND	42	4.2	8.4
HEPTACHLOR	(ND)	ND	42	4.2	8.4
DELTA-BHC	(ND)	5.9J	42	5.6	8.4
ALDRIN	(ND)	ND	42	4.2	8.4
HEPTACHLOR EPOXIDE	(ND)	ND	42	4.2	8.4
GAMMA-CHLORDANE	330	(460)	42	4.2	8.4
ALPHA-CHLORDANE	680E	(400) J(12)	42	4.2	8.4
ENDOSULFAN I	(ND)	ND R(22)	42	4.2	8.4
4,4'-DDE	(31J)	25J	42	4.2	8.4
DIELDRIN	100	(130)	42	4.2	8.4
ENDRIN	(ND)	ND	42	4.2	8.4
4,4'-DDD	(ND)	ND	42	4.2	8.4
ENDOSULFAN II	(ND)	ND	42	4.2	8.4
4,4'-DDT	20J	(33J)	42	4.2	8.4
ENDRIN ALDEHYDE	(ND)	ND	42	7.3	8.4
ENDOSULFAN SULFATE	(ND)	ND	42	4.2	8.4
ENDRIN KETONE	(ND)	ND	42	4.2	8.4
METHOXYCHLOR	(ND)	ND	210	42	84
TOXAPHENE	(ND)	ND	1000	100	210
TECHNICAL CHLORDANE	3400	(4100)	1000	210	420

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	16.35 (17.23)	13.93	117 (124)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

8605171L

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-024	Date Analyzed: 03/22/16 22:21
Lab Samp ID: C129-03	Dilution Factor: 1
Lab File ID: RC22029A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 2.1
Calib. Ref.: RC22023A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	2.0	0.20	0.41
GAMMA-BHC (LINDANE)	(ND)	ND	2.0	0.20	0.41
BETA-BHC	(ND)	ND	2.0	0.20	0.41
HEPTACHLOR	(ND)	ND	2.0	0.20	0.41
DELTA-BHC	(ND)	ND	2.0	0.28	0.41
ALDRIN	(0.26J)	0.24J	2.0	0.20	0.41
HEPTACHLOR EPOXIDE	(ND)	ND	2.0	0.20	0.41
GAMMA-CHLORDANE	27E	(45E)	2.0	0.20	0.41
ALPHA-CHLORDANE	(55E)	36E	2.0	0.20	0.41
ENDOSULFAN I	0.49J	(ND)	2.0	0.20	0.41
4,4'-DDE	9.0	(10)	2.0	0.20	0.41
DIELDRIN	1.4J	(ND)	2.0	0.20	0.41
ENDRIN	(ND)	0.84J	2.0	0.20	0.41
4,4'-DDD	(ND)	ND	2.0	0.20	0.41
ENDOSULFAN II	(ND)	ND	2.0	0.20	0.41
4,4'-DDT	1.0J	(2.3)	2.0	0.20	0.41
ENDRIN ALDEHYDE	(ND)	ND	2.0	0.36	0.41
ENDOSULFAN SULFATE	(ND)	ND	2.0	0.20	0.41
ENDRIN KETONE	(ND)	ND	2.0	0.20	0.41
METHOXYCHLOR	(ND)	ND	10	2.0	4.1
TOXAPHENE	(ND)	ND	51	5.1	10
TECHNICAL CHLORDANE	470	(500)	51	10	20

SURROGATE PARAMETERS	RESULTS		SPK_AMT	% RECOVERY		QC LIMIT
TETRACHLORO-M-XYLENE	12.70	(15.28)	13.62	93.2	(112)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

4/25/16

METHOD SW3550B/8081A
PESTICIDES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 13:45
Sample ID	: KCH067-024DL	Date Analyzed:	03/23/16 22:06
Lab Samp ID	: C129-03I	Dilution Factor:	5
Lab File ID	: RC22062A	Matrix	: SOIL
Ext Btch ID	: CPC019S	% Moisture	: 2.1
Calib. Ref.	: RC22057A	Instrument ID	: F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND R(22)	10	1.0	2.0
GAMMA-BHC (LINDANE)	(ND)	ND	10	1.0	2.0
BETA-BHC	(ND)	ND	10	1.0	2.0
HEPTACHLOR	(ND)	ND	10	1.0	2.0
DELTA-BHC	(ND)	ND	10	1.4	2.0
ALDRIN	(ND)	ND	10	1.0	2.0
HEPTACHLOR EPOXIDE	(ND)	ND	10	1.0	2.0
GAMMA-CHLORDANE	39	(53)	10	1.0	2.0
ALPHA-CHLORDANE	(86)	40 J R(32) (13)	10	1.0	2.0
ENDOSULFAN I	(ND)	ND	10	1.0	2.0
4,4'-DDE	(15)	12	10	1.0	2.0
DIELDRIN	(ND)	ND	10	1.0	2.0
ENDRIN	(ND)	ND	10	1.0	2.0
4,4'-DDD	(ND)	ND	10	1.0	2.0
ENDOSULFAN II	(ND)	ND	10	1.0	2.0
4,4'-DDT	(ND)	2.8J	10	1.0	2.0
ENDRIN ALDEHYDE	(ND)	ND	10	1.8	2.0
ENDOSULFAN SULFATE	(ND)	ND	10	1.0	2.0
ENDRIN KETONE	(ND)	ND	10	1.0	2.0
METHOXYCHLOR	(ND)	ND	51	10	20
TOXAPHENE	(ND)	ND	260	26	51
TECHNICAL CHLORDANE	550	(580)	260	51	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	16.11 | (16.26)	13.62	118 | (119)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

8/25/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-025	Date Analyzed: 03/22/16 22:42
Lab Samp ID: C129-04	Dilution Factor: 1
Lab File ID: RC22030A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 4.3
Calib. Ref.: RC22023A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND UJ(S)	2.1	0.21	0.42
GAMMA-BHC (LINDANE)	(ND)	32E	2.1	0.21	0.42
BETA-BHC	24	(ND)	2.1	0.21	0.42
HEPTACHLOR	(ND)	1.6J	2.1	0.21	0.42
DELTA-BHC	(ND)	1.1J	2.1	0.28	0.42
ALDRIN	1.2J	(ND)	2.1	0.21	0.42
HEPTACHLOR EPOXIDE	17	(ND)	2.1	0.21	0.42
GAMMA-CHLORDANE	140E	(370E) R(22)	2.1	0.21	0.42
ALPHA-CHLORDANE	210E	(300E) ↓	2.1	0.21	0.42
ENDOSULFAN I	5.0	(ND)	2.1	0.21	0.42
4,4'-DDE	170E	(420E) R(22)	2.1	0.21	0.42
DIELDRIN	42	(46)	2.1	0.21	0.42
ENDRIN	(ND)	10	2.1	0.21	0.42
4,4'-DDD	(ND)	ND	2.1	0.21	0.42
ENDOSULFAN II	(ND)	ND	2.1	0.21	0.42
4,4'-DDT	220E	(530E) R(22)	2.1	0.21	0.42
ENDRIN ALDEHYDE	(ND)	ND	2.1	0.37	0.42
ENDOSULFAN SULFATE	(ND)	2.2	2.1	0.21	0.42
ENDRIN KETONE	(ND)	ND	2.1	0.21	0.42
METHOXYCHLOR	(ND)	ND	10	2.1	4.2
TOXAPHENE	(ND)	ND	52	5.2	10
TECHNICAL CHLORDANE	2100E	(4300E) R(22)	52	10	21

SURROGATE PARAMETERS	RESULTS		SPK_AMT	% RECOVERY		QC LIMIT
TETRACHLORO-M-XYLENE	(13.73)	13.19	13.93	(98.5)	94.7	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

SG 05/17/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-025DL	Date Analyzed: 03/23/16 22:26
Lab Samp ID: C129-04I	Dilution Factor: 40
Lab File ID: RC22063A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 4.3
Calib. Ref.: RC22057A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND) | ND	R(22)	84	8.4	17
GAMMA-BHC (LINDANE)	(ND) | ND		84	8.4	17
BETA-BHC	(ND) | ND		84	8.4	17
HEPTACHLOR	(ND) | ND		84	8.4	17
DELTA-BHC	(ND) | ND		84	11	17
ALDRIN	(ND) | ND		84	8.4	17
HEPTACHLOR EPOXIDE	(ND) | ND		84	8.4	17
GAMMA-CHLORDANE	360 | (460)		84	8.4	17
ALPHA-CHLORDANE	(840) | 370	J(12)	84	8.4	17
ENDOSULFAN I	(ND) | ND	R(22)	84	8.4	17
4,4'-DDE	520 | (540)		84	8.4	17
DIELDRIN	(11J) | 79J	R(22)	84	8.4	17
ENDRIN	(ND) | ND		84	8.4	17
4,4'-DDD	(ND) | ND		84	8.4	17
ENDOSULFAN II	(ND) | ND		84	8.4	17
4,4'-DDT	540 | (570)		84	8.4	17
ENDRIN ALDEHYDE	(ND) | ND	R(22)	84	15	17
ENDOSULFAN SULFATE	(ND) | ND		84	8.4	17
ENDRIN KETONE	(ND) | ND		84	8.4	17
METHOXYCHLOR	(ND) | ND		420	84	170
TOXAPHENE	(ND) | ND		2100	210	420
TECHNICAL CHLORDANE	(6000) | 5800		2100	420	840

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	14.47 | (17.42)	13.93	104 | (125)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

8/25/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-026	Date Analyzed: 03/24/16 20:44
Lab Samp ID: C129-05K	Dilution Factor: 20
Lab File ID: RC22087A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 3.9
Calib. Ref.: RC22085A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	42	4.2	8.3
GAMMA-BHC (LINDANE)	(ND)	ND	42	4.2	8.3
BETA-BHC	(ND)	ND	42	4.2	8.3
HEPTACHLOR	(ND)	270	42	4.2	8.3
DELTA-BHC	22J	(ND)	42	5.6	8.3
ALDRIN	270	(ND) UJ(5)	42	4.2	8.3
HEPTACHLOR EPOXIDE	2600E	(ND)	42	4.2	8.3
GAMMA-CHLORDANE	2300E	(14000E) R(22)	42	4.2	8.3
ALPHA-CHLORDANE	2000E	(13000E) ↓	42	4.2	8.3
ENDOSULFAN I	540	(ND) UJ(5)	42	4.2	8.3
4,4'-DDE	2400E	(ND)	42	4.2	8.3
DIELDRIN	1100	(390) J(12)	42	4.2	8.3
ENDRIN	(150)	460 ↓	42	4.2	8.3
4,4'-DDD	(ND)	ND	42	4.2	8.3
ENDOSULFAN II	390	(ND)	42	4.2	8.3
4,4'-DDT	(270)	240	42	4.2	8.3
ENDRIN ALDEHYDE	(ND)	ND	42	7.3	8.3
ENDOSULFAN SULFATE	(ND)	ND	42	4.2	8.3
ENDRIN KETONE	(ND)	ND	42	4.2	8.3
METHOXYCHLOR	(ND)	ND	210	42	83
TOXAPHENE	(ND)	ND	1000	100	210
TECHNICAL CHLORDANE	76000E	(130000E) R(22)	1000	210	420

SURROGATE PARAMETERS	RESULTS		SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	12.30	(13.52)	13.87	88.7 (97.5)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

4/25/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-026DL	Date Analyzed: 03/24/16 20:23
Lab Samp ID: C129-05J	Dilution Factor: 2000
Lab File ID: RC22086A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 3.9
Calib. Ref.: RC22085A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	4200	420	830
GAMMA-BHC (LINDANE)	(ND)	ND	4200	420	830
BETA-BHC	(ND)	ND	4200	420	830
HEPTACHLOR	(ND)	ND	4200	420	830
DELTA-BHC	(ND)	ND	4200	560	830
ALDRIN	(ND)	ND	4200	420	830
HEPTACHLOR EPOXIDE	(ND)	ND	4200	420	830
GAMMA-CHLORDANE	20000	(24000)	4200	420	830
ALPHA-CHLORDANE	(37000)	22000	4200	420	830
ENDOSULFAN I	(ND)	ND	4200	420	830
4,4'-DDE	960J	(ND)	4200	420	830
DIELDRIN	1000J	(ND)	4200	420	830
ENDRIN	(ND)	600J	4200	420	830
4,4'-DDD	(ND)	ND	4200	420	830
ENDOSULFAN II	(ND)	ND	4200	420	830
4,4'-DDT	(ND)	ND	4200	420	830
ENDRIN ALDEHYDE	(ND)	ND	4200	730	830
ENDOSULFAN SULFATE	(ND)	ND	4200	420	830
ENDRIN KETONE	(ND)	ND	4200	420	830
METHOXYCHLOR	(ND)	ND	21000	4200	8300
TOXAPHENE	(ND)	ND	100000	10000	21000
TECHNICAL CHLORDANE	(200000)	200000	100000	21000	42000

R(22)
J(5)
(12)
R(22)

SURROGATE PARAMETERS	RESULTS		SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	(ND)	ND	13.87 (0.000000*)	0.000000*	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

5/5/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-027	Date Analyzed: 03/22/16 23:23
Lab Samp ID: C129-06	Dilution Factor: 1
Lab File ID: RC22032A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 5.6
Calib. Ref.: RC22023A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	2.1	0.21	0.42
GAMMA-BHC (LINDANE)	(ND)	ND	2.1	0.21	0.42
BETA-BHC	(ND)	ND	2.1	0.21	0.42
HEPTACHLOR	(ND)	ND	2.1	0.21	0.42
DELTA-BHC	(ND)	9.8	2.1	0.29	0.42
ALDRIN	(ND)	1.6J	2.1	0.21	0.42
HEPTACHLOR EPOXIDE	34E	(ND)	2.1	0.21	0.42
GAMMA-CHLORDANE	180E	(430E)	2.1	0.21	0.42
ALPHA-CHLORDANE	170E	(400E)	2.1	0.21	0.42
ENDOSULFAN I	(ND)	10	2.1	0.21	0.42
4,4'-DDE	(ND)	ND	2.1	0.21	0.42
DIELDRIN	110E	(160E)	2.1	0.21	0.42
ENDRIN	(ND)	ND	2.1	0.21	0.42
4,4'-DDD	(ND)	ND	2.1	0.21	0.42
ENDOSULFAN II	(ND)	ND	2.1	0.21	0.42
4,4'-DDT	5.1	(12)	2.1	0.21	0.42
ENDRIN ALDEHYDE	(ND)	3.1	2.1	0.37	0.42
ENDOSULFAN SULFATE	(ND)	1.8J	2.1	0.21	0.42
ENDRIN KETONE	1.2J	(ND)	2.1	0.21	0.42
METHOXYCHLOR	(ND)	ND	11	2.1	4.2
TOXAPHENE	(ND)	ND	53	5.3	11
TECHNICAL CHLORDANE	2300E	(4100E)	53	11	21

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	15.83 | (16.48)	14.12	112 | (117)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-027DL	Date Analyzed: 03/23/16 23:07
Lab Samp ID: C129-06I	Dilution Factor: 40
Lab File ID: RC22065A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 5.6
Calib. Ref.: RC22057A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	85	8.5	17
GAMMA-BHC (LINDANE)	(ND)	ND	85	8.5	17
BETA-BHC	(ND)	ND	85	8.5	17
HEPTACHLOR	(ND)	ND	85	8.5	17
DELTA-BHC	(ND)	14J	85	11	17
ALDRIN	(ND)	ND	85	8.5	17
HEPTACHLOR EPOXIDE	50J	(ND)	85	8.5	17
GAMMA-CHLORDANE	550	(680)	85	8.5	17
ALPHA-CHLORDANE	1200E	(580)	85	8.5	17
ENDOSULFAN I	(ND)	17J	85	8.5	17
4,4'-DDE	15J	(ND)	85	8.5	17
DIELDRIN	(200)	190	85	8.5	17
ENDRIN	(ND)	ND	85	8.5	17
4,4'-DDD	(ND)	ND	85	8.5	17
ENDOSULFAN II	(ND)	ND	85	8.5	17
4,4'-DDT	(ND)	13J	85	8.5	17
ENDRIN ALDEHYDE	(ND)	ND	85	15	17
ENDOSULFAN SULFATE	(ND)	ND	85	8.5	17
ENDRIN KETONE	(ND)	ND	85	8.5	17
METHOXYCHLOR	(ND)	ND	420	85	170
TOXAPHENE	(ND)	ND	2100	210	420
TECHNICAL CHLORDANE	6000	(6000)	2100	420	850

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	14.83 (16.04)	14.12	105 (114)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-028	Date Analyzed: 03/23/16 23:28
Lab Samp ID: C129-07I	Dilution Factor: 20
Lab File ID: RC22066A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 2.3
Calib. Ref.: RC22057A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND UJ(S)	41	4.1	8.2
GAMMA-BHC (LINDANE)	(ND)	ND	41	4.1	8.2
BETA-BHC	(ND)	ND	41	4.1	8.2
HEPTACHLOR	(ND)	ND	41	4.1	8.2
DELTA-BHC	(ND)	ND	41	5.5	8.2
ALDRIN	(ND)	ND	41	4.1	8.2
HEPTACHLOR EPOXIDE	(ND)	ND	41	4.1	8.2
GAMMA-CHLORDANE	1700E	(2300E) R(>>)	41	4.1	8.2
ALPHA-CHLORDANE	(3000E)	2000E	41	4.1	8.2
ENDOSULFAN I	(ND)	70	41	4.1	8.2
4,4'-DDE	(300)	210	41	4.1	8.2
DIELDRIN	(290)	290	41	4.1	8.2
ENDRIN	(ND)	ND	41	4.1	8.2
4,4'-DDD	(ND)	ND	41	4.1	8.2
ENDOSULFAN II	(ND)	ND	41	4.1	8.2
4,4'-DDT	84	(120)	41	4.1	8.2
ENDRIN ALDEHYDE	(ND)	ND	41	7.2	8.2
ENDOSULFAN SULFATE	(ND)	ND	41	4.1	8.2
ENDRIN KETONE	(ND)	ND	41	4.1	8.2
METHOXYCHLOR	(ND)	ND	200	41	82
TOXAPHENE	(ND)	ND	1000	100	200
TECHNICAL CHLORDANE	19000E	(22000E) R(>>)	1000	200	410

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	14.75 | (15.21)	13.64	108 | (111)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

Scott 7/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-028DL	Date Analyzed: 03/24/16 21:24
Lab Samp ID: C129-07J	Dilution Factor: 200
Lab File ID: RC22089A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 2.3
Calib. Ref.: RC22085A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	410	41	82
GAMMA-BHC (LINDANE)	(ND)	ND	410	41	82
BETA-BHC	(ND)	ND	410	41	82
HEPTACHLOR	45J	(ND)	410	41	82
DELTA-BHC	(ND)	ND	410	55	82
ALDRIN	(ND)	ND	410	41	82
HEPTACHLOR EPOXIDE	(ND)	ND	410	41	82
GAMMA-CHLORDANE	1700	(2000)	410	41	82
ALPHA-CHLORDANE	(3900)	1800	410	41	82
ENDOSULFAN I	(ND)	ND	410	41	82
4,4'-DDE	(260J)	160J	410	41	82
DIELDRIN	(290J)	260J	410	41	82
ENDRIN	(ND)	ND	410	41	82
4,4'-DDD	(ND)	ND	410	41	82
ENDOSULFAN II	(ND)	ND	410	41	82
4,4'-DDT	71J	(90J)	410	41	82
ENDRIN ALDEHYDE	(ND)	ND	410	72	82
ENDOSULFAN SULFATE	(ND)	ND	410	41	82
ENDRIN KETONE	(ND)	ND	410	41	82
METHOXYCHLOR	(ND)	ND	2000	410	820
TOXAPHENE	(ND)	ND	10000	1000	2000
TECHNICAL CHLORDANE	(23000)	20000	10000	2000	4100

SURROGATE PARAMETERS	RESULTS		SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	(ND)	ND	13.64	(0.000000*) | 0.000000*	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

3/17/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-029	Date Analyzed: 03/23/16 00:03
Lab Samp ID: C129-08	Dilution Factor: 1
Lab File ID: RC22034A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 1.4
Calib. Ref.: RC22023A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND UJ(5)	2.0	0.20	0.41
GAMMA-BHC (LINDANE)	(ND)	3.9	2.0	0.20	0.41
BETA-BHC	2.9	(ND)	2.0	0.20	0.41
HEPTACHLOR	(ND)	0.88J	2.0	0.20	0.41
DELTA-BHC	(ND)	0.33J	2.0	0.27	0.41
ALDRIN	(0.63J)	0.35J J(12)	2.0	0.20	0.41
HEPTACHLOR EPOXIDE	(ND)	ND	2.0	0.20	0.41
GAMMA-CHLORDANE	97E	(190E) R(22)	2.0	0.20	0.41
ALPHA-CHLORDANE	(200E)	170E ↓	2.0	0.20	0.41
ENDOSULFAN I	(ND)	ND	2.0	0.20	0.41
4,4'-DDE	10	(18) J(12)	2.0	0.20	0.41
DIELDRIN	98E	(150E) R(22)	2.0	0.20	0.41
ENDRIN	(ND)	5.3	2.0	0.20	0.41
4,4'-DDD	(ND)	ND	2.0	0.20	0.41
ENDOSULFAN II	(ND)	ND	2.0	0.20	0.41
4,4'-DDT	6.4	(9.5)	2.0	0.20	0.41
ENDRIN ALDEHYDE	(ND)	ND	2.0	0.35	0.41
ENDOSULFAN SULFATE	(ND)	ND	2.0	0.20	0.41
ENDRIN KETONE	(ND)	ND	2.0	0.20	0.41
METHOXYCHLOR	(ND)	ND	10	2.0	4.1
TOXAPHENE	(ND)	ND	51	5.1	10
TECHNICAL CHLORDANE	1500E	(1900E) R(22)	51	10	20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	13.60 (13.63)	13.52	101 (101)	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

4/5/16

METHOD SW3550B/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/21/16 13:45
Sample ID: KCH067-029DL	Date Analyzed: 03/23/16 23:48
Lab Samp ID: C129-08I	Dilution Factor: 20
Lab File ID: RC22067A	Matrix : SOIL
Ext Btch ID: CPC019S	% Moisture : 1.4
Calib. Ref.: RC22057A	Instrument ID : F9

PARAMETERS	RESULTS (ug/kg)		LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
ALPHA-BHC	(ND)	ND	41	4.1	8.1
GAMMA-BHC (LINDANE)	(ND)	ND	41	4.1	8.1
BETA-BHC	(ND)	ND	41	4.1	8.1
HEPTACHLOR	(ND)	ND	41	4.1	8.1
DELTA-BHC	(ND)	ND	41	5.5	8.1
ALDRIN	(ND)	ND	41	4.1	8.1
HEPTACHLOR EPOXIDE	(ND)	ND	41	4.1	8.1
GAMMA-CHLORDANE	200	(230)	41	4.1	8.1
ALPHA-CHLORDANE	(470)	210	41	4.1	8.1
ENDOSULFAN I	(ND)	8.2J	41	4.1	8.1
4,4'-DDE	(25J)	13J	41	4.1	8.1
DIELDRIN	(170)	170	41	4.1	8.1
ENDRIN	(ND)	ND	41	4.1	8.1
4,4'-DDD	(ND)	ND	41	4.1	8.1
ENDOSULFAN II	(ND)	ND	41	4.1	8.1
4,4'-DDT	6.2J	(11J)	41	4.1	8.1
ENDRIN ALDEHYDE	(ND)	ND	41	7.1	8.1
ENDOSULFAN SULFATE	(ND)	ND	41	4.1	8.1
ENDRIN KETONE	(ND)	ND	41	4.1	8.1
METHOXYCHLOR	(ND)	ND	200	41	81
TOXAPHENE	(ND)	ND	1000	100	200
TECHNICAL CHLORDANE	(2400)	2400	1000	200	410

SURROGATE PARAMETERS	RESULTS		SPK_AMT	% RECOVERY		QC LIMIT
TETRACHLORO-M-XYLENE	(14.85)	18.19	13.52	(110)	135*	42-129

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

METHOD SW3520C/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/17/16 16:30
Sample ID: KCH067-041	Date Analyzed: 03/22/16 17:36
Lab Samp ID: C129-18	Dilution Factor: 1.1
Lab File ID: RC22015A	Matrix : WATER
Ext Btch ID: CPC014W	% Moisture : NA
Calib. Ref.: RC22011A	Instrument ID : F9

