TETRA TECH NUS

PHIL-21240

TO:	**RUSS TURNER**	**DATE:**	**JULY 18, 2007**
FROM:	**MEGAN RITCHIE**	**COPIES:**	**FILE**

SUBJECT: **ORGANIC DATA REVIEW – CHLORINATED DIOXINS/FURANS**
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. C7E010209

SAMPLES: **1/Solid/**
03TP05-0506-01

OVERVIEW

The sample set for NAS JRB Willow Grove Site 3 Test Pits – Willow Grove, PA, SDG C7E010209, consists of one solid environmental sample (designated 03TP05-). The sample was analyzed for polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans. No field duplicate pair was included in this SDG.

The sample was collected by Tetra Tech NUS on April 30, 2007 and analyzed by Severn Trent Laboratories (STL) of Knoxville, Tennessee.

All analyses were conducted by high resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS) using EPA SW-846 Method 8290.

SUMMARY

All analytes were successfully analyzed in all samples. The findings offered in this report are based upon a general review of all available data including data completeness, holding times until analysis, instrument performance checks, initial/continuing calibrations, laboratory and field quality control blank results, field duplicate results, compound identification, compound quantitation, and detection limits.

MINOR PROBLEMS

The laboratory qualified results for PCDDs/PCDFs as estimated maximum possible concentrations (EMPCs) if method QC requirements for compound identification were not met with respect to molecular ion ratios exceeding plus or minus 15% from the theoretical chlorine isotope-based mass abundance ratios, in cases where all other criteria were met for PCDD/PCDF peak identification (signal-to-noise, retention times coincident with expected values from calibration standards, and absence of chlorinated diphenyl ether interferences).

In accordance with Region 3 dioxin validation guidance, these EMPC values were handled during data validation in one of two ways: Those PCDD/PCDF results associated with ion ratios outside of plus or minus 25% of theoretical were not considered as positively identified concentrations and retained the EMPC qualifier. In contrast, results associated with ion ratios within the expanded ion ratio criteria of plus or minus 25% (but outside of plus or minus 15%) were considered positively identified and qualified as estimated values (J), and the EMPC qualifier was removed from results in this category. The

1,2,3,7,8-PeCDD result in sample 03TP05-0506-01 was qualified as an EMPC value because the ion ratio was outside the 25% expanded window.

Polychlorinated diphenyl ether (PCDPE) interferents were detected in several analyses within 2 seconds of the analyte retention time and with a signal to noise ration (S/N) of at least 2.5. These results were qualified as EMPCs: 1,2,3,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, and 2,3,4,7,8-PeCDF, and 2,3,7,8-TCDF in sample 03TP05-0506-01.

NOTES

OCDD was detected in the laboratory method blank at a concentration of 1.1 pg/g. No results were within 10 times the blank concentration, therefore no action was taken.

The laboratory reported 2,3,7,8-TCDF in sample 03TP05-0506-01 from the second column (DB-225) analysis, which was used after the first column (DB-5) indicated the presence of this isomer. The DB-225 column results were retained for presentation in the data summary because this column has superior performance for resolving 2,3,7,8-TCDF from potential nearby TCDF isomers.

EXECUTIVE SUMMARY

Laboratory Performance: One analyte was detected in the laboratory blank.

Oth r Factors Affecting Data Quality: One result was considered estimated due to ion ratios outside method criteria for compound identification and did not meet expanded ion ratio criteria and were qualified as EMPCs. Four results were qualified as EMPCs due to the presence of DPE.

The data for these analyses were reviewed to evaluate usability with reference to the EPA "National Functional Guidelines for Chlorinated Dioxin/Furan Data Review" (2005), as amended for use within EPA Region 3 following the document, "Region III Dioxin/Furan Data Validation Guidance" (1999), and the NFESC document entitled "Navy IRCDQM" (9/99).

The text of this report has been formatted to address only those problem areas affecting data quality.

"I attest that the data referenced herein were reviewed according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Megan Ritchie

Tetra Tech NUS, Inc.
Megan Ritchie
Data Validator

Tetra Tech NUS, Inc.
Russell Sloboda
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

Qualified Analytical Results

PROJ_NO: 2192

SDG: C7E010209 MEDIA: SOIL DATA FRACTION: DIOX

nsample	03TP05-0506-01
samp_date	4/30/2007
lab_id	C7E010209001
qc_type	NM
units	NG/KG
Pct_Solids	77.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,2,3,4,6,7,8,9-OCDD	2100		
1,2,3,4,6,7,8,9-OCDF	190		
1,2,3,4,6,7,8-HPCDD	320		
1,2,3,4,6,7,8-HPCDF	560		
1,2,3,4,7,8,9-HPCDF	60		
1,2,3,4,7,8-HXCDD	21		
1,2,3,4,7,8-HXCDF	230		
1,2,3,6,7,8-HXCDD	45		
1,2,3,6,7,8-HXCDF	150	EMPC	W
1,2,3,7,8,9-HXCDD	58		
1,2,3,7,8,9-HXCDF	17		
1,2,3,7,8-PECDD	28	EMPC	W
1,2,3,7,8-PECDF	240	EMPC	W
2,3,4,6,7,8-HXCDF	170		
2,3,4,7,8-PECDF	210	EMPC	W
2,3,7,8-TCDD	9.6		
2,3,7,8-TCDF	230	EMPC	W

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

APPENDIX B

Results as Reported by the Laboratory

Tetra Tech NUS, Inc

Sample ID: 03TP05-0506-01

Trace Level Organic Compounds

Lot - Sample #....:	C7E010209 - 001	Work Order #....:	JV2D41A6	Matrix....:	SOLID
Date Sampled....:	04/30/07	Date Received....:	05/01/07	Dilution Factor:	1
Prep Date....:	05/09/07	Analysis Date....:	05/17/07	Percent Moisture:	23
Prep Batch # ....:	7129262				
Initial Wgt/Vol :	10 g	Instrument ID....:	M2A	Method:	SW846 8290
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	9.6		1.3	1.2	pg/g
1,2,3,7,8-PeCDD	28	Q	6.5	0.59	pg/g
1,2,3,4,7,8-HxCDD	21		6.5	0.50	pg/g
1,2,3,6,7,8-HxCDD	45		6.5	0.56	pg/g
1,2,3,7,8,9-HxCDD	58		6.5	0.49	pg/g
1,2,3,4,6,7,8-HpCDD	320		6.5	0.90	pg/g
OCDD	2100	B	13	0.73	pg/g
1,2,3,7,8-PeCDF	240	Q	6.5	1.0	pg/g
2,3,4,7,8-PeCDF	210	Q	6.5	0.91	pg/g
1,2,3,4,7,8-HxCDF	230		6.5	0.45	pg/g
1,2,3,6,7,8-HxCDF	150	Q	6.5	0.47	pg/g
2,3,4,6,7,8-HxCDF	170		6.5	0.56	pg/g
1,2,3,7,8,9-HxCDF	17		6.5	0.74	pg/g
1,2,3,4,6,7,8-HpCDF	560		6.5	0.51	pg/g
1,2,3,4,7,8,9-HpCDF	60		6.5	0.80	pg/g
OCDF	190		13	0.59	pg/g

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	40 - 135
13C-1,2,3,7,8-PeCDD	68	40 - 135
13C-1,2,3,4,7,8-HxCDD	87	40 - 135
13C-1,2,3,6,7,8-HxCDD	87	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	74	40 - 135
13C-OCDD	78	40 - 135
13C-1,2,3,7,8-PeCDF	71	40 - 135
13C-2,3,4,7,8-PeCDF	66	40 - 135
13C-1,2,3,4,7,8-HxCDF	91	40 - 135
13C-1,2,3,6,7,8-HxCDF	85	40 - 135
13C-2,3,4,6,7,8-HxCDF	83	40 - 135
13C-1,2,3,7,8,9-HxCDF	75	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	73	40 - 135
13C-1,2,3,4,7,8,9-HpCDF	64	40 - 135

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Tetra Tech NUS, Inc

Sample ID: 03TP05-0506-01

Trace Level Organic Compounds

Lot - Sample #....:	C7E010209 - 001	**Work Order #....:**	JV2D41A6	**Matrix....:**	SOLID
Date Sampled....:	04/30/07	**Date Received....:**	05/01/07	**Dilution Factor:**	1
Prep Date....:	05/09/07	**Analysis Date....:**	05/17/07	**Percent Moisture:**	23
Prep Batch # ....:	7129262				
Initial Wgt/Vol :	10 g	**Instrument ID....:**	M2A	**Method:**	SW846 8290
Analyst ID....:	Patricia(Trish) M. Parsly				

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Q Estimated maximum possible concentration (EMPC).

