TETRA TECH NUS

PHIL-21241

TO:	**RUSS TURNER**	**DATE:**	**JULY 19, 2007**
FROM:	**MEGAN RITCHIE**	**COPIES:**	**FILE**

SUBJECT: **ORGANIC DATA REVIEW – CHLORINATED DIOXINS/FURANS**
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. C7E020142

SAMPLES: **2/Solid/**
03TP06-0102-05 03TP06-0809-03

OVERVIEW

The sample set for NAS JRB Willow Grove Site 3 Test Pits – Willow Grove, PA, SDG C7E020142, consists of two solid environmental sample (designated 03TP06-). The sample was analyzed for polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans. One field duplicate pair (03TP06-0102-05 and 03TP06-0809-03) was included in this SDG.

The samples were collected by Tetra Tech NUS on May 1, 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 results for 1,2,3,7,8,9-HxCDF and 1,2,3,4,7,8,9-HpCDF in sample 03TP06-0809-03 and 2,3,7,8-TCDD in sample

03TP06-0102-05 were qualified as estimated because the ion abundance ratio met the expanded QC window of 25%.

Polychlorinated diphenyl ether (PCDPE) interferants 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. The analytes affected by PCDPE interferants were: 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, 2,3,4,7,8-PeCDF, and 2,3,7,8-TCDF in sample 03TP06-0102-05, and 1,2,3,7,8,9-HxCDF, 1,2,3,7,8-PeCDF, and 2,3,7,8-TCDF in sample 03TP06-0809-03.

The 1,2,3,7,8-PeCDD result for samples 03TP06-0102-05 and 03TP06-0809-03 and the 2,3,7,8-TCDD result for sample 03TP06-0102-05 were qualified as EMPC values because the two ion quantitation peaks for these analytes maximized outside the 2 second QC criteria. In addition, ion ratios were outside ±25% of theoretical ion abundance. The analytes affected by co-maximizing quanitiation ions were: 1,2,3,7,8-PeCDD and 2,3,7,8-TCDD in sample 03TP06-0102-05, and 1,2,3,7,8-PeCDD in sample 03TP06-0809-03.

The internal standard recovery for 13C-1,2,3,4,7,8,9-HpCDF was below the lower QC limit of 40%. The result for 1,2,3,4,7,8,9-HpCDF was qualified as estimated (J) but was superseded by the EMPC qualifier.

Several field duplicate relative percent differences (RPDs) exceeded the QC criteria of 50% or the absolute difference of the two results was greater than 2X the reporting limit. The results for these analytes were qualified as estimated (J) unless superseded by the qualifier EMPC. A comparison of the field duplicate results is included in Appendix C.

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.

Several MS/MSD recoveries exceeded the upper QC limits. One MS recovery was below the lower QC limit. Several relative percent differences (RPDs) exceeded the QC limit of 15%. No qualifications were made on MS/MSD data alone.

The laboratory reported 2,3,7,8-TCDF in samples 03TP06-0102-05 and 03TP06-0809-03 from the second column (DB-225) analyses, which were 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

Lab ratory Performance: One analyte was detected in the laboratory blank. One internal standard recovery was below the QC limit.

Other 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. Three results were considered estimated due to ion rations outside criteria for compound identification and met expanded ion ratio criteria. Eight results were qualified as EMPCs due to the presence of DPE. Three results were qualified as EMPCs due to co-maximizing quantitation ions. Several MS/MSD recoveries exceeded QC criteria.

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: C7E020142 MEDIA: SOIL DATA FRACTION: DIOX

nsample	03TP06-0102-05	nsample	03TP06-0809-03
samp_date	5/1/2007	samp_date	5/1/2007
lab_id	C7E020142005	lab_id	C7E020142003
qc_type	NM	qc_type	NM
units	NG/KG	units	NG/KG
Pct_Solids	67.0	Pct_Solids	71.0
DUP_OF:	03TP06-0809-03	DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,2,3,4,6,7,8,9-OCDD	2200		
1,2,3,4,6,7,8,9-OCDF	420	J	G
1,2,3,4,6,7,8-HPCDD	650	J	G
1,2,3,4,6,7,8-HPCDF	1100	J	G
1,2,3,4,7,8,9-HPCDF	88	J	G
1,2,3,4,7,8-HXCDD	39	J	G
1,2,3,4,7,8-HXCDF	690	EMPC	GW
1,2,3,6,7,8-HXCDD	94	J	G
1,2,3,6,7,8-HXCDF	230	EMPC	W
1,2,3,7,8,9-HXCDD	120	J	G
1,2,3,7,8,9-HXCDF	14		
1,2,3,7,8-PECDD	43	EMPC	GW
1,2,3,7,8-PECDF	130	J	G
2,3,4,6,7,8-HXCDF	350	EMPC	GW
2,3,4,7,8-PECDF	300	EMPC	GW
2,3,7,8-TCDD	17	J	Q
2,3,7,8-TCDF	130	EMPC	GW

Parameter	Result	Val Qual	Qual Code
1,2,3,4,6,7,8,9-OCDD	1700		
1,2,3,4,6,7,8,9-OCDF	190	J	G
1,2,3,4,6,7,8-HPCDD	380	J	G
1,2,3,4,6,7,8-HPCDF	490	J	G
1,2,3,4,7,8,9-HPCDF	36	J	GN01Q
1,2,3,4,7,8-HXCDD	16	J	G
1,2,3,4,7,8-HXCDF	270	J	G
1,2,3,6,7,8-HXCDD	40	J	G
1,2,3,6,7,8-HXCDF	89	EMPC	W
1,2,3,7,8,9-HXCDD	49	J	G
1,2,3,7,8,9-HXCDF	3.2	J	Q
1,2,3,7,8-PECDD	16	EMPC	GW
1,2,3,7,8-PECDF	52	EMPC	GW
2,3,4,6,7,8-HXCDF	150	J	G
2,3,4,7,8-PECDF	110	J	G
2,3,7,8-TCDD	17		
2,3,7,8-TCDF	59	EMPC	GW

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: 03TP06-0809-03

Trace Level Organic Compounds

Lot - Sample #....:	C7E020142 - 003	Work Order #....:	JV38A1A9	Matrix....:	SOLID
Date Sampled....:	05/01/07	Date Received....:	05/02/07	Dilution Factor:	1
Prep Date....:	05/09/07	Analysis Date....:	05/22/07	Percent Moisture:	29
Prep Batch # ....:	7129262				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1C	Method:	SW846 8290
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	17	M	1.4	1.1	pg/g
1,2,3,7,8-PeCDD	16	Q M	7.1	0.83	pg/g
1,2,3,4,7,8-HxCDD	16	M	7.1	0.58	pg/g
1,2,3,6,7,8-HxCDD	40	M	7.1	0.71	pg/g
1,2,3,7,8,9-HxCDD	49	M	7.1	0.60	pg/g
1,2,3,4,6,7,8-HpCDD	380	M	7.1	1.2	pg/g
OCDD	1700	B M	14	1.3	pg/g
2,3,7,8-TCDF	59	Q X M	1.4	0.67	pg/g
1,2,3,7,8-PeCDF	52	Q M	7.1	0.77	pg/g
2,3,4,7,8-PeCDF	110	M	7.1	0.64	pg/g
1,2,3,4,7,8-HxCDF	270	M	7.1	0.54	pg/g
1,2,3,6,7,8-HxCDF	89	Q M	7.1	0.49	pg/g
2,3,4,6,7,8-HxCDF	150	M	7.1	0.58	pg/g
1,2,3,7,8,9-HxCDF	3.2	Q J M	7.1	0.83	pg/g
1,2,3,4,6,7,8-HpCDF	490	M	7.1	0.65	pg/g
1,2,3,4,7,8,9-HpCDF	36	Q M	7.1	0.87	pg/g
OCDF	190	M	14	0.93	pg/g

INTERNAL STANDARDS	PERCENT RECOVERY		RECOVERY LIMITS
13C-2,3,7,8-TCDD	59		40 - 135
13C-1,2,3,7,8-PeCDD	46		40 - 135
13C-1,2,3,4,7,8-HxCDD	64		40 - 135
13C-1,2,3,6,7,8-HxCDD	62		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	48		40 - 135
13C-OCDD	41		40 - 135
13C-2,3,7,8-TCDF	66	X	40 - 135
13C-1,2,3,7,8-PeCDF	43		40 - 135
13C-2,3,4,7,8-PeCDF	43		40 - 135
13C-1,2,3,4,7,8-HxCDF	63		40 - 135
13C-1,2,3,6,7,8-HxCDF	60		40 - 135
13C-2,3,4,6,7,8-HxCDF	60		40 - 135
13C-1,2,3,7,8,9-HxCDF	52		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	43		40 - 135
13C-1,2,3,4,7,8,9-HpCDF	39	*	40 - 135

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Tetra Tech NUS, Inc

Sample ID: 03TP06-0809-03

Trace Level Organic Compounds

Lot - Sample #....:	C7E020142 - 003	**Work Order #....:**	JV38A1A9	**Matrix....:**	SOLID
Date Sampled....:	05/01/07	**Date Received....:**	05/02/07	**Dilution Factor:**	1
Prep Date....:	05/09/07	**Analysis Date....:**	05/22/07	**Percent Moisture:**	29
Prep Batch # ....:	7129262				
Initial Wgt/Vol :	10 g	**Instrument ID....:**	M1C	**Method:**	SW846 8290
Analyst ID....:	Patricia(Trish) M. Parsly				

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

- * Surrogate recovery is outside stated control limits.
- B Method blank contamination. The associated method blank contains the target analyte at a reportable level.
- J Estimated Result.
- M Matrix spike recovery outside of limits.
- Q Estimated maximum possible concentration (EMPC).
- X See project narrative.