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
ALPHA-BHC	(ND) | ND UJ(S)	0.11	0.0055	0.011
GAMMA-BHC (LINDANE)	(ND) | ND	0.11	0.0055	0.011
BETA-BHC	(ND) | 0.22	0.11	0.0077	0.011
HEPTACHLOR	(ND) | ND	0.11	0.0077	0.011
DELTA-BHC	(ND) | ND	0.11	0.0077	0.011
ALDRIN	(ND) | 0.044J	0.11	0.0055	0.011
HEPTACHLOR EPOXIDE	(ND) | ND	0.11	0.0055	0.011
GAMMA-CHLORDANE	(ND) | ND	0.11	0.0055	0.011
ALPHA-CHLORDANE	(ND) | ND	0.11	0.0055	0.011
ENDOSULFAN I	(ND) | ND	0.11	0.0088	0.011
4,4'-DDE	(ND) | ND	0.11	0.0055	0.011
DIELDRIN	(ND) | ND	0.11	0.0055	0.011
ENDRIN	(ND) | ND	0.11	0.0088	0.011
4,4'-DDD	(ND) | ND	0.11	0.0055	0.011
ENDOSULFAN II	(ND) | ND	0.11	0.0055	0.011
4,4'-DDT	(ND) | ND	0.11	0.0055	0.011
ENDRIN ALDEHYDE	(ND) | ND	0.11	0.0055	0.011
ENDOSULFAN SULFATE	(ND) | ND	0.11	0.0055	0.011
ENDRIN KETONE	(ND) | ND	0.11	0.0055	0.011
METHOXYCHLOR	(ND) | ND	1.1	0.055	0.11
TOXAPHENE	(ND) | ND	2.2	0.28	0.55
TECHNICAL CHLORDANE	(ND) | ND	1.1	0.28	0.55

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.4331 | (0.4827)	0.4400	98.4 | (110)	44-124

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

SDG 17/16

METHOD SW3520C/8081A
PESTICIDES

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/17/16 16:30
Sample ID: KCH067-042	Date Analyzed: 03/22/16 17:56
Lab Samp ID: C129-19	Dilution Factor: 1.14
Lab File ID: RC22016A	Matrix : WATER
Ext Btch ID: CPC014W	% Moisture : NA
Calib. Ref.: RC22011A	Instrument ID : F9

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
ALPHA-BHC	(ND) | ND UJ(5)	0.11	0.0057	0.011
GAMMA-BHC (LINDANE)	(ND) | ND	0.11	0.0057	0.011
BETA-BHC	(ND) | ND	0.11	0.0080	0.011
HEPTACHLOR	(ND) | ND	0.11	0.0080	0.011
DELTA-BHC	(ND) | ND	0.11	0.0080	0.011
ALDRIN	(ND) | 0.028J	0.11	0.0057	0.011
HEPTACHLOR EPOXIDE	(ND) | ND	0.11	0.0057	0.011
GAMMA-CHLORDANE	(ND) | ND	0.11	0.0057	0.011
ALPHA-CHLORDANE	(ND) | ND	0.11	0.0057	0.011
ENDOSULFAN I	(ND) | ND	0.11	0.0091	0.011
4,4'-DDE	(ND) | ND	0.11	0.0057	0.011
DIELDRIN	(ND) | ND	0.11	0.0057	0.011
ENDRIN	(ND) | ND	0.11	0.0091	0.011
4,4'-DDD	(ND) | ND	0.11	0.0057	0.011
ENDOSULFAN II	(ND) | ND	0.11	0.0057	0.011
4,4'-DDT	(ND) | ND	0.11	0.0057	0.011
ENDRIN ALDEHYDE	(ND) | ND	0.11	0.0057	0.011
ENDOSULFAN SULFATE	(ND) | ND	0.11	0.0057	0.011
ENDRIN KETONE	(ND) | ND	0.11	0.0057	0.011
METHOXYCHLOR	(ND) | ND	1.1	0.057	0.11
TOXAPHENE	(ND) | ND	2.3	0.28	0.57
TECHNICAL CHLORDANE	(ND) | ND	1.1	0.28	0.57

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.4365 | (0.4695)	0.4560	95.7 | (103)	44-124

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

3/25/16

LDC #: 36282C3a
SDG #: 16C129
Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard/Full

Date: 5/10/16
Page: 1 of 2
Reviewer: F
2nd Reviewer: R

METHOD: GC Chlorinated Pesticides (EPA SW846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC Instrument Performance Check	A	
III.	Initial calibration/ICV	A / A	%RSD/ICV ≤20
IV.	Continuing calibration	SW	CCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB= 17 SB=18'
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Compound quantitation/RL/LOQ/LODs	SW	Not reviewed for Standard validation.
XII.	Target compound identification	A	Not reviewed for Standard validation.
XIII.	System Performance	A	Not reviewed for Standard validation.
XIV.	Overall assessment of data	SW	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-022	16C129-01	Soil	03/15/16
2	KCH067-022DL	16C129-01DL	Soil	03/15/16
3	KCH067-023	16C129-02	Soil	03/15/16
4	KCH067-023DL	16C129-02DL	Soil	03/15/16
5	KCH067-024	16C129-03	Soil	03/15/16
6	KCH067-024DL	16C129-03DL	Soil	03/15/16
7	KCH067-025	16C129-04	Soil	03/15/16
8	KCH067-025DL	16C129-04DL	Soil	03/15/16
9	KCH067-026**	16C129-05**	Soil	03/15/16
10	KCH067-026DL**	16C129-05DL**	Soil	03/15/16
11	KCH067-027	16C129-06	Soil	03/15/16
12	KCH067-027DL	16C129-06DL	Soil	03/15/16
13	KCH067-028	16C129-07	Soil	03/15/16
14	KCH067-028DL	16C129-07DL	Soil	03/15/16
15	KCH067-029	16C129-08	Soil	03/15/16

LDC #: 36282C3a

SDG #: 16C129

Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET

Standard/Full

Date: 5/10/16

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW846 Method 8081A)

	Client ID	Lab ID	Matrix	Date
16	KCH067-029DL	16C129-08DL	Soil	03/15/16
17	KCH067-041	16C129-18	Water	03/15/16
18	KCH067-042	16C129-19	Water	03/15/16
19	KCH067-022MS	16C129-01MS	Soil	03/15/16
20	KCH067-022MSD	16C129-01MSD	Soil	03/15/16
21				
22				
23				
24				
25				

Notes:

-	MBLKIW						
-	MB LK1S						

LDC #: 36282C30a

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: EJ
2nd Reviewer: [illegible]

Method: Pesticides (EPA SW 846 Method 8081)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and at beginning of each 12-hour shift?	✓			
Were endrin and 4,4'-DDT breakdowns ≤ 15% for individual breakdown in the Evaluation mix standards?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IIIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?		✓		
Were all the retention times within the acceptance windows?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes/Internal Standards				
Were all surrogate percent recovery (%R) within the QC limits?		✓		

LDC #: 36282C3a

VALIDATION FINDINGS CHECKLIST

Reviewer: FT
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recovery (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
Were internal standard area counts within ± 50% of the average area calculated during calibration?		FT A	✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
Were relative percent difference (RPD) of the results between two columns ≤ 40%?	✓	✓		
XII. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Arochlor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC #: 36282C3a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___%R
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / %R validation criteria of ≤20.0% / 80-120%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

code = 5

#	Date	Standard ID	Detector/ Column	Compound	%D (Limit ≤ 20.0)	RT (limit)	Associated Samples	Qualifications
	3/22/16 16:15	CCV	RTX CLP2	A	22		All Water + MBLKS	J dil/UJ/A (ND)
	3/22/16 20:18	CCV	RTX CLP2	A	23		1, 3, 5, 7, 11, 15 19/20	J/UJ/A (ND)
	3/23/16 20:25	CCV	RTX CLP2	A	31		2, 4, 6, 8, 12, 13, 16	J/UJ/A (ND)
				D	25			
	3/24/16 20:03	CCV	RTX CLP1	T	34		9, 10, 14	J/UJ/A (ND+RJT)
				S	24			
				H	21			
			RTX CLP2	F	22			

LDC #: 36282 c3a

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ✓ **GC** __ **HPLC**

Are surrogates required by the method? Yes____ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	10, 14	surrogate	was diluted out	( )	no qual 75x DL
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
	16	✓ RTX CLP2	Y	135 (42-129)	no qual 20x DL
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 36282c3a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: V **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
Y N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y N N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	19 & 20	I	-120 (56-136)	-130 (56-136)	( )	1, 2	no qual parent 7 x spikr Amt
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 36289c3a

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AC

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

code = 20

#	Associated Samples	Compound Name	Findings	Qualifications
	1	I, HH	x'd cal Range	J all / Δ
	3, 9, 13	S, T, HH		
	5	S, T		
	7	S, T, J, θ, HH		
	FT 9, 11, 15	S, T, I, HH	↓	↓
	FT 15	FT I		

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282 C3a

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: FT
2nd Reviewer: AC

METHOD: V **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

code = 12

#	Associated Samples	Compound Name	Findings (%RPD Bet 2 col ≤ 40)	Qualifications
	1	T	52	J det / Δ
		I	78	
		θ	45	
		HH	45	
	2	T	75	
		S	67	
	3	T	84	
		I	50	
		θ	89	
		HH	63	
	4	S	52	
		θ	49	✓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282C3a

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: FT
2nd Reviewer: M

METHOD: ✓ **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

code = 12

#	Associated Samples	Compound Name	% RPD Bet 2 col ≤ 40 Findings	Qualifications
	5	T	42	J det /A
		S	50	
		O	79	
	6	S	73	
	7	T	90	
		J	85	
		O	83	
		HH	69	
	8	S	78	
		I	151	

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282C3a

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: FT
2nd Reviewer: DC

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

wells = 12

#	Associated Samples	Compound Name	% RPD Bet 2 col ≤40 Findings	Qualifications
	9	T	144	J all / A
		S	147	
		I	95	
		K	102	
		HH	52	
	10	S	51	
	11	T	82	
		S	81	
			81	
		HH	56	
	~~12~~	~~S~~	~~70~~ FT	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282 C3a

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: FT
2nd Reviewer: MC

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results? code - 12

#	Associated Samples	Compound Name	Findings (% RPD Bet 2 col ≤40)	Qualifications
	12	S	70	J (all) /A
	14	S	74	
		J	48	
	15	F	57	
		P	65	
		J	57	
		I	42	
	16	S	76	
		J	63	
		O	56	

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282C3a

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: FT
2nd Reviewer: 9

METHOD: ✓ **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

code = 22

#	Associated samples	Compounds	Findings	Qualifications
	1	I, HH	x'd cal Range	R/Δ
	2	all except I, HH	diluted	
	3, 9, 13	S, T, HH	x'd cal Range	
	4, 10, 14	all except S, T, HH	diluted	
	5	S, T	x'd cal Range	
	6	all except S, T	diluted	
	7	S, T, J, O, HH	x'd cal Range	
	8	all except S, T, J, O, HH	diluted	↓

Comments: _____

LDC #: 36282c3a

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: FT
2nd Reviewer: MC

METHOD: ✓ **GC** __ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

wbl = 22

#	Associated samples	Compounds	Findings	Qualifications
	11, 15	S, T, I, HH	x'd cal Range	R/Δ
	12, 16	all except S, T, I, HH	diluted	J

Comments: _____

LDC #: 36282C3a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC Pesticides (EPA SW 846 Method 8081)

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)/200	Recalculated CF (20 std)/200	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICA L	1/21/16	endosulfan I	431064	431064	419333.4	419333.4	12.1	12.1
	RTX cup1		Methoxychlor	146220	146220	164669.2	164669.2	15.4	15.4
2	RTX cup2		↓	107259	107259	105819.2	105819.2	5.8	5.8
				44563	44563	45652.3	45652.3	5.4	5.4
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282C 3a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC Pesticides (EPA SW 846 Method 8081)

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount (ng)
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount (ng)

Standard ID	Calibration Date/Time	Compound	Average CF/ CCV Conc	Reported CF/Conc CCV	Recalculated CF/Conc CCV	Reported %D	Recalculated %D
CCV 16:15	3/22/16	endosulfan I RTx CVP1	20.0	19.17	19.17	4	4
		methoxychlor RTx CVP2	200.0	203.87	203.87	2	2
			20.0	21.25	21.25	6	6
			200.0	207.31	207.31	4	4
CCV 20:18	3/22/16	↓	↓	20.24	20.24	1	1
				226.17	226.17	13	13
				21.74	21.74	9	9
				226.34	226.34	13	13
CCV 20:03	3/24/16	↓	↓	15.80	15.80	21	21
				199.76	199.76	0	0
				17.07	17.07	15	15
				207.96	207.96	4	4

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c3a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT
2nd reviewer: [illegible]

METHOD: GC Pesticides (EPA SW 846 Method 8081)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 9

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene	RTX opl	40	35.467	88.7	88.7	0
Tetrachloro-m-xylene	↓	↓	38.981	97.5	97.5	0
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 36282C3a

VALIDATION FINDINGS WORKSHEET

Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FT
2nd Reviewer: A

METHOD: GC Pesticides (EPA SW 846 Method 8081)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery

MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 19 + 20

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD		MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
gamma-BHC	6.77	6.77	ND	5.02	5.04	74	74	74	74	0	0
4,4'-DDT	↓	↓	9.6	17.9	16.7	123	123	105	105	7	7

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c3a

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Pesticides (EPA SW 846 Method 8081A)

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: CP a0195L / sa

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
gamma-BHC	6.67	6.67	8.32	8.33	125	125	125	125	0	0
4,4'-DDT	↓	↓	8.33	8.17	125	125	122	122	2	2

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c3a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: EJ
2nd reviewer: [illegible]

METHOD: GC Pesticides (EPA SW 846 Method 8081A)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. #9 , 4,4' DDT

Conc. = $\frac{(12119673)\ (10)\ (20)}{(312997.5)\ (30)\ (0.961)}$

= 270 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Polychlorinated Biphenyls

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-042	16C129-19	Water	03/15/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

Raw data were not reviewed for Level III validation.

XI. Target Compound Identification

Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Polychlorinated Biphenyls - Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW3520C/8082
PCBs

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
Batch No. : 16C129	Date Extracted: 03/17/16 16:30
Sample ID: KCH067-042	Date Analyzed: 03/18/16 17:58
Lab Samp ID: C129-19	Dilution Factor: 1.14
Lab File ID: KC18014A	Matrix : WATER
Ext Btch ID: CPC014W	% Moisture : NA
Calib. Ref.: KC18004A	Instrument ID : GCT071

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
AROCLOR 1016	(ND)|ND	1.1	0.51	0.57
AROCLOR 1221	(ND)|ND	1.1	0.33	0.57
AROCLOR 1232	(ND)|ND	1.1	0.28	0.57
AROCLOR 1242	(ND)|ND	1.1	0.28	0.57
AROCLOR 1248	(ND)|ND	1.1	0.28	0.57
AROCLOR 1254	(ND)|ND	1.1	0.28	0.57
AROCLOR 1260	(ND)|ND	1.1	0.35	0.57

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.4467|(0.4704)	0.4560	98.0|(103)	60-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

SL 3/17/16

LDC #: 36282C3b

SDG #: 16C129

Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET

Standard

Date: 5/10/16

Page: 1 of 1

Reviewer: EF

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / Δ	
II.	Initial calibration/ICV	A / Δ	
III.	Continuing calibration	Δ	
IV.	Laboratory Blanks	Δ	
V.	Field blanks	ND	SB = 1
VI.	Surrogate spikes	Δ	
VII.	Matrix spike/Matrix spike duplicates	N	QC Sample
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII	Overall assessment of data	Δ	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-042	16C129-19	Water	03/15/16
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Notes:

	MBLK1W						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 24, 2016

Parameters: Metals

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-032**	16C129-09**	Soil	03/15/16
KCH067-033	16C129-10	Soil	03/15/16
KCH067-034	16C129-11	Soil	03/15/16
KCH067-035	16C129-12	Soil	03/15/16
KCH067-036	16C129-13	Soil	03/15/16
KCH067-037	16C129-14	Soil	03/15/16
KCH067-038	16C129-15	Soil	03/15/16
KCH067-039	16C129-16	Soil	03/15/16
KCH067-040	16C129-17	Soil	03/15/16
KCH067-041	16C129-18	Water	03/15/16
KCH067-042	16C129-19	Water	03/15/16
KCH067-035MS	16C129-12MS	Soil	03/15/16
KCH067-035MSD	16C129-12MSD	Soil	03/15/16
KCH067-041MS	16C129-18MS	Water	03/15/16
KCH067-041MSD	16C129-18MSD	Water	03/15/16
KCH067-032DL**	16C129-09DL**	Soil	03/15/16
KCH067-037DL	16C129-14DL	Soil	03/15/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A
Mercury by EPA SW 846 Method 7470A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Copper	0.308 ug/L	All water samples in SDG 16C129
ICB/CCB	Molybdenum	0.203 ug/L	KCH067-032** KCH067-033 KCH067-034 KCH067-035

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
KCH067-042	Copper	0.811 ug/L	0.811U ug/L

Sample	Analyte	Reported Concentration	Modified Final Concentration
KCH067-033	Molybdenum	0.324 mg/Kg	0.324U mg/Kg
KCH067-034	Molybdenum	0.195 mg/Kg	0.195U mg/Kg
KCH067-035	Molybdenum	0.310 mg/Kg	0.310U mg/Kg

VI. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
KCH067-041	03/15/16	Aluminum Barium Boron Calcium Chromium Copper Iron Lead Magnesium Manganese Nickel Potassium Sodium Zinc	21.6 ug/L 1.09 ug/L 4.36 ug/L 122 ug/L 0.284 ug/L 1.34 ug/L 27.5 ug/L 0.570 ug/L 17.7 ug/L 0.800 ug/L 0.156 ug/L 156 ug/L 152 ug/L 8.14 ug/L	All soil samples in SDG 16C129

Sample KCH067-042 was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
KCH067-042	03/15/16	Barium Boron Calcium Chromium Copper Lead Magnesium Sodium	0.277 ug/L 4.00 ug/L 34.7 ug/L 0.101 ug/L 0.811 ug/L 0.0528 ug/L 7.51 ug/L 35.3 ug/L	KCH067-041

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated field blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
KCH067-033	Boron	8.19 mg/Kg	8.19U mg/Kg
KCH067-034	Boron Sodium	5.65 mg/Kg 94.9 mg/Kg	5.65U mg/Kg 94.9U mg/Kg
KCH067-035	Boron Sodium	5.36 mg/Kg 71.3 mg/Kg	5.36U mg/Kg 71.3U mg/Kg
KCH067-036	Boron Sodium	6.06 mg/Kg 77.3 mg/Kg	6.06U mg/Kg 77.3U mg/Kg
KCH067-037	Boron Sodium	6.18 mg/Kg 81.9 mg/Kg	6.18U mg/Kg 81.9U mg/Kg
KCH067-038	Boron Sodium	5.40 mg/Kg 77.5 mg/Kg	5.40U mg/Kg 77.5U mg/Kg
KCH067-039	Boron Sodium	5.75 mg/Kg 85.8 mg/Kg	5.75U mg/Kg 85.8U mg/Kg
KCH067-040	Boron Sodium	5.70 mg/Kg 85.7 mg/Kg	5.70U mg/Kg 85.7U mg/Kg
KCH067-041	Boron Chromium Lead Magnesium	4.36 ug/L 0.284 ug/L 0.570 ug/L 17.7 ug/L	5.00U ug/L 0.284U ug/L 0.570U ug/L 17.7U ug/L
KCH067-037DL	Sodium	70.6 mg/Kg	97.4U mg/Kg

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
KCH067-035MS/MSD (KCH067-035)	Aluminum Calcium Manganese	135 (78-124) 132 (86-118) 120 (85-116)	132 (78-124) 132 (86-118) -	J+ (all detects) J+ (all detects) J+ (all detects)	A
KCH067-035MS/MSD (KCH067-035)	Vanadium	-	73 (82-116)	J- (all detects)	A

For KCH067-035MS/MSD, no data were qualified for Barium and Iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

VIII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

IX. Serial Dilution

Serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

X. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
KCH067-032**	Boron	Sample result exceeded linear range.	Reported result should be within linear range.	J (all detects)	A
KCH067-037	Iron	Sample result exceeded linear range.	Reported result should be within linear range.	J (all detects)	A

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Analyte	Flag	A or P
KCH067-032**	Boron	R	A
KCH067-037	Iron	R	A
KCH067-032DL**	All analytes except Boron	R	A
KCH067-037DL	All analytes except Iron	R	A

Due to MS/MSD %R, data were qualified as estimated in one sample.

Due to laboratory blank contamination, data were qualified as not detected in four samples.

Due to equipment blank and source blank contamination, data were qualified as not detected in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Metals - Data Qualification Summary - SDG 16C129

Sample	Analyte	Flag	A or P	Reason (Code)
KCH067-035	Aluminum Calcium Manganese	J+ (all detects) J+ (all detects) J+ (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (8)
KCH067-035	Vanadium	J- (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (8)
KCH067-032**	Boron	R	A	Overall assessment of data (22)
KCH067-037	Iron	R	A	Overall assessment of data (22)
KCH067-032DL**	All analytes except Boron	R	A	Overall assessment of data (22)
KCH067-037DL	All analytes except Iron	R	A	Overall assessment of data (22)

China Lake CTO 067
Metals - Laboratory Blank Data Qualification Summary - SDG 16C129

Sample	Analyte	Modified Final Concentration	A or P	Code
KCH067-042	Copper	0.811U ug/L	A	7
KCH067-033	Molybdenum	0.324U mg/Kg	A	7
KCH067-034	Molybdenum	0.195U mg/Kg	A	7
KCH067-035	Molybdenum	0.310U mg/Kg	A	7

China Lake CTO 067
Metals - Field Blank Data Qualification Summary - SDG 16C129

Sample	Analyte	Modified Final Concentration	A or P	Code
KCH067-033	Boron	8.19U mg/Kg	A	6
KCH067-034	Boron Sodium	5.65U mg/Kg 94.9U mg/Kg	A	6

Sample	Analyte	Modified Final Concentration	A or P	Code
KCH067-035	Boron Sodium	5.36U mg/Kg 71.3U mg/Kg	A	6
KCH067-036	Boron Sodium	6.06U mg/Kg 77.3U mg/Kg	A	6
KCH067-037	Boron Sodium	6.18U mg/Kg 81.9U mg/Kg	A	6
KCH067-038	Boron Sodium	5.40U mg/Kg 77.5U mg/Kg	A	6
KCH067-039	Boron Sodium	5.75U mg/Kg 85.8U mg/Kg	A	6
KCH067-040	Boron Sodium	5.70U mg/Kg 85.7U mg/Kg	A	6
KCH067-041	Boron Chromium Lead Magnesium	5.00U ug/L 0.284U ug/L 0.570U ug/L 17.7U ug/L	A	6

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID	: KCH067-032	Date Analyzed:	03/28/16 13:36
Lab Samp ID	: C129-09	Dilution Factor:	0.971
Lab File ID	: 98C11021	Matrix :	SOIL
Ext Btch ID	: IMC040S	% Moisture :	1.7
Calib. Ref.	: 98C11016	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	5650	98.8	9.88	19.8
Antimony	0.890	0.494	0.0988	0.198
Arsenic	6.11	0.494	0.0494	0.0988
Barium	35.2	0.494	0.0711	0.0988
Beryllium	0.203J	0.494	0.0494	0.0988
Boron	25.1E R(22)	9.88	2.47	4.94
Cadmium	0.779	0.494	0.0563	0.0988
Calcium	18200	98.8	16.8	19.8
Chromium	8.04	0.494	0.0494	0.0988
Cobalt	3.16	0.494	0.0494	0.0988
Copper	8.87	0.494	0.0988	0.198
Iron	10200	98.8	4.94	9.88
Lead	23.9	0.494	0.0494	0.0988
Magnesium	4140	98.8	9.88	19.8
Manganese	157	0.494	0.151	0.198
Molybdenum	0.802	0.494	0.0988	0.198
Nickel	4.17	0.494	0.0622	0.0988
Potassium	2490	98.8	9.88	19.8
Selenium	0.0630J	0.494	0.0494	0.0988
Silver	0.181J	0.494	0.0494	0.0988
Sodium	454	98.8	9.88	19.8
Thallium	0.0666J	0.494	0.0494	0.0988
Vanadium	20.7	0.494	0.188	0.247
Zinc	385	1.98	0.675	0.988

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID:	KCH067-032DL	Date Analyzed:	03/28/16 17:49
Lab Samp ID:	C129-09I	Dilution Factor:	1.94
Lab File ID:	98C11078	Matrix :	SOIL
Ext Btch ID:	IMC040S	% Moisture :	1.7
Calib. Ref.:	98C11074	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	5640 R22	197	19.7	39.5
Antimony	0.869J	0.987	0.197	0.395
Arsenic	6.23	0.987	0.0987	0.197
Barium	34.5	0.987	0.142	0.197
Beryllium	0.205J	0.987	0.0987	0.197
Boron	25.4	19.7	4.93	9.87
Cadmium	0.726J R22	0.987	0.112	0.197
Calcium	19100	197	33.6	39.5
Chromium	8.08	0.987	0.0987	0.197
Cobalt	3.24	0.987	0.0987	0.197
Copper	9.05	0.987	0.197	0.395
Iron	10300	197	9.87	19.7
Lead	23.9	0.987	0.0987	0.197
Magnesium	4110	197	19.7	39.5
Manganese	162	0.987	0.302	0.395
Molybdenum	0.775J	0.987	0.197	0.395
Nickel	4.22	0.987	0.124	0.197
Potassium	2570	197	19.7	39.5
Selenium	ND	0.987	0.0987	0.197
Silver	0.174J	0.987	0.0987	0.197
Sodium	454	197	19.7	39.5
Thallium	ND	0.987	0.0987	0.197
Vanadium	20.8	0.987	0.375	0.493
Zinc	387	3.95	1.35	1.97