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Tetra Tech NUS, Inc

Sample ID: 03TP05-0506-01

Trace Level Organic Compounds

Lot - Sample #....:	C7E010209 - 001	Work Order #....:	JV2D41CD	Matrix....:	SOLID
Date Sampled....:	04/30/07	Date Received....:	05/01/07	Dilution Factor:	1
Prep Date....:	05/09/07	Analysis Date....:	05/22/07	Percent Moisture:	23
Prep Batch # ....:	7129262				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1C	Method:	SW846 8290
Analyst ID....:	Patricia(Trish) M. Parsly				

Confirmation Run

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDF	230	Q	1.3	0.93	pg/g

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	84	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

Q Estimated maximum possible concentration (EMPC).

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APPENDIX C

Support Documentation

PROJECT NARRATIVE

Lot Number: C7E010209

Method(s): SW-846 8290

Dioxin Analysis

All QC criteria were met.

Comments:

The percent difference (%D from the ICAL) for 13C-OCDD on closing standard B070517s1 was -33.5%. When the %D falls between 30 and 35%, the method requires the use of the average (of the bracketing) response factors for all samples on the shift. This adjustment was performed as specified by the method.

All positive 2378-TCDF results at or above the minimum level were confirmed on a DB-225 column.

The Matrix Spike and Matrix Spike Duplicate were batched internally with another DOD client, as per the variances taken for 8290, the data is not included in this package.

The following flags are used to qualify results for chlorinated dioxin and furan results:

> **J** – The reported result is an estimate. The amount reported is below the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A. For the purposes of this report the ML is qualitatively defined as described above, and quantitatively defined as follows: **Minimum Level:** The concentration or mass of analyte in the sample that corresponds to the lowest calibration level in the initial calibration. It represents a concentration (in the sample extract) equivalent to that of the lowest calibration standard, after corrections for method-specified sample weights, volumes and cleanup procedures has been employed.
>
> Example: The lowest calibration level for TCDD in the initial calibration is 0.5 pg/uL. A mass of 10 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 0.5 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the lowest calibration standard, the 10 pg mass in the sample components is the ML. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The ML for 2,3,7,8-TCDD becomes 100 pg rather than the default of 10 pg.

E – The reported result is an estimate. The amount reported is above the UCL described below.
The E qualifier is applied on the basis of the **Upper Calibration Level (UCL)**. The quantitative definition of the UCL is listed below:
Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

Example:
The maximum calibration level for TCDD in the initial calibration is 200 pg/uL. A mass of 4000 pg of 2,3,7,8-TCDD in the sampling components would result in a concentration of 200 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the highest calibration standard, the 4000 pg mass in the sample components is the UCL. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example:
A 1/10 dilution is performed on the sample extract described above. The UCL for 2,3,7,8-TCDD becomes 40,000 pg rather than the default of 4000 pg. In this examples all positive 2,3,7,8-TCDD results above 40,000 pg are flagged with an E.

B – The analyte is present in the associated method blank at a reportable level. For this analysis, there is no method specified reporting level, other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of 2.5-to-1. Therefore, the presence of any amount of the analyte present in the blank will result a B qualifier on all associated samples.
If the blank has analytes present above the ML (described above) the need for corrective action beyond qualifying the associated data is evaluated. The determination is made whether the amount in the blank is less than 5% of the lowest amount in associated client samples or regulatory limit. If this is the case, sample processing may continue with the qualification of the data. If the amount in the blank is greater than 5% of the lowest amount in associated client samples or regulatory limit, corrective action must be taken.
The corrective actions may include extracting a second aliquot of sample if available, or notifying the client to assess the impact on the project objectives.
Note: Some laboratories do not report contamination in the blank unless it is above their lower calibration limit, or an established percentage of the level in the samples, or an established percentage of the regulatory limit. Likewise, some laboratories set a reporting limit at one half the lower calibration limit.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. The criteria include the following areas:

- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio.)
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.
- Polychlorinated dibenzofuran purity. No peak can be identified as a polychlorinated dibenzofuran if a polychlorinated diphenyl ether peak maximizes within +/- 2 seconds of the furan candidate.

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity, due to a matrix-borne interference.

C – Coeluting Isomer. The isomer is known to coelute with another member of its homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer

X – Other. See explanation in narrative.

C7E010209

Chain of Custody Record

STL Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: Tetra Tech NUS	Project Manager: Russell Turner	Date: 4/30/07	Chain of Custody Number: 312314
Address: 600 Clark Ave	Telephone Number (Area Code)/Fax Number: 610-491-9688	Lab Number:	Page 1 of 1
City: King of Prussia; State: PA; Zip Code: 19406	Site Contact:	Lab Contact:	
Project Name and Location (State): NAS JRB Willow Grove, PA	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	VOC 5g Encore	SVOC, PCB/PES 40z	TAL metals/CN 40z	Dioxin 40z	VOC 40ml vial	Special Instructions/ Conditions of Receipt
03TP05-0506-01	4/30/07	1215				✓	✓						3	1	1	1		
03TP05-0910-02	4/30/07	1515				✓	✓						3	1	1			
03TP05-0102-03	4/30/07	1530				✓	✓						3	1	1			
03 TB-01	4/30/07	0730		✓						✓							2	Trip Blank

Analysis (Attach list if more space is needed)

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify):

1. Relinquished By: Donald W Haber	Date: 4/30/07	Time: 1830	1. Received By: [signature]	Date: 05-01-07	Time: 1000
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments:

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

STL - Knoxville

IsoCalc Preliminary Peak Report

PCDD/PCDF by EPA Method 8290 w/15 IS's

IsoCalc

Workorder	JV2D41A6	Prep Batch	7129262	Lot No	C7E010209-001
Data File	/20070516s3/btjv2d4.d	Prep Date	05/09/07	SDG No	
Analysis ID	97183	Prep Exp Date	05/30/07	Date Received	05/01/07
Analysis Date	05/17/07 02:02	Matrix	SOLID	Date Sampled	04/30/07
Anal Exp Date	06/23/07	Initial Wt/Vol	10.0 g	Lims Test Code	XXA11IN01
Instrument	M2A	Extract Vol	20 uL	Method	DX8290_2
Analyst	PMP	Diluton Factor	1.00	Code	IN2