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Tetra Tech NUS, Inc

Sample ID: 03TP06-0102-05

Trace Level Organic Compounds

Lot - Sample #....:	C7E020142 - 005	Work Order #....:	JV38M1AA	Matrix....:	SOLID
Date Sampled....:	05/01/07	Date Received....:	05/02/07	Dilution Factor:	1
Prep Date....:	05/09/07	Analysis Date....:	05/17/07	Percent Moisture:	33
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	17	Q	1.5	1.2	pg/g
1,2,3,7,8-PeCDD	43	Q	7.4	0.41	pg/g
1,2,3,4,7,8-HxCDD	39		7.4	0.15	pg/g
1,2,3,6,7,8-HxCDD	94		7.4	0.16	pg/g
1,2,3,7,8,9-HxCDD	120		7.4	0.15	pg/g
1,2,3,4,6,7,8-HpCDD	650		7.4	0.21	pg/g
OCDD	2200	B	15	0.93	pg/g
1,2,3,7,8-PeCDF	130		7.4	0.43	pg/g
2,3,4,7,8-PeCDF	300	Q	7.4	0.34	pg/g
1,2,3,4,7,8-HxCDF	690	Q	7.4	0.18	pg/g
1,2,3,6,7,8-HxCDF	230	Q	7.4	0.18	pg/g
2,3,4,6,7,8-HxCDF	350	Q	7.4	0.20	pg/g
1,2,3,7,8,9-HxCDF	14		7.4	0.25	pg/g
1,2,3,4,6,7,8-HpCDF	1100		7.4	0.18	pg/g
1,2,3,4,7,8,9-HpCDF	88		7.4	0.25	pg/g
OCDF	420		15	0.18	pg/g

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	73	40 - 135
13C-1,2,3,7,8-PeCDD	65	40 - 135
13C-1,2,3,4,7,8-HxCDD	74	40 - 135
13C-1,2,3,6,7,8-HxCDD	69	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	68	40 - 135
13C-OCDD	56	40 - 135
13C-1,2,3,7,8-PeCDF	67	40 - 135
13C-2,3,4,7,8-PeCDF	65	40 - 135
13C-1,2,3,4,7,8-HxCDF	72	40 - 135
13C-1,2,3,6,7,8-HxCDF	68	40 - 135
13C-2,3,4,6,7,8-HxCDF	69	40 - 135
13C-1,2,3,7,8,9-HxCDF	65	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	62	40 - 135
13C-1,2,3,4,7,8,9-HpCDF	62	40 - 135

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Tetra Tech NUS, Inc

Sample ID: 03TP06-0102-05

Trace Level Organic Compounds

Lot - Sample #....:	C7E020142 - 005	**Work Order #....:**	JV38M1AA	**Matrix....:**	SOLID
Date Sampled....:	05/01/07	**Date Received....:**	05/02/07	**Dilution Factor:**	1
Prep Date....:	05/09/07	**Analysis Date....:**	05/17/07	**Percent Moisture:**	33
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: 03TP06-0102-05

Trace Level Organic Compounds

Lot - Sample #....:	C7E020142 - 005	**Work Order #....:**	JV38M1AE	**Matrix....:**	SOLID
Date Sampled....:	05/01/07	**Date Received....:**	05/02/07	**Dilution Factor:**	1
Prep Date....:	05/09/07	**Analysis Date....:**	05/22/07	**Percent Moisture:**	33
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	130	Q	1.5	0.76	pg/g

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDF	66	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: C7E020142

Method(s): SW-846 8290

Dioxin Analysis

All QC criteria were met with the following exceptions:

For the following samples the listed recoveries of internal standards were below the lower acceptance criterion (40%). The minimum required signal-to-noise ratio was present, and the target estimated detection limit for associated analytes was met. The results are reported in accordance with the standard operating procedure. When properly applied, isotope dilution techniques produce results that are independent of internal standard recovery.

03TP06-0809-03

13C-1234789-HpCDF	39%

03TP06-0809-03 Matrix Spike

13C-12378-PeCDD	30%
13C-1234678-HpCDD	35%
13C-OCDD	28%
13C-12378-PeCDF	31%
13C-23478-PeCDF	30%
13C-234678-HxCDF	39%
13C-123789-HxCDF	36%
13C-1234678-HpCDF	30%
13C-1234789-HpCDF	25%

03TP06-0809-03 Matrix Spike Duplicate

13C-12378-PeCDD	36%
13C-1234678-HpCDD	39%
13C-OCDD	32%
13C-12378-PeCDF	36%
13C-23478-PeCDF	36%
13C-1234678-HpCDF	34%
13C-1234789-HpCDF	26%

The percent recoveries for all the native analytes for 03TP06-0809-03 Matrix Spike and 03TP06-0809-03 Matrix Spike Duplicate were outside QC limits. Heterogeneity in the distribution of the analytes in the original sample is the suspected cause for the recoveries

being outside limits and many of the relative percent differences (RPDs) being outside the method suggested 15%. The recoveries in the laboratory control sample met their acceptance criteria.

Note: All recoveries in the Matrix Spike and Matrix Spike Duplicate samples were compared to the limits used for the Laboratory Control Sample. The "M" qualifier was used for analytes in the original sample which were outside the LCS limits.

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 2378-TCDF result for samples 03TP06-0809-03 (Original), 03TP06-0809-03 (Matrix Spike) and 03TP06-0809-03 (Matrix Spike Duplicate) are reported with an "X" qualifier to indicate that this analyte was reported from the DB-225 analytical column analysis. All other analytes for these samples were reported from the Rtx-5 analytical column analysis. The DB-225 analytical column raw data is included in the data package after each Rtx-5 column analysis.

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.

C7E020142

Chain of Custody Record

SEVERN TRENT **STL**

S vern Trent Laboratories, Inc.

STL-4124 (0901)

Client: Tetra Tech NUS	Project Manager: Russell Turner	Date: 5/1/07	Chain of Custody Number: 312315
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: FedEx 8545 6865 8520		
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	TCL SVOC/Pest/PCB	TAL Metals/Hg	Dioxin	VOC 40ml								Special Instructions/ Conditions of Receipt
03TP06-0304-01	5/1/07	0925				✓		✓							6	2	2										Do MS/MSD
03TP06-0708-02	5/1/07	1045				✓		✓							3	1	1										
03TP06-0809-03	5/1/07	1110				✓		✓							3	1	1	2*									* Do MS/MSD Dioxin only
03TP06-0607-04	5/1/07	1330				✓		✓							3	1	1										
03TP06-0102-05	5/1/07	1400				✓		✓										1									
03TB-02	5/1/07	0740		✓							✓								2								Trip Blank

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)

	Date	Time		Date	Time
1. Relinquished By: Donald Wahler	5/1/07	1900	1. Received By: [signature]	05 02 07	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

03TP06-0809-03

STL - Knoxville

IsoCalc Preliminary Sample Report

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

Is Calc

Workorder	JV38A1A9	Prep Batch	7129262	Lot No	C7E020142-003
Data File	/20070516s3/btjv38a.d	Prep Date	05/09/07	SDG No	
Analysis ID	97184	Prep Exp Date	05/31/07	Date Received	05/02/07
Analysis Date	5/17/2007	Matrix	SOLID	Date Sampled	05/01/07
Analysis Time	05:16	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	6 sec. 31:52	49026	6056	1.052		121.269561		12.126956		0.780
Total TCDD				1.052		121.269561		12.126956		0.780
2,3,7,8-TCDF	~~29:55~~	1560186	129411	0.984		2902.44321		~~290.244321~~ ~~Q~~ NA		1.53
Total TCDF				0.984		2902.44321		290.244321	Q LSD	1.53
1,2,3,7,8-PeCDD	41:42	36457	8578	0.998		115.137646		11.513765	Q 5/22/07	0.587
Total PeCDD				0.998		115.137646		11.513765	Q	0.587
1,2,3,7,8-PeCDF	39:53	163955	34201	1.024		370.161820		37.016182	Q	0.543
2,3,4,7,8-PeCDF	41:08	354943	74897	1.100		764.837241		76.483724		0.452
Total PeCDF				1.062		1134.99906		113.499906	Q	0.494
1,2,3,4,7,8-HxCDD	45:59	29526	7599	1.186		115.597241		11.559724		0.410
1,2,3,6,7,8-HxCDD	46:05	66494	18236	0.963		284.832200		28.483220		0.506
1,2,3,7,8,9-HxCDD	46:27	90491	14776	1.145		345.518199		34.551820		0.425
Total HxCDD				1.098		745.947640		74.594764		0.443
1,2,3,4,7,8-HxCDF	44:54	710801	153619	1.264		1887.22147		188.722147		0.384
1,2,3,6,7,8-HxCDF	45:05	242748	72562	1.239		628.499786		62.849979	Q	0.348
2,3,4,6,7,8-HxCDF	45:48	362019	95619	1.196		1036.53127		103.653127		0.408
1,2,3,7,8,9-HxCDF	46:44	6299	1445	1.212		22.481460		2.248146	QJ	0.587
Total HxCDF				1.228		3574.73399		357.473399	Q	0.416
1,2,3,4,6,7,8-HpCDD	50:51	495328	100736	1.056		2706.96895		270.696895		0.845
Total HpCDD				1.056		2706.96895		270.696895		0.845
1,2,3,4,6,7,8-HpCDF	49:08	890124	216101	1.467		3446.48256		344.648256		0.461
1,2,3,4,7,8,9-HpCDF	51:29	49346	10930	1.451		253.457190		25.345719	Q	0.616
Total HpCDF				1.459		3699.93975		369.993975	Q	0.528
OCDD	55:06	1385723	363555	1.041		11676.1368		1167.61368	B	0.921
OCDF	55:14	196595	55555	1.253		1375.91830		137.591830		0.658
13C-2,3,7,8-TCDD	31:46	384176	41737	1.048	1000	590.696018	59.07	59.069602		0.633
13C-2,3,7,8-TCDF	~~29:48~~	546385	65909	1.492	1000	590.195780	59.02	59.019578		0.305
13C-1,2,3,7,8-PeCDD	41:40	317176	75988	1.117	1000	457.681385	45.77	45.768139		0.289
13C-1,2,3,7,8-PeCDF	39:51	432537	89023	1.616	1000	431.251966	43.13	43.125197		0.237
13C-2,3,4,7,8-PeCDF	41:07	422001	99658	1.580	1000	430.367016	43.04	43.036702		0.242
13C-1,2,3,4,7,8-HxCDD	45:58	215312	68418	0.891	1000	635.730319	63.57	63.573032		0.442
13C-1,2,3,6,7,8-HxCDD	46:04	242317	68272	1.031	1000	618.687855	61.87	61.868785		0.382
13C-1,2,3,4,7,8-HxCDF	44:55	297887	85491	1.235	1000	634.738801	63.47	63.473880		0.269
13C-1,2,3,6,7,8-HxCDF	45:04	311724	96197	1.370	1000	599.009804	59.90	59.900980		0.242
13C-2,3,4,6,7,8-HxCDF	45:47	291903	84955	1.285	1000	598.038316	59.80	59.803832		0.258
13C-1,2,3,7,8,9-HxCDF	46:43	231263	58387	1.167	1000	521.790378	52.18	52.179038		0.284
13C-1,2,3,4,6,7,8-HpCDD	50:50	173241	34177	0.947	1000	481.316330	48.13	48.131633		0.282
13C-1,2,3,4,6,7,8-HpCDF	49:07	176100	42909	1.069	1000	433.752798	43.38	43.375280		0.243
13C-1,2,3,4,7,8,9-HpCDF	51:26	134218	32454	0.898	1000	393.492668	39.35	39.349267		0.289
13C-OCDD	55:05	228041	63647	0.737	2000	814.400491	40.72	81.440049		0.447
13C-1,2,3,4-TCDD	31:16	1241385	143889	1.000	2000	2000.00000	100.00	200.000000		0.664
13C-1,2,3,7,8,9-HxCDD	46:28	759829	200441	1.000	2000	2000.00000	100.00	200.000000		0.394