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID:	KCH067-033	Date Analyzed:	03/28/16 13:40
Lab Samp ID:	C129-10	Dilution Factor:	0.966
Lab File ID:	98C11022	Matrix :	SOIL
Ext Btch ID:	IMC040S	% Moisture :	1.5
Calib. Ref.:	98C11016	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	4010	98.1	9.81	19.6
Antimony	0.437J	0.490	0.0981	0.196
Arsenic	2.68	0.490	0.0490	0.0981
Barium	33.5	0.490	0.0706	0.0981
Beryllium	0.151J	0.490	0.0490	0.0981
Boron	8.19J U(6)	9.81	2.45	4.90
Cadmium	0.163J	0.490	0.0559	0.0981
Calcium	7780	98.1	16.7	19.6
Chromium	4.33	0.490	0.0490	0.0981
Cobalt	2.07	0.490	0.0490	0.0981
Copper	5.55	0.490	0.0981	0.196
Iron	6710	98.1	4.90	9.81
Lead	2.74	0.490	0.0490	0.0981
Magnesium	2420	98.1	9.81	19.6
Manganese	111	0.490	0.150	0.196
Molybdenum	0.324J U(T)	0.490	0.0981	0.196
Nickel	2.52	0.490	0.0618	0.0981
Potassium	1400	98.1	9.81	19.6
Selenium	ND	0.490	0.0490	0.0981
Silver	ND	0.490	0.0490	0.0981
Sodium	112	98.1	9.81	19.6
Thallium	ND	0.490	0.0490	0.0981
Vanadium	14.1	0.490	0.186	0.245
Zinc	24.8	1.96	0.670	0.981

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID:	KCH067-034	Date Analyzed:	03/28/16 13:45
Lab Samp ID:	C129-11	Dilution Factor:	0.966
Lab File ID:	98C11023	Matrix :	SOIL
Ext Btch ID:	IMC040S	% Moisture :	0.4
Calib. Ref.:	98C11016	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)		LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	2050		97.0	9.70	19.4
Antimony	0.179J		0.485	0.0970	0.194
Arsenic	2.79		0.485	0.0485	0.0970
Barium	111		0.485	0.0698	0.0970
Beryllium	0.0961J		0.485	0.0485	0.0970
Boron	5.65J	U(6)	9.70	2.42	4.85
Cadmium	0.0643J		0.485	0.0553	0.0970
Calcium	3850		97.0	16.5	19.4
Chromium	9.76		0.485	0.0485	0.0970
Cobalt	3.06		0.485	0.0485	0.0970
Copper	3.35		0.485	0.0970	0.194
Iron	13400		97.0	4.85	9.70
Lead	2.47		0.485	0.0485	0.0970
Magnesium	866		97.0	9.70	19.4
Manganese	54.7		0.485	0.148	0.194
Molybdenum	0.195J	U(7)	0.485	0.0970	0.194
Nickel	1.71		0.485	0.0611	0.0970
Potassium	729		97.0	9.70	19.4
Selenium	ND		0.485	0.0485	0.0970
Silver	0.0879J		0.485	0.0485	0.0970
Sodium	94.9J	U(6)	97.0	9.70	19.4
Thallium	ND		0.485	0.0485	0.0970
Vanadium	37.8		0.485	0.184	0.242
Zinc	9.51		1.94	0.662	0.970

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID:	KCH067-035	Date Analyzed:	03/28/16 14:15
Lab Samp ID:	C129-12	Dilution Factor:	0.976
Lab File ID:	98C11030	Matrix :	SOIL
Ext Btch ID:	IMC040S	% Moisture :	0.5
Calib. Ref.:	98C11028	Instrument ID :	T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	1970 J+(8)	98.1	9.81	19.6
Antimony	0.203J	0.490	0.0981	0.196
Arsenic	3.43	0.490	0.0490	0.0981
Barium	199	0.490	0.0706	0.0981
Beryllium	0.0978J	0.490	0.0490	0.0981
Boron	5.36J U(6)	9.81	2.45	4.90
Cadmium	0.0697J	0.490	0.0559	0.0981
Calcium	5040 J+(8)	98.1	16.7	19.6
Chromium	9.98	0.490	0.0490	0.0981
Cobalt	2.17	0.490	0.0490	0.0981
Copper	3.82	0.490	0.0981	0.196
Iron	15700	98.1	4.90	9.81
Lead	3.05	0.490	0.0490	0.0981
Magnesium	948	98.1	9.81	19.6
Manganese	57.2 J+(8)	0.490	0.150	0.196
Molybdenum	0.310J U(7)	0.490	0.0981	0.196
Nickel	1.88	0.490	0.0618	0.0981
Potassium	763	98.1	9.81	19.6
Selenium	ND	0.490	0.0490	0.0981
Silver	ND	0.490	0.0490	0.0981
Sodium	71.3J U(6)	98.1	9.81	19.6
Thallium	ND	0.490	0.0490	0.0981
Vanadium	42.1 J-(8)	0.490	0.186	0.245
Zinc	8.51	1.96	0.670	0.981

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID	: KCH067-036	Date Analyzed:	03/28/16 14:24
Lab Samp ID	: C129-13	Dilution Factor:	0.98
Lab File ID	: 98C11032	Matrix	: SOIL
Ext Btch ID	: IMC040S	% Moisture	: 2.3
Calib. Ref.	: 98C11028	Instrument ID	: T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	2530	100	10.0	20.1
Antimony	0.197J	0.502	0.100	0.201
Arsenic	3.20	0.502	0.0502	0.100
Barium	230	0.502	0.0722	0.100
Beryllium	0.107J	0.502	0.0502	0.100
Boron	6.06J U16)	10.0	2.51	5.02
Cadmium	0.0824J	0.502	0.0572	0.100
Calcium	7270	100	17.1	20.1
Chromium	11.5	0.502	0.0502	0.100
Cobalt	2.13	0.502	0.0502	0.100
Copper	3.82	0.502	0.100	0.201
Iron	17600	100	5.02	10.0
Lead	2.73	0.502	0.0502	0.100
Magnesium	1280	100	10.0	20.1
Manganese	72.2	0.502	0.153	0.201
Molybdenum	0.228J	0.502	0.100	0.201
Nickel	2.01	0.502	0.0632	0.100
Potassium	838	100	10.0	20.1
Selenium	ND	0.502	0.0502	0.100
Silver	0.0585J	0.502	0.0502	0.100
Sodium	77.3J U16)	100	10.0	20.1
Thallium	ND	0.502	0.0502	0.100
Vanadium	46.8	0.502	0.191	0.251
Zinc	10.1	2.01	0.685	1.00

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID:	KCH067-037	Date Analyzed:	03/28/16 14:29
Lab Samp ID:	C129-14	Dilution Factor:	0.957
Lab File ID:	98C11033	Matrix :	SOIL
Ext Btch ID:	IMC040S	% Moisture :	1.6
Calib. Ref.:	98C11028	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	2630	97.3	9.73	19.5
Antimony	0.307J	0.486	0.0973	0.195
Arsenic	4.79	0.486	0.0486	0.0973
Barium	253	0.486	0.0700	0.0973
Beryllium	0.112J	0.486	0.0486	0.0973
Boron	6.18J U(6)	9.73	2.43	4.86
Cadmium	0.105J	0.486	0.0554	0.0973
Calcium	6850	97.3	16.5	19.5
Chromium	27.0	0.486	0.0486	0.0973
Cobalt	3.74	0.486	0.0486	0.0973
Copper	4.62	0.486	0.0973	0.195
Iron	38000E R22	97.3	4.86	9.73
Lead	4.61	0.486	0.0486	0.0973
Magnesium	1430	97.3	9.73	19.5
Manganese	105	0.486	0.149	0.195
Molybdenum	0.383J	0.486	0.0973	0.195
Nickel	3.44	0.486	0.0613	0.0973
Potassium	909	97.3	9.73	19.5
Selenium	0.0573J	0.486	0.0486	0.0973
Silver	ND	0.486	0.0486	0.0973
Sodium	81.9J U(6)	97.3	9.73	19.5
Thallium	ND	0.486	0.0486	0.0973
Vanadium	111	0.486	0.185	0.243
Zinc	13.7	1.95	0.664	0.973

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID:	KCH067-037DL	Date Analyzed:	03/28/16 17:54
Lab Samp ID:	C129-14I	Dilution Factor:	4.79
Lab File ID:	98C11079	Matrix :	SOIL
Ext Btch ID:	IMC040S	% Moisture :	1.6
Calib. Ref.:	98C11074	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	2690 R22	487	48.7	97.4
Antimony	ND	2.43	0.487	0.974
Arsenic	5.04	2.43	0.243	0.487
Barium	249	2.43	0.350	0.487
Beryllium	ND	2.43	0.243	0.487
Boron	ND	48.7	12.2	24.3
Cadmium	ND	2.43	0.277	0.487
Calcium	7220	487	82.8	97.4
Chromium	27.0	2.43	0.243	0.487
Cobalt	3.88	2.43	0.243	0.487
Copper	4.77	2.43	0.487	0.974
Iron	39700	487	24.3	48.7
Lead	4.76 R22	2.43	0.243	0.487
Magnesium	1450	487	48.7	97.4
Manganese	110	2.43	0.745	0.974
Molybdenum	ND	2.43	0.487	0.974
Nickel	3.54	2.43	0.307	0.487
Potassium	913	487	48.7	97.4
Selenium	ND	2.43	0.243	0.487
Silver	ND	2.43	0.243	0.487
Sodium	70.6J	487	48.7	97.4
Thallium	ND	2.43	0.243	0.487
Vanadium	108	2.43	0.925	1.22
Zinc	14.7	9.74	3.32	4.87

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID	: KCH067-038	Date Analyzed:	03/28/16 14:33
Lab Samp ID	: C129-15	Dilution Factor:	0.985
Lab File ID	: 98C11034	Matrix	: SOIL
Ext Btch ID	: IMC040S	% Moisture	: 1.3
Calib. Ref.	: 98C11028	Instrument ID	: T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	2120	99.8	9.98	20.0
Antimony	0.156J	0.499	0.0998	0.200
Arsenic	3.31	0.499	0.0499	0.0998
Barium	17.2	0.499	0.0719	0.0998
Beryllium	0.0788J	0.499	0.0499	0.0998
Boron	5.40J U(6)	9.98	2.49	4.99
Cadmium	0.0580J	0.499	0.0569	0.0998
Calcium	6350	99.8	17.0	20.0
Chromium	6.16	0.499	0.0499	0.0998
Cobalt	1.56	0.499	0.0499	0.0998
Copper	3.49	0.499	0.0998	0.200
Iron	8850	99.8	4.99	9.98
Lead	2.68	0.499	0.0499	0.0998
Magnesium	1330	99.8	9.98	20.0
Manganese	51.8	0.499	0.153	0.200
Molybdenum	0.200J	0.499	0.0998	0.200
Nickel	1.45	0.499	0.0629	0.0998
Potassium	688	99.8	9.98	20.0
Selenium	ND	0.499	0.0499	0.0998
Silver	0.0867J	0.499	0.0499	0.0998
Sodium	77.5J U(6)	99.8	9.98	20.0
Thallium	ND	0.499	0.0499	0.0998
Vanadium	22.9	0.499	0.190	0.249
Zinc	10.5	2.00	0.682	0.998

5/17/16

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID:	KCH067-039	Date Analyzed:	03/28/16 14:37
Lab Samp ID:	C129-16	Dilution Factor:	0.971
Lab File ID:	98C11035	Matrix :	SOIL
Ext Btch ID:	IMC040S	% Moisture :	1.1
Calib. Ref.:	98C11028	Instrument ID :	T-I98

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	2180	98.2	9.82	19.6
Antimony	0.143J	0.491	0.0982	0.196
Arsenic	3.02	0.491	0.0491	0.0982
Barium	19.0	0.491	0.0707	0.0982
Beryllium	0.0893J	0.491	0.0491	0.0982
Boron	5.75J U(6)	9.82	2.45	4.91
Cadmium	0.0645J	0.491	0.0560	0.0982
Calcium	7370	98.2	16.7	19.6
Chromium	3.91	0.491	0.0491	0.0982
Cobalt	1.35	0.491	0.0491	0.0982
Copper	2.94	0.491	0.0982	0.196
Iron	5740	98.2	4.91	9.82
Lead	2.10	0.491	0.0491	0.0982
Magnesium	1370	98.2	9.82	19.6
Manganese	51.1	0.491	0.150	0.196
Molybdenum	0.216J	0.491	0.0982	0.196
Nickel	1.26	0.491	0.0619	0.0982
Potassium	708	98.2	9.82	19.6
Selenium	ND	0.491	0.0491	0.0982
Silver	0.128J	0.491	0.0491	0.0982
Sodium	85.8J U(6)	98.2	9.82	19.6
Thallium	ND	0.491	0.0491	0.0982
Vanadium	14.1	0.491	0.187	0.245
Zinc	8.24	1.96	0.671	0.982

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METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 15:08
Sample ID	: KCH067-040	Date Analyzed:	03/28/16 14:42
Lab Samp ID	: C129-17	Dilution Factor:	0.971
Lab File ID	: 98C11036	Matrix	: SOIL
Ext Btch ID	: IMC040S	% Moisture	: 1.0
Calib. Ref.	: 98C11028	Instrument ID	: T-198

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
Aluminum	2260	98.1	9.81	19.6
Antimony	0.143J	0.490	0.0981	0.196
Arsenic	3.09	0.490	0.0490	0.0981
Barium	21.5	0.490	0.0706	0.0981
Beryllium	0.0920J	0.490	0.0490	0.0981
Boron	5.70J U(6)	9.81	2.45	4.90
Cadmium	0.0621J	0.490	0.0559	0.0981
Calcium	6600	98.1	16.7	19.6
Chromium	9.16	0.490	0.0490	0.0981
Cobalt	1.67	0.490	0.0490	0.0981
Copper	4.02	0.490	0.0981	0.196
Iron	11700	98.1	4.90	9.81
Lead	2.44	0.490	0.0490	0.0981
Magnesium	1390	98.1	9.81	19.6
Manganese	70.5	0.490	0.150	0.196
Molybdenum	0.192J	0.490	0.0981	0.196
Nickel	1.61	0.490	0.0618	0.0981
Potassium	747	98.1	9.81	19.6
Selenium	ND	0.490	0.0490	0.0981
Silver	0.312J	0.490	0.0490	0.0981
Sodium	85.7J U(6)	98.1	9.81	19.6
Thallium	ND	0.490	0.0490	0.0981
Vanadium	31.4	0.490	0.186	0.245
Zinc	9.11	1.96	0.670	0.981

5/17/16

METHOD SW6020A
METALS BY ICP-MS

Client : KLEINFELDER	Date Collected: 03/15/16
Project : NAWS CHINA LAKE, CTO 067	Date Received: 03/17/16
SDG NO. : 16C129	Date Extracted: 03/23/16 11:55
Sample ID: KCH067-041	Date Analyzed: 03/28/16 18:56
Lab Samp ID: C129-18	Dilution Factor: 1
Lab File ID: 98C11093	Matrix : WATER
Ext Btch ID: IMC039W	% Moisture : NA
Calib. Ref.: 98C11085	Instrument ID : T-I98

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
Aluminum	21.6J	100	10.0	20.0
Antimony	ND	1.00	0.250	0.500
Arsenic	ND	1.00	0.100	0.200
Barium	1.09	1.00	0.250	0.500
Beryllium	ND	1.00	0.0500	0.100
Boron	4.36J ≤ 5.00 U	10.0 (6)	2.50	5.00
Cadmium	ND	1.00	0.100	0.200
Calcium	122	100	13.0	25.0
Chromium	0.284J U (6)	1.00	0.100	0.200
Cobalt	ND	1.00	0.100	0.200
Copper	1.34	1.00	0.250	0.500
Iron	27.5J	100	5.00	10.0
Lead	0.570J U (6)	1.00	0.0500	0.100
Magnesium	17.7J U (6)	100	5.00	10.0
Manganese	0.800J	1.00	0.100	0.200
Molybdenum	ND	2.00	0.250	0.500
Nickel	0.156J	1.00	0.100	0.200
Potassium	156	100	10.0	20.0
Selenium	ND	1.00	0.150	0.300
Silver	ND	1.00	0.100	0.200
Sodium	152	100	25.0	50.0
Thallium	ND	1.00	0.100	0.200
Vanadium	ND	1.00	0.250	0.500
Zinc	8.14J	20.0	5.00	10.0

5/17/16 J

METHOD SW6020A
METALS BY ICP-MS

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
SDG NO.	: 16C129	Date Extracted:	03/23/16 11:55
Sample ID:	KCH067-042	Date Analyzed:	03/28/16 19:05
Lab Samp ID:	C129-19	Dilution Factor:	1
Lab File ID:	98C11095	Matrix	: WATER
Ext Btch ID:	IMC039W	% Moisture	: NA
Calib. Ref.:	98C11085	Instrument ID	: T-I98

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
Aluminum	ND	100	10.0	20.0
Antimony	ND	1.00	0.250	0.500
Arsenic	ND	1.00	0.100	0.200
Barium	0.277J	1.00	0.250	0.500
Beryllium	ND	1.00	0.0500	0.100
Boron	4.00J	10.0	2.50	5.00
Cadmium	ND	1.00	0.100	0.200
Calcium	34.7J	100	13.0	25.0
Chromium	0.101J	1.00	0.100	0.200
Cobalt	ND	1.00	0.100	0.200
Copper	0.811J U(7)	1.00	0.250	0.500
Iron	ND	100	5.00	10.0
Lead	0.0528J	1.00	0.0500	0.100
Magnesium	7.51J	100	5.00	10.0
Manganese	ND	1.00	0.100	0.200
Molybdenum	ND	2.00	0.250	0.500
Nickel	ND	1.00	0.100	0.200
Potassium	ND	100	10.0	20.0
Selenium	ND	1.00	0.150	0.300
Silver	ND	1.00	0.100	0.200
Sodium	35.3J	100	25.0	50.0
Thallium	ND	1.00	0.100	0.200
Vanadium	ND	1.00	0.250	0.500
Zinc	ND	20.0	5.00	10.0

8/25/16

METHOD SW7470A
MERCURY BY COLD VAPOR

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C129

Matrix : WATER
InstrumentID : 47

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DIL'N FACTOR	MOIST (%)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1W	HGC014WB	ND	1	NA	0.50	0.050	0.10	03/23/1610:11	03/22/1616:30	M47C011011	M47C011	HGC014W	NA	NA
LCS1W	HGC014WL	2.38	1	NA	0.50	0.050	0.10	03/23/1610:13	03/22/1616:30	M47C011012	M47C011	HGC014W	NA	NA
LCD1W	HGC014WC	2.40	1	NA	0.50	0.050	0.10	03/23/1610:15	03/22/1616:30	M47C011013	M47C011	HGC014W	NA	NA
KCH067-041	C129-18	ND	1	NA	0.50	0.050	0.10	03/23/1610:46	03/22/1616:30	M47C011027	M47C011	HGC014W	03/15/1614:00	03/17/16
KCH067-042	C129-19	ND	1	NA	0.50	0.050	0.10	03/23/1610:48	03/22/1616:30	M47C011028	M47C011	HGC014W	03/15/1614:40	03/17/16

8/25/16

EXHIBIT 9

METHOD SW7471A
MERCURY BY COLD VAPOR

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C129

Matrix : SOIL
InstrumentID : 47

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DIL'N FACTOR	MOIST (%)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1S	HGC012SB	ND	1	NA	0.10	0.010	0.020	03/21/1614:21	03/21/1611:40	M47C009011	M47C009	HGC012S	NA	NA
LCS1S	HGC012SL	0.445	1	NA	0.10	0.010	0.020	03/21/1614:24	03/21/1611:40	M47C009012	M47C009	HGC012S	NA	NA
LCD1S	HGC012SC	0.434	1	NA	0.10	0.010	0.020	03/21/1614:26	03/21/1611:40	M47C009013	M47C009	HGC012S	NA	NA
KCH067-035	C129-12	ND	1	0.5	0.10	0.010	0.020	03/21/1614:30	03/21/1611:40	M47C009015	M47C009	HGC012S	03/15/1612:15	03/17/16
KCH067-035MS	C129-12M	0.444	1	0.5	0.099	0.0099	0.020	03/21/1614:35	03/21/1611:40	M47C009017	M47C009	HGC012S	03/15/1612:15	03/17/16
KCH067-035MSD	C129-12S	0.439	1	0.5	0.098	0.0098	0.020	03/21/1614:37	03/21/1611:40	M47C009018	M47C009	HGC012S	03/15/1612:15	03/17/16
KCH067-032	C129-09	ND	1	1.7	0.10	0.010	0.020	03/21/1614:40	03/21/1611:40	M47C009019	M47C009	HGC012S	03/15/1611:20	03/17/16
KCH067-033	C129-10	ND	1	1.5	0.10	0.010	0.020	03/21/1614:42	03/21/1611:40	M47C009020	M47C009	HGC012S	03/15/1611:35	03/17/16
KCH067-034	C129-11	ND	1	0.4	0.10	0.010	0.020	03/21/1614:48	03/21/1611:40	M47C009023	M47C009	HGC012S	03/15/1612:10	03/17/16
KCH067-036	C129-13	ND	1	2.3	0.10	0.010	0.020	03/21/1614:50	03/21/1611:40	M47C009024	M47C009	HGC012S	03/15/1612:30	03/17/16
KCH067-037	C129-14	ND	1	1.6	0.10	0.010	0.020	03/21/1614:52	03/21/1611:40	M47C009025	M47C009	HGC012S	03/15/1612:40	03/17/16
KCH067-038	C129-15	0.0256J	1	1.3	0.10	0.010	0.020	03/21/1614:55	03/21/1611:40	M47C009026	M47C009	HGC012S	03/15/1612:50	03/17/16
KCH067-039	C129-16	ND	1	1.1	0.10	0.010	0.020	03/21/1614:58	03/21/1611:40	M47C009027	M47C009	HGC012S	03/15/1613:00	03/17/16
KCH067-040	C129-17	ND	1	1.0	0.10	0.010	0.020	03/21/1615:00	03/21/1611:40	M47C009028	M47C009	HGC012S	03/15/1613:05	03/17/16

3/25/16

SEE J

LDC #: 36282C4a

SDG #: 16C129

Laboratory: EMAX Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET

Standard/Full

Date: 5/10/16

Page: 1 of 1

Reviewer: JD

2nd Reviewer: JL

METHOD: Metals (EPA SW 846 Method 6020A/7470A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	3/15/16
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	EB= (10) SB=(11)
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MSD = (12,13)(14,15)
VIII.	Duplicate sample analysis	N	
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	LCSD
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	A	Not reviewed for Standard validation
XIII.	Sample Result Verification 30	SW/A	Not reviewed for Standard validation.
XIV.	Overall Assessment of Data ↓	SW/A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID		Lab ID	Matrix	Date
1	KCH067-032**		16C129-09**	Soil	03/15/16
2	KCH067-033		16C129-10	Soil	03/15/16
3	KCH067-034		16C129-11	Soil	03/15/16
4	KCH067-035		16C129-12	Soil	03/15/16
5	KCH067-036		16C129-13	Soil	03/15/16
6	KCH067-037		16C129-14	Soil	03/15/16
7	KCH067-038		16C129-15	Soil	03/15/16
8	KCH067-039		16C129-16	Soil	03/15/16
9	KCH067-040		16C129-17	Soil	03/15/16
10	KCH067-041		16C129-18	Water	03/15/16
11	KCH067-042		16C129-19	Water	03/15/16
12	KCH067-035MS	All	16C129-12MS	Soil	03/15/16
13	KCH067-035MSD	↓	16C129-12MSD	Soil	03/15/16
14	KCH067-041MS	All but Hg	16C129-18MS	Water	03/15/16
15	KCH067-041MSD	↓	16C129-18MSD	Water	03/15/16

LDC #: 36282C4a

VALIDATION COMPLETENESS WORKSHEET

Standard/Full

Date: 5/10/16

SDG #: 16C129

Page: 2 of 2

Laboratory: EMAX Laboratories Inc.