View Small Peaks? False View deleted peaks? False

Mass	Peak Name	RT	Pred RT	Δ	Area 1	Area 2	Height1	Height2	Ratio	Integration	Flags
304					303.9016	305.8987	303.9016	305.8987	0.65-0.89		
	Noise	00:00	00:00	0	655	838	262	335	0.78	/	
	2,3,7,8-TCDF	29:52	29:50	2	1520317	1936531	113979	145496	0.79	AVV/AVV	D
316					315.9419	317.9389	315.9419	317.9389	0.65-0.89		
	Noise	00:00	00:00	0	170	178	68	71	0.96 *	/	
	13C-2,3,7,8-TCDF	29:47	29:47	0	238225	306053	29980	36589	0.78	ABV/ABV	
320					319.8965	321.8936	319.8965	321.8936	0.65-0.89		
	Noise	00:00	00:00	0	153	233	61	93	0.66	/	
	2,3,7,8-TCDD	31:48	31:49	-1	11965	16713	1639	1900	0.72	AVB/AVV	D
332					331.9368	333.9338	331.9368	333.9338	0.65-0.89		
	Noise	00:00	00:00	0	273	240	109	96	1.14 *	/	
	13C-1,2,3,4-TCDD	31:14	31:13	1	389347	494726	43120	55374	0.79	ABV/ABV	
	13C-2,3,7,8-TCDD	31:44	31:46	-2	165159	204796	17080	21275	0.81	AVB/ABV	
340					339.8597	341.8567	339.8597	341.8567	1.32-1.78		
	Noise	00:00	00:00	0	275	590	110	236	0.47 *	/	
	1,2,3,7,8-PeCDF	39:52	39:51	1	595650	368315	120949	77865	1.62	AVV/AVV	
	2,3,4,7,8-PeCDF	41:07	41:07	0	513083	314253	104493	65447	1.63	AVV/ABV	
352					351.9000	353.8970	351.9000	353.8970	1.32-1.78		
	Noise	00:00	00:00	0	143	158	57	63	0.90 *	/	
	13C-1,2,3,7,8-PeCDF	39:49	39:50	-1	299464	207175	64534	40904	1.45	ABV/ABV	
	13C-2,3,4,7,8-PeCDF	41:06	41:06	0	282756	178100	70791	41221	1.59	ABV/ABV	
356					355.8546	357.8516	355.8546	357.8516	1.32-1.78		
	Noise	00:00	00:00	0	195	178	78	71	1.10 *	/	
	1,2,3,7,8-PeCDD	41:40	41:40	0	43710	74464	9659	14016	0.59 *	ABB/ABB	R
368					367.8949	369.8919	367.8949	369.8919	1.32-1.78		
	Noise	00:00	00:00	0	153	90	61	36	1.69	/	
	13C-1,2,3,7,8-PeCDD	41:39	41:39	0	205644	130450	52028	29880	1.58	ABV/ABV	
374					373.8208	375.8178	373.8208	375.8178	1.05-1.43		
	Noise	00:00	00:00	0	283	263	113	105	1.08	/	
	1,2,3,4,7,8-HxCDF	44:55	44:55	0	523286	396588	176062	146104	1.32	AVV/AVV	
	1,2,3,6,7,8-HxCDF	45:04	45:03	1	345064	263192	100008	81256	1.31	AVB/AVB	
	2,3,4,6,7,8-HxCDF	45:46	45:46	0	328758	263399	88396	72370	1.25	AVV/AVV	
	1,2,3,7,8,9-HxCDF	46:42	46:43	-1	27500	24238	7531	7364	1.13	ABV/ABV	
384					383.8639	385.8610	383.8639	385.8610	0.43-0.59		
	Noise	00:00	00:00	0	143	190	57	76	0.75 *	/	
	13C-1,2,3,4,7,8-HxCDF	44:54	44:54	0	140569	266709	40759	83690	0.53	ABV/ABV	
	13C-1,2,3,6,7,8-HxCDF	45:03	45:02	1	142565	278002	42584	79199	0.51	AVB/AVV	
	13C-2,3,4,6,7,8-HxCDF	45:46	45:45	1	133813	254850	35922	69568	0.53	ABV/ABV	
	13C-1,2,3,7,8,9-HxCDF	46:41	46:42	-1	111811	206399	28657	50394	0.54	ABV/ABV	
390					389.8156	391.8127	389.8156	391.8127	1.05-1.43		
	Noise	00:00	00:00	0	178	183	71	73	0.97 *	/	
	1,2,3,4,7,8-HxCDD	45:58	45:57	1	30158	22682	9341	6525	1.33	ABV/ABV	
	1,2,3,6,7,8-HxCDD	46:04	46:04	0	59066	48188	16928	13566	1.23	AVB/AVB	
	1,2,3,7,8,9-HxCDD	46:26	46:27	-1	87309	66726	16599	11604	1.31	ABB/ABB	

result qualified as EMPC

Notes:
R = ratio is outside limits M = data changed manually N = Peak not reported S = peak less than 2.5x S/N
T = peaks outside conax limit D = peak outside RT window W = peak outside first/last X = peak has dup match

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H7E090000 - 262B	**Work Order #....:**	JWJX71AA	**Matrix....:**	SOLID
Dilution Factor:	1				
Prep Date....:	05/09/07	**Analysis Date....:**	05/17/07	**Percent Moisture:**	100
Prep Batch # ....:	7129262				
Initial Wgt/Vol :	10 g	**Instrument ID....:**	M2A	**Method:**	SW846 8290
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		1.0	0.58	pg/g
1,2,3,7,8-PeCDD	ND		5.0	0.27	pg/g
1,2,3,4,7,8-HxCDD	ND		5.0	0.22	pg/g
1,2,3,6,7,8-HxCDD	ND		5.0	0.27	pg/g
1,2,3,7,8,9-HxCDD	ND		5.0	0.23	pg/g
1,2,3,4,6,7,8-HpCDD	ND		5.0	0.35	pg/g
OCDD	1.1	J	10	0.43	pg/g
2,3,7,8-TCDF	ND		1.0	0.36	pg/g
1,2,3,7,8-PeCDF	ND		5.0	0.24	pg/g
2,3,4,7,8-PeCDF	ND		5.0	0.22	pg/g
1,2,3,4,7,8-HxCDF	ND		5.0	0.14	pg/g
1,2,3,6,7,8-HxCDF	ND		5.0	0.14	pg/g
2,3,4,6,7,8-HxCDF	ND		5.0	0.17	pg/g
1,2,3,7,8,9-HxCDF	ND		5.0	0.23	pg/g
1,2,3,4,6,7,8-HpCDF	ND		5.0	0.21	pg/g
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.36	pg/g
OCDF	ND		10	0.50	pg/g

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	69	40 - 135
13C-1,2,3,7,8-PeCDD	53	40 - 135
13C-1,2,3,4,7,8-HxCDD	90	40 - 135
13C-1,2,3,6,7,8-HxCDD	84	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	71	40 - 135
13C-OCDD	77	40 - 135
13C-2,3,7,8-TCDF	74	40 - 135
13C-1,2,3,7,8-PeCDF	52	40 - 135
13C-2,3,4,7,8-PeCDF	51	40 - 135
13C-1,2,3,4,7,8-HxCDF	91	40 - 135
13C-1,2,3,6,7,8-HxCDF	87	40 - 135
13C-2,3,4,6,7,8-HxCDF	86	40 - 135
13C-1,2,3,7,8,9-HxCDF	74	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	74	40 - 135
13C-1,2,3,4,7,8,9-HpCDF	63	40 - 135