PMP 5-17-07
SGH 52107

03TP06-0809-03

STL - Knoxville

IsoCalc Preliminary Peak Report

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

IsoCalc

Workorder	JV38A1A9	Prep Batch	7129262	Lot No	C7E020142-003
Data File	/20070516s3/btjv38a.d	Prep Date	05/09/07	SDG No	
Analysis ID	97184	Prep Exp Date	05/31/07	Date Received	05/02/07
Analysis Date	05/17/07 05:16	Matrix	SOLID	Date Sampled	05/01/07
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	568	428	227	171	1.33 *	/	
	2,3,7,8-TCDF	29:55	29:51	4	678545	881641	57758	71653	0.77	AVV/AVV	M
316					315.9419	317.9389	315.9419	317.9389	0.65-0.89		
	Noise	00:00	00:00	0	158	170	63	68	0.93 *	/	
	13C-2,3,7,8-TCDF	29:48	29:48	0	238492	307893	27210	38699	0.77	ABB/ABV	
320					319.8965	321.8936	319.8965	321.8936	0.65-0.89		
	Noise	00:00	00:00	0	163	180	65	72	0.90 *	/	
	2,3,7,8-TCDD	31:52	31:50	2	21666	27360	2267	3789	0.79	AVB/AVV	D
332					331.9368	333.9338	331.9368	333.9338	0.65-0.89		
	Noise	00:00	00:00	0	268	210	107	84	1.27 *	/	
	13C-1,2,3,4-TCDD	31:16	31:14	2	566859	674526	65070	78819	0.84	ABV/ABV	
	13C-2,3,7,8-TCDD	31:46	31:47	-1	175422	208754	18200	23537	0.84	AVV/AVV	
340					339.8597	341.8567	339.8597	341.8567	1.32-1.78		
	Noise	00:00	00:00	0	273	223	109	89	1.22 *	/	
	1,2,3,7,8-PeCDF	39:53	39:53	0	98592	65363	21300	12901	1.51	AVV/AVB	
	2,3,4,7,8-PeCDF	41:08	41:09	-1	221441	133502	45759	29138	1.66	ABV/ABV	
352					351.9000	353.8970	351.9000	353.8970	1.32-1.78		
	Noise	00:00	00:00	0	120	155	48	62	0.77 *	/	
	13C-1,2,3,7,8-PeCDF	39:51	39:52	-1	264663	167874	55023	34000	1.58	ABB/ABV	
	13C-2,3,4,7,8-PeCDF	41:07	41:08	-1	259304	162697	60567	39091	1.59	ABV/ABB	
356					355.8546	357.8516	355.8546	357.8516	1.32-1.78		
	Noise	00:00	00:00	0	228	218	91	87	1.05 *	/	
	1,2,3,7,8-PeCDD	41:42	41:42	0	22160	48715	5214	9369	0.45 *	ABB/ABB	RT
368					367.8949	369.8919	367.8949	369.8919	1.32-1.78		
	Noise	00:00	00:00	0	133	100	53	40	1.33	/	
	13C-1,2,3,7,8-PeCDD	41:40	41:41	-1	193864	123312	46045	29943	1.57	ABV/ABB	
374					373.8208	375.8178	373.8208	375.8178	1.05-1.43		
	Noise	00:00	00:00	0	230	185	92	74	1.24	/	
	1,2,3,4,7,8-HxCDF	44:54	44:57	-3	395732	315069	83908	69711	1.26	ABV/ABV	M
	1,2,3,6,7,8-HxCDF	45:05	45:05	0	132368	110380	41089	31473	1.20	AVV/AVV	
	2,3,4,6,7,8-HxCDF	45:48	45:48	0	205333	156686	53172	42447	1.31	AVV/AVV	
	1,2,3,7,8,9-HxCDF	46:44	46:45	-1	4270	2812	1388	645	1.52 *	ABV/ABB	R
384					383.8639	385.8610	383.8639	385.8610	0.43-0.59		
	Noise	00:00	00:00	0	175	158	70	63	1.11 *	/	
	13C-1,2,3,4,7,8-HxCDF	44:55	44:56	-1	106179	191708	29023	56468	0.55	ABV/ABV	
	13C-1,2,3,6,7,8-HxCDF	45:04	45:04	0	109103	202621	32434	63763	0.54	AVB/AVV	
	13C-2,3,4,6,7,8-HxCDF	45:47	45:47	0	99088	192815	28239	56716	0.51		M
	13C-1,2,3,7,8,9-HxCDF	46:43	46:44	-1	82037	149226	20868	37519	0.55	ABV/ABV	
390					389.8156	391.8127	389.8156	391.8127	1.05-1.43		
	Noise	00:00	00:00	0	128	205	51	82	0.62 *	/	
	1,2,3,4,7,8-HxCDD	45:59	45:59	0	16029	13497	4355	3244	1.19	ABV/ABV	
	1,2,3,6,7,8-HxCDD	46:05	46:06	-1	34763	31731	9197	9039	1.10	AVB/AVB	
	1,2,3,7,8,9-HxCDD	46:27	46:29	-2	50345	40146	8389	6387	1.25	ABB/ABB	

"J" ok wt 25% exp. window

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 comax limit D = peak outside RT window W = peak outside first/last X = peak has dup match

03TP06-0809-03

STL - Knoxville

IsoCalc Preliminary Peak Report

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

IsoCalc

Workorder	JV38A1A9	Prep Batch	7129262	Lot No	C7E020142-003
Data File	/20070516s3/btjv38a.d	Prep Date	05/09/07	SDG No	
Analysis ID	97184	Prep Exp Date	05/31/07	Date Received	05/02/07
Analysis Date	05/17/07 05:16	Matrix	SOLID	Date Sampled	05/01/07
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
390					389.8156	391.8127	389.8156	391.8127	1.05-1.43		
402					401.8559	403.8529	401.8559	403.8529	1.05-1.43		
	Noise	00:00	00:00	0	203	193	81	77	1.05	/	
	13C-1,2,3,4,7,8-HxCDD	45:58	45:58	0	119274	96038	37924	30494	1.24	ABV/ABV	
	13C-1,2,3,6,7,8-HxCDD	46:04	46:05	-1	140484	101833	36170	32102	1.38	AVB/AVB	
	13C-1,2,3,7,8,9-HxCDD	46:28	46:29	-1	406671	353158	109621	90820	1.15	ABV/ABV	XM
408					407.7818	409.7788	407.7818	409.7788	0.88-1.20		
	Noise	00:00	00:00	0	143	148	57	59	0.97	/	
	1,2,3,4,6,7,8-HpCDF	49:08	49:08	0	457136	432988	114268	101833	1.06	ABV/ABB	
	1,2,3,4,7,8,9-HpCDF	51:29	51:27	2	29521	24189	6705	5358	1.22 *	ABB/ABB	R
418					417.8250	419.8220	417.8250	419.8220	0.37-0.51		
	Noise	00:00	00:00	0	145	115	58	46	1.26 *	/	
	13C-1,2,3,4,6,7,8-HpCDF	49:07	49:07	0	54037	122063	13167	29742	0.44	ABB/ABV	
	13C-1,2,3,4,7,8,9-HpCDF	51:26	51:27	-1	41537	92681	8797	23657	0.45	ABB/ABB	
424					423.7767	425.7737	423.7767	425.7737	0.88-1.20		
	Noise	00:00	00:00	0	153	153	61	61	1.00	/	
	1,2,3,4,6,7,8-HpCDD	50:51	50:49	2	260264	235064	53536	47200	1.11	ABV/ABV	
436					435.8169	437.8140	435.8169	437.8140	0.88-1.20		
	Noise	00:00	00:00	0	155	113	62	45	1.38 *	/	
	13C-1,2,3,4,6,7,8-HpCDD	50:50	50:48	2	83219	90022	16911	17266	0.92	ABB/ABB	
442					441.7428	443.7399	441.7428	443.7399	0.76-1.02		
	Noise	00:00	00:00	0	130	133	52	53	0.98	/	
	OCDF	55:14	55:14	0	88583	108012	24698	30857	0.82	ABB/ABV	
458					457.7377	459.7348	457.7377	459.7348	0.76-1.02		
	Noise	00:00	00:00	0	143	163	57	65	0.88	/	
	OCDD	55:06	55:06	0	653963	731760	175420	188135	0.89	ABV/ABV	M
470					469.7780	471.7750	469.7780	471.7750	0.76-1.02		
	Noise	00:00	00:00	0	155	175	62	70	0.89	/	
	13C-OCDD	55:05	55:05	0	109942	118099	29908	33739	0.93	AVV/ABV	