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6020A/7470A)

	Client ID	Lab ID	Matrix	Date
16	#1DL			
17	#6DL			
18				
19				
20				

Notes:

LDC #: 36282C4a

VALIDATION FINDINGS CHECKLIST

Reviewer: 3D
2nd Reviewer: AC

Method: Metals (EPA SW 846 Method 6010B/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. ICP/MS Tune				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution ≤5%?	✓			
III. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
IV. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
V. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
VII. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?	✓			
IX. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	✓			
Were all percent differences (%Ds) < 10%?	✓			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: JS
2nd reviewer: M

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-9	S	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
10-11	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
12-13	S	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
14-15	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
16-17	S	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___ ___

Comments: Mercury by CVAA if performed

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: JD
2nd Reviewer:

METHOD: Metals (EPA SW 864 Method 6010/6020/7000) Soil preparation factor applied:

Sample Concentration units, unless otherwise noted: ug/L Associated Samples: All Waters (07)

					Sample Identification									
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	11									
Cu		0.308			0.811/~~1.00~~									

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 1-4 (07)

					Sample Identification									
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	2	3	4							
Mo			0.203		0.324/~~0.490~~	0.195/~~0.485~~	0.310/~~0.490~~							

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: JD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA Method 200.7/200.8)
Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 03/15/16 Soil factor applied 50X
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All Soils (06)

Analyte	Blank ID	Sample Identification										
	10	Action Limit	2	3	4	5	6	7	8	9	17	
Al	21.6											
Ba	1.09	0.545										
B	4.36		8.19/~~9.81~~	5.65/~~9.70~~	5.36/~~9.81~~	6.06/~~10.0~~	6.18/~~9.73~~	5.40/~~9.98~~	5.75/~~9.82~~	5.70/~~9.81~~		
Ca	122	61										
Cr	0.284											
Cu	1.34	0.67										
Fe	27.5											
Pb	0.570											
Mg	17.7											
Mn	0.800											
Ni	0.156											
K	156	78										
Na	152	76		94.9/~~97.0~~	71.3/~~98.1~~	77.3/~~100~~	81.9/~~97.3~~	77.5/~~99.8~~	85.8/~~96.2~~	85.7/~~98.1~~	70.6/~~467~~	
Zn	8.14										97.4U	

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: JD
2nd Reviewer: AC

METHOD: Trace Metals (EPA Method 200.7/200.8)
Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 03/15/16 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: (SB) Associated Samples: 10 (06)

Analyte	Blank ID	Sample Identification											
[redacted]	11	Action Limit	10										
Ba	0.277												
B	4.00		4.36/~~10.0~~ 5.00										
Ca	34.7												
Cr	0.101		0.284/~~1.00~~										
Cu	0.811												
Pb	0.0528		0.570/~~1.00~~										
Mg	7.51		17.7/~~100~~										
Na	35.3												

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: JD
2nd Reviewer: AC

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	12/13	S	Al	135 (78-124)	132 (78-124)		4	J+det/A (det) (08)
			Ca	132 (86-118)	132 (86-118)			J+det/A (det) (08)
			Mn	120 (85-116)				J+det/A (det) (08)
			V		73 (82-116)			J-/UJ/A (det) (08)

Comments: 12/13: Ba, Fe > 4X

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: JD
2nd Reviewer: Q

METHOD: Metals (EPA SW 846 Method 6010/6020/7000)

#	Sample ID	Analyte	Result (units)	RL (units)	Finding	Qualifications
	1	B			> Linear range	J/A (20)
	106	Fe			> Liner range	J/A (20)

Comments:

LDC #: 36282C4a

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: SD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA CLP SOW ILM02.1)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable? All except = 6020 only -- Do not include Hg

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		1	B (exceeds calibration range)	1	R/A (22)
		~~10~~ 6	Fe (exceeds calibration range)	10	R/A (22)
		16	All Except B (dilution not necessary)	16	R/A (22)
		17	All Except Fe (dilution not necessary)	17	R/A (22)

Comments:

LDC #: 36852C4a

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: JO
2nd Reviewer: [illegible]

METHOD: Trace Metals (See cover)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
	ICP (Initial calibration)						
ICV 12:43	ICP/MS (Initial calibration)	Ca	29890 ug/L	30000 ug/L	100%R	100%R	Y
ICV 14:13	CVAA (Initial calibration)	Hg	1.95 ug/L	2 ug/L	98%R	98%R	Y
	ICP (Continuing calibration)						
CCV (2) 14:07	ICP/MS (Continuing calibration)	Cr	245.3 ug/L	250 ug/L	98%R	98%R	Y
CCV 14:44	CVAA (Contining calibration)	Hg	2.11 ug/L	2 ug/L	106%R	106%R	Y
	GFAA (Initial calibration)						
	GFAA (Continuing calibation)						

Comments: _____

LDC #: 36202C4a

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: JD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICS AB 13:05	ICP interference check	Cd	21.81 ug/L	20 ug/L	109%R	109%R	Y
LCS 14:24	Laboratory control sample	Hg	445.2 mg/kg	0.416 mg/kg	107%R	107%R	↓
N	Matrix spike		(SSR-SR)				
N	Duplicate						
N	ICP serial dilution						

Comments: _____

LDC #: 36828C4a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 2
Reviewer: JO
2nd reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for (1) Ag were recalculated and verified using the following equation:

Concentration = (RD)(FV)(Dil) / (In. Vol.)

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor

Prep Factor: 10
%Solids = 0.983
RD = 0.3658 ug/L
FV = 100 ml
In. W = 2.06g

Recalculation: $\frac{(0.3658 ug/L)(100ml)(10)}{(2.06g)(0.983)} \times \frac{1mg}{1000ug} = 0.181 mg/kg$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
	1	Al	5650	5640	y*
	|	Sb	0.890	0.889	y*
	|	As	6.11	6.11	y
	|	Ba	35.2	35.2	|
	↓	Be	0.203	0.203	↓
	16	B	25.4	25.5	y*
	1	Cd	0.779	0.779	y
	|	Ca	18200	18200	↓
	|	Cr	8.04	8.03	y*
	|	Co	3.16	3.16	y
	|	Cu	8.87	8.87	|
	|	Fe	10200	10200	|
	|	Pb	23.9	23.9	|
	|	Mg	4140	4140	|
	|	Mn	157	157	|
	|	Mo	0.802	0.802	|
	|	Ni	4.17	4.17	|
	|	K	2490	2490	|
	|	Se	0.0630	0.0630	|
	↓	Ag	0.181	0.181	↓

Note: _____

LDC #: 30282C4a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 2 of 2
Reviewer: JSD
2nd reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for See Pg 1 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)}$ Recalculation:

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor

#	Sample ID	Analyte	Reported Concentration (mg/Kg)	Calculated Concentration (mg/Kg)	Acceptable (Y/N)
	1	Na	454	454	Y
	↓	Tl	0.0666	0.0666	↓
		V	20.7	20.7	
	↓	Zn	385	385	↓
	~~4b~~ 3D				

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Hexavalent Chromium

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-032**	16C129-09**	Soil	03/15/16
KCH067-033	16C129-10	Soil	03/15/16
KCH067-041	16C129-18	Water	03/15/16
KCH067-042	16C129-19	Water	03/15/16
KCH067-032MS	16C129-09MS	Soil	03/15/16
KCH067-032MSD	16C129-09MSD	Soil	03/15/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Hexavalent Chromium by Environmental Protection Agency (EPA) SW 846 Method 7199

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Hexavalent Chromium - Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW7199
HEXAVALENT CHROMIUM

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C129

Matrix : SOIL
InstrumentID : 59

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/kg)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1S	HCC003SB	ND	1	NA	100	13	40	03/28/1613:24	03/24/1615:20	IC26003	IC26001	HCC003S	NA	NA
LCS1S	CSC003SL	1080	1	NA	100	13	40	03/28/1613:45	03/24/1615:20	IC26005	IC26001	HCC003S	NA	NA
KCH067-032	C129-09	632	1	1.7	102	13.2	40.7	03/28/1614:26	03/24/1615:20	IC26009	IC26001	HCC003S	03/15/1611:20	03/17/16
KCH067-032MS	C129-09M	2490	1	1.7	102	13.2	40.7	03/28/1615:08	03/24/1615:20	IC26013	IC26011	HCC003S	03/15/1611:20	03/17/16
KCH067-032MSD	C129-09S	2350	1	1.7	102	13.2	40.7	03/28/1615:29	03/24/1615:20	IC26015	IC26011	HCC003S	03/15/1611:20	03/17/16
KCH067-033	C129-10	70.1J	1	1.5	102	13.2	40.6	03/28/1616:31	03/24/1615:20	IC26021	IC26011	HCC003S	03/15/1611:35	03/17/16

03/17/16

0030

METHOD SW7199
HEXAVALENT CHROMIUM

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C129

Matrix : WATER
InstrumentID : 59

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1W	HCC007WB	ND	1	NA	0.2	0.05	0.1	03/17/1612:23	03/17/1612:45	IC17003	IC17001	HCC007W	NA	NA
LCS1W	HCC007WL	1.86	1	NA	0.2	0.05	0.1	03/17/1612:44	03/17/1612:45	IC17005	IC17001	HCC007W	NA	NA
LCD1W	HCC007WC	1.86	1	NA	0.2	0.05	0.1	03/17/1613:05	03/17/1612:45	IC17007	IC17001	HCC007W	NA	NA
KCH067-042	C129-19	ND	1	NA	0.2	0.05	0.1	03/17/1614:49	03/17/1612:45	IC17017	IC17011	HCC007W	03/15/1614:40	03/17/16
KCH067-041	C129-18I	ND	10	NA	2	0.5	1	03/17/1615:49	03/17/1612:45	IC17021	IC17019	HCC007W	03/15/1614:00	03/17/16

Q 051716

0502

LDC #: 36282C6 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C129 Standard/Full Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: SD
2nd Reviewer: N

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	3/15/16
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	EB=(3) SB=(4)
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/D=(5,6)
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for Standard validation.
XI	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-032**	16C129-09**	Soil	03/15/16
2	KCH067-033	16C129-10	Soil	03/15/16
3	KCH067-041	16C129-18	Water	03/15/16
4	KCH067-042	16C129-19	Water	03/15/16
5	KCH067-032MS	16C129-09MS	Soil	03/15/16
6	KCH067-032MSD	16C129-09MSD	Soil	03/15/16
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes:

LDC #: 36282C60

VALIDATION FINDINGS CHECKLIST

Reviewer: SD
2nd Reviewer: M

Method: Inorganics (EPA Method See Cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 36282C9

VALIDATION FINDINGS CHECKLIST

Reviewer: 3D
2nd Reviewer: MC

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 36282C50

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Reviewer: JD
2nd Reviewer: AK

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr^{+6} was recalculated. Calibration date: 1/20/16

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/l)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr^{+6}	s1	0	0	*0.9998*	0.9998	Y
		s2	0.2	0.0000157			
		s3	0.5	0.0000504			
		s4	1	0.0001022			
		s5	2	0.000194			
		s6	5	0.0005014			
		s7	7.5	0.0007527			
		s8	10	0.0010231			
ICV 13:57 Calibration verification		Found 3.925ug/L	True 4ug/L		93%R	93%R	
CCV 14:47 Calibration verification		1.949ug/L	2ug/L		97%R	97%R	
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282C6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: SD
2nd Reviewer: JL

METHOD: Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS 13:45	Laboratory control sample	Cr^{+6}	1077 ug/kg	1000 ug/kg	108%R	108%R	Y
MS 15:08	Matrix spike sample		(SSR-SR) 1861 ug/kg	2000 ug/kg	93%R	93%R	
MSD 15:29	Duplicate sample		2346 ug/kg	2493 ug/kg	6%RPD	6%RPD	

Comments: _____

LDC #: 36282C6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: SD
2nd reviewer: KC

METHOD: Inorganics, Method See Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for (1) Cr^{+6} reported with a positive detect were recalculated and verified using the following equation:

Concentration = $\frac{A-(-0.0000035)}{0.0001018}$

Recalculation: $\frac{0.0001229-(-0.0000035)}{0.0001018} \times \frac{(100ml)(62.5)}{(12.503g)(0.983)} = 63$ ug

A = 0.0001229
FV = 100ml
%solids = 0.983
Sm. W = 12.503g
Prep F = 62.5

#	Sample ID	Analyte	Reported Concentration (ug/kg)	Calculated Concentration (ug/kg)	Acceptable (Y/N)
	1	Cr^{+6}	632	632	Y

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-042	16C129-19	Water	03/15/16
KCH067-043	16C129-20	Water	03/15/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Gasoline by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-043 was identified as a trip blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 14:45
Sample ID:	KCH067-042	Date Analyzed:	03/21/16 14:45
Lab Samp ID:	C129-19	Dilution Factor:	1
Lab File ID:	EC21008A	Matrix :	WATER
Ext Btch ID:	VG39C10	% Moisture :	NA
Calib. Ref.:	EC21003A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
GASOLINE	ND	0.10	0.010	0.020

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	0.0338	0.04000	84.5	69-133

Parameter	H-C Range
Gasoline	C6-C10

SGJ 7/16

METHOD SW5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 15:24
Sample ID:	KCH067-043	Date Analyzed:	03/21/16 15:24
Lab Samp ID:	C129-20	Dilution Factor:	1
Lab File ID:	EC21009A	Matrix :	WATER
Ext Btch ID:	VG39C10	% Moisture :	NA
Calib. Ref.:	EC21003A	Instrument ID :	GCT039

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
GASOLINE	ND	0.10	0.010	0.020

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
4-BROMOFLUOROBENZENE	0.0308	0.04000	77.0	69-133

Parameter	H-C Range
Gasoline	C6-C10

SL 3/31/16

LDC #: 36282C7 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16

SDG #: 16C129 Standard Page: 1 of 1

Laboratory: EMAX Laboratories Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	
III.	Continuing calibration	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	SB = 1 TB = 2
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	QC samples
VIII.	Laboratory control samples	A	LCS/LD
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-042	16C129-19	Water	03/15/16
2	KCH067-043	16C129-20	Water	03/15/16
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Notes:

	MBLK1W						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 13, 2016

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-032**	16C129-09**	Soil	03/15/16
KCH067-033	16C129-10	Soil	03/15/16
KCH067-041	16C129-18	Water	03/15/16
KCH067-042	16C129-19	Water	03/15/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 11:25
Sample ID	: KCH067-032	Date Analyzed:	03/21/16 15:36
Lab Samp ID	: C129-09	Dilution Factor:	1
Lab File ID	: LC21014A	Matrix	: SOIL
Ext Btch ID	: DSC017S	% Moisture	: 1.7
Calib. Ref.	: LC21009A	Instrument ID	: D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.5	5.1
JP-5	ND	20	2.5	5.1
MOTOR OIL	6.5J	20	2.5	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	99.8	101.7	98.1	60-130
HEXACOSANE	30.4	25.43	119	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3550B/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 11:25
Sample ID:	KCH067-033	Date Analyzed:	03/21/16 15:52
Lab Samp ID:	C129-10	Dilution Factor:	1
Lab File ID:	LC21015A	Matrix :	SOIL
Ext Btch ID:	DSC017S	% Moisture :	1.5
Calib. Ref.:	LC21009A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/kg)	LOQ (mg/kg)	DL (mg/kg)	LOD (mg/kg)
DIESEL	ND	10	2.5	5.1
JP-5	ND	20	2.5	5.1
MOTOR OIL	ND	20	2.5	5.1

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	100	101.5	98.8	60-130
HEXACOSANE	29.7	25.38	117	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/17/16 13:45
Sample ID:	KCH067-041	Date Analyzed:	03/18/16 16:16
Lab Samp ID:	C129-18	Dilution Factor:	1
Lab File ID:	LC18020A	Matrix :	WATER
Ext Btch ID:	DSC015W	% Moisture :	NA
Calib. Ref.:	LC18016A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
DIESEL	ND	0.50	0.050	0.10
JP-5	ND	0.50	0.050	0.10
MOTOR OIL	ND	0.50	0.050	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	0.965	1.000	96.5	60-130
HEXACOSANE	0.249	0.2500	99.4	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

METHOD SW3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/17/16 13:45
Sample ID:	KCH067-042	Date Analyzed:	03/18/16 16:33
Lab Samp ID:	C129-19	Dilution Factor:	1
Lab File ID:	LC18021A	Matrix :	WATER
Ext Btch ID:	DSC015W	% Moisture :	NA
Calib. Ref.:	LC18016A	Instrument ID :	D5

PARAMETERS	RESULTS (mg/L)	LOQ (mg/L)	DL (mg/L)	LOD (mg/L)
DIESEL	ND	0.50	0.050	0.10
JP-5	ND	0.50	0.050	0.10
MOTOR OIL	ND	0.50	0.050	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
BROMOBENZENE	0.972	1.000	97.2	60-130
HEXACOSANE	0.247	0.2500	98.7	60-130

Parameter	H-C Range
Diesel	C10-C24
JP-5	C8-C18

3/25/16

LDC #: 36282C8 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C129 Standard/Full Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: EJ
2nd Reviewer: A

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	%RSD / ICV ≤20
III.	Continuing calibration	A	CCV ≤20
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB = 3 SB = 4
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XI.	Target compound identification	A	Not reviewed for Standard validation.
XII.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID		Lab ID	Matrix	Date
1	KCH067-032**		16C129-09**	Soil	03/15/16
2	KCH067-033		16C129-10	Soil	03/15/16
3	KCH067-041	EB	16C129-18	Water	03/15/16
4	KCH067-042	SB	16C129-19	Water	03/15/16
5					
6					
7					
8					
9					
10					
11					
12					
13					

Notes:

1	MBLK1S						
	MBLK1W						

LDC #: 36282 CS

VALIDATION FINDINGS CHECKLIST

Reviewer: FZ
2nd Reviewer: AC

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
IIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥0.990?			✓	
Were the RT windows properly established?	✓			
IIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 20% or percent recoveries (%R) 80-120%?	✓			
III. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
IV. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
V. Field Blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VI. Surrogate spikes				
Were all surrogate percent recovery (%R) within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	

LDC #: 36282C8

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: EJ
2nd Reviewer: AV

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?		✓		
X. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 36282 c8

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer: A

METHOD: GC ✓ HPLC ____

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (500std)	Recalculated CF (500std)	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICAL	3/9/16	Diesel C10-C24	33825	33825	31896.9	31896.9	12.9	12.9
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c5

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: AR

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	CCV 1250	3/21/16	Diesel C10 - C24	500.0	442.28	442.28	12	12
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282cg

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: FT
2nd reviewer: AK

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Bromobenzene	/	100	98.07	98.1	98.1	0
Hexacosane	/	25	29.873	~~119~~ 119	119	U

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 36282C8

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT
2nd Reviewer: AC

METHOD: ✓ GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC/SA)
RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
LCS = Laboratory Control Sample
SA = Spike added
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: DSC0175L/SC

Compound	Spike Added (mg/kg)		Spike Sample Concentration (mg/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	500	500	495	511	99	99	102	102	3	3
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282cf

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ___ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #1 Compound Name Malor 6:1

Concentration = $\frac{126429 \quad (10)}{19873.41117 \quad (10.03)(0.983)}$ =

= 6.5 mg/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 11, 2016

Parameters: Explosives

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-032**	16C129-09**	Soil	03/15/16
KCH067-033	16C129-10	Soil	03/15/16
KCH067-034	16C129-11	Soil	03/15/16
KCH067-035	16C129-12	Soil	03/15/16
KCH067-036	16C129-13	Soil	03/15/16
KCH067-037	16C129-14	Soil	03/15/16
KCH067-038	16C129-15	Soil	03/15/16
KCH067-039	16C129-16	Soil	03/15/16
KCH067-040	16C129-17	Soil	03/15/16
KCH067-041	16C129-18	Water	03/15/16
KCH067-042	16C129-19	Water	03/15/16
KCH067-035MS	16C129-12MS	Soil	03/15/16
KCH067-035MSD	16C129-12MSD	Soil	03/15/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Explosives by Environmental Protection Agency (EPA) SW 846 Method 8330A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 15.0% for all compounds.

Retention time windows were established as required by the method for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation.

The sample results for detected compounds from the two columns were within 40% relative percent difference (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
KCH067-034	HMX	46	J (all detects)	A

Raw data were not reviewed for Level III validation.

XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to RPD between two columns, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Explosives - Data Qualification Summary - SDG 16C129

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-034	HMX	J (all detects)	A	Compound quantitation (RPD between two columns) (12)

China Lake CTO 067
Explosives - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Explosives - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID	: KCH067-032	Date Analyzed:	03/23/16 18:50
Lab Samp ID	: C129-09	Dilution Factor:	1
Lab File ID	: XC23012A	Matrix :	SOIL
Ext Btch ID	: EXC008S	% Moisture :	NA
Calib. Ref.	: XC23002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2110	2000	106	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID:	KCH067-033	Date Analyzed:	03/23/16 19:34
Lab Samp ID:	C129-10	Dilution Factor:	1
Lab File ID:	XC23013A	Matrix :	SOIL
Ext Btch ID:	EXC008S	% Moisture :	NA
Calib. Ref.:	XC23002A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2040	2000	102	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID:	KCH067-034	Date Analyzed:	03/23/16 22:14
Lab Samp ID:	C129-11	Dilution Factor:	1
Lab File ID:	XC23017A	Matrix :	SOIL
Ext Btch ID:	EXC008S	% Moisture :	NA
Calib. Ref.:	XC23015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	54J J(12)	400	50	100
RDX	120J	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2090	2000	104	60-140

Note: All positive results are confirmed by Biphenyl column

Dos1716

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID	: KCH067-035	Date Analyzed:	03/23/16 22:50
Lab Samp ID	: C129-12	Dilution Factor:	1
Lab File ID	: XC23018A	Matrix :	SOIL
Ext Btch ID	: EXC008S	% Moisture :	NA
Calib. Ref.	: XC23015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	140J	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2060	2000	103	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID	: KCH067-036	Date Analyzed:	03/24/16 00:54
Lab Samp ID	: C129-13	Dilution Factor:	1
Lab File ID	: XC23021A	Matrix :	SOIL
Ext Btch ID	: EXC008S	% Moisture :	NA
Calib. Ref.	: XC23015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2080	2000	104	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID:	KCH067-037	Date Analyzed:	03/24/16 01:30
Lab Samp ID:	C129-14	Dilution Factor:	1
Lab File ID:	XC23022A	Matrix :	SOIL
Ext Btch ID:	EXC008S	% Moisture :	NA
Calib. Ref.:	XC23015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2110	2000	106	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID:	KCH067-038	Date Analyzed:	03/24/16 02:14
Lab Samp ID:	C129-15	Dilution Factor:	1
Lab File ID:	XC23023A	Matrix :	SOIL
Ext Btch ID:	EXC008S	% Moisture :	NA
Calib. Ref.:	XC23015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2080	2000	104	60-140

Note: All positive results are confirmed by Biphenyl column

SL 05/17/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID:	KCH067-039	Date Analyzed:	03/24/16 02:50
Lab Samp ID:	C129-16	Dilution Factor:	1
Lab File ID:	XC23024A	Matrix :	SOIL
Ext Btch ID:	EXC008S	% Moisture :	NA
Calib. Ref.:	XC23015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2010	2000	100	60-140

Note: All positive results are confirmed by Biphenyl column

4/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/22/16 15:17
Sample ID:	KCH067-040	Date Analyzed:	03/24/16 03:33
Lab Samp ID:	C129-17	Dilution Factor:	1
Lab File ID:	XC23025A	Matrix :	SOIL
Ext Btch ID:	EXC008S	% Moisture :	NA
Calib. Ref.:	XC23015A	Instrument ID :	T-081

PARAMETERS	RESULTS (ug/kg)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)
HMX	ND	400	50	100
RDX	ND	400	50	100
1,3,5-TNB	ND	400	50	100
1,3-DNB	ND	400	50	100
TETRYL	ND	400	57	100
NITROBENZENE	ND	400	50	100
2,4,6-TNT	ND	400	50	100
4-AM-2,6-DNT	ND	400	50	100
2-AM-4,6-DNT	ND	400	50	100
2,6-DNT	ND	400	56	100
2,4-DNT	ND	400	55	100
2-NITROTOLUENE	ND	400	76	200
3-NITROTOLUENE	ND	400	95	200
4-NITROTOLUENE	ND	400	99	200

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	2070	2000	103	60-140

Note: All positive results are confirmed by Biphenyl column

8/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 16:05
Sample ID:	KCH067-041	Date Analyzed:	03/23/16 15:35
Lab Samp ID:	C129-18	Dilution Factor:	1
Lab File ID:	XC23007A	Matrix	: WATER
Ext Btch ID:	EXC009W	% Moisture	: NA
Calib. Ref.:	XC23002A	Instrument ID	: T-081

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
HMX	ND	1.0	0.10	0.20
RDX	ND	1.0	0.16	0.40
1,3,5-TNB	ND	1.0	0.10	0.20
1,3-DNB	ND	1.0	0.10	0.20
TETRYL	ND	1.0	0.10	0.20
NITROBENZENE	ND	1.0	0.10	0.20
2,4,6-TNT	ND	1.0	0.16	0.40
4-AM-2,6-DNT	ND	1.0	0.20	0.20
2-AM-4,6-DNT	ND	1.0	0.10	0.20
2,6-DNT	ND	1.0	0.10	0.20
2,4-DNT	ND	1.0	0.12	0.20
2-NITROTOLUENE	ND	1.0	0.11	0.20
3-NITROTOLUENE	ND	1.0	0.16	0.40
4-NITROTOLUENE	ND	1.0	0.10	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	4.15	4.000	104	60-140

Note: All positive results are confirmed by Biphenyl column

3/25/16

METHOD SW8330A
EXPLOSIVES

Client	: KLEINFELDER	Date Collected:	03/15/16
Project	: NAWS CHINA LAKE, CTO 067	Date Received:	03/17/16
Batch No.	: 16C129	Date Extracted:	03/21/16 16:05
Sample ID	: KCH067-042	Date Analyzed:	03/23/16 16:11
Lab Samp ID	: C129-19	Dilution Factor:	1
Lab File ID	: XC23008A	Matrix	: WATER
Ext Btch ID	: EXC009W	% Moisture	: NA
Calib. Ref.	: XC23002A	Instrument ID	: T-081