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STL - Knoxville

IsoCalc Preliminary Sample Report

PCDD/PCDF by EPA Method 8290 w/15 IS's

Is Calc

Workorder	JV2D41A6	Prep Batch	7129262	Lot No	C7E010209-001
Data File	/20070516s3/btjv2d4.d	Prep Date	05/09/07	SDG No	
Analysis ID	97183	Prep Exp Date	05/30/07	Date Received	05/01/07
Analysis Date	5/17/2007	Matrix	SOLID	Date Sampled	04/30/07
Analysis Time	02:02	Initial Wt/Vol	10.0	Lims Test Code	XXA11IN01
Anal Exp Date	06/23/07	Extract Vol	20	Method	DX8290_2
Instrument	M2A	Dil Factor	1.0	Code	IN2
Analyst	PMP				

Sample

Analyte	RT	Area	Height	RF	Std Amt	Amount	Rec	Conc (pg/g)		DL (pg/g)
2,3,7,8-TCDD	31:48	28678	3539	1.052		73.664040		7.366404		0.954
Total TCDD				1.052		73.664040		7.366404	MSD 5/22/07	0.954
2,3,7,8-TCDF	29:52	3456848	259475	0.984		6455.73397		~~645.573397 QE~~ ND		2.28
Total TCDF				0.984		6455.73397		645.573397	QE	2.28
1,2,3,7,8-PeCDD	41:40	71910	15891	0.998		214.322594		21.432259	Q	0.456
Total PeCDD				0.998		214.322594		21.432259	Q	0.456
1,2,3,7,8-PeCDF	39:52	963965	198814	1.024		1858.03062		185.803062	Q	0.801
2,3,4,7,8-PeCDF	41:07	827336	169940	1.100		1632.45255		163.245255	Q	0.702
Total PeCDF				1.062		3490.48317		349.048317	Q	0.749
1,2,3,4,7,8-HxCDD	45:58	52840	15866	1.186		157.996698		15.799670		0.384
1,2,3,6,7,8-HxCDD	46:04	107254	30494	0.963		342.625389		34.262539		0.429
1,2,3,7,8,9-HxCDD	46:26	154035	28203	1.145		443.526932		44.352693		0.378
Total HxCDD				1.098		944.149020		94.414902		0.395
1,2,3,4,7,8-HxCDF	44:55	919874	322166	1.264		1786.33860		178.633860		0.346
1,2,3,6,7,8-HxCDF	45:04	608256	181264	1.239		1167.26892		116.726892	Q	0.361
2,3,4,6,7,8-HxCDF	45:46	592157	160766	1.196		1273.36606		127.336606		0.432
1,2,3,7,8,9-HxCDF	46:42	51738	14895	1.212		134.203285		13.420329		0.569
Total HxCDF				1.228		4361.17687		436.117687	Q	0.412
1,2,3,4,6,7,8-HpCDD	50:47	655017	134893	1.056		2451.34269		245.134269		0.693
Total HpCDD				1.056		2451.34269		245.134269		0.693
1,2,3,4,6,7,8-HpCDF	49:07	1798601	402910	1.467		4341.65308		434.165308		0.392
1,2,3,4,7,8,9-HpCDF	51:26	138309	30098	1.451		459.143210		45.914321		0.611
Total HpCDF				1.459		4800.79629		480.079629		0.478
OCDD	55:04	3564607	946496	1.041		16396.9123		1639.69123	B	0.559
OCDF	55:11	382554	98810	1.253		1461.64058		146.164058		0.457
13C-2,3,7,8-TCDD	31:44	369955	38355	1.048	1000	798.731993	79.87	79.873199		0.993
13C-2,3,7,8-TCDF	29:47	544278	66569	1.492	1000	825.536877	82.55	82.553688		0.473
13C-1,2,3,7,8-PeCDD	41:39	336094	81908	1.117	1000	680.992074	68.10	68.099207		0.441
13C-1,2,3,7,8-PeCDF	39:49	506639	105438	1.616	1000	709.291586	70.93	70.929159		0.377
13C-2,3,4,7,8-PeCDF	41:06	460856	112012	1.580	1000	659.947079	65.99	65.994708		0.386
13C-1,2,3,4,7,8-HxCDD	45:57	281920	79059	0.891	1000	870.887565	87.09	87.088756		0.378
13C-1,2,3,6,7,8-HxCDD	46:03	324926	87143	1.031	1000	867.967942	86.80	86.796794		0.327
13C-1,2,3,4,7,8-HxCDF	44:54	407278	124449	1.235	1000	907.958421	90.80	90.795842		0.263
13C-1,2,3,6,7,8-HxCDF	45:03	420567	121783	1.370	1000	845.532677	84.55	84.553268		0.237
13C-2,3,4,6,7,8-HxCDF	45:46	388663	105490	1.285	1000	833.096219	83.31	83.309622		0.253
13C-1,2,3,7,8,9-HxCDF	46:41	318210	79051	1.167	1000	751.164834	75.12	75.116483		0.278
13C-1,2,3,4,6,7,8-HpCDD	50:47	252982	52238	0.947	1000	735.361774	73.54	73.536177		0.242
13C-1,2,3,4,6,7,8-HpCDF	49:06	282465	64875	1.069	1000	727.912353	72.79	72.791235		0.269
13C-1,2,3,4,7,8,9-HpCDF	51:25	207668	42010	0.898	1000	636.981730	63.70	63.698173		0.321
13C-OCDD	55:04	417720	109967	0.737	2000	1560.78065	78.04	156.078065		0.357
13C-1,2,3,4-TCDD	31:14	884073	98494	1.000	2000	2000.00000	100.00	200.000000		1.04
13C-1,2,3,7,8,9-HxCDD	46:27	726247	204969	1.000	2000	2000.00000	100.00	200.000000		0.337