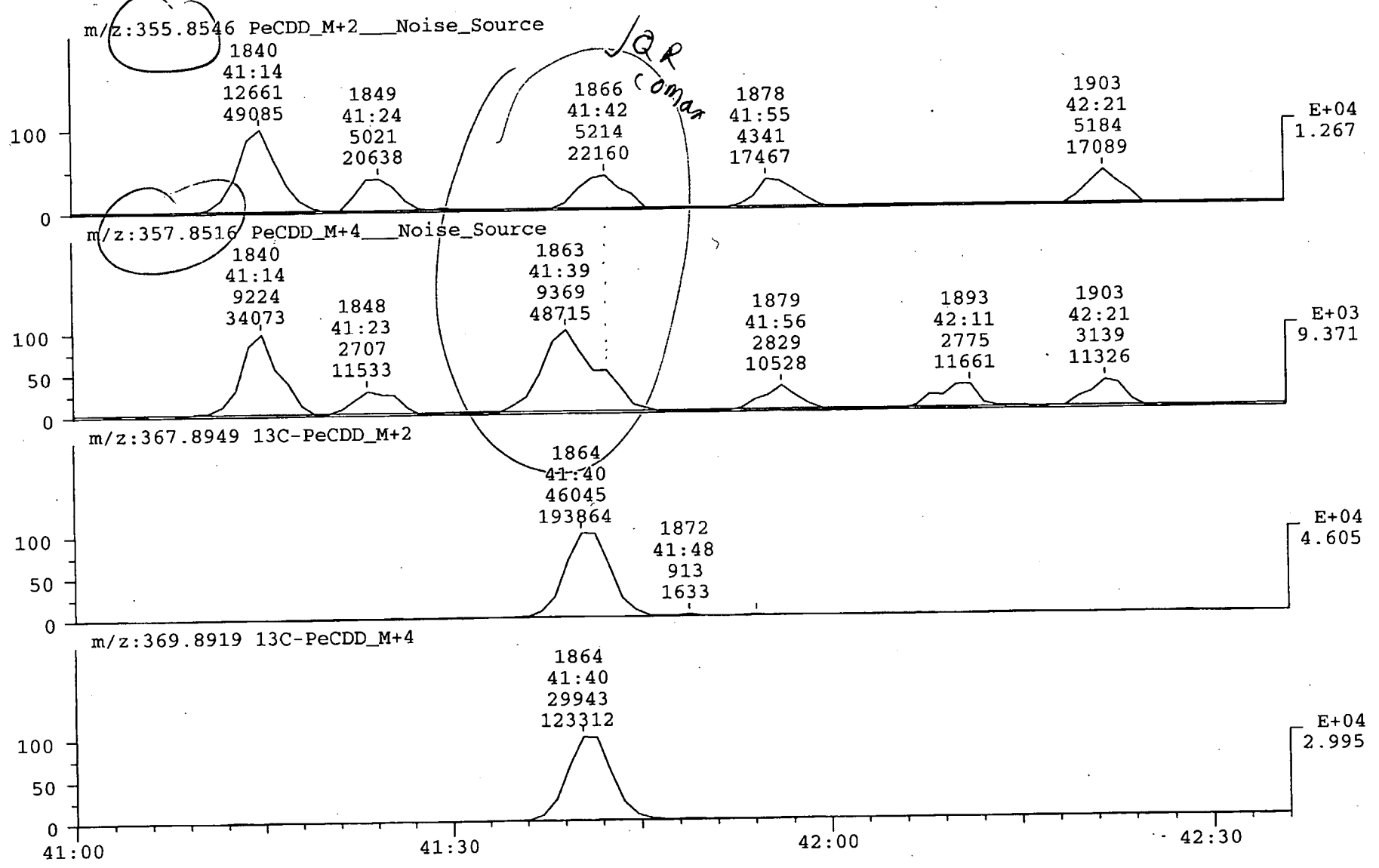
ok window

ok "J"

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 comax limit D = peak outside RT window W = peak outside first/last X = peak has dup match

C7E020142

CHRO: btjv38a 17-May-07 Elapse: 41:44 1868
Samp: Vial 13 WO=jv38a1a9 Meth=IN2 Dil=1 Start : 05:16:31 2696
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ~~ESCAN LR NRM~~ Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-003 Inlet : GC Vial 13
Peak: 100.00 ppm ~~Label wndw:~~ 1826 > 1916 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



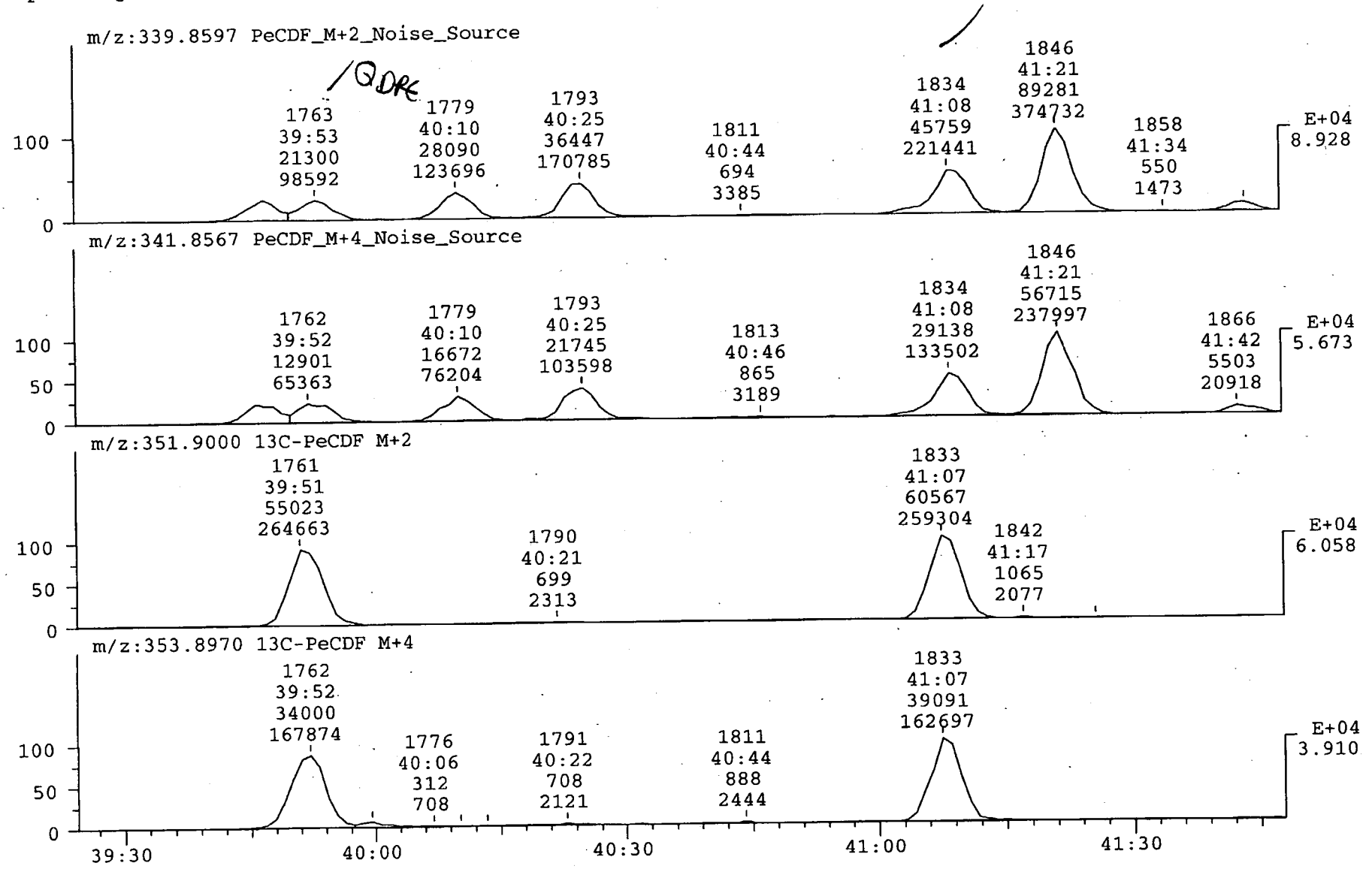
JQR comar

7013

(7001-7937)

C7E020142

CHRO: btjv38a 17-May-07 Elapse: 46:51 2155
Samp: Vial 13 WO=jv38a1a9 Meth=IN2 Dil=1 Start : 05:16:31 2696
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-003 Inlet : GC Vial 13
Peak: 100.00 ppm Label wndw: 1736 > 1871 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