PARAMETERS	RESULTS (ug/L)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)
HMX	ND	1.0	0.10	0.20
RDX	ND	1.0	0.16	0.40
1,3,5-TNB	ND	1.0	0.10	0.20
1,3-DNB	ND	1.0	0.10	0.20
TETRYL	ND	1.0	0.10	0.20
NITROBENZENE	ND	1.0	0.10	0.20
2,4,6-TNT	ND	1.0	0.16	0.40
4-AM-2,6-DNT	ND	1.0	0.20	0.20
2-AM-4,6-DNT	ND	1.0	0.10	0.20
2,6-DNT	ND	1.0	0.10	0.20
2,4-DNT	ND	1.0	0.12	0.20
2-NITROTOLUENE	ND	1.0	0.11	0.20
3-NITROTOLUENE	ND	1.0	0.16	0.40
4-NITROTOLUENE	ND	1.0	0.10	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DINITROTOLUENE	3.96	4.000	99.1	60-140

Note: All positive results are confirmed by Biphenyl column

3/31/16

LDC #: 36282C40 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C129 Standard/Full Page: 1 of 1
Laboratory: EMAX Laboratories Inc. Reviewer: EJ
2nd Reviewer: [illegible]

METHOD: HPLC Explosives (EPA SW 846 Method 8330A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	%D RSD ≤20 ICV ≤15
III.	Continuing calibration	A	CCV ≤15
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	EB=10 SB=11
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	SW	Not reviewed for Standard validation.
XI.	Target compound identification	A	Not reviewed for Standard validation.
XII.	System performance	A	Not reviewed for Standard validation.
XIII.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-032**	16C129-09**	Soil	03/15/16
2	KCH067-033	16C129-10	Soil	03/15/16
3	KCH067-034	16C129-11	Soil	03/15/16
4	KCH067-035	16C129-12	Soil	03/15/16
5	KCH067-036	16C129-13	Soil	03/15/16
6	KCH067-037	16C129-14	Soil	03/15/16
7	KCH067-038	16C129-15	Soil	03/15/16
8	KCH067-039	16C129-16	Soil	03/15/16
9	KCH067-040	16C129-17	Soil	03/15/16
10	KCH067-041	16C129-18	Water	03/15/16
11	KCH067-042	16C129-19	Water	03/15/16
12	KCH067-035MS	16C129-12MS	Soil	03/15/16
13	KCH067-035MSD	16C129-12MSD	Soil	03/15/16
14				
15	MBLK1S			
16	MBLK1W			

LDC #: 36282c40

VALIDATION FINDINGS CHECKLIST

Reviewer: R
2nd Reviewer: M

Method: ____ GC ✓ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
IIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥0.990?		✓		
Were the RT windows properly established?	✓			
IIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 15%?	✓			
III. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) < 15%?	✓			
Were all the retention times within the acceptance windows?	✓			
IV. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
V. Field Blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VI. Surrogate spikes				
Were all surrogate percent recovery (%R) within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36282C40

VALIDATION FINDINGS CHECKLIST

Reviewer: FD
2nd Reviewer: MC

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
X. Compound quantitation				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: ____GC ____HPLC

8310	8330	8151	8141	8141 (Con't)	8021B
A. Acenaphthene	A. HMX	A. 2,4-D	A. Dichlorvos	V. Fensulfothion	V. Benzene
B. Acenaphthylene	B. RDX	B. 2,4-DB	B. Mevinphos	W. Bolstar	CC. Toluene
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	C. Demeton-O	X. EPN	EE. Ethyl Benzene
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	D. Demeton-S	Y. Azinphos-methyl	SSS. O-Xylene
E. Benzo(a)pyrene	E. Tetryl	E. Dinoseb	E. Ethoprop	Z. Coumaphos	RRR. MP-Xylene
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	F. Naled	AA. Parathion	GG. Total Xylene
G. Benzo(g,h,i)perylene	G. 2.4.6-Trinitrotoluene	G. Dicamba	G. Sulfotep	BB. Trichloronate	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon	H. Phorate	CC. Trichlorinate	
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP	I. Dimethoate	DD. Trifluralin	
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotolune	J. MCPA	J. Diazinon	EE. Def	
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol	K. Disulfoton	FF. Prowl	
L. Fluorene	L. 2-Nitrotoluene	L.. 2,4,5-TP (silvex)	L. Parathion-methyl	GG. Ethion	
M. Indeno(1,2,3-cd)pyrene	M. 3-Nitrotoluene	M. Silvex	M. Ronnel		
N. Naphthalene	N. 4-Nitrotoluene		N. Malathion		
O. Phenanthrene	O.		O. Chlorpyrifos		
P. Pyrene	P.		P. Fenthion		
Q.	Q		Q. Parathion-ethyl		
R.			R. Trichlornate		
S.			S. Merphos		
			T. Stirofos		
			U. Tokuthion		

Notes:_____

LDC #: 36282C40

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ~~GC~~ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

Code = 12

#	Associated Samples	Compound Name	%RPD Bet 2 columns ≤ 40 Findings	Qualifications
	3	A	46	J det / A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36282C40

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC ~~(HPLC)~~ HPLC

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (100 std)	Recalculated CF (100 std)	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/27/16	HMX (C18)	145	145.15	151.7	151.7	6.9	6.9
			2,4,6 TNT	430	429.84	410.8	410.8	6.3	6.3
2	ICAL	1/20/16	HMX (Biphenyl)	124	123.6	122.9	122.9	9.8	9.8
			2,4,6 TNT	321	320.7	322.0	322.0	6.1	6.1
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282C40

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC ~~X~~ (HPLC)

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	CCV 12:55	3/23/16	HMX (C18)	400.0	~~425.88~~ ~~151.7~~ F7	425.38	6	6
			2,4,6-TNT	400.0	428.11	428.11	7	7
2	CCV 13:15	3/28/16	(Biphenyl)	200.0	219.63	219.63	10	10
			↓	200.0	191.47	191.47	4	4
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282C40

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: FT
2nd reviewer: [illegible]

METHOD: ___ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
3,4- DinitroToluene	C-18 (Ch A)	200	211.2	106	106	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 36282C40

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ~~__ GC~~ __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100

Where SSC = Spiked sample concentration; SC = Sample concentration; SA = Spike added; MS = Matrix spike; MSD = Matrix spike duplicate

MS/MSD samples: 12 + 13

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)	2000	2000	ND	2070	2090	103	103	104	104	1	1
2,4,6-Trinitrotoluene (8330)	↓	↓	↓	1920	1970	96	96	99	99	3	3
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c40

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT

2nd Reviewer: AC

METHOD: ~~GC~~ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC/SA)
RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
LCS = Laboratory Control Sample
SA = Spike added
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: EXC0085L/SC

Compound	Spike Added (ug/kg)		Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)	2000	2000	2250	2210	112	112	111	111	2	2
2,4,6-Trinitrotoluene (8330)	2000	2000	2020	1930	101	101	96	96	5	5
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282CY0

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: __ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. EXC009SL (LCS) Compound Name HMX

Concentration = (34100)(20) / (151.7)(2) =

= 2248 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 12, 2016

Parameters: Perchlorate

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 16C129

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-032**	16C129-09**	Soil	03/15/16
KCH067-033	16C129-10	Soil	03/15/16
KCH067-034	16C129-11	Soil	03/15/16
KCH067-035	16C129-12	Soil	03/15/16
KCH067-036	16C129-13	Soil	03/15/16
KCH067-037	16C129-14	Soil	03/15/16
KCH067-038	16C129-15	Soil	03/15/16
KCH067-039	16C129-16	Soil	03/15/16
KCH067-040	16C129-17	Soil	03/15/16
KCH067-041	16C129-18	Water	03/15/16
KCH067-042	16C129-19	Water	03/15/16
KCH067-035MS	16C129-12MS	Soil	03/15/16
KCH067-035MSD	16C129-12MSD	Soil	03/15/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perchlorate by Environmental Protection Agency (EPA) SW 846 Method 6850

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance check was performed prior to initial calibration.

All perchlorate ion signal to noise ratio requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

The isotope ratios were within QC limits.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 15.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the limit of detection verification (LODV) standard were less than or equal to 30.0%.

The isotope ratios were within QC limits.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found.

Sample KCH067-042 was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

China Lake CTO 067
Perchlorate - Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

China Lake CTO 067
Perchlorate - Field Blank Data Qualification Summary - SDG 16C129

No Sample Data Qualified in this SDG

METHOD SW6850
PERCHLORATE

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C129

Matrix : SOIL
InstrumentID : G0

Client SAMPLE ID	EMAX SAMPLE ID	RESULT (ug/kg)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/kg)	DL (ug/kg)	LOD (ug/kg)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1S	PLC003SB	ND	1	NA	4	0.5	1	03/21/1616:10	03/21/1610:30	16MC21008	MC21004	16PLC003S	NA	NA
LCS1S	PLC003SL	4.36	1	NA	4	0.5	1	03/21/1616:25	03/21/1610:30	16MC21009	MC21004	16PLC003S	NA	NA
KCH067-032	C129-09	2.32J	1	1.7	4.07	0.509	1.02	03/21/1616:54	03/21/1610:30	16MC21011	MC21004	16PLC003S	03/15/1611:20	03/17/16
LCD1S	PLC003SC	4.52	1	NA	4	0.5	1	03/21/1617:11	03/21/1610:30	16MC21012	MC21004	16PLC003S	NA	NA
KCH067-033	C129-10	ND	1	1.5	4.06	0.508	1.02	03/21/1617:26	03/21/1610:30	16MC21013	MC21004	16PLC003S	03/15/1611:35	03/17/16
KCH067-034	C129-11	1.99J	1	0.4	4.02	0.502	1	03/21/1617:41	03/21/1610:30	16MC21014	MC21004	16PLC003S	03/15/1612:10	03/17/16
KCH067-035	C129-12	ND	1	0.5	4.02	0.503	1.01	03/21/1617:55	03/21/1610:30	16MC21015	MC21004	16PLC003S	03/15/1612:15	03/17/16
KCH067-035MS	C129-12M	4.86	1	0.5	4.02	0.503	1.01	03/21/1618:10	03/21/1610:30	16MC21016	MC21004	16PLC003S	03/15/1612:15	03/17/16
KCH067-035MSD	C129-12S	4.86	1	0.5	4.02	0.503	1.01	03/21/1618:39	03/21/1610:30	16MC21018	MC21004	16PLC003S	03/15/1612:15	03/17/16
KCH067-036	C129-13	ND	1	2.3	4.09	0.512	1.02	03/21/1619:37	03/21/1610:30	16MC21022	MC21020	16PLC003S	03/15/1612:30	03/17/16
KCH067-037	C129-14	ND	1	1.6	4.07	0.508	1.02	03/21/1619:52	03/21/1610:30	16MC21023	MC21020	16PLC003S	03/15/1612:40	03/17/16
KCH067-038	C129-15	ND	1	1.3	4.05	0.507	1.01	03/21/1620:07	03/21/1610:30	16MC21024	MC21020	16PLC003S	03/15/1612:50	03/17/16
KCH067-039	C129-16	ND	1	1.1	4.04	0.506	1.01	03/21/1620:21	03/21/1610:30	16MC21025	MC21020	16PLC003S	03/15/1613:00	03/17/16
KCH067-040	C129-17	ND	1	1.0	4.04	0.505	1.01	03/21/1620:36	03/21/1610:30	16MC21026	MC21020	16PLC003S	03/15/1613:05	03/17/16

3/15/16

SGS

METHOD SW6850
PERCHLORATE

Client : KLEINFELDER
Project : NAWS CHINA LAKE, CTO 067
Batch No. : 16C129

Matrix : WATER
InstrumentID : GO

Client SAMPLE ID	EMAX SAMPLE ID	RESULT (ug/L)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/L)	DL (ug/L)	LOD (ug/L)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1W	PLC006WB	ND	1	NA	0.5	0.1	0.2	03/23/1611:28	NA	16MC23007	MC23004	16PLC006W	NA	NA
LCS1W	PLC006WL	0.588	1	NA	0.5	0.1	0.2	03/23/1611:45	NA	16MC23008	MC23004	16PLC006W	NA	NA
LCD1W	PLC006WC	0.550	1	NA	0.5	0.1	0.2	03/23/1611:59	NA	16MC23009	MC23004	16PLC006W	NA	NA
KCH067-041	C129-18	ND	1	NA	0.5	0.1	0.2	03/23/1613:56	NA	16MC23017	MC23004	16PLC006W	03/15/1614:00	03/17/16
KCH067-042	C129-19	ND	1	NA	0.5	0.1	0.2	03/23/1614:11	NA	16MC23018	MC23004	16PLC006W	03/15/1614:40	03/17/16

RC 17/6

LDC #: 36282C87 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C129 Standard/Full Page: 1 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: LC/MS Perchlorate (EPA SW846 Method 6850)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	awb tune
III.	Initial calibration/ICV	A / A	r² ICV ≤ 15
IV.	Continuing calibration	A	CCV ≤ 15 LODV ≤ 30
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB = 10 SB = 11
VII.	Surrogate spikes	N	not required
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS ID
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XIII.	Target compound identification	A	Not reviewed for Standard validation.
XIV.	System performance	A	Not reviewed for Standard validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-032**	16C129-09**	Soil	03/15/16
2	KCH067-033	16C129-10	Soil	03/15/16
3	KCH067-034	16C129-11	Soil	03/15/16
4	KCH067-035	16C129-12	Soil	03/15/16
5	KCH067-036	16C129-13	Soil	03/15/16
6	KCH067-037	16C129-14	Soil	03/15/16
7	KCH067-038	16C129-15	Soil	03/15/16
8	KCH067-039	16C129-16	Soil	03/15/16
9	KCH067-040	16C129-17	Soil	03/15/16
10	KCH067-041 EB	16C129-18	Water	03/15/16
11	KCH067-042 SB	16C129-19	Water	03/15/16
12	KCH067-035MS	16C129-12MS	Soil	03/15/16
13	KCH067-035MSD	16C129-12MSD	Soil	03/15/16

LDC #: 36282C87 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: 16C129 Standard/Full Page: 3 of 2
Laboratory: EMAX Laboratories Inc. Reviewer: F
2nd Reviewer: pl

METHOD: LC/MS Perchlorate (EPA SW846 Method 6850)

	Client ID	Lab ID	Matrix	Date
14				
15				
16				
17				
18				

Notes:

	MBLK1W						
	MBLK1S						

LDC #: 36282c87

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: EJ
2nd Reviewer: M

Method: Perchlorate (EPA SW 846 Method 6850)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the specified criteria?	✓			
Were the Perchlorate ions within ±0.3 m/z of mass 99,101 and 107?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?			✓	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Was the isotope ratio of $^{35}Cl/^{37}Cl$ or m/z 99/101 within 2.3 to 3.8?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 15%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the mid-range continuing calibration ≤ 15%?	✓			
Were all percent differences (%D) of the low-range continuing calibration ≤ 50%?	✓			
Was the isotope ratio of $^{35}Cl/^{37}Cl$ or m/z 99/101 within 2.3 to 3.8?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 36282C87

VALIDATION FINDINGS CHECKLIST

Reviewer: FD
2nd Reviewer: N

Validation Area	Yes	No	NA	Findings/Comments
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?.	✓			
XI. Internal standards				
Were internal standard area counts within ± 50% of the associated calibration standard?	✓			
Were retention times of m/z 89 ($Cl^{18}O_3^-$) within 0.2 minutes of m/z 83 (ClO_3^-)?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within 0.98 to 1.02?	✓			
Was the isotope ratio of $^{35}Cl/^{37}Cl$ or m/z 99/101 within 2.3 to 3.8?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC#: 36282c87
SDG#: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FD
2nd Reviewer: AC

Method: LCMS Perchlorate (Method 6850)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
3/3/2016	LCMS	Perchlorate	1	0.092049784	0.1
			2	0.181001406	0.2
			3	0.473018348	0.5
			4	0.958156512	1
			5	1.944112791	2
			6	4.823551117	5
			7	6.972141437	7.5

Regression Output		*Reported*
Constant	*0.022419*	*-0.002295*
Std Err of Y Est		
R Squared	*0.999451*	*0.999500*
Degrees of Freedom		
X Coefficient(s)	*0.937859*	*0.948471*
Std Err of Coef.		
Correlation Coefficient	*0.999725*	
Coefficient of Determination (r^2)	*0.999451*	*0.999500*

LDC #: 36282c87

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: M

METHOD: LC/MS Perchlorate (EPA Method 6850)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	MC21004	3/21/16	Perchlorate	2.0	2.083	2.083	4.15	4.15
2								
3								

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c87

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: FJ
2nd Reviewer:

METHOD: LC/MS perchlorate(EPA Method 6850)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSR - SR)/SA Where: SSR = Spiked sample result, SR = Sample result
SA = Spike added

RPD = I MSR - MSDR I * 2/(MSR + MSDR) MSR = Matrix spike percent recovery MSDR = Matrix spike duplicate percent recovery

MS/MSD samples: 12 + 13

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		Reported RPD	Recalculated RPD
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	----	----
Perchlorate	4.020	4.020	ND	4.86	4.86	121	121	121	121	0	0

Comments: Refer to Matrix Spike/Matrix Spike Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c87

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: LC/MS Perchlorate (EPA Method 6850)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: lcs10 8012

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCSD		LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Perchlorate	4.0	4.0	4.36	4.52	109	109	113	113	4	4

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282c87

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd reviewer: M

METHOD: LCMS (EPA SW 846 Method 6850)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. #1, Perchlorate

Conc. = $\frac{\left(\frac{14409}{135629} + 0.00229468\right)(40)}{(0.948471)(2.007)(0.983}$

=

2.32 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 13, 2016

Parameters: Polychlorinated Dioxins/Dibenzofurans

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 78915

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-005	AZ30248	Soil	03/08/16
KCH067-006	AZ30249	Soil	03/08/16
KCH067-007	AZ30250	Soil	03/08/16
KCH067-008	AZ30251	Soil	03/08/16
KCH067-009	AZ30252	Soil	03/08/16
KCH067-010	AZ30253	Soil	03/08/16
KCH067-011	AZ30254	Soil	03/08/16
KCH067-012	AZ30255	Soil	03/08/16
KCH067-013	AZ30256	Soil	03/08/16
KCH067-014	AZ30257	Soil	03/08/16
KCH067-015	AZ30258	Soil	03/08/16
KCH067-016**	AZ30259**	Soil	03/08/16
KCH067-017	AZ30260	Soil	03/08/16
KCH067-018	AZ30261	Soil	03/08/16
KCH067-019	AZ30262	Water	03/08/16
KCH067-016MS	AZ30259MS	Soil	03/08/16
KCH067-016MSD	AZ30259MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (September 2011). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) SW 846 Method 8290A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all labeled and unlabeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The minimum S/N ratio was greater than or equal to 10 for each unlabeled compounds and labeled compounds for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for unlabeled compounds and less than or equal to 30.0% for labeled compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 20.0% for labeled and less than or equal to 30.0% for unlabeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The minimum S/N ratio was greater than or equal to 10 for each unlabeled compounds and labeled compounds for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
160406-MB	04/06/16	OCDD Total HpCDD Total HpCDF Total HxCDF Total PeCDF Total TCDD Total TCDF	1.8 ng/Kg 0.50 ng/Kg 0.25 ng/Kg 0.30 ng/Kg 0.28 ng/Kg 0.088 ng/Kg 0.24 ng/Kg	KCH067-009
160321-MB	03/21/16	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	0.55 ng/Kg 0.36 ng/Kg 0.55 ng/Kg 0.054 ng/Kg	KCH067-005 KCH067-006 KCH067-007 KCH067-008 KCH067-010 KCH067-011 KCH067-012 KCH067-013 KCH067-014 KCH067-015 KCH067-016** KCH067-017 KCH067-018
160318-MB	03/18/16	2,3,4,6,7,8-HxCDF OCDD Total HpCDD Total HpCDF Total HxCDF Total PeCDF Total TCDD Total TCDF	4.2 pg/L 43 pg/L 2.1 pg/L 9.5 pg/L 20 pg/L 1.4 pg/L 1.1 pg/L 2.5 pg/L	All water samples in SDG 78915

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-009	Total HpCDD Total TCDD	1.5 ng/Kg 0.29 ng/Kg	1.5J ng/Kg 0.29J ng/Kg
KCH067-005	1,2,3,4,6,7,8-HpCDD Total HpCDD	0.43 ng/Kg 0.56 ng/Kg	0.43U ng/Kg 0.56J ng/Kg
KCH067-006	1,2,3,4,6,7,8-HpCDD Total HpCDD Total HxCDF	0.21 ng/Kg 0.21 ng/Kg 0.21 ng/Kg	0.21U ng/Kg 0.21U ng/Kg 0.21J ng/Kg

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-007	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	8.1 ng/Kg 7.9 ng/Kg 8.1 ng/Kg 6.2 ng/Kg	8.1J ng/Kg 7.9J ng/Kg 8.1J ng/Kg 6.2J ng/Kg
KCH067-008	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	0.33 ng/Kg 0.22 ng/Kg 0.80 ng/Kg 0.27 ng/Kg	0.33U ng/Kg 0.22U ng/Kg 0.80J ng/Kg 0.27J ng/Kg
KCH067-010	Total HpCDD	0.31 ng/Kg	0.31U ng/Kg
KCH067-011	1,2,3,4,6,7,8-HpCDD Total HpCDD	1.5 ng/Kg 1.5 ng/Kg	1.5J ng/Kg 1.5J ng/Kg
KCH067-012	1,2,3,4,6,7,8-HpCDD Total HpCDD	0.32 ng/Kg 0.32 ng/Kg	0.32U ng/Kg 0.32U ng/Kg
KCH067-014	Total HpCDD Total HxCDF	0.25 ng/Kg 0.27 ng/Kg	0.25U ng/Kg 0.27J ng/Kg
KCH067-015	1,2,3,4,6,7,8-HpCDD Total HpCDD Total HxCDF	0.29 ng/Kg 0.29 ng/Kg 2.3 ng/Kg	0.29U ng/Kg 0.29U ng/Kg 2.3J ng/Kg
KCH067-016**	Total HpCDD	0.32 ng/Kg	0.32U ng/Kg
KCH067-017	1,2,3,4,6,7,8-HpCDD Total HpCDD	5.3 ng/Kg 5.3 ng/Kg	5.3J ng/Kg 5.3J ng/Kg
KCH067-019	OCDD Total HxCDF Total PeCDF	57 pg/L 10 pg/L 7.2 pg/L	57J pg/L 10U pg/L 7.2J pg/L

VI. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-019	03/08/16	OCDD OCDF Total HxCDF Total PeCDF	57 pg/L 4.0 pg/L 10 pg/L 7.2 pg/L	All soil samples in SDG 78915

Sample KCH067-042 (from SDG 76998) was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-042	03/15/16	2,3,4,6,7,8-HxCDF OCDD Total HpCDF Total HxCDF Total HxCDD	2.4 pg/L 25 pg/L 2.8 pg/L 2.4 pg/L 1.9 pg/L	All water samples in SDG 78915

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-005	Total PeCDF	12 ng/Kg	12J ng/Kg
KCH067-006	OCDD Total HxCDF	1.6 ng/Kg 0.21 ng/Kg	1.6U ng/Kg 0.21U ng/Kg
KCH067-007	OCDD OCDF Total HxCDF Total PeCDF	139 ng/Kg 7.9 ng/Kg 6.2 ng/Kg 1.0 ng/Kg	139J ng/Kg 7.9J ng/Kg 6.2U ng/Kg 1.0U ng/Kg
KCH067-008	OCDD OCDF Total HxCDF	2.3 ng/Kg 0.22 ng/Kg 0.27 ng/Kg	2.3U ng/Kg 0.22U ng/Kg 0.27U ng/Kg
KCH067-010	OCDD Total PeCDF	3.0 ng/Kg 0.15 ng/Kg	3.0U ng/Kg 0.15U ng/Kg
KCH067-012	Total PeCDF	0.45 ng/Kg	0.45U ng/Kg
KCH067-013	Total PeCDF	0.12 ng/Kg	0.12U ng/Kg
KCH067-014	OCDD Total HxCDF Total PeCDF	1.6 ng/Kg 0.27 ng/Kg 0.23 ng/Kg	1.6U ng/Kg 0.27U ng/Kg 0.23U ng/Kg
KCH067-015	OCDD Total HxCDF	2.4 ng/Kg 2.3 ng/Kg	2.4U ng/Kg 2.3U ng/Kg
KCH067-016**	OCDD Total PeCDF	0.93 ng/Kg 0.35 ng/Kg	0.93U ng/Kg 0.35U ng/Kg
KCH067-017	OCDD Total PeCDF	47 ng/Kg 0.52 ng/Kg	47U ng/Kg 0.52U ng/Kg
KCH067-018	Total PeCDF	0.36 ng/Kg	0.36U ng/Kg

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-019	OCDD Total HxCDF	57 pg/L 10 pg/L	57J pg/L 10J pg/L

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

XI. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected or estimated in thirteen samples.