PMP 5-17-07

SAH 52107

STL - Knoxville

IsoCalc Preliminary Sample Report

PCDD/PCDF by EPA Method 1613B

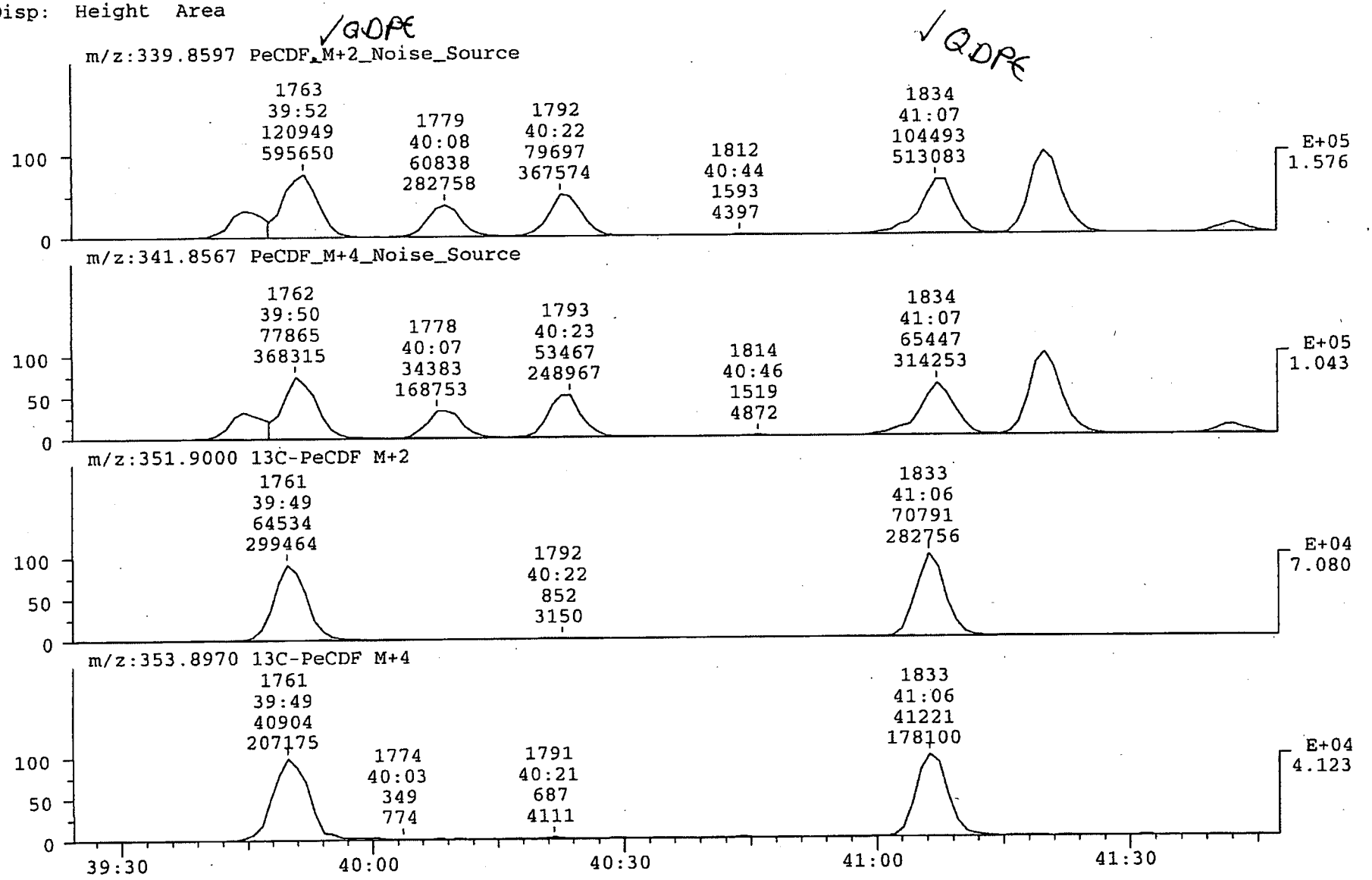
IsoCalc

Workorder	3452:55	**Prep Batch**		**Lot No**	
Data File	/20070516s3/b070516s3.d	**Prep Date**		**SDG No**	
Analysis ID	97171	**Prep Exp Date**		**Date Received**	
Analysis Date	5/16/2007	**Matrix**	UNKNOWN	**Date Sampled**	
Analysis Time	23:18	**Initial Wt/Vol**		**Lims Test Code**	
Anal Exp Date		**Extract Vol**		**Method**	DX1613B
Instrument	M2A CCV	**Dil Factor**	1.0	**Code**	F8
Analyst	PMP				

Analyte	RT	Area	Height	RF	Std Amt	Amount	Rec	Conc (ng/mL)		DL (ng/mL)
2,3,7,8-TCDD	31:51	168113	19378	1.052	10.00	10.868413	108.68	10.868413	E	0.172
Total TCDD		725755	86524	1.052		57.788074		57.788074	E	0.172
2,3,7,8-TCDF	29:51	238808	26693	0.984	10.00	11.297918	112.98	11.297918	E	0.114
Total TCDF		498232	65119	0.984		34.869090		34.869090	EQ	0.114
1,2,3,7,8-PeCDD	41:46	733338	175346	0.998	50.00	53.286862	106.57	53.286862	E	0.0838
Total PeCDD		1358215	283187	0.998		151.979436		151.979436	E	0.0838
1,2,3,7,8-PeCDF	39:56	1072401	213703	1.024	50.00	51.667247	103.33	51.667247	E	0.0863
2,3,4,7,8-PeCDF	41:13	1102199	261468	1.100	50.00	50.590651	101.18	50.590651	E	0.0719
Total PeCDF		2132733	378472	1.062		202.480673		202.480673	E	0.0786
1,2,3,4,7,8-HxCDD	46:03	691896	212557	1.186	50.00	47.468791	94.94	47.468791	E	0.0675
1,2,3,6,7,8-HxCDD	46:10	619448	180784	0.963	50.00	52.731161	105.46	52.731161	E	0.0870
1,2,3,7,8,9-HxCDD	46:33	613445	158291	1.145	50.00	43.786040	87.57	43.786040	E	0.0716
Total HxCDD		851627	258098	1.098		207.346793		207.346793	E	0.0746
1,2,3,4,7,8-HxCDF	45:01	1133400	345624	1.264	50.00	49.180909	98.36	49.180909	E	0.0549
1,2,3,6,7,8-HxCDF	45:09	1181618	340036	1.239	50.00	49.364208	98.73	49.364208	E	0.0558
2,3,4,6,7,8-HxCDF	45:52	1009161	292885	1.196	50.00	48.365087	96.73	48.365087	E	0.0649
1,2,3,7,8,9-HxCDF	46:49	665539	179754	1.212	50.00	44.344524	88.69	44.344524	E	0.102
Total HxCDF		1843668	513275	1.228		280.402782		280.402782	E	0.0654
1,2,3,4,6,7,8-HpCDD	50:53	537303	113878	1.056	50.00	50.581421	101.16	50.581421	E	0.176
Total HpCDD		569578	126459	1.056		104.201194		104.201194	E	0.176
1,2,3,4,6,7,8-HpCDF	49:12	896788	216934	1.467	50.00	49.663698	99.33	49.663698	E	0.0846
1,2,3,4,7,8,9-HpCDF	51:31	597051	134983	1.451	50.00	48.436328	96.87	48.436328	E	0.131
Total HpCDF				1.459		98.100026		98.100026	E	0.103
OCDD	55:10	933236	254874	1.041	100.0	99.307611	99.31	99.307611	E	0.102
OCDF	55:18	1062090	283274	1.253	100.0	93.874967	93.87	93.874967	E	0.111
13C-2,3,7,8-TCDD	31:48	1469910	153757	1.048	100.0	96.538085	96.54	96.538085		0.219
13C-2,3,7,8-TCDF	29:49	2148506	239966	1.492	100.0	99.130666	99.13	99.130666		0.115
13C-1,2,3,7,8-PeCDD	41:45	1378553	328815	1.117	100.0	84.969003	84.97	84.969003		0.147
13C-1,2,3,7,8-PeCDF	39:55	2026899	404362	1.616	100.0	86.320521	86.32	86.320521		0.101
13C-2,3,4,7,8-PeCDF	41:11	1981133	452295	1.580	100.0	86.300488	86.30	86.300488		0.104
13C-1,2,3,4,7,8-HxCDD	46:02	1228694	361921	0.891	100.0	121.042622	121.04	121.042622		0.0945
13C-1,2,3,6,7,8-HxCDD	46:09	1219349	345873	1.031	100.0	103.873707	103.87	103.873707		0.0817
13C-1,2,3,4,7,8-HxCDF	45:00	1822691	557857	1.235	100.0	129.582526	129.58	129.582526		0.107
13C-1,2,3,6,7,8-HxCDF	45:08	1931900	560765	1.370	100.0	123.862041	123.86	123.862041		0.0967
13C-2,3,4,6,7,8-HxCDF	45:51	1743886	499386	1.285	100.0	119.206089	119.21	119.206089		0.103
13C-1,2,3,7,8,9-HxCDF	46:48	1238799	313565	1.167	100.0	93.256831	93.26	93.256831		0.114
13C-1,2,3,4,6,7,8-HpCDD	50:52	1005702	204541	0.947	100.0	93.226446	93.23	93.226446		0.0771
13C-1,2,3,4,6,7,8-HpCDF	49:11	1231220	286034	1.069	100.0	101.183219	101.18	101.183219		0.101
13C-1,2,3,4,7,8,9-HpCDF	51:30	849782	186953	0.898	100.0	83.123402	83.12	83.123402		0.121
13C-OCDD	55:09	1805696	495663	1.024	200.0	154.862287	77.43	154.862287		0.118
37Cl4-2,3,7,8-TCDD	31:53	150987	16893	1.123	10.00	9.250075	92.50	9.250075	E	0.0799
13C-1,2,3,4-TCDD	31:18	1453123	158750	1.000	100.0	100.000000	100.00	100.000000		0.230
13C-1,2,3,7,8,9-HxCDD	46:33	1138665	290763	1.000	100.0	100.000000	100.00	100.000000		0.0843