7015

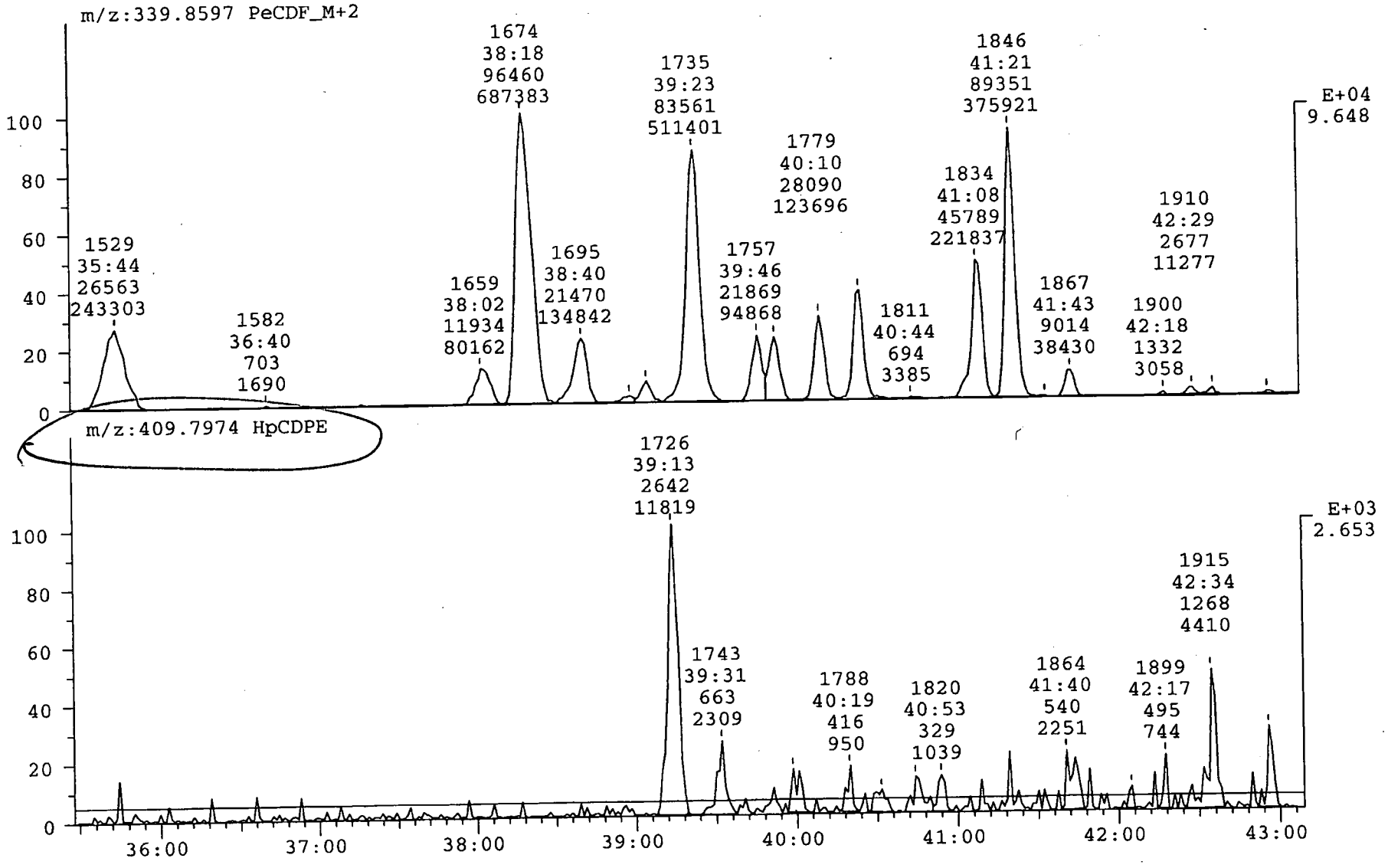
(7001-7937)

C7E020142

CHRO: btjv38a
Samp: Vial 13 WO=jv38a1a9 Meth=IN2 Dil=1
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM
Oper: PMP Client: C7E020142-003
Peak: 100.00 ppm Label wndw: 1513 > 1947
Area: 5, 0.50, 15 Baseline : 100, 3
Disp: Height Area

17-May-07

Elapse: 40:35 1803
Start : 05:16:31 2696
Study : 7129262 (10.0g)
Inlet : GC Vial 13
Masses: 293 > 514
Label : -2, 3.0

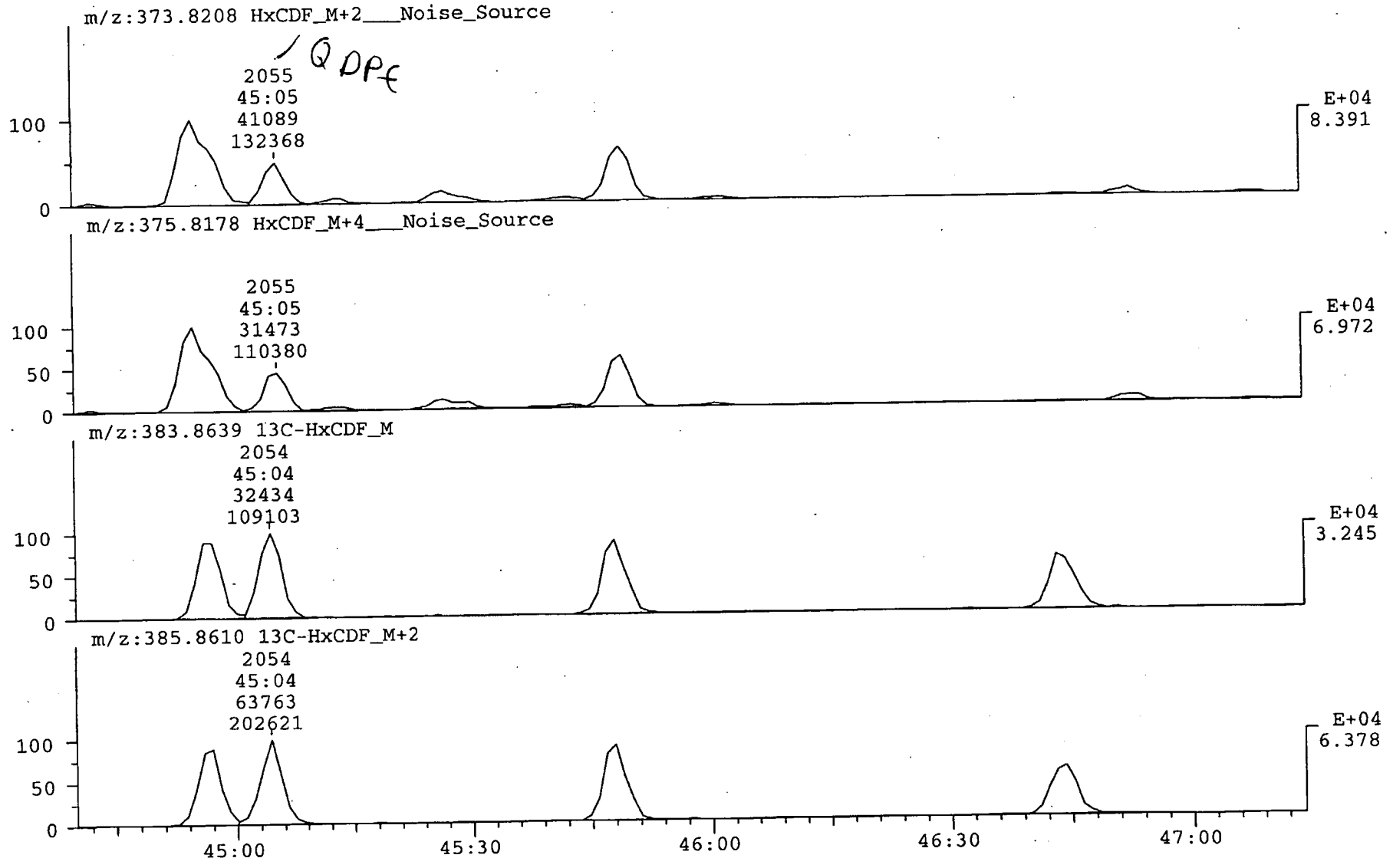


7016

(7001-7937)

C7E020142

CHRO: btjv38a 17-May-07 Elapse: 45:07 2057
Samp: Vial 13 WO=jv38a1a9 Meth=IN2 Dil=1 Start : 05:16:31 2696
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-003 Inlet : GC Vial 13
Peak: 100.00 ppm Label wndw: 2053 > 2061 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



7020

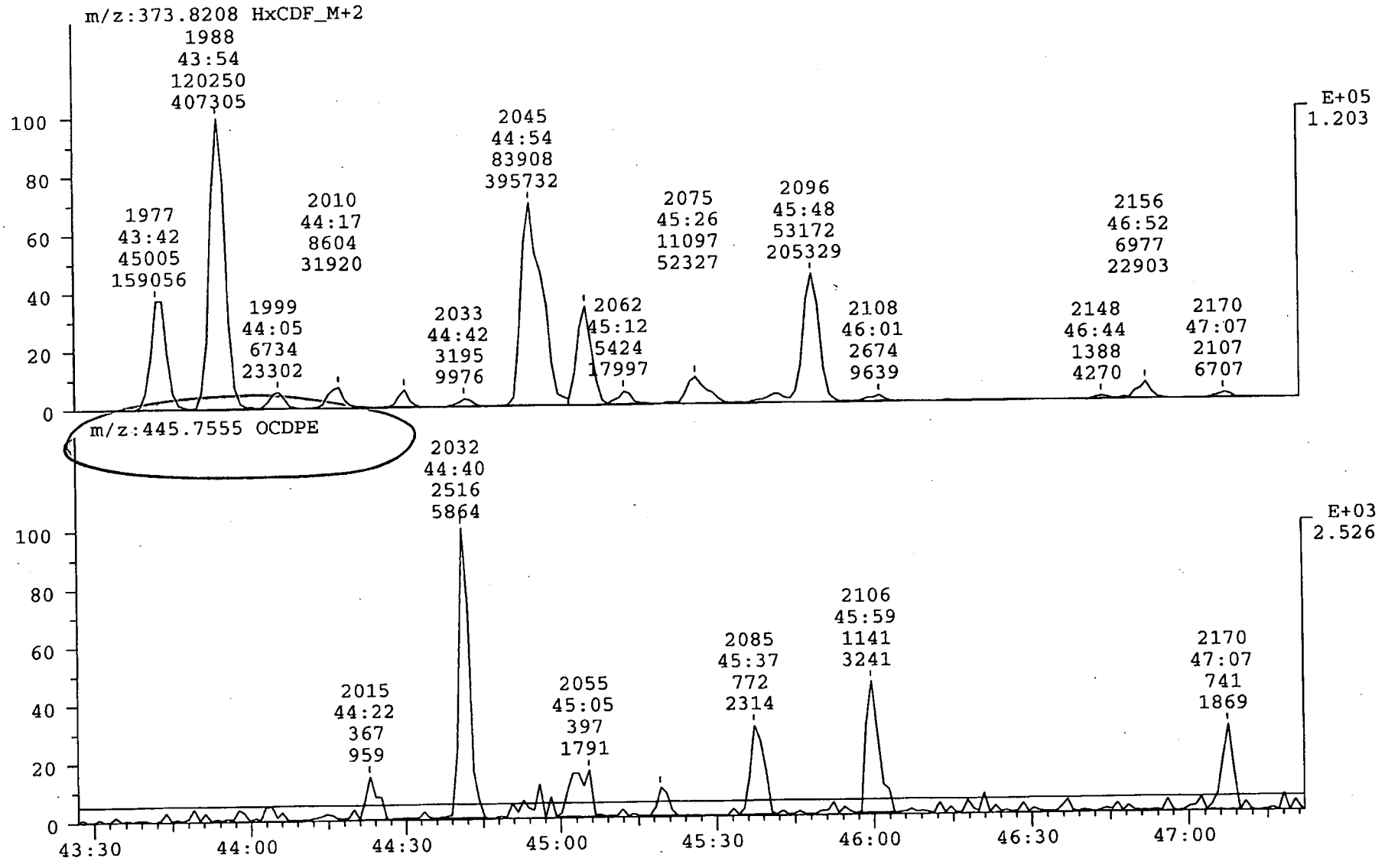
(7001-7937)