Due to equipment blank and source blank contamination, data were qualified as not detected or estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Polychlorinated Dioxins/Dibenzofurans - Data Qualification Summary - SDG 78915

No Sample Data Qualified in this SDG

China Lake CTO 067
Polychlorinated Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG 78915

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-009	Total HpCDD Total TCDD	1.5J ng/Kg 0.29J ng/Kg	A	7
KCH067-005	1,2,3,4,6,7,8-HpCDD Total HpCDD	0.43U ng/Kg 0.56J ng/Kg	A	7
KCH067-006	1,2,3,4,6,7,8-HpCDD Total HpCDD Total HxCDF	0.21U ng/Kg 0.21U ng/Kg 0.21J ng/Kg	A	7
KCH067-007	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	8.1J ng/Kg 7.9J ng/Kg 8.1J ng/Kg 6.2J ng/Kg	A	7
KCH067-008	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	0.33U ng/Kg 0.22U ng/Kg 0.80J ng/Kg 0.27J ng/Kg	A	7
KCH067-010	Total HpCDD	0.31U ng/Kg	A	7
KCH067-011	1,2,3,4,6,7,8-HpCDD Total HpCDD	1.5J ng/Kg 1.5J ng/Kg	A	7
KCH067-012	1,2,3,4,6,7,8-HpCDD Total HpCDD	0.32U ng/Kg 0.32U ng/Kg	A	7
KCH067-014	Total HpCDD Total HxCDF	0.25U ng/Kg 0.27J ng/Kg	A	7
KCH067-015	1,2,3,4,6,7,8-HpCDD Total HpCDD Total HxCDF	0.29U ng/Kg 0.29U ng/Kg 2.3J ng/Kg	A	7
KCH067-016**	Total HpCDD	0.32U ng/Kg	A	7
KCH067-017	1,2,3,4,6,7,8-HpCDD Total HpCDD	5.3J ng/Kg 5.3J ng/Kg	A	7

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-019	OCDD Total HxCDF Total PeCDF	57J pg/L 10U pg/L 7.2J pg/L	A	7

China Lake CTO 067
Polychlorinated Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG 78915

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-005	Total PeCDF	12J ng/Kg	A	6
KCH067-006	OCDD Total HxCDF	1.6U ng/Kg 0.21U ng/Kg	A	6
KCH067-007	OCDD OCDF Total HxCDF Total PeCDF	139J ng/Kg 7.9J ng/Kg 6.2U ng/Kg 1.0U ng/Kg	A	6
KCH067-008	OCDD OCDF Total HxCDF	2.3U ng/Kg 0.22U ng/Kg 0.27U ng/Kg	A	6
KCH067-010	OCDD Total PeCDF	3.0U ng/Kg 0.15U ng/Kg	A	6
KCH067-012	Total PeCDF	0.45U ng/Kg	A	6
KCH067-013	Total PeCDF	0.12U ng/Kg	A	6
KCH067-014	OCDD Total HxCDF Total PeCDF	1.6U ng/Kg 0.27U ng/Kg 0.23U ng/Kg	A	6
KCH067-015	OCDD Total HxCDF	2.4U ng/Kg 2.3U ng/Kg	A	6
KCH067-016**	OCDD Total PeCDF	0.93U ng/Kg 0.35U ng/Kg	A	6
KCH067-017	OCDD Total PeCDF	47U ng/Kg 0.52U ng/Kg	A	6
KCH067-018	Total PeCDF	0.36U ng/Kg	A	6
KCH067-019	OCDD Total HxCDF	57J pg/L 10J pg/L	A	6

EPA 8290A

Kleinfelder
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Attn: Karin Kaiser

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Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-005

APPL ID: AZ30248

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.43 J U(7)	12.5	0.43PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.10 U	12.5	0.10PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.056 U	12.5	0.056DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.13 J	12.5	0.13PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.053 U	12.5	0.053DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.043 U	12.5	0.043DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.13 U	12.5	0.13PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.040 U	12.5	0.040DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.062 U	12.5	0.062DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8-PECDD	0.042 U	12.5	0.042DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8-PECDF	0.074 U	12.5	0.074DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.13 U	12.5	0.13PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,4,7,8-PECDF	0.078 U	12.5	0.078DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,7,8-TCDD	0.076 U	5.0	0.076DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,7,8-TCDF	0.12 U	5.0	0.12PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	OCDD	2.8 U	25.0	2.8PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	OCDF	0.16 U	25.0	0.16PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HPCDD	0.56 J J(7)	12.5	0.56PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HPCDF	0.44 U	12.5	0.44PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HXCDD	0.17 J	12.5	0.42PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HXCDF	0.54 U	12.5	0.54PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL PECDD	0.022 U	12.5	0.022DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL PECDF	0.12 J J(6)	12.5	0.64PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL TCDD	0.15 U	5.0	0.15PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL TCDF	0.19 J	5.0	0.57PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	93.1	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	86.6	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	93.4	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	96.7	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	97.3	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	85.3	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	84.2	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	81.3	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	79.8	40-135		%	03/21/16	04/04/16

J = Estimated value.

4/25/16

Quant Method: 160302_8290
Run #: 160404_HR_05
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:39 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

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Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-006

APPL ID: AZ30249

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.21 J U(7)	12.5	0.21PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.023 U	12.5	0.023DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.028 U	12.5	0.028DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.030 U	12.5	0.030DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.027 U	12.5	0.027DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.030 U	12.5	0.030DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.026 U	12.5	0.026DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.029 U	12.5	0.029DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.031 U	12.5	0.031DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8-PECDD	0.044 U	12.5	0.044DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8-PECDF	0.056 U	12.5	0.056DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.14 J	12.5	0.14PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,4,7,8-PECDF	0.059 U	12.5	0.059DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,7,8-TCDD	0.052 U	5.0	0.052DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,7,8-TCDF	0.24 J	5.0	0.24PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	OCDD	1.6 J U(6)	25.0	1.6PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	OCDF	0.15 U	25.0	0.15PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HPCDD	0.21 J U(7)	12.5	0.25PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HPCDF	0.084 J	12.5	0.15PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HXCDD	0.037 U	12.5	0.037PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HXCDF	0.21 J U(7)	12.5(6)	0.21PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL PECDD	0.044 U	12.5	0.044DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL PECDF	0.063 U	12.5	0.063PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL TCDD	0.65 U	5.0	0.65PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL TCDF	0.47 J	5.0	0.97PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	101	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	92.4	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	95.0	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	97.9	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	106	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	90.8	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	95.2	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	92.3	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	91.2	40-135		%	03/21/16	04/04/16

J = Estimated value.

5C051716

Quant Method: 160302_8290
Run #: 160404_HR_06
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-007

APPL ID: AZ30250

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	8.1 J J(7)	12.5	8.1PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.17 U	12.5	0.17DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.20 U	12.5	0.20DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.050 U	12.5	0.050DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.063 U	12.5	0.063DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.17 U	12.5	0.17PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.39 U	12.5	0.39PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.089 U	12.5	0.089PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.074 U	12.5	0.074DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8-PECDD	0.027 U	12.5	0.027DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	1,2,3,7,8-PECDF	0.059 U	12.5	0.059DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,4,6,7,8-HXCDF	3.3 U	12.5	3.3PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,4,7,8-PECDF	0.062 U	12.5	0.062DL	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,7,8-TCDD	0.15 U	5.0	0.15PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	2,3,7,8-TCDF	0.099 U	5.0	0.099PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	OCDD	139 J(6)	25.0	139PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	OCDF	7.9 J J(6,7)	25.0	7.9PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HPCDD	8.1 J J(7)	12.5	8.4PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HPCDF	1.6 J	12.5	5.9PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HXCDD	0.089 J	12.5	0.37PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL HXCDF	6.2 J UJ(6)	12.5 (7)	6.8PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL PECDD	0.067 U	12.5	0.067PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL PECDF	1.0 J U(6)	12.5	1.6PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL TCDD	0.15 U	5.0	0.15PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	TOTAL TCDF	0.20 J	5.0	0.56PC	ng/Kg	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	96.3	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	79.6	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	85.9	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	99.3	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	93.1	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	86.1	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	86.2	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	84.7	40-135		%	03/21/16	04/04/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	84.7	40-135		%	03/21/16	04/04/16

J = Estimated value.

Quant Method: 160302_8290
Run #: 160404_HR_14
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

Attn: Karin Kaiser

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-008

APPL ID: AZ30251

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.33 J U(7)	12.5	0.33PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.029 U	12.5	0.029DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.034 U	12.5	0.034DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.052 U	12.5	0.052DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.032 U	12.5	0.032DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.053 U	12.5	0.053DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.032 U	12.5	0.032DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.050 U	12.5	0.050DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.038 U	12.5	0.038DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.038 U	12.5	0.038DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.030 U	12.5	0.030DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.069 U	12.5	0.069PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.031 U	12.5	0.031DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.019 U	5.0	0.019DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.077 U	5.0	0.077PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	2.3 J U(6)	25.0	2.3PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.22 J U(6,7)	25.0	0.22PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	0.80 J J(7)	12.5	0.80PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.071 J	12.5	0.25PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.17 U	12.5	0.17PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	0.27 J UJ(6)	12.5 (7)	0.46PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.060 U	12.5	0.060PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.12 U	12.5	0.12PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.029 J	5.0	0.098PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.024 J	5.0	0.20PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	108	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	91.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	96.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	105	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	99.7	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	92.1	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	92.4	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	93.7	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	94.9	40-135		%	03/21/16	04/05/16

J = Estimated value.

Quant Method: 160302_8290
Run #: 160404_HR_15
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-009

APPL ID: AZ30252

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160406-2066

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	1.5 J	12.5	1.5PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.54 U	12.5	0.54PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.13 U	12.5	0.13PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.060 U	12.5	0.060DL	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.066 U	12.5	0.066DL	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.21 U	12.5	0.21PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.065 U	12.5	0.065DL	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.13 U	12.5	0.13PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.13 U	12.5	0.13PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,7,8-PECDD	0.066 U	12.5	0.066DL	ng/Kg	04/06/16	04/12/16
EPA 8290A	1,2,3,7,8-PECDF	0.10 U	12.5	0.10DL	ng/Kg	04/06/16	04/12/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.16 U	12.5	0.16PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	2,3,4,7,8-PECDF	0.23 U	12.5	0.23PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	2,3,7,8-TCDD	0.052 U	5.0	0.052DL	ng/Kg	04/06/16	04/12/16
EPA 8290A	2,3,7,8-TCDF	0.11 U	5.0	0.11DL	ng/Kg	04/06/16	04/12/16
EPA 8290A	OCDD	9.1 U	25.0	9.1PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	OCDF	0.20 U	25.0	0.20PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL HPCDD	1.5 J J(7)	12.5	1.6PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL HPCDF	1.4 U	12.5	1.4PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL HXCDD	0.23 U	12.5	0.23PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL HXCDF	1.5 U	12.5	1.5PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL PECDD	0.16 J	12.5	0.45PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL PECDF	0.74 U	12.5	0.74PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL TCDD	0.29 J J(7)	5.0	0.60PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	TOTAL TCDF	1.3 U	5.0	1.3PC	ng/Kg	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	77.3	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	73.3	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	76.4	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	74.3	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	69.8	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	65.4	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	66.3	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	65.9	40-135		%	04/06/16	04/12/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	68.9	40-135		%	04/06/16	04/12/16

J = Estimated value.

Quant Method: 160302_8290
Run #: 160411_HR_18
Instrument: Magneto
Sequence: 160411
Dilution Factor: 1
Initials: RP

4/05/16

Printed: 04/18/16 5:29:53 AM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-010

APPL ID: AZ30253

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.33 U	12.5	0.33PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.068 U	12.5	0.068PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.065 U	12.5	0.065DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.034 U	12.5	0.034PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.041 U	12.5	0.041DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.030 U	12.5	0.030DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.040 U	12.5	0.040DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.029 U	12.5	0.029DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.058 U	12.5	0.058PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.033 U	12.5	0.033DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.034 U	12.5	0.034DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.042 U	12.5	0.042DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.036 U	12.5	0.036DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.029 U	5.0	0.029DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.17 U	5.0	0.17PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	3.0 J U(6)	25.0	3.0PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.20 U	25.0	0.20PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	0.31 J U(7)	12.5	0.65PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.077 J	12.5	0.38PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.12 J	12.5	0.44PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	0.33 U	12.5	0.33PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.035 J	12.5	0.32PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.15 J U(6)	12.5	0.82PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.30 U	5.0	0.30PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.24 J	5.0	0.41PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	67.2	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	62.1	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	66.3	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	67.7	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	61.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	56.7	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	56.5	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	61.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	56.9	40-135		%	03/21/16	04/05/16

J = Estimated value.

Quant Method: 160302_8290
Run #: 160404_HR_17
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

4/7/16

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

Attn: Karin Kaiser

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-011

APPL ID: AZ30254

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	1.5 J J(7)	12.5	1.5PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.11 U	12.5	0.11DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.13 U	12.5	0.13DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.099 U	12.5	0.099DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.17 U	12.5	0.17PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.10 U	12.5	0.10DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.10 U	12.5	0.10DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.096 U	12.5	0.096DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.12 U	12.5	0.12DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.10 U	12.5	0.10DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.14 U	12.5	0.14DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.12 U	12.5	0.12PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.11 U	12.5	0.11PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.14 U	5.0	0.14PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.23 U	5.0	0.23PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	13 U	25.0	13PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.45 U	25.0	0.45PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	1.5 J J(7)	12.5	1.5PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.75 U	12.5	0.75PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.50 U	12.5	0.50PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	1.2 U	12.5	1.2PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.18 U	12.5	0.18PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.78 U	12.5	0.78PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.14 U	5.0	0.14PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.44 J	5.0	2.3PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	57.4	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	58.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	61.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	60.7	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	55.9	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	53.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	54.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	51.9	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	49.9	40-135		%	03/21/16	04/05/16

J = Estimated value.

SG 051716

Quant Method: 160302_8290
Run #: 160404_HR_18
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-012

APPL ID: AZ30255

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.32 J U(7)	12.5	0.32PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.046 U	12.5	0.046DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.055 U	12.5	0.055DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.090 U	12.5	0.090DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.040 U	12.5	0.040DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.092 U	12.5	0.092DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.039 U	12.5	0.039DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.14 U	12.5	0.14PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.047 U	12.5	0.047DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.017 U	12.5	0.017DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.074 U	12.5	0.074DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.15 U	12.5	0.15PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.078 U	12.5	0.078DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.014 U	5.0	0.014DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.10 U	5.0	0.10PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	2.2 U	25.0	2.2PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.041 U	25.0	0.041DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	0.32 J U(7)	12.5	0.44PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.50 U	12.5	0.50PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.25 J	12.5	0.56PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	0.53 U	12.5	0.53PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.18 U	12.5	0.18PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.45 J U(6)	12.5	0.45PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.067 J	5.0	0.23PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.22 J	5.0	1.0PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	105	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	97.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	98.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	104	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	98.1	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	91.3	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	88.3	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	89.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	91.2	40-135		%	03/21/16	04/05/16

J = Estimated value.

4/5/16

Quant Method: 160302_8290
Run #: 160404_HR_19
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-013

APPL ID: AZ30256

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.051 U	12.5	0.051DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.20 J	12.5	0.20PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.049 U	12.5	0.049DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.034 U	12.5	0.034DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.047 U	12.5	0.047DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.035 U	12.5	0.035DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.046 U	12.5	0.046DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.033 U	12.5	0.033DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.055 U	12.5	0.055DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.030 U	12.5	0.030DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.059 U	12.5	0.059DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.049 U	12.5	0.049DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.062 U	12.5	0.062DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.033 U	5.0	0.033DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.17 U	5.0	0.17PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	0.70 U	25.0	0.70PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.045 U	25.0	0.045DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	0.051 U	12.5	0.051DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.20 J	12.5	0.20PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.18 U	12.5	0.18PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	0.20 U	12.5	0.20PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.039 U	12.5	0.039PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.12 J U(6)	12.5	0.52PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.52 U	5.0	0.52PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.60 U	5.0	0.60PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	103	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	94.5	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	101	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	106	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	98.0	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	90.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	89.3	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	91.4	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	84.4	40-135		%	03/21/16	04/05/16

J = Estimated value.

Quant Method: 160302_8290
Run #: 160404_HR_24
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

4/8/16

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-014

APPL ID: AZ30257

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.051 U	12.5	0.051DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.037 U	12.5	0.037DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.044 U	12.5	0.044DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.048 U	12.5	0.048DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.042 U	12.5	0.042DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.049 U	12.5	0.049DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.041 U	12.5	0.041DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.046 U	12.5	0.046DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.049 U	12.5	0.049DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.037 U	12.5	0.037DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.032 U	12.5	0.032DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.13 U	12.5	0.13PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.034 U	12.5	0.034DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.036 U	5.0	0.036DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.097 U	5.0	0.097PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	1.6 J U(6)	25.0	1.6PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.13 U	25.0	0.13PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	0.25 J U(7)	12.5	0.25PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.47 U	12.5	0.47PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.14 U	12.5	0.14PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	0.27 J U(6,7)	12.5	0.55PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.077 J	12.5	0.45PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.23 J U(6)	12.5	0.55PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.069 U	5.0	0.069PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.31 U	5.0	0.31PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	84.9	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	72.0	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	78.4	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	85.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	79.5	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	70.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	73.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	71.0	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	75.5	40-135		%	03/21/16	04/05/16

J = Estimated value.

4/5/16

Quant Method: 160302_8290
Run #: 160404_HR_25
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-015

APPL ID: AZ30258

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.29 J U(7)	12.5	0.29PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.14 U	12.5	0.14PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.065 U	12.5	0.065DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.047 U	12.5	0.047DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.092 U	12.5	0.092DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.048 U	12.5	0.048DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.25 U	12.5	0.25PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.046 U	12.5	0.046DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.11 U	12.5	0.11DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.068 U	12.5	0.068DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.044 U	12.5	0.044DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.52 U	12.5	0.52PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.046 U	12.5	0.046DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.11 U	5.0	0.11DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.10 U	5.0	0.10PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	2.4 J U(6)	25.0	2.4PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.18 U	25.0	0.18PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	0.29 J U(7)	12.5	0.39PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.59 U	12.5	0.59PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.11 J	12.5	0.22PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	2.3 J UJ(6)	12.5 (7)	3.5PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.26 U	12.5	0.26PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	1.9 U	12.5	1.9PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.84 U	5.0	0.84PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.97 U	5.0	0.97PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	107	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	98.7	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	101	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	106	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	102	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	91.9	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	84.7	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	89.1	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	92.5	40-135		%	03/21/16	04/05/16

J = Estimated value.

8/25/16

Quant Method: 160302_8290
Run #: 160404_HR_26
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-016

APPL ID: AZ30259

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.069 U	12.5	0.069DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.052 U	12.5	0.052DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.061 U	12.5	0.061DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.038 U	12.5	0.038PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.045 U	12.5	0.045DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.048 U	12.5	0.048DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.044 U	12.5	0.044DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.046 U	12.5	0.046DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.053 U	12.5	0.053DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.056 U	12.5	0.056DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.047 U	12.5	0.047DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.11 U	12.5	0.11PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.050 U	12.5	0.050DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.052 U	5.0	0.052DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.25 U	5.0	0.25PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	0.93 J U(6)	25.0	0.93PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.039 U	25.0	0.039PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	0.32 J U(7)	12.5	0.64PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	0.058 U	12.5	0.058PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	0.12 U	12.5	0.12PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	0.11 U	12.5	0.11PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.24 U	12.5	0.24PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.35 J U(6)	12.5	0.65PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.026 U	5.0	0.026DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.53 U	5.0	0.53PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	82.3	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	73.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	78.0	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	80.2	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	84.8	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	74.4	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	73.0	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	70.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	71.5	40-135		%	03/21/16	04/05/16

J = Estimated value.

8/25/16

Quant Method: 160302_8290
Run #: 160404_HR_27
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-017

APPL ID: AZ30260

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	5.3 J J(7)	12.5	5.3PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.40 U	12.5	0.40PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.16 U	12.5	0.16DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.17 U	12.5	0.17DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.19 U	12.5	0.19DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.17 U	12.5	0.17DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.19 U	12.5	0.19DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.16 U	12.5	0.16DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.22 U	12.5	0.22DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDD	0.19 U	12.5	0.19DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	1,2,3,7,8-PECDF	0.093 U	12.5	0.093DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.20 U	12.5	0.20DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,4,7,8-PECDF	0.098 U	12.5	0.098DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDD	0.097 U	5.0	0.097DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	2,3,7,8-TCDF	0.20 J	5.0	0.20PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDD	47 U(6)	25.0	47PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	OCDF	0.24 U	25.0	0.24DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDD	5.3 J J(7)	12.5	5.3PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HPCDF	1.8 U	12.5	1.8PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDD	1.1 U	12.5	1.1PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL HXCDF	1.0 U	12.5	1.0PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDD	0.19 U	12.5	0.19DL	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL PECDF	0.52 J U(6)	12.5	0.72PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDD	0.79 U	5.0	0.79PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	TOTAL TCDF	0.43 J	5.0	0.58PC	ng/Kg	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	99.0	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	86.9	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	108	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	103	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	88.3	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	85.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	85.0	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	86.6	40-135		%	03/21/16	04/05/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	106	40-135		%	03/21/16	04/05/16

J = Estimated value.

Quant Method: 160302_8290
Run #: 160404_HR_28
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

4/5/16

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-018

APPL ID: AZ30261

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	0.57 U	12.5	0.57PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.045 U	12.5	0.045DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.065 U	12.5	0.065PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.042 U	12.5	0.042DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.070 U	12.5	0.070DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.043 U	12.5	0.043DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.068 U	12.5	0.068DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.041 U	12.5	0.041DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.081 U	12.5	0.081DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,7,8-PECDD	0.034 U	12.5	0.034DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	1,2,3,7,8-PECDF	0.034 U	12.5	0.034DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.073 U	12.5	0.073DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	2,3,4,7,8-PECDF	0.036 U	12.5	0.036DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	2,3,7,8-TCDD	0.019 U	5.0	0.019DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	2,3,7,8-TCDF	0.024 U	5.0	0.024DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	OCDD	3.9 U	25.0	3.9PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	OCDF	0.077 U	25.0	0.077DL	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL HPCDD	0.63 U	12.5	0.63PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL HPCDF	0.055 J	12.5	0.43PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL HXCDD	0.18 U	12.5	0.18PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL HXCDF	0.23 U	12.5	0.23PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL PECDD	0.061 J	12.5	0.54PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL PECDF	0.36 J U(6)	12.5	0.40PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL TCDD	0.20 U	5.0	0.20PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	TOTAL TCDF	0.31 J	5.0	0.51PC	ng/Kg	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	92.8	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	76.3	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	95.7	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	102	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	84.3	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	77.6	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	84.1	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	82.6	40-135		%	03/21/16	04/06/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	88.2	40-135		%	03/21/16	04/06/16

J = Estimated value.

Quant Method: 160302_8290
Run #: 160404_HR_29
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

8/05/16

Printed: 04/08/16 4:59:40 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

Attn: Karin Kaiser

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78915

Sample ID: KCH067-019

APPL ID: AZ30262

Sample Collection Date: 03/08/16

QCG: $829ACTO6-160318-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	3.5 U	125.0	3.5PC	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.61 U	125.0	0.61DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	1.3 U	125.0	1.3PC	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.93 U	125.0	0.93DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.52 U	125.0	0.52DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.94 U	125.0	0.94DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.51 U	125.0	0.51DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.90 U	125.0	0.90DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.60 U	125.0	0.60DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8-PECDD	0.82 U	125.0	0.82DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8-PECDF	0.60 U	125.0	0.60DL	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,4,6,7,8-HXCDF	2.7 U	125.0	2.7PC	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,4,7,8-PECDF	0.93 U	125.0	0.93PC	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,7,8-TCDD	0.70 U	50.0	0.70DL	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,7,8-TCDF	0.83 U	50.0	0.83PC	pg/L	03/18/16	04/03/16
EPA 8290A	OCDD	57 J J(6)	250.0 (7)	57PC	pg/L	03/18/16	04/03/16
EPA 8290A	OCDF	4.0 J	250.0	4.0PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HPCDD	4.1 U	125.0	4.1PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HPCDF	4.1 U	125.0	4.1PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HXCDD	0.98 U	125.0	0.98PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HXCDF	10 J UJ(6)	125.0 (7)	15PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL PECDD	1.6 U	125.0	1.6PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL PECDF	7.2 J J(6)	125.0	12PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL TCDD	0.86 U	50.0	0.86PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL TCDF	0.83 U	50.0	0.83PC	pg/L	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	78.3	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	74.6	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	78.4	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	81.9	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	72.8	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	66.2	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	69.7	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	69.5	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	65.0	40-135		%	03/18/16	04/03/16

J = Estimated value.