C7E010209

CHRO: btjv2d4 17-May-07 Elapse: 55:18 2629
Samp: Vial 12 WO=jv2d41a6 Meth=IN2 Dil=1 Start : 02:02:24 2697
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E010209-001 Inlet : GC Vial 12
Peak: 100.00 ppm Label wndw: 1760 > 1840 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area

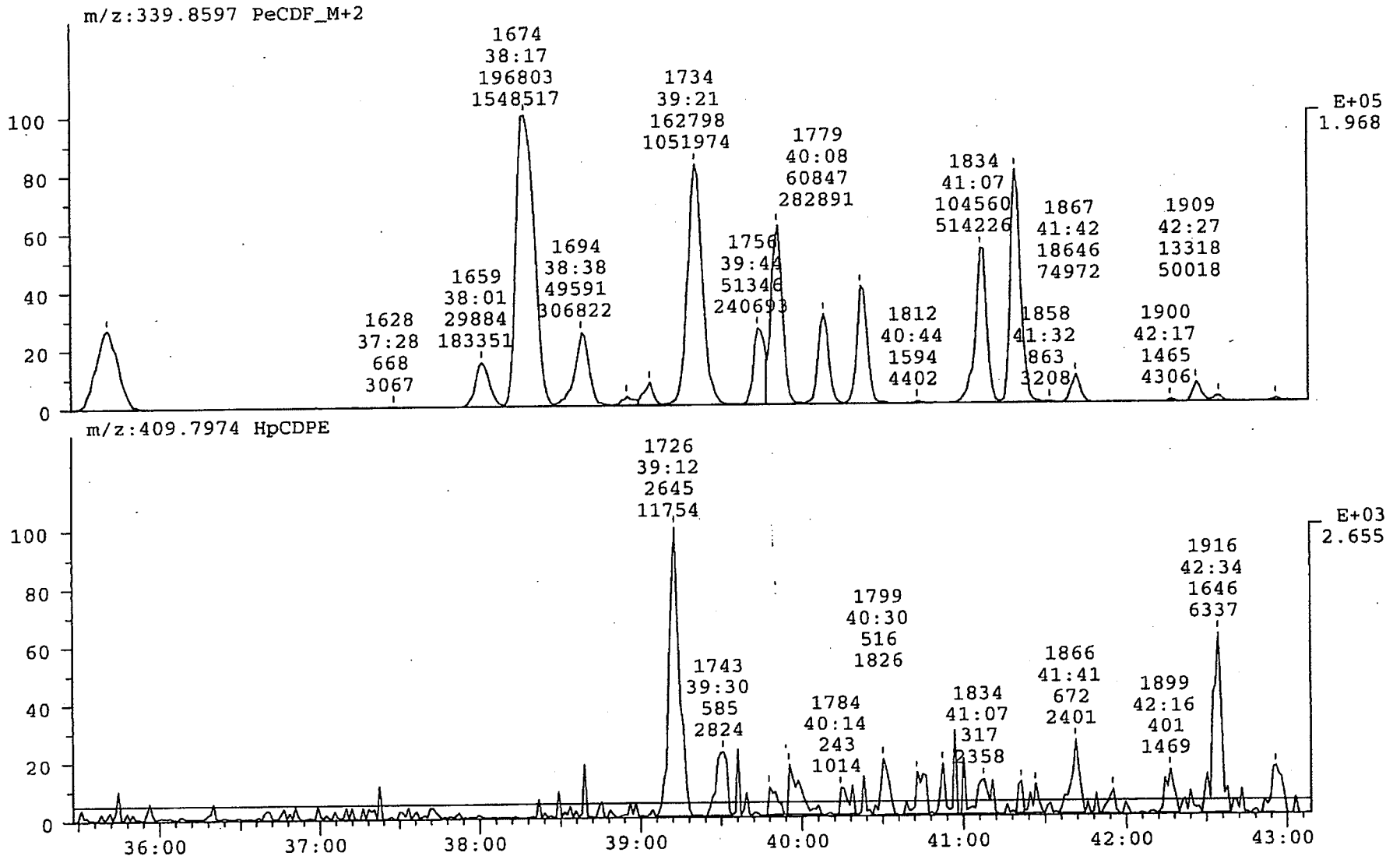


7023

(7001-7718)

C7E010209

CHRO: btjv2d4 17-May-07 Elapse: 40:35 1804
Samp: Vial 12 WO=jv2d41a6 Meth=IN2 Dil=1 Start : 02:02:24 2697
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E010209-001 Inlet : GC Vial 12
Peak: 100.00 ppm Label wndw: 1514 > 1949 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