C7E020142

CHRO: btjv38a
Samp: Vial 13 WO=jv38a1a9 Meth=IN2 Dil=1
Comm: Inst=m2a/718318 Batch=20070516s3 Ccal=B070516S3
Mode: EI +VE +LMR ESCAN LR NRM
Oper: PMP Client: C7E020142-003
Peak: 100.00 ppm Label wndw: 1962 > 2184
Area: 5, 0.50, 15 Baseline : 100, 3
Disp: Height Area

17-May-07

Elapse: 45:07 2057
Start : 05:16:31 2696
Study : 7129262 (10.0g)
Inlet : GC Vial 13
Masses: 293 > 514
Label : -2, 3.0



7021

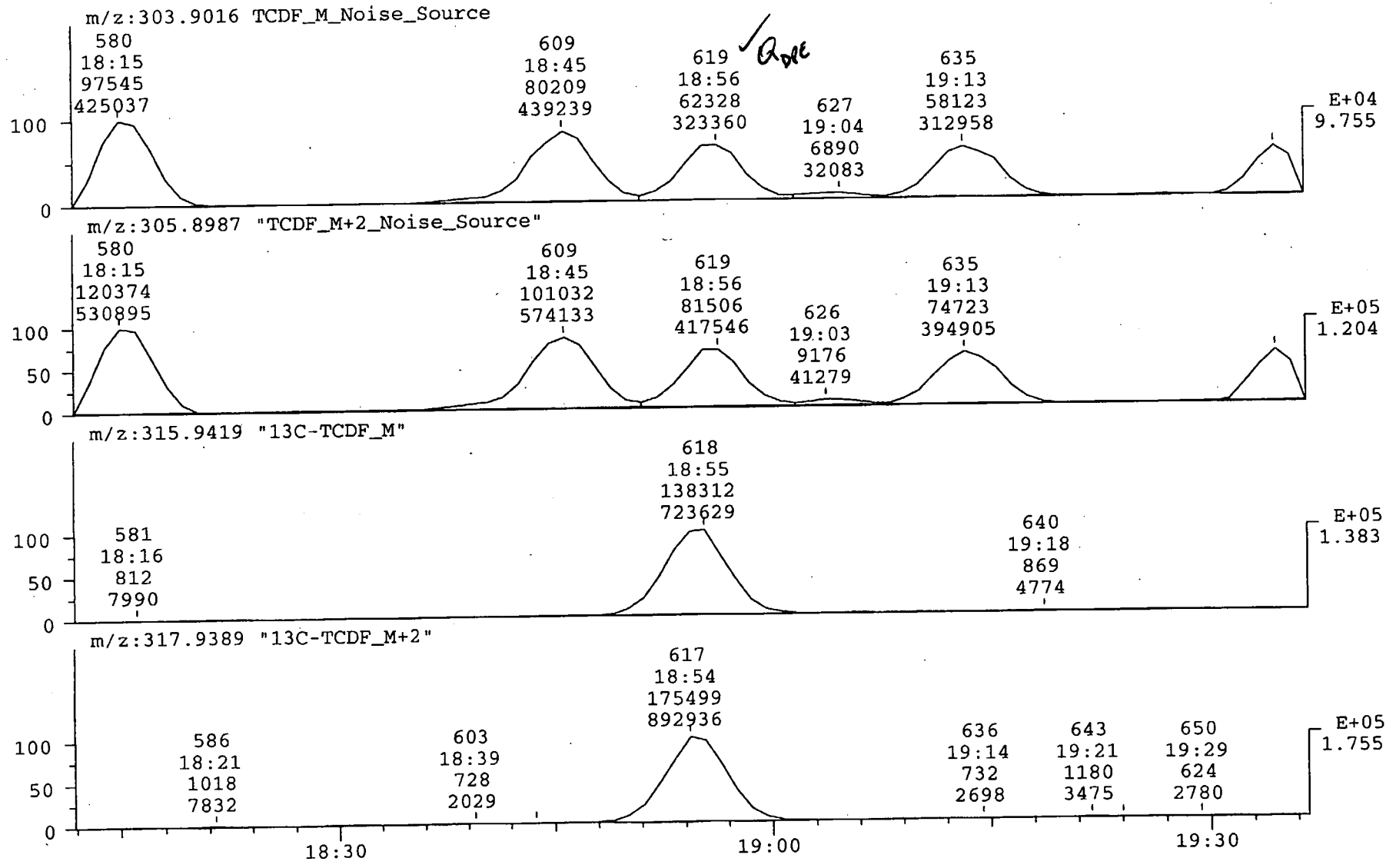
(7001-7937)

C7E020142

7039

(7001-7937)

```
CHRO:  afjv38a                                   22-May-07   Elapse:  18:54.3     617
Samp:  Vial 5 WO=jv38alcd Meth=INc Dil=1                     Start :  01:25:49   1132
Comm:  Inst=m1c/7206044 Batch=20070521s1 Ccal=A070521S1
Mode:  EI +VE +LMR  ESCAN LR NRM                             Study :  7129262 (10.0g)
Oper:  PMP            Client:  C7E020142-003                 Inlet :  GC     Vial   5
Peak:  100.00  ppm      Label wndw:   577 > 657              Masses:  293 > 376
Area:  5, 0.50, 15      Baseline  :   100, 3                 Label :  -2, 3.0
Disp:  Height  Area
```



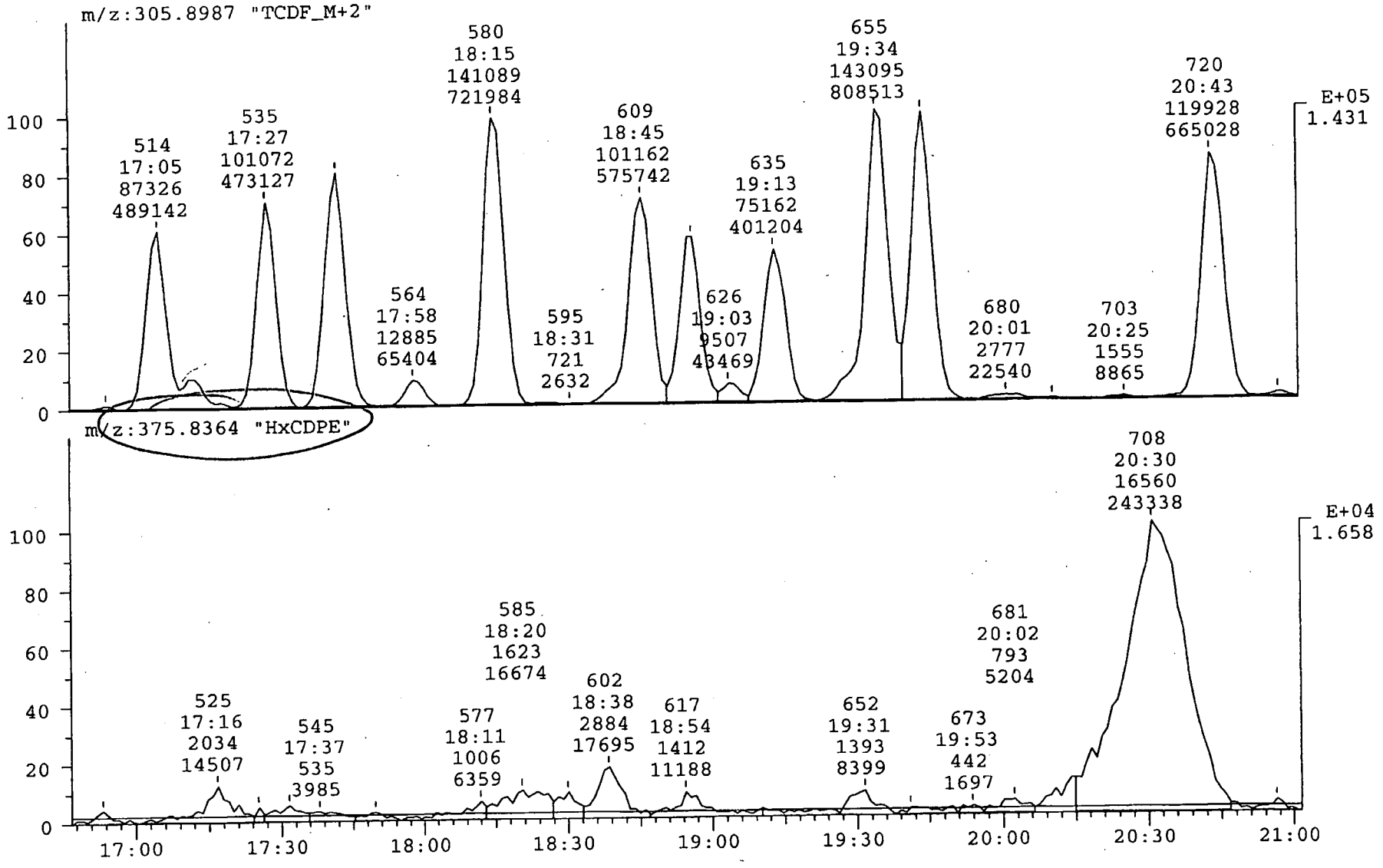
C7E020142

7040

CHRO: afjv38a
Samp: Vial 5 WO=jv38alcd Meth=INc Dil=1
Comm: Inst=m1c/7206044 Batch=20070521s1 Ccal=A070521S1
Mode: EI +VE +LMR ESCAN LR NRM
Oper: PMP Client: C7E020142-003
Peak: 100.00 ppm Label wndw: 497 > 737
Area: 5, 0.50, 15 Baseline : 100, 3
Disp: Height Area