SLS 17/16

Quant Method: 160302_8290
Run #: 160403_HR_06
Instrument: Magneto
Sequence: 160403
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 5:12:53 PM
Form 1 - APPL Standard GC - No MC

LDC #: 36282D21
SDG #: 78915
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard/Full

Date: 5/12/16
Page: 1 of 2
Reviewer: P
2nd Reviewer: R

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW846 Method 8290A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	% RSD ≤ 20 ICV = 20/30 unlabeled/labeled
IV.	Continuing calibration	A	↓
V.	Laboratory Blanks	SW	
VI.	Field blanks	SW	EB = 15 SB= KCH067-042 (78998)
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Internal standards	A	
XI.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XII.	Target compound identification	A	Not reviewed for Standard validation.
XIII.	System performance	A	Not reviewed for Standard validation.
XIV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1 2	KCH067-005	AZ30248	Soil	03/08/16
2 2	KCH067-006	AZ30249	Soil	03/08/16
3 2	KCH067-007	AZ30250	Soil	03/08/16
4 2	KCH067-008	AZ30251	Soil	03/08/16
5 3	KCH067-009	AZ30252	Soil	03/08/16
6 2	KCH067-010	AZ30253	Soil	03/08/16
7 2	KCH067-011	AZ30254	Soil	03/08/16
8 2	KCH067-012	AZ30255	Soil	03/08/16
9 2	KCH067-013	AZ30256	Soil	03/08/16
10 2	KCH067-014	AZ30257	Soil	03/08/16
11 2	KCH067-015	AZ30258	Soil	03/08/16
12 2	KCH067-016**	AZ30259**	Soil	03/08/16
13 2	KCH067-017	AZ30260	Soil	03/08/16
14 2	KCH067-018	AZ30261	Soil	03/08/16

LDC #: 36282D21
SDG #: 78915
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard/Full

Date: 5/12/16

Reviewer: FJ
2nd Reviewer: JK

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW846 Method 8290A)

	Client ID	Lab ID	Matrix	Date
15 1	KCH067-019	AZ30262	Water	03/08/16
16 2	KCH067-016MS	AZ30259MS	Soil	03/08/16
17 2	↓ MSD	↓ MSD	↓	↓
18				
19				
20				
21				

Notes:

1	160318-MB						
2	160321-MB						
3	160406-MB						

LDC #: 36282021

VALIDATION FINDINGS CHECKLIST

Reviewer: EJ
2nd Reviewer: AC

Method: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Was the chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomers ≤ 25% ?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
Was the presence of 1,2,8,9-TCDD and 1,3,4,6,8-PeCDF verified?	✓			
IIIa. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% for unlabeled compounds and labeled compounds ?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% for unlabeled compounds and ≤ 30% for labeled compounds ?	✓			
IV. Continuing calibration				
Was a contiuning calibration performed at the beginning and end of each 12 hour period?	✓			
Were all percent differences (%D) ≤ 20% for unlabeled compounds and ≤ 30% for labeled compounds ?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound and for each recovery and internal standard ≥ 10?	✓			
V. Laboratory Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and whenever a sample extraction was performed?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet?	✓			
VI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.	✓			
VII. Matrix spike/Matrix spike duplicates				

LDC #: 36282021

VALIDATION FINDINGS CHECKLIST

Reviewer: EJ
2nd Reviewer: AC

Validation Area	Yes	No	NA	Findings/Comments
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
X. Internal standards				
Were internal standard recoveries within the 40-135% criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks ≥ 10?	✓			
XI. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. Target compound identification				
For 2,3,7,8 substituted congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For 2,3,7,8 substituted congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For non-2,3,7,8 substituted congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard ≥ 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
For PCDF identification, was any signal (S/N ≥ 2.5, at ± seconds RT) detected in the corresponding PCDPE channel?	✓			
Was an acceptable lock mass recorded and monitored?				
XIII. System performance				
System performance was found to be acceptable.	✓			
XIV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

_____

_____

LDC #: 36282D2 1

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: EM
2nd Reviewer: AK

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

code = 7

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 4/6/16 **Blank analysis date:** 4/12/16 **Associated samples:** 5

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	160406-MB	5								
G	1.8	-								
U	0.50	1.5 J								
Y	0.25	-								
X	0.30	-								
W	0.28	-								
R	0.088	0.29 J								
V	0.24	-								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36282D21

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

code = 7

Blank extraction date: 3/21/16 **Blank analysis date:** 4/4/16 **Associated samples:** 1→4, 6→14

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	160321-MB	MB	1	2	3	4	5	6	7	8
* F	0.55		0.43 U	0.21 U	8.1 J	0.33 U	1.5 J	-	1.5 J	0.32 U
* Q	0.36				7.9 J	0.22 U	-	-	-	-
* U	0.55		0.56 J	0.21 U	~~7.9 J~~ 8.1 J	0.80 J	~~1.5 J~~	0.31 U	1.5 J	0.32 U
* X	0.054			0.21 J	6.2 J	0.27 J	-	-	-	-
* > EDL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36282D1

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: PD
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?

Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?

Y N N/A Was the method blank contaminated?

code = 7

Blank extraction date: 3/21/16 **Blank analysis date:** 4/4/16 **Associated samples:** 1→4, 6→14

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	160321-MB	10	11	12	13	~~14~~ F7				
* F	0.55	-	0.29U	-	5.3J					
* Q	0.36	-	-	-	-					
* U	0.55	0.25U	0.29U	0.32U	5.3J					
* X	0.05U	0.27J	2.3J	-	-					
* 7 EDL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36282D21

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

code = 7

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 3/18/16 **Blank analysis date:** 4/3/16 **Associated samples:** all water

Conc. units: pg/L

Compound	Blank ID	Sample Identification								
	160318-MB	LCS								
* M	4.2	-								
* G	43	57 J								
* U	2.1	-								
* Y	9.5	-								
* X	20	104								
* W	1.4	7.2 J								
* R	1.1	-								
* V	2.5	-								
* > EDL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36282021

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Y N N/A Were field blanks identified in this SDG? Circle = 6

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 3/8/16
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All soils

Compound	Blank ID	Sample Identification								
	15	1	2	3	4	5	8	9	10	11
G	57	-	1.6U	139 J	2.3U	3.0U			1.6U	2.4U
Q	4.0	~~0.36U~~	-	7.9J	0.22U	-			-	-
X	10	-	0.21U	6.2U	0.27U	-			0.27U	2.3U
W	7.2	12 J	-	1.0U	-	0.15U	0.45U	0.12U	0.23U	-
CRQL										

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 3/8/16
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All soils

Compound	Blank ID	Sample Identification								
	15		12	13	14	7 (ND)				
G	57		0.93U	47U						
Q	40		-	-						
X	10		-	-						
W	7.2		0.35U	0.52U	0.36U					
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with compound concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 36282021

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: PD
2nd Reviewer: AK

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

SB = KCH067-042

Cont = 6

(Y) N N/A Were field blanks identified in this SDG?
Blank units: pg/L **Associated sample units:** pg/L
Sampling date: 3/15/16
Field blank type: (circle one) Field Blank / Rinsate / Other: SB Associated Samples: all water (#15)

Compound	Blank ID	Sample Identification								
	SB		15							
M	2.4									
G	25		57 J							
Y	2.8									
X	2.4		10 J							
T	1.9									
CRQL										

Blank units: _____ **Associated sample units:** _____
Sampling date: _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with compound concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 36282D21

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 8290)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS-3 std)	Recalculated RRF (CS-3 std)	Reported %RSD	Recalculated %RSD
1	IGAL	3/2/16	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	0.951858	0.951858	0.91456	0.91456	3.29222	3.29222
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.07768	1.07768	1.09162	1.09162	5.022	5.022
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.05456	1.05456	1.02152	1.02152	2.30779	2.30779
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	0.990196	0.990196	0.96245	0.96245	3.63217	3.63217
			OCDF (^{13}C-OCDD)	1.21618	1.21618	1.18811	1.18811	5.75034	5.75034
2			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282D 21

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: FD
2nd Reviewer: X

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	160404_HR_02 ccv	4/4/16	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	0.951858	0.826	0.826	13.2	13.2
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.07768	1.025	1.025	4.9	4.9
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.05456	0.990	0.990	6.1	6.1
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	0.990196	0.975	0.975	1.5	1.5
			OCDF (^{13}C-OCDD)	1.21618	1.175	1.175	3.4	3.4
2	160404_HR_41 ccv	4/6/16	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)		0.825	0.825	13.4	13.4
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)		1.028	1.028	4.7	4.7
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)		1.053	1.053	0.2	0.2
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)		0.976	0.976	1.4	1.4
			OCDF (^{13}C-OCDD)	↓	1.190	1.190	2.2	2.2
3	160404 HR_21 ccv	4/5/16	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)		0.791	0.791	17.0	17.0
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)		0.969	0.969	10.1	10.1
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)		1.014	1.014	3.9	3.9
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	↓	0.950	0.950	4.0	4.0
			OCDF (^{13}C-OCDD)	↓	1.148	1.148	5.6	5.6

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282D21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FR
2nd Reviewer: AC

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSR - SR)/SA Where: SSR = Spiked sample result, SR = Sample result
SA = Spike added

RPD = I MSR - MSDR I * 2/(MSR + MSDR) MSR = Matrix spike percent recovery MSDR = Matrix spike duplicate percent recovery

MS/MSD samples: 16 + 17

Compound	Spike Added (ng/kg)		Sample Concentration (ng/kg)	Spiked Sample Concentration (ng/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
2,3,7,8-TCDD	33.4	33.3 4	ND	32.3	34.7	96.7	96.7	104	104	7.2	7.2
1,2,3,7,8-PeCDD	83.6	83.6		81.6	85.4	97.6	97.6	102	102	4.6	4.6
1,2,3,4,7,8-HxCDD	83.6	83.6		72.8	73.6	87.1	87.1	88.0	88.0	1.1	1.1
1,2,3,4,7,8,9-HpCDF	83.6	83.6		66.2	67.8	79.2	79.2	81.1	81.1	2.4	2.4
OCDF	167	167		127	134	76	76	80.2	80.2	5.4	5.4

Comments: Refer to Matrix Spike/Matrix Spike Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282D21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: EJ
2nd Reviewer: AC

METHOD: GC/MS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: 160321-LCS

Compound	Spike Added (ng/kg)		Spiked Sample Concentration (ng/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
2,3,7,8-TCDD	49.8	NA	43.8	NA	88.0	88.0				
1,2,3,7,8-PeCDD	124		109		87.9	87.9				
1,2,3,4,7,8-HxCDD	124		99.6		80.3	80.3				
1,2,3,4,7,8,9-HpCDF	124		89.5		72.2	72.2				
OCDF	249	↓	187	↓	75.1	75.1	NA			

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282D2J

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: EJ
2nd reviewer: A

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

RRF = Relative Response Factor (average) from the initial calibration

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

Example:

Sample I.D. #12, OCDD:

Conc. = $\frac{(2.996940 \times 10^2 + 3.040940 \times 10^2)(200)(0.05)(1000)}{(1.912105 \times 10^5 + 2.155929 \times 10^5)(1.07099)(15.33)(0.972)}$

0.93 ng/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 13, 2016

Parameters: Polychlorinated Dioxins/Dibenzofurans

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 78998

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-032**	AZ30748**	Soil	03/15/16
KCH067-033	AZ30749	Soil	03/15/16
KCH067-041	AZ30750	Water	03/15/16
KCH067-042	AZ30751	Water	03/15/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (September 2011). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) SW 846 Method 8290A

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all labeled and unlabeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The minimum S/N ratio was greater than or equal to 10 for each unlabeled compounds and labeled compounds for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for unlabeled compounds and less than or equal to 30.0% for labeled compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 20.0% for labeled and less than or equal to 30.0% for unlabeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The minimum S/N ratio was greater than or equal to 10 for each unlabeled compounds and labeled compounds for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
160321-MB	03/21/16	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	0.55 ng/Kg 0.36 ng/Kg 0.55 ng/Kg 0.054 ng/Kg	All soil samples in SDG 78998
160318-MB	03/18/16	2,3,4,6,7,8-HxCDF OCDD Total HpCDD Total HpCDF Total HxCDF Total PeCDF Total TCDD Total TCDF	4.2 pg/L 43 pg/L 2.1 pg/L 9.5 pg/L 20 pg/L 1.4 pg/L 1.1 pg/L 2.5 pg/L	All water samples in SDG 78998

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-032**	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	51 ng/Kg 4.5 ng/Kg 51 ng/Kg 6.7 ng/Kg	51J ng/Kg 4.5J ng/Kg 51J ng/Kg 6.7J ng/Kg
KCH067-033	1,2,3,4,6,7,8-HpCDD Total HpCDD Total HxCDF	3.3 ng/Kg 3.3 ng/Kg 0.43 ng/Kg	3.3J ng/Kg 3.3J ng/Kg 0.43J ng/Kg
KCH067-041	Total TCDD Total TCDF	0.87 pg/L 12 pg/L	0.87U pg/L 12U pg/L
KCH067-042	2,3,4,6,7,8-HxCDF OCDD Total HpCDF Total HxCDF	2.4 pg/L 25 pg/L 2.8 pg/L 2.4 pg/L	2.4U pg/L 25U pg/L 2.8U pg/L 2.4U pg/L

VI. Field Blanks

Sample KCH067-041 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-041	03/15/16	Total TCDD Total TCDF	0.87 pg/L 12 pg/L	All soil samples in SDG 78998

Sample KCH067-042 was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-042	03/15/16	2,3,4,6,7,8-HxCDF OCDD Total HpCDF Total HxCDF Total HxCDD	2.4 ng/L 25 ng/L 2.8 ng/L 2.4 ng/L 1.9 ng/L	KCH067-041

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-032**	Total TCDD Total TCDF	0.095 ng/Kg 2.5 ng/Kg	0.095U ng/Kg 2.5U ng/Kg
KCH067-033	Total TCDF	0.51 ng/Kg	0.51U ng/Kg

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

XI. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected or estimated in four samples.

Due to equipment blank contamination, data were qualified as not detected in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Polychlorinated Dioxins/Dibenzofurans - Data Qualification Summary - SDG 78998

No Sample Data Qualified in this SDG

China Lake CTO 067
Polychlorinated Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG 78998

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-032**	1,2,3,4,6,7,8-HpCDD OCDF Total HpCDD Total HxCDF	51J ng/Kg 4.5J ng/Kg 51J ng/Kg 6.7J ng/Kg	A	7
KCH067-033	1,2,3,4,6,7,8-HpCDD Total HpCDD Total HxCDF	3.3J ng/Kg 3.3J ng/Kg 0.43J ng/Kg	A	7
KCH067-041	Total TCDD Total TCDF	0.87U pg/L 12U pg/L	A	7
KCH067-042	2,3,4,6,7,8-HxCDF OCDD Total HpCDF Total HxCDF	2.4U pg/L 25U pg/L 2.8U pg/L 2.4U pg/L	A	7

China Lake CTO 067
Polychlorinated Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG 78998

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-032**	Total TCDD Total TCDF	0.095U ng/Kg 2.5U ng/Kg	A	6
KCH067-033	Total TCDF	0.51U ng/Kg	A	6

EPA 8290A

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Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78998

Sample ID: KCH067-032

APPL ID: AZ30748

Sample Collection Date: 03/15/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result		PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	51	J(7)	12.5	51PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	1.5 U		12.5	1.5PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.27 U		12.5	0.27DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.29 J		12.5	0.29PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.24 J		12.5	0.24PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,6,7,8-HXCDD	1.6 J		12.5	1.6PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.15 U		12.5	0.15PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.72 U		12.5	0.72PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.70 U		12.5	0.70PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8-PECDD	0.14 U		12.5	0.14DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8-PECDF	0.28 U		12.5	0.28PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,4,6,7,8-HXCDF	3.5 U		12.5	3.5PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,4,7,8-PECDF	0.34 U		12.5	0.34PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,7,8-TCDD	0.20 U		5.0	0.20PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,7,8-TCDF	0.70 U		5.0	0.70PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	OCDD	437		25.0	437PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	OCDF	4.5 J	J(7)	25.0	4.5PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HPCDD	51	↓	12.5	53PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HPCDF	3.6 U		12.5	3.6PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HXCDD	12 J		12.5	13PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HXCDF	6.7 J	J(7)	12.5	8.9PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL PECDD	0.38 J		12.5	2.6PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL PECDF	1.7 U		12.5	1.7PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL TCDD	0.095 J	U(6)	5.0	0.73PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL TCDF	2.5 J	↓	5.0	5.1PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	90.0		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	76.9		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	79.9		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	88.3		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	83.4		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	73.9		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	72.5		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	73.2		40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	71.5		40-135		%	03/21/16	04/07/16

J = Estimated value.

4/05/16

Quant Method: 160302_8290
Run #: 160404_HR_45
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 5:21:04 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78998

Sample ID: KCH067-033

APPL ID: AZ30749

Sample Collection Date: 03/15/16

QCG: $829ACTO6-160321-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	3.3 J J(7)	12.5	3.3PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	3.0 J	12.5	3.0PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.079 U	12.5	0.079DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.20 U	12.5	0.20PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.14 U	12.5	0.14PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.065 U	12.5	0.065DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.11 U	12.5	0.11PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.062 U	12.5	0.062DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.068 U	12.5	0.068DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8-PECDD	0.061 U	12.5	0.061DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	1,2,3,7,8-PECDF	0.14 U	12.5	0.14DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,4,6,7,8-HXCDF	0.43 U	12.5	0.43PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,4,7,8-PECDF	0.14 U	12.5	0.14DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,7,8-TCDD	0.038 U	5.0	0.038DL	ng/Kg	03/21/16	04/07/16
EPA 8290A	2,3,7,8-TCDF	0.11 U	5.0	0.11PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	OCDD	27	25.0	27PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	OCDF	1.6 U	25.0	1.6PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HPCDD	3.3 J J(7)	12.5	3.7PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HPCDF	3.0 J	12.5	3.0PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HXCDD	0.60 U	12.5	0.60PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL HXCDF	0.43 J J(7)	12.5	2.1PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL PECDD	0.42 U	12.5	0.42PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL PECDF	0.39 J	12.5	0.73PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL TCDD	0.65 U	5.0	0.65PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	TOTAL TCDF	0.51 J U(6)	5.0	1.2PC	ng/Kg	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	87.2	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	78.0	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	88.7	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	95.0	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	90.1	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	81.5	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	86.6	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	86.3	40-135		%	03/21/16	04/07/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	68.4	40-135		%	03/21/16	04/07/16

J = Estimated value.

4/25/16

Quant Method: 160302_8290
Run #: 160404_HR_46
Instrument: Magneto
Sequence: 160404
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 5:21:05 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

Attn: Karin Kaiser

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78998

Sample ID: KCH067-041

APPL ID: AZ30750

Sample Collection Date: 03/15/16

QCG: $829ACTO6-160318-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	5.2 U	125.0	5.2PC	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	0.52 U	125.0	0.52DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.61 U	125.0	0.61DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.71 U	125.0	0.71DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.78 U	125.0	0.78DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.73 U	125.0	0.73DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.76 U	125.0	0.76DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.69 U	125.0	0.69DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.91 U	125.0	0.91DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8-PECDD	0.80 U	125.0	0.80DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8-PECDF	1.2 U	125.0	1.2DL	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,4,6,7,8-HXCDF	1.9 U	125.0	1.9PC	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,4,7,8-PECDF	1.3 U	125.0	1.3DL	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,7,8-TCDD	0.94 U	50.0	0.94PC	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,7,8-TCDF	0.61 U	50.0	0.61DL	pg/L	03/18/16	04/03/16
EPA 8290A	OCDD	24 U	250.0	24PC	pg/L	03/18/16	04/03/16
EPA 8290A	OCDF	3.4 U	250.0	3.4PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HPCDD	14 U	125.0	14PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HPCDF	3.8 U	125.0	3.8PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HXCDD	1.6 U	125.0	1.6PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HXCDF	4.9 U	125.0	4.9PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL PECDD	2.0 U	125.0	2.0PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL PECDF	9.0 U	125.0	9.0PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL TCDD	0.87 J U(7)	50.0	7.1PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL TCDF	12 J ↓	50.0	18PC	pg/L	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	79.7	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	77.3	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	77.8	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	84.0	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	74.4	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	69.0	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	71.7	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	71.3	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	66.9	40-135		%	03/18/16	04/03/16

J = Estimated value.

8/5/16

Quant Method: 160302_8290
Run #: 160403_HR_07
Instrument: Magneto
Sequence: 160403
Dilution Factor: 1
Initials: RP

Printed: 04/08/16 5:21:39 PM
Form 1 - APPL Standard GC - No MC

EPA 8290A

Kleinfelder
1039 Hyland Drive
Evergreen, CO 80439

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Karin Kaiser

Project: 479811.67.07.09.AC CTO067 China Lake

ARF: 78998

Sample ID: KCH067-042

APPL ID: AZ30751

Sample Collection Date: 03/15/16

QCG: $829ACTO6-160318-2062

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290A	1,2,3,4,6,7,8-HPCDD	1.2 U	125.0	1.2DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,6,7,8-HPCDF	1.1 U	125.0	1.1PC	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8,9-HPCDF	0.53 U	125.0	0.53DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8-HXCDD	0.60 U	125.0	0.60DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,4,7,8-HXCDF	0.59 U	125.0	0.59DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,6,7,8-HXCDD	0.61 U	125.0	0.61DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,6,7,8-HXCDF	0.58 U	125.0	0.58DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8,9-HXCDD	0.58 U	125.0	0.58DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8,9-HXCDF	0.69 U	125.0	0.69DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8-PECDD	0.75 U	125.0	0.75DL	pg/L	03/18/16	04/03/16
EPA 8290A	1,2,3,7,8-PECDF	0.72 U	125.0	0.72DL	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,4,6,7,8-HXCDF	2.4 J U(7)	125.0	2.4PC	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,4,7,8-PECDF	0.76 U	125.0	0.76DL	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,7,8-TCDD	0.70 U	50.0	0.70DL	pg/L	03/18/16	04/03/16
EPA 8290A	2,3,7,8-TCDF	0.50 U	50.0	0.50DL	pg/L	03/18/16	04/03/16
EPA 8290A	OCDD	25 J U(7)	250.0	25PC	pg/L	03/18/16	04/03/16
EPA 8290A	OCDF	2.4 U	250.0	2.4PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HPCDD	0.87 U	125.0	0.87PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HPCDF	2.8 J U(7)	125.0	7.7PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HXCDD	1.9 J	125.0	1.9PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL HXCDF	2.4 J U(7)	125.0	3.7PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL PECDD	1.5 U	125.0	1.5PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL PECDF	9.2 U	125.0	9.2PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL TCDD	3.9 U	50.0	3.9PC	pg/L	03/18/16	04/03/16
EPA 8290A	TOTAL TCDF	4.8 U	50.0	4.8PC	pg/L	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDD (S	75.0	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,6,7,8-HPCDF (S	70.7	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,4,7,8-HXCDF (S)	72.0	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,6,7,8-HXCDD (S)	78.6	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDD (S)	67.2	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-1,2,3,7,8-PECDF (S)	61.7	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDD (S)	65.0	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-2,3,7,8-TCDF (S)	65.2	40-135		%	03/18/16	04/03/16
EPA 8290A	SURROGATE: 13C-OCDD (S)	62.2	40-135		%	03/18/16	04/03/16

J = Estimated value.