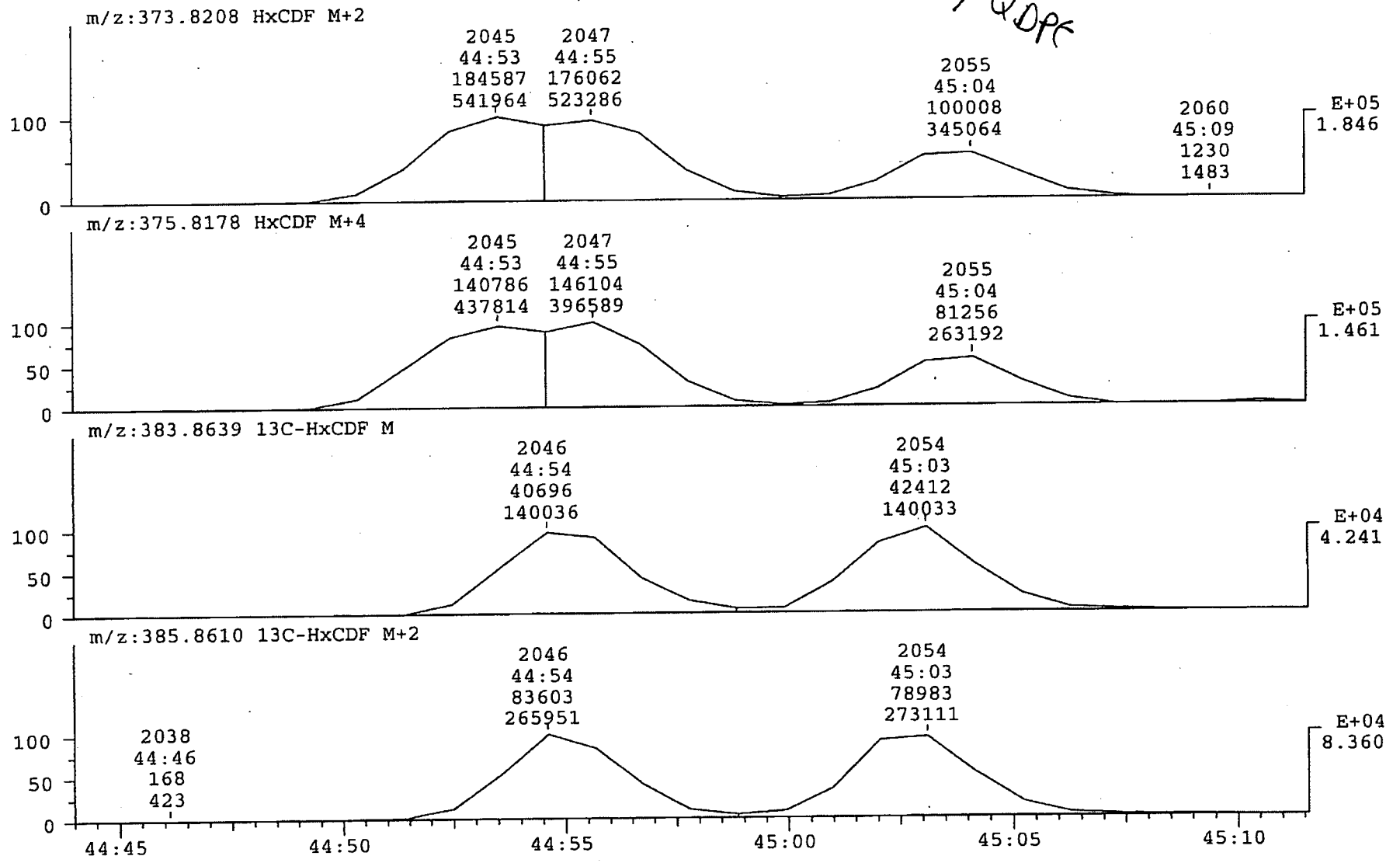
7024

(7001-7718)

C7E010209

CHRO: btjv2d4 17-May-07 Elapse: 45:47 2096
Samp: Vial 12 WO=jv2d41a6 Meth=IN2 Dil=1 Start : 02:02:24 2697
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E010209-001 Inlet : GC Vial 12
Peak: 100.00 ppm Label wndw: 2036 > 2062 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 1 Label : -2, 3.0
Disp: Height Area

/ QDPC



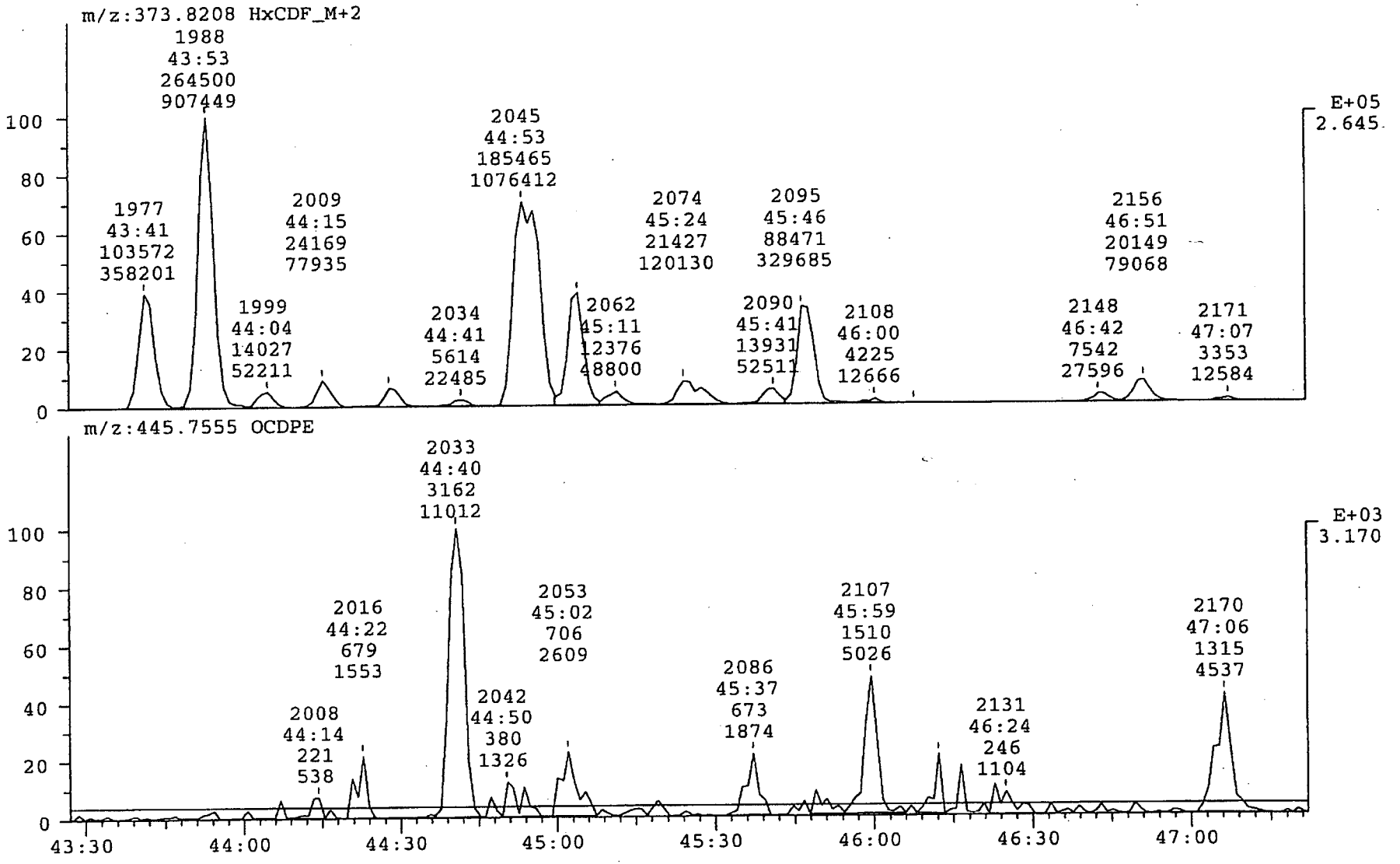
7030

(7001-7718)