22-May-07

Elapse: 18:54.3 617
Start : 01:25:49 1132
Study : 7129262 (10.0g)
Inlet : GC Vial 5
Masses: 293 > 376
Label : -2, 3.0



(7001-7937)

03TR-06-0102-05

STL - Knoxville

IsoCalc Preliminary Sample Report

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

IsoCalc

Workorder	JV38M1AA	Prep Batch	7129262	Lot No	C7E020142-005
Data File	/20070517s3/btjv38ma.d	Prep Date	05/09/07	SDG No	
Analysis ID	97213	Prep Exp Date	05/31/07	Date Received	05/02/07
Analysis Date	5/17/2007	Matrix	SOLID	Date Sampled	05/01/07
Analysis Time	22:59	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	Calc 31:47	143614	14832	1.052		113.189903		11.318990	Q	0.807
Total TCDD				1.052		113.189903		11.318990	Q	0.807
2,3,7,8-TCDF	~~29:50~~	12155053	1015057	0.984		6967.58174		~~696.758174~~	~~QE~~ NA	1.42
Total TCDF				0.984		6967.58174		696.758174	QE MSD 5/22/07	1.42
1,2,3,7,8-PeCDD	41:43	323653	77844	0.998		286.329316		28.632932	Q	0.279
Total PeCDD				0.998		286.329316		28.632932	Q	0.279
1,2,3,7,8-PeCDF	39:52	1502977	305003	1.024		868.611858		86.861186		0.288
2,3,4,7,8-PeCDF	41:09	3617051	763670	1.100		2041.02194		204.102194	Q	0.231
Total PeCDF				1.062		2909.63380		290.963380	Q	0.257
1,2,3,4,7,8-HxCDD	46:00	333637	95397	1.186		260.756141		26.075614		0.103
1,2,3,6,7,8-HxCDD	46:07	711440	208735	0.963		630.044409		63.004441		0.109
1,2,3,7,8,9-HxCDD	46:28	997297	185857	1.145		774.273288		77.427329		0.0985
Total HxCDD				1.098		1665.07384		166.507384		0.103
1,2,3,4,7,8-HxCDF	44:55	8546546	1864534	1.264		4614.73428		461.473428	Q	0.120
1,2,3,6,7,8-HxCDF	45:06	2923719	900855	1.239		1537.96107		153.796107	Q	0.123
2,3,4,6,7,8-HxCDF	45:49	4067284	1197404	1.196		2331.64534		233.164534	Q	0.133
1,2,3,7,8,9-HxCDF	46:45	137595	38498	1.212		91.170373		9.117037		0.169
Total HxCDF				1.228		8575.51106		857.551106	Q	0.134
1,2,3,4,6,7,8-HpCDD	50:50	4853617	1036985	1.056		4352.09320		435.209320		0.143
Total HpCDD				1.056		4352.09320		435.209320		0.143
1,2,3,4,6,7,8-HpCDF	49:09	11797513	2877911	1.467		7395.98826		739.598826		0.123
1,2,3,4,7,8,9-HpCDF	51:28	792467	163145	1.451		594.222631		59.422263		0.167
Total HpCDF				1.459		7990.21089		799.021089		0.142
OCDD	55:08	14201921	4035854	1.041		14589.0704		1458.90704	B	0.130
OCDF	55:16	3329234	914886	1.253		2840.67977		284.067977		0.124
13C-2,3,7,8-TCDD	31:41	1205715	127493	1.048	1000	732.843438	73.28	73.284344		0.435
13C-2,3,7,8-TCDF	~~29:43~~	1773213	200470	1.492	1000	757.165758	75.72	75.716576		0.148
13C-1,2,3,7,8-PeCDD	41:42	1132277	277066	1.117	1000	645.874805	64.59	64.587481		0.137
13C-1,2,3,7,8-PeCDF	39:51	1689728	344368	1.616	1000	665.974118	66.60	66.597412		0.134
13C-2,3,4,7,8-PeCDF	41:08	1611502	398990	1.580	1000	649.664408	64.97	64.966441		0.137
13C-1,2,3,4,7,8-HxCDD	46:00	1078576	299774	0.891	1000	737.758147	73.78	73.775815		0.106
13C-1,2,3,6,7,8-HxCDD	46:06	1172081	347555	1.031	1000	693.272392	69.33	69.327239		0.0919
13C-1,2,3,4,7,8-HxCDF	44:57	1464773	457715	1.235	1000	723.056767	72.31	72.305677		0.0683
13C-1,2,3,6,7,8-HxCDF	45:05	1534299	453759	1.370	1000	683.018182	68.30	68.301818		0.0616
13C-2,3,4,6,7,8-HxCDF	45:48	1457913	434735	1.285	1000	691.959430	69.20	69.195943		0.0657
13C-1,2,3,7,8,9-HxCDF	46:44	1245708	338903	1.167	1000	651.125549	65.11	65.112555		0.0724
13C-1,2,3,4,6,7,8-HpCDD	50:49	1055865	230418	0.947	1000	679.589846	67.96	67.958985		0.0673
13C-1,2,3,4,6,7,8-HpCDF	49:08	1087625	259952	1.069	1000	620.612741	62.06	62.061274		0.0731
13C-1,2,3,4,7,8,9-HpCDF	51:27	919389	192431	0.898	1000	624.429997	62.44	62.443000		0.0870
13C-OCDD	55:07	1870489	545644	1.024	2000	1113.84527	55.69	111.384527		0.104
13C-1,2,3,4-TCDD	31:10	3140319	345319	1.000	2000	2000.00000	100.00	200.000000		0.456
13C-1,2,3,7,8,9-HxCDD	46:30	3279875	870659	1.000	2000	2000.00000	100.00	200.000000		0.0948

SGM 5/22/07

MSD 5/22/07

03TP06-0102-05

STL - Knoxville

IsoCalc Preliminary Peak Report

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

IsoCalc

Workorder	JV38M1AA	Prep Batch	7129262	Lot No	C7E020142-005
Data File	/20070517s3/btjv38ma.d	Prep Date	05/09/07	SDG No	
Analysis ID	97213	Prep Exp Date	05/31/07	Date Received	05/02/07
Analysis Date	05/17/07 22:59	Matrix	SOLID	Date Sampled	05/01/07
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	1558	1253	623	501	1.24 *	/	
	2,3,7,8-TCDF	29:50	29:46	4	5351154	6803899	456966	558091	0.79	AVV/AVV	M
316					**315.9419**	**317.9389**	**315.9419**	**317.9389**	**0.65-0.89**		
	Noise	00:00	00:00	0	215	165	86	66	1.30 *	/	
	13C-2,3,7,8-TCDF	29:43	29:43	0	782281	990932	87252	113218	0.79	ABV/ABV	
320					**319.8965**	**321.8936**	**319.8965**	**321.8936**	**0.65-0.89**		
	Noise	00:00	00:00	0	485	598	194	239	0.81	/	
	2,3,7,8-TCDD	31:47	31:46	1	65276	78338	5792	9040	0.83	AVB/AVB	DT
332					**331.9368**	**333.9338**	**331.9368**	**333.9338**	**0.65-0.89**		
	Noise	00:00	00:00	0	528	260	211	104	2.03 *	/	
	13C-1,2,3,4-TCDD	31:10	31:10	0	1404151	1736168	154718	190601	0.81	ABV/ABV	
	13C-2,3,7,8-TCDD	31:41	31:41	0	520351	685364	56623	70870	0.76	AVV/AVV	
340					**339.8597**	**341.8567**	**339.8597**	**341.8567**	**1.32-1.78**		
	Noise	00:00	00:00	0	470	545	188	218	0.86 *	/	
	1,2,3,7,8-PeCDF	39:52	39:52	0	915947	587030	185011	119992	1.56	AVV/AVV	
	2,3,4,7,8-PeCDF	41:09	41:09	0	2213260	1403791	471369	292301	1.58	ABV/AVV	
352					**351.9000**	**353.8970**	**351.9000**	**353.8970**	**1.32-1.78**		
	Noise	00:00	00:00	0	175	200	70	80	0.88 *	/	
	13C-1,2,3,7,8-PeCDF	39:51	39:51	0	1029139	660589	213175	131193	1.56	ABV/ABV	
	13C-2,3,4,7,8-PeCDF	41:08	41:08	0	998854	612648	243672	155318	1.63	ABV/ABV	
356					**355.8546**	**357.8516**	**355.8546**	**357.8516**	**1.32-1.78**		
	Noise	00:00	00:00	0	263	510	105	204	0.51 *	/	
	1,2,3,7,8-PeCDD	41:43	41:44	-1	196730	456122	47317	92987	0.43 *	ABB/ABV	RT
368					**367.8949**	**369.8919**	**367.8949**	**369.8919**	**1.32-1.78**		
	Noise	00:00	00:00	0	163	103	65	41	1.59	/	
	13C-1,2,3,7,8-PeCDD	41:42	41:42	0	697282	434995	169253	107813	1.60	AVV/ABV	
374					**373.8208**	**375.8178**	**373.8208**	**375.8178**	**1.05-1.43**		
	Noise	00:00	00:00	0	513	180	205	72	2.85 *	/	
	1,2,3,4,7,8-HxCDF	44:55	44:59	-4	4760613	3785933	1026525	838009	1.26	ABV/AVV	M
	1,2,3,6,7,8-HxCDF	45:06	45:06	0	1639982	1283737	499889	400966	1.28	AVV/AVV	
	2,3,4,6,7,8-HxCDF	45:49	45:50	-1	2270949	1796335	658253	539151	1.26	AVV/AVV	
	1,2,3,7,8,9-HxCDF	46:45	46:46	-1	76892	60703	21395	17103	1.27	ABV/ABV	
384					**383.8639**	**385.8610**	**383.8639**	**385.8610**	**0.43-0.59**		
	Noise	00:00	00:00	0	180	188	72	75	0.96 *	/	
	13C-1,2,3,4,7,8-HxCDF	44:57	44:58	-1	509712	955061	159299	298416	0.53	ABV/ABV	
	13C-1,2,3,6,7,8-HxCDF	45:05	45:05	0	545364	988935	160125	293634	0.55	AVV/AVV	
	13C-2,3,4,6,7,8-HxCDF	45:48	45:49	-1	506352	951561	148799	285936	0.53	ABV/AVV	
	13C-1,2,3,7,8,9-HxCDF	46:44	46:45	-1	438444	807264	118376	220527	0.54	ABV/AVV	M
390					**389.8156**	**391.8127**	**389.8156**	**391.8127**	**1.05-1.43**		
	Noise	00:00	00:00	0	163	203	65	81	0.80 *	/	
	1,2,3,4,7,8-HxCDD	46:00	46:01	-1	185735	147902	53710	41687	1.26	ABV/ABV	
	1,2,3,6,7,8-HxCDD	46:07	46:08	-1	389534	321906	114165	94570	1.21	AVV/AVV	
	1,2,3,7,8,9-HxCDD	46:28	46:30	-2	551419	445878	101598	84259	1.24	AVV/AVV	