4/5/16

Quant Method: 160302_8290
Run #: 160403_HR_08
Instrument: Magneto
Sequence: 160403
Dilution Factor: 1
Initials: RP

Printed: 04/09/16 10:07:05 AM
Form 1 - APPL Standard GC - No MC

LDC #: 36282E21
SDG #: 78998
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Standard/Full

Date: 5/11/16
Page: 1 of 1
Reviewer: EJ
2nd Reviewer: AL

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW846 Method 8290A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A /A	
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration/ICV	A /A	%D RSD ≤ 20 ICV ≤ 20/30 unlabeled labeled
IV.	Continuing calibration	A	CCV ≤ 20/30
V.	Laboratory Blanks	SW	
VI.	Field blanks	SW	EB = 3 SB = 4
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Internal standards	A	
XI.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Standard validation.
XII.	Target compound identification	A	Not reviewed for Standard validation.
XIII.	System performance	A	Not reviewed for Standard validation.
XIV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1 2	KCH067-032**	AZ30748**	Soil	03/15/16
2 N	KCH067-033	AZ30749	Soil	03/15/16
3 1	KCH067-041	AZ30750	Water	03/15/16
4 1	KCH067-042	AZ30751	Water	03/15/16
5				
6				
7				
8				
9				
10				
11				

Notes:

+1	160318-MB						
+2	160321 - MB						

LDC #: 36282 E21

VALIDATION FINDINGS CHECKLIST

Reviewer: F2
2nd Reviewer: AC

Method: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Was the chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomers ≤ 25% ?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
Was the presence of 1,2,8,9-TCDD and 1,3,4,6,8-PeCDF verified?	✓			
IIIa. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% for unlabeled compounds and labeled compounds ?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% for unlabeled compounds and ≤ 30% for labeled compounds ?	✓			
IV. Continuing calibration				
Was a contiuning calibration performed at the beginning and end of each 12 hour period?	✓			
Were all percent differences (%D) ≤ 20% for unlabeled compounds and ≤ 30% for labeled compounds ?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound and for each recovery and internal standard ≥ 10?	✓			
V. Laboratory Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and whenever a sample extraction was performed?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet?	✓			
VI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.	✓			
VII. Matrix spike/Matrix spike duplicates				

LDC #: 36282E21

VALIDATION FINDINGS CHECKLIST

Reviewer: EJ
2nd Reviewer: AV

Validation Area	Yes	No	NA	Findings/Comments
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
X. Internal standards				
Were internal standard recoveries within the 40-135% criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks ≥ 10?	✓			
XI. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. Target compound identification				
For 2,3,7,8 substituted congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For 2,3,7,8 substituted congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For non-2,3,7,8 substituted congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard ≥ 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
For PCDF identification, was any signal (S/N ≥ 2.5, at ± seconds RT) detected in the corresponding PCDPE channel?	✓			
Was an acceptable lock mass recorded and monitored?	✓			
XIII. System performance				
System performance was found to be acceptable.	✓			
XIV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 36282E21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: EM
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Code = 7

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 3/21/16 **Blank analysis date:** 4/4/16 **Associated samples:** all soils

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	160321-MB	1		2						
F	0.55	51J		3.3J						
Q	0.36	4.5J								
U	0.55	51J		3.3J						
X	0.054	6.7J		0.43J						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36282E21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: B
2nd Reviewer: M

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

code = 7

Blank extraction date: 3/18/16 **Blank analysis date:** 4/3/16 **Associated samples:** all water

Conc. units: pg/L

Compound	Blank ID	Sample Identification								
	160318-	MB	3	4						
M	4.2			2.4 U						
G	43			25 U						
U	2.1									
Y	9.5			2.8 U						
X	20			2.4 U						
W	1.4									
R	1.1		0.87 U							
V	2.5		12 U							

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36282E21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

(Y) N N/A Were field blanks identified in this SDG?
Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 3/15/16
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All SOILS

wdle = 6

Compound	Blank ID	Sample Identification									
	3		1		2						
R	0.87		0.095 U								
Y	12		2.5 U		0.51 U						
CRQL											

Blank units: ng/L **Associated sample units:** ng/L
Sampling date: 3/15/16
Field blank type: (circle one) Field Blank / Rinsate / Other: SB Associated Samples: 3 (ND)

Compound	Blank ID	Sample Identification									
	4										
M	2.4										
G	25										
Y	2.8										
X	2.4										
T	1.9										
CRQL											

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with compound concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 36282E21

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: JG
2nd Reviewer: R

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 8290)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS-3 std)	Recalculated RRF (CS-3 std)	Reported %RSD	Recalculated %RSD
1	IGAL	3/2/16	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	0.951858	0.951858	0.91456	0.91456	3.29222	3.29222
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.07768	1.07768	1.09162	1.09162	5.022	5.022
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.05456	1.05456	1.02152	1.02152	2.30779	2.30779
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	0.990196	0.990196	0.96245	0.96245	3.63217	3.63217
			OCDF (^{13}C-OCDD)	1.21618	1.21618	1.18811	1.18811	5.75034	5.75034
2			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282E21

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	160404_HR_02 ccv	4/4/16	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	0.951858	0.826	0.826	13.2	13.2
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.07768	1.025	1.025	4.9	4.9
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.05456	0.990	0.990	6.1	6.1
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	0.990196	0.975	0.975	1.5	1.5
			OCDF (^{13}C-OCDD)	1.21618	1.175	1.175	3.4	3.4
2	160404_HR_41 ccv	4/6/16	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)		0.825	0.825	13.4	13.4
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)		1.028	1.028	4.7	4.7
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)		1.053	1.053	0.2	0.2
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)		0.976	0.976	1.4	1.4
			OCDF (^{13}C-OCDD)		1.190	1.190	2.2	2.2
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)					
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)					
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)					
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)					
			OCDF (^{13}C-OCDD)					

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282E21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: EJ
2nd Reviewer: AK

METHOD: GC/MS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: 160321 - LCS1D

Compound	Spike Added (ng/kg)		Spiked Sample Concentration (ng/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
2,3,7,8-TCDD	49.8	NA	43.8	NA	88.0	88.0				
1,2,3,7,8-PeCDD	124		105		84.7	84.7				
1,2,3,4,7,8-HxCDD	124		99.6		80.3	80.3				
1,2,3,4,7,8,9-HpCDF	124		89.5		72.2	72.2				
OCDF	249		187		75.1	75.1	NA			

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282E21

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: EJ
2nd reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

RRF = Relative Response Factor (average) from the initial calibration

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

Example:

Sample I.D. #1, OCDD:

Conc. = $\frac{(1.325662 \times 10^5 + 1.494042 \times 10^5)(200)(0.05)(1000)}{(2.193651 \times 10^5 + 2.436840 \times 10^5)(1.07099)(13.00)}$

= 437 ng/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 13, 2016

Parameters: Perfluorinated Alkyl Acids

Validation Level: Level III & IV

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): K1602494

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-009	K1602494-001	Soil	03/08/16
KCH067-010	K1602494-002	Soil	03/08/16
KCH067-011	K1602494-003	Soil	03/08/16
KCH067-012	K1602494-004	Soil	03/08/16
KCH067-013	K1602494-005	Soil	03/08/16
KCH067-014	K1602494-006	Soil	03/08/16
KCH067-015	K1602494-007	Soil	03/08/16
KCH067-016**	K1602494-008**	Soil	03/08/16
KCH067-019	K1602494-009	Water	03/08/16
KCH067-016MS	K1602494-008MS	Soil	03/08/16
KCH067-016MSD	K1602494-008MSD	Soil	03/08/16

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 25.0%.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 25.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 25.0%.

The percent differences (%D) of the ending CCVs were less than or equal to 25.0%.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound	Concentration	Associated Samples
KQ1602477-03	03/17/16	Perfluorooctanoic acid	0.48 ng/L	All water samples in SDG K1602494

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-019	Perfluorooctanoic acid	0.47 ng/L	0.80U ng/L

VI. Field Blanks

Sample KCH067-019 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-019	03/08/16	Perfluorooctanoic acid	0.47 ng/L	All soil samples in SDG K1602494

Sample KCH067-042 (from SDG K1602709) was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-042	03/15/16	Perfluorooctanoic acid	0.39 ng/L	KCH067-019

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-019	Perfluorooctanoic acid	0.47 ng/g	0.80U ng/g
KCH067-009	Perfluorooctanoic acid	0.35 ng/g	0.35U ng/g
KCH067-011	Perfluorooctanoic acid	0.29 ng/g	0.29U ng/g
KCH067-012	Perfluorooctanoic acid	0.27 ng/g	0.27U ng/g
KCH067-014	Perfluorooctanoic acid	0.21 ng/g	0.21U ng/g
KCH067-015	Perfluorooctanoic acid	0.27 ng/g	0.27U ng/g
KCH067-016**	Perfluorooctanoic acid	0.24 ng/g	0.24U ng/g

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
KCH067-009	Perfluoro-n-[1,2,3,4-13C4] octanoic acid	65 (70-130)	Perfluorinated alkyl acids	J (all detects) UJ (all non-detects)	P
KCH067-011	Perfluoro-n-[1,2,3,4-13C4] octanoic acid	65 (70-130)	Perfluorinated alkyl acids	J (all detects) UJ (all non-detects)	P

Additionally, surrogate recoveries (%R) were not within QC limits for sample KCH067-013. No data were qualified for samples analyzed at greater than or equal to 5X dilution.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogate %R, data were qualified as estimated in two samples.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

Due to equipment blank and source blank contamination, data were qualified as not detected in seven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG K1602494

Sample	Compound	Flag	A or P	Reason (Code)
KCH067-009 KCH067-011	Perfluorinated alkyl acids	J (all detects) UJ (all non-detects)	P	Surrogate spikes (%R) (13)

China Lake CTO 067
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG K1602494

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-019	Perfluorooctanoic acid	0.80U ng/L	A	7

China Lake CTO 067
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG K1602494

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-019	Perfluorooctanoic acid	0.80U ng/g	A	6
KCH067-009	Perfluorooctanoic acid	0.35U ng/g	A	6
KCH067-011	Perfluorooctanoic acid	0.29U ng/g	A	6
KCH067-012	Perfluorooctanoic acid	0.27U ng/g	A	6
KCH067-014	Perfluorooctanoic acid	0.21U ng/g	A	6
KCH067-015	Perfluorooctanoic acid	0.27U ng/g	A	6
KCH067-016**	Perfluorooctanoic acid	0.24U ng/g	A	6

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:00
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-009	**Units:**	ng/g
Lab Code:	K1602494-001	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U UJ	1.0 (13)	0.20	0.092	1	04/19/16 00:02	3/16/16	
Perfluorooctanoic Acid	**0.35 J** UJ	1.0	0.21 (6)	0.21	1	04/19/16 00:02	3/16/16	
Perfluorooctane Sulfonate	**0.41 J** J	1.0	0.20	0.061	1	04/19/16 00:02	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	74	70 - 130	04/19/16 00:02	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	65	70 - 130	04/19/16 00:02	*
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	80	70 - 130	04/19/16 00:02	

4/29/16

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:05
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-010	**Units:**	ng/g
Lab Code:	K1602494-002	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	0.95	0.20	0.090	1	04/19/16 00:12	3/16/16	
Perfluorooctanoic Acid	ND U	0.95	0.20	0.20	1	04/19/16 00:12	3/16/16	
Perfluorooctane Sulfonate	ND U	0.95	0.20	0.060	1	04/19/16 00:12	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	83	70 - 130	04/19/16 00:12	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	73	70 - 130	04/19/16 00:12	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	88	70 - 130	04/19/16 00:12	

4/5/16

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:10
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-011	**Units:**	ng/g
Lab Code:	K1602494-003	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U UJ	0.92 (13)	0.20	0.090	1	04/19/16 00:22	3/16/16	
Perfluorooctanoic Acid	**0.29 J** UJ	0.92 ↓	0.20 (6)	0.20	1	04/19/16 00:22	3/16/16	
Perfluorooctane Sulfonate	**0.44 J** J	0.92 ↓	0.20	0.060	1	04/19/16 00:22	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	75	70 - 130	04/19/16 00:22	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	65	70 - 130	04/19/16 00:22	*
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	82	70 - 130	04/19/16 00:22	

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REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:20
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-012	**Units:**	ng/g
Lab Code:	K1602494-004	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	0.95	0.20	0.090	1	04/19/16 00:33	3/16/16	
Perfluorooctanoic Acid	**0.27 J** U (6)	0.95	0.20	0.20	1	04/19/16 00:33	3/16/16	
Perfluorooctane Sulfonate	**0.24 J**	0.95	0.20	0.060	1	04/19/16 00:33	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	86	70 - 130	04/19/16 00:33	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	77	70 - 130	04/19/16 00:33	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	87	70 - 130	04/19/16 00:33	

4/29/16

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:25
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-013	**Units:**	ng/g
Lab Code:	K1602494-005	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	9.8	2.0	0.90	10	04/19/16 14:10	3/16/16	
Perfluorooctanoic Acid	ND U	9.8	2.0	2.0	10	04/19/16 14:10	3/16/16	
Perfluorooctane Sulfonate	ND U	9.8	2.0	0.60	10	04/19/16 14:10	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	142	70 - 130	04/19/16 14:10	*
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	147	70 - 130	04/19/16 14:10	*
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	153	70 - 130	04/19/16 14:10	*

5/5/16

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:30
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-014	**Units:**	ng/g
Lab Code:	K1602494-006	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	0.97	0.20	0.090	1	04/19/16 00:53	3/16/16	
Perfluorooctanoic Acid	**0.21 J** U(6)	0.97	0.20	0.20	1	04/19/16 00:53	3/16/16	
Perfluorooctane Sulfonate	**0.10 J**	0.97	0.20	0.060	1	04/19/16 00:53	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	82	70 - 130	04/19/16 00:53	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	85	70 - 130	04/19/16 00:53	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	91	70 - 130	04/19/16 00:53	

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REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 14:50
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-015	**Units:**	ng/g
Lab Code:	K1602494-007	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	1.0	0.20	0.093	1	04/19/16 14:41	3/16/16	
Perfluorooctanoic Acid	**0.27** J U(6)	1.0	0.21	0.21	1	04/19/16 14:41	3/16/16	
Perfluorooctane Sulfonate	**1.6**	1.0	0.20	0.062	1	04/19/16 14:41	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	81	70 - 130	04/19/16 14:41	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	90	70 - 130	04/19/16 14:41	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	81	70 - 130	04/19/16 14:41	

5/17/16

REVISED
9:19 am, Apr 29, 2016

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 15:00
Sample Matrix:	Soil	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-016	**Units:**	ng/g
Lab Code:	K1602494-008	**Basis:**	Dry

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3550B

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	**0.10 J**	0.95	0.20	0.090	1	04/19/16 01:33	3/16/16	
Perfluorooctanoic Acid	**0.24 J** U(6)	0.95	0.20	0.20	1	04/19/16 01:33	3/16/16	
Perfluorooctane Sulfonate	**0.37 J**	0.95	0.20	0.060	1	04/19/16 01:33	3/16/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	76	70 - 130	04/19/16 01:33	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	77	70 - 130	04/19/16 01:33	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	80	70 - 130	04/19/16 01:33	

4/25/16

REVISED
9:19 am, Apr 29, 2016

Analytical Report

Client:	Kleinfelder	**Service Request:**	K1602494
Project:	CCTO-067 - China Lake	**Date Collected:**	03/08/16 17:35
Sample Matrix:	Water	**Date Received:**	03/10/16 10:00
Sample Name:	KCH067-019	**Units:**	ng/L
Lab Code:	K1602494-009	**Basis:**	NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	4.3	1.2	0.41	1	03/17/16 23:52	3/17/16	
Perfluorooctanoic Acid	**0.47** J 0.804	4.3 (6.7)	0.80	0.27	1	03/17/16 23:52	3/17/16	
Perfluorooctane Sulfonate	ND U	4.3	1.2	0.60	1	03/17/16 23:52	3/17/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	82	20 - 128	03/17/16 23:52	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	83	13 - 142	03/17/16 23:52	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	82	11 - 131	03/17/16 23:52	

4/25/16

Superset Referen

REVISED
9:19 am, Apr 29, 2016

LDC #: 36282F96 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: K1602494 Standard/Full Page: 1 of 1
Laboratory: ALS Environmental Reviewer: EJ
2nd Reviewer: K

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A /Δ	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A Δ	%RSD ≤ 25 ICV ≤ 25
IV.	Continuing calibration / closing ccv	Δ	CCV ≤ 25
V.	Laboratory Blanks	SW	
VI.	Field blanks	SW	FB = 9 SB = KCH067-042 (K1602709)
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Standard validation.
XIII.	Target compound identification	Δ	Not reviewed for Standard validation.
XIV.	System performance	Δ	Not reviewed for Standard validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Full validation

	Client ID	Lab ID	Matrix	Date
1	KCH067-009	K1602494-001	Soil	03/08/16
2	KCH067-010	K1602494-002	Soil	03/08/16
3	KCH067-011	K1602494-003	Soil	03/08/16
4	KCH067-012	K1602494-004	Soil	03/08/16
5	KCH067-013	K1602494-005	Soil	03/08/16
6	KCH067-014	K1602494-006	Soil	03/08/16
7	KCH067-015	K1602494-007	Soil	03/08/16
8	KCH067-016**	K1602494-008**	Soil	03/08/16
9	KCH067-019	K1602494-009	Water	03/08/16
10	KCH067-016MS	K1602494-008MS	Soil	03/08/16
11	KCH067-016MSD	K1602494-008MSD	Soil	03/08/16
12				
13	KQ1602426-04			
14	KQ1602477-03			

LDC #: 36282 F96 **VALIDATION FINDINGS CHECKLIST** Page: 1 of 2
Reviewer: F2
2nd Reviewer: M

Method: LC/MS/MS Perfluorinated Alkyl Acids(EPA Method 537)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✗	✓	✓	
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard (%RSD)≤ 25%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent differences (%D) ≤ 25?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) < 25%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
VIII. Internal standards				
Were internal standard area counts within50-150% from the average areas measured during initial calbration?	✓			

LDC #: 36282F96

VALIDATION FINDINGS CHECKLIST

Reviewer: FJ
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
IX. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
X. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. System performance				
System performance was found to be acceptable.	✓			
XII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XIV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.	✓			

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: HPLC/MS (EPA Method 537)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Code = 7

Blank extraction date: 3/17/16 **Blank analysis date:** 3/17/16
Conc. units: ng/L Associated Samples: all water

Compound	Blank ID	Sample Identification							
[redacted]	KQ160277-03	9							
Perfluorooctanoic Acid	0.48		0.47/0.80U						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AC

SB = KCH067-042

METHOD: HPLC/MS (EPA Method 537)

Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?

code = 6

Blank units: ng/L **Associated sample units:** ng/L
Sampling date: 3/15/16
Field blank type: (circle one) Field Blank / Rinsate / Other: SB Associated Samples: 9

Compound	Blank ID	Sample Identification								
	SB		9							
Perfluorooctanoic Acid	0.39		0.47 /0.80U							

Blank units: ng/L **Associated sample units:** ng/g
Sampling date: 3/8/16
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All soils

code = 6

Compound	Blank ID	Sample Identification								
	9	1	3	4	6	7	8			
Perfluorooctanoic Acid	0.47	0.35U	0.29U	0.27U	0.21 J U F1	0.27U	0.24U			

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AC

METHOD: LCMS (EPA Method 537)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?

Y (N) N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

code = 13

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	1	*	65 (70-130)	J/UJ/P ND + Det
			( )	
			( )	
	3	*	65 (↓)	↓
			( )	
			( )	
			( )	
	5	all surrogates	outside limit)	no qual 10X DL
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
	* Perfluoro-n-[1,2,3,4-13C4] octanoic acid		( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer:

METHOD: HP/LC/MS Perfluorinated Alkyl Acids(EPA Method 537)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (5.0 std)	Recalculated RRF (5.0 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	4/18/16	Perfluorobutane Sulfonate	2.707	2.707	2.782	2.782	11.31	11.31
			Perfluorooctanoic Acid	0.5171	0.5171	0.539	0.539	16.12	16.12
			Perfluorooctane Sulfonate	0.9702	0.9702	0.990	0.990	10.70	10.70
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: PD
2nd Reviewer:

METHOD: HP/LC/MS Perfluorinated Alkyl Acids (EPA Method 537)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	041816/2020 CCV	4/18/16	Perfluorobutane Sulfonate	~~20.0~~ F1 2.782	2.824	2.824	1.5	1.5
			Perfluorooctanoic Acid	0.539	0.584	0.584	8.2	8.2
			Perfluorooctane Sulfonate	0.990	1.007	1.007	1.7	1.7
2	041816/2032 CCV	4/19/16	↓	2.782	2.760	2.760	0.8	0.8
			↓	↓	0.495	0.495	8.2	8.2
			↓	↓	0.971	0.971	1.9	1.9
3								

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT
2nd reviewer: A

METHOD: HPLC/MS Perfluorinated Alkyl Acids (EPA Method 537)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 8

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Sodium – sulfonate	20.0	15.200	76	76	0
Perfluoro – octanoic	↓	15.3390	77	77	↓
Sodium – octanesulfonate	↓	16.0810	80	80	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HPLC/MS Perfluorinated Alkyl Acids(EPA Method 537)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSR - SR)/SA Where: SSR = Spiked sample result, SR = Sample result
SA = Spike added

RPD = I MSR - MSDR I * 2/(MSR + MSDR) MSR = Matrix spike percent recovery MSDR = Matrix spike duplicate percent recovery

MS/MSD samples: 10 + 11

Compound	Spike Added (ng/g)		Sample Concentration (ng/g)	Spiked Sample Concentration (ng/g)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		Reported RPD	Recalculated RPD
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	----	----
Perfluorobutane	37.5	39.2	0.10	~~85~~		~~93~~	85	93	93	9	9
Sulfonate				31.9	36.4	85					

Comments: Refer to Matrix Spike/Matrix Spike Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. % RPD based on %R

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: FT
2nd Reviewer: AK

METHOD: HPLC/MS Perfluorinated Alkyl Acids (EPA Method 537)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: KQ1602426-03

Compound	Spike Added (ng/g)		Spiked Sample Concentration (ng/g)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCSD		LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Perfluorobutane Sulfonate	40.0	NA	33.9	NA	85	85				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 36282F96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd reviewer: M

METHOD: LC/MS/MS Perfluorinated Alkyl Acids(EPA Method 537)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example: 2/1.0800

Sample I.D. #1, Perfluorobutane Sulfonate

Conc. = $\frac{27576\ (20)\ (2)}{(3674365)(2.782)(1.08)}$

= 0.100 ng/g

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: China Lake CTO 067

LDC Report Date: May 18, 2016

Parameters: Perfluorinated Alkyl Acids

Validation Level: Level III

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): K1602709

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
KCH067-042	K1602709-001	Water	03/15/16

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater and Soil Investigation at Installation Restoration Program Sites 22, 23, 31, 32, 43, and PLOU and Soil Investigation at Areas of Concern 166, 230, and 235, Naval Air Weapons Station China Lake, California (February 2016), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 25.0%.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 25.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 25.0%.

The percent differences (%D) of the ending CCVs were less than or equal to 25.0%.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound	Concentration	Associated Samples
KQ1602838-04	03/28/16	Perfluorooctanoic acid	0.35 ng/L	KCH067-042

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
KCH067-042	Perfluorooctanoic acid	0.39 ng/L	0.80U ng/L

VI. Field Blanks

Sample KCH067-042 was identified as a source blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
KCH067-042	03/15/16	Perfluorooctanoic acid	0.39 ng/L	No associated samples in this SDG

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIV. System Performance

Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

China Lake CTO 067
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG K1602709

No Sample Data Qualified in this SDG

China Lake CTO 067
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG K1602709

Sample	Compound	Modified Final Concentration	A or P	Code
KCH067-042	Perfluorooctanoic acid	0.80U ng/L	A	7

China Lake CTO 067
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG K1602709

No Sample Data Qualified in this SDG

Analytical Report

Client:	Kleinfelder	**Service Request:**	K1602709
Project:	CCTO-067 - China Lake	**Date Collected:**	03/15/16 14:40
Sample Matrix:	Water	**Date Received:**	03/17/16 10:20
Sample Name:	KCH067-042	**Units:**	ng/L
Lab Code:	K1602709-001	**Basis:**	NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorobutane Sulfonate	ND U	4.3	1.2	0.41	1	03/30/16 16:11	3/28/16	
Perfluorooctanoic Acid	**0.39 J** 0.80U	4.3 (7)	0.80	0.27	1	03/30/16 16:11	3/28/16	
Perfluorooctane Sulfonate	ND U	4.3	1.2	0.60	1	03/30/16 16:11	3/28/16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Sodium perfluoro-1-hexane[18O2]sulfonate	84	20 - 128	03/30/16 16:11	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	88	13 - 142	03/30/16 16:11	
Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	87	11 - 131	03/30/16 16:11	

ML 051716

LDC #: 36282G96 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/10/16
SDG #: K1602709 Standard Page: 1 of 1
Laboratory: ALS Environmental Reviewer: FT
2nd Reviewer: M

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	%RSD ≤ 25 ICV ≤ 25
IV.	Continuing calibration (closing ccv)	A	ccv ≤ 25
V.	Laboratory Blanks	SW	
VI.	Field blanks	SW	SB = 1
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	QC sample
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	KCH067-042	K1602709-001	Water	03/15/16
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	K1602838-04						

LDC #: 36282 Q96

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: HPLC/MS (EPA Method 537)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

code = 7

Blank extraction date: 3/28/16 **Blank analysis date:** 3/30/16

Conc. units: ng/L Associated Samples: 1

Compound	Blank ID	Sample Identification							
[redacted]	KQ1602838-04			1					
Perfluorooctanoic Acid	0.35			0.39 J 0.80 U					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 36282G96

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: FT
2nd Reviewer: A

METHOD: HPLC/MS (EPA Method 537)

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target compounds detected in the field blanks?

Blank units: ng/L **Associated sample units:** NA
Sampling date: 3/15/16
Field blank type: (circle one) Field Blank / Rinsate / Other: SB Associated Samples: none

Compound	Blank ID	Sample Identification								
	1									
Perfluorooctanoic Acid	0.39									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 76282

EDD POPULATION COMPLETENESS WORKSHEET

Date: 5.25.16
Page: 1 of 1
2nd Reviewer: JG

The LDC job number listed above was entered by (W).

	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	✓	
Ib.	- All samples present/match report?	✓	
Ic.	- All reported analytes present?	✓	
Id.	-10% or 100% verification of EDD?	✓	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	✓	
IIb.	- Reason Codes used? If so, note which codes	✓	LDC.
IIc.	-Additional Information (QC Level, Validator, Date, Validated Y/N, etc.)	✓	
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	✓	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓	
IIIc.	- If reason codes used, do all qualified results have reason code field populated?	✓	
IIId.	-Does the detect flag require changing for blank qualifiers? If so, are all U results marked ND?	N/A ✓	
IIIe.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	✓	
IIIf.	- Were any results rejected for overall assessment? If so, were results changed to nonreportable?	N/A ✓	
IIIg.	- Is the readme complete? If applicable, were edits or discrepancies listed in the readme?	✓	

Notes: _____

The attached zipped file contains eight files:

File	Format	Description	
1) Readme_ChinaLake_052516.doc	MS Word 2003	A "Readme" file (this document).	
	MS Excel 2007	A spreadsheet for the following SDG(s):	
2) EFW2LabRES.xlsx		16C070	36282A
3) 16C074_EFW2LabRESvalidated.xlsx		16C074	36282B
4) 16C129_EFW2LabRESvalidated.xlsx		16C129	36282C
5) 78915.EFW2LabRESvalidated.xlsx		78915	36282D
6) 78998.EFW2LabRESvalidated.xlsx		78998	36282E
7) K1602494_EFW2LabRESvalidated.xlsx		K1602494	36282F
8) K1602709_EFW2LabRESvalidated.xlsx		K1602709	36282G

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Pei Geng at (760) 827-1100 if you have any questions regarding this electronic data submittal.