C7E010209

7031

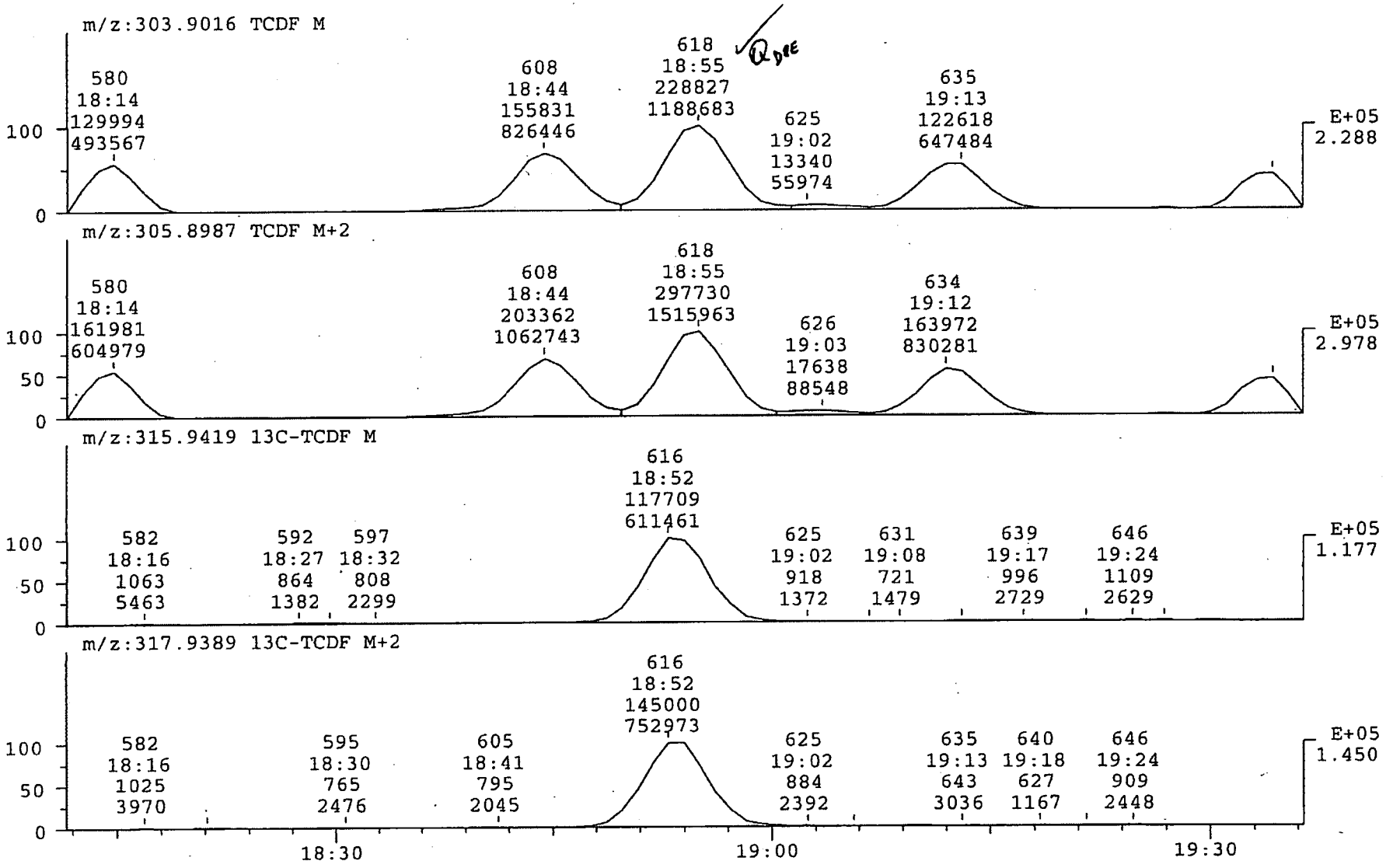
CHRO: btjv2d4 17-May-07 Elapse: 45:08 2059
Samp: Vial 12 WO=jv2d41a6 Meth=IN2 Dil=1 Start : 02:02:24 2697
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E010209-001 Inlet : GC Vial 12
Peak: 100.00 ppm Label wndw: 1963 > 2185 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



(7001-7718)

C7E010209

CHRO: afjv2d4 22-May-07 Elapse: 18:54.9 617
Samp: Vial 4 WO=jv2d41cd Meth=INc Dil=1 Start : 00:54:56 1133
Comm: Inst=m1c/7206044 Batch=20070521s1 Ccal=A070521S1
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E010209-001 Inlet : GC Vial 4
Peak: 100.00 ppm Label wndw: 577 > 657 Masses: 293 > 376
Area: 5, 0.50, 15 Baseline : 100, 1 Label : -2, 3.0
Disp: Height Area

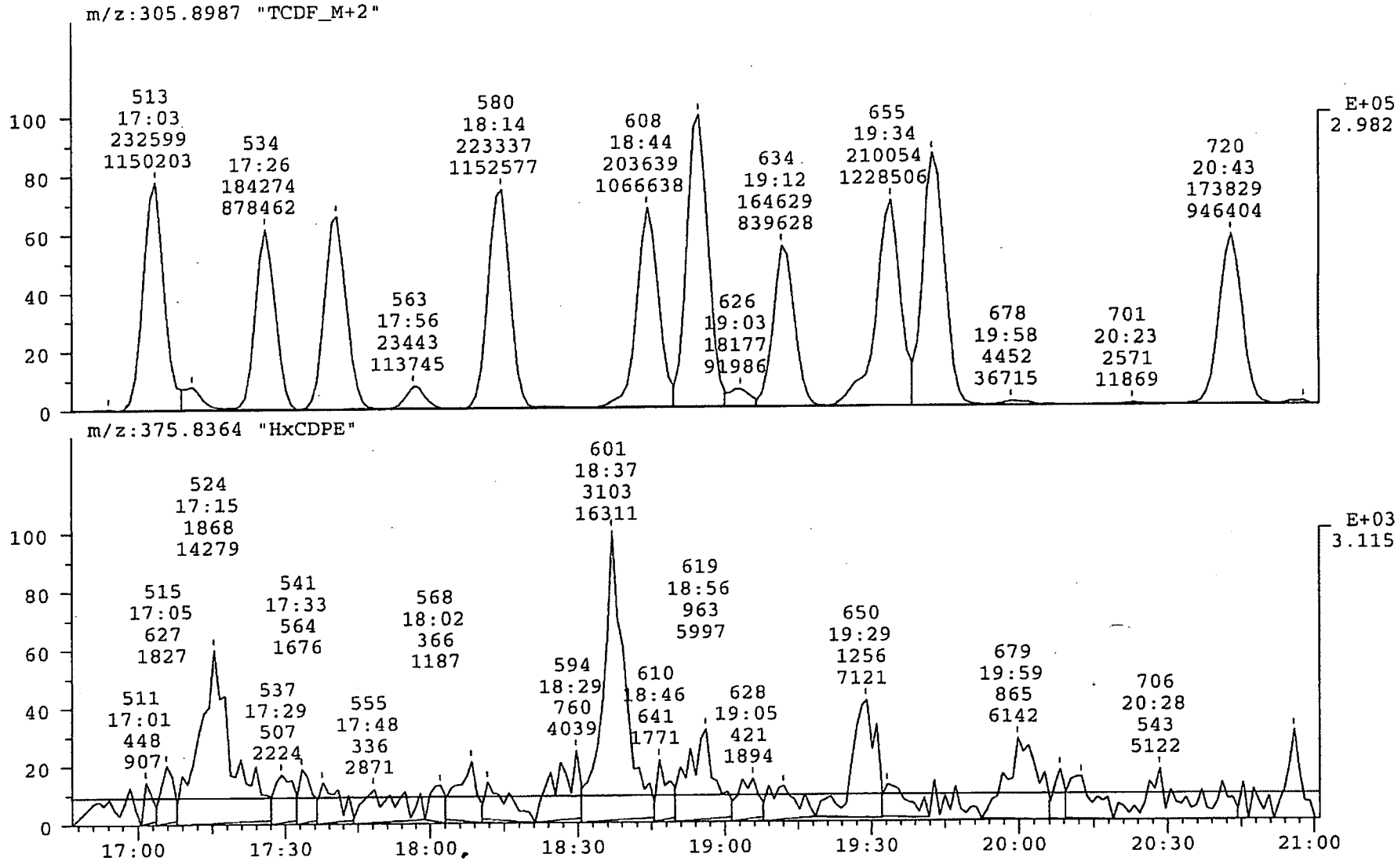


7052

(7001-7718)

C7E010209

7053

(7001-7718)

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CHRO:  afjv2d4                                  22-May-07   Elapse:  18:54.9      617
Samp:  Vial 4 WO=jv2d41cd Meth=INc Dil=1                    Start :  00:54:56    1133
Comm:  Inst=m1c/7206044 Batch=20070521s1 Ccal=A070521S1
Mode:  EI +VE +LMR  ESCAN LR NRM                            Study :  7129262 (10.0g)
Oper:  PMP            Client:  C7E010209-001                Inlet :  GC     Vial   4
Peak:  100.00  ppm      Label wndw:   497 > 737             Masses:  293 > 376
Area:  5, 0.50, 15      Baseline  :   100, 3                Label :  -2, 3.0
Disp:  Height  Area
```