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 comax limit D = peak outside RT window W = peak outside first/last X = peak has dup match

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IsoCalc Continuing Calibration Report

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

CCAL ID: 21349 - B070516S3

CCAL Filename: b070516s3

CCAL Sample ID: 3452:55

CCAL Result Dir: /20070516s3/b070516s3.d

CCAL Date/Time: 05/16/07 23:18

ICAL Date: 04/12/06

Method: IN2 - DX8290_2

Instrument: M2A

Column SN: 718318

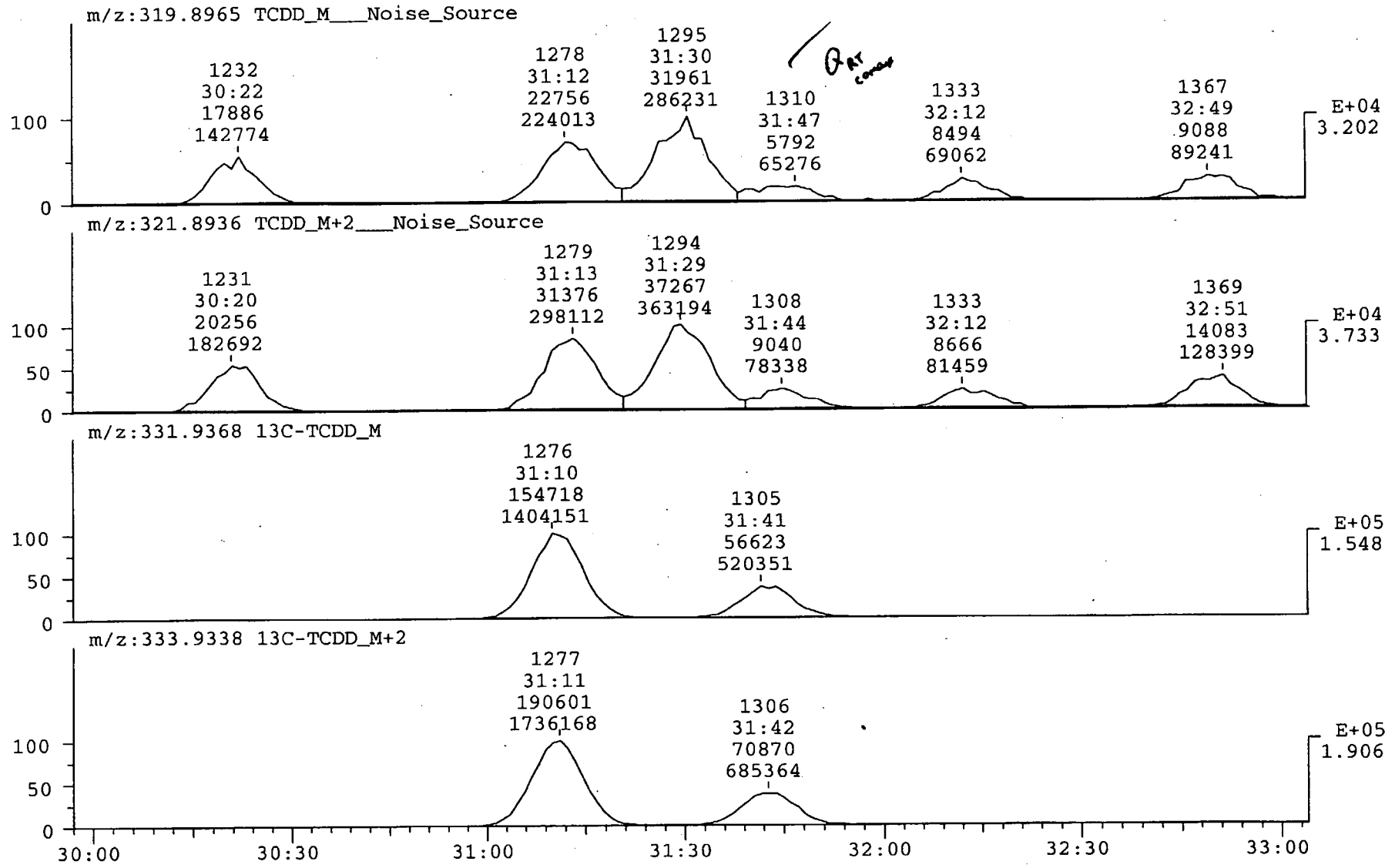
Column Desc: Rtx-5 60m x 0.32mm ID x 0.25um

CCV

Analytes	ICAL RT	CCAL RT	RT Diff	ICAL RRT	CCAL RRT	RRT QC Limit	Valid?
2,3,7,8-TCDD	33:56	31:51	-125	1.002	1.002	-	
2,3,7,8-TCDF	31:47	29:51	-116	1.002	1.001	-	
1,2,3,7,8-PeCDD	42:35	41:46	-49	1.000	1.000	-	
1,2,3,7,8-PeCDF	40:57	39:56	-61	1.001	1.000	-	
2,3,4,7,8-PeCDF	42:05	41:13	-52	1.000	1.001	-	
1,2,3,4,7,8-HxCDD	46:48	46:03	-45	1.000	1.000	-	
1,2,3,6,7,8-HxCDD	46:55	46:10	-45	1.000	1.000	-	
1,2,3,7,8,9-HxCDD	47:20	46:33	-47	1.009	1.009	-	
1,2,3,4,7,8-HxCDF	45:45	45:01	-44	1.000	1.000	-	
1,2,3,6,7,8-HxCDF	45:53	45:09	-44	1.000	1.000	-	
2,3,4,6,7,8-HxCDF	46:38	45:52	-46	1.000	1.000	-	
1,2,3,7,8,9-HxCDF	47:36	46:49	-47	1.000	1.000	-	
1,2,3,4,6,7,8-HpCDD	51:51	50:53	-58	1.000	1.000	-	
1,2,3,4,6,7,8-HpCDF	50:08	49:12	-56	1.000	1.000	-	
1,2,3,4,7,8,9-HpCDF	52:27	51:31	-56	1.000	1.000	-	
OCDD	56:17	55:10	-67	1.000	1.000	-	
OCDF	56:24	55:18	-66	1.002	1.003	-	
13C-2,3,7,8-TCDD	33:53	31:48	-125	1.020	1.016	-	
13C-2,3,7,8-TCDF	31:44	29:49	-115	0.956	0.953	-	
13C-1,2,3,7,8-PeCDD	42:34	41:45	-49	1.282	1.334	-	
13C-1,2,3,7,8-PeCDF	40:55	39:55	-60	1.232	1.275	-	
13C-2,3,4,7,8-PeCDF	42:04	41:11	-53	1.267	1.316	-	
13C-1,2,3,4,7,8-HxCDD	46:46	46:02	-44	0.989	0.989	-	
13C-1,2,3,6,7,8-HxCDD	46:54	46:09	-45	0.991	0.991	-	
13C-1,2,3,4,7,8-HxCDF	45:44	45:00	-44	0.967	0.967	-	
13C-1,2,3,6,7,8-HxCDF	45:52	45:08	-44	0.969	0.970	-	
13C-2,3,4,6,7,8-HxCDF	46:37	45:51	-46	0.985	0.985	-	
13C-1,2,3,7,8,9-HxCDF	47:35	46:48	-47	1.006	1.005	-	
13C-1,2,3,4,6,7,8-HpCDD	51:50	50:52	-58	1.096	1.093	-	
13C-1,2,3,4,6,7,8-HpCDF	50:07	49:11	-56	1.059	1.057	-	
13C-1,2,3,4,7,8,9-HpCDF	52:26	51:30	-56	1.108	1.106	-	
13C-OCDD	56:16	55:09	-67	1.189	1.185	-	

C7E020142

CHRO: btjv38ma 17-May-07 Elapse: 31:29 1294
Samp: Vial 16 WO=jv38m1aa Meth=IN2 Dil=1 Start : 22:59:44 2694
Comm: Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 16
Peak: 100.00 ppm Label wndw: 1209 > 1381 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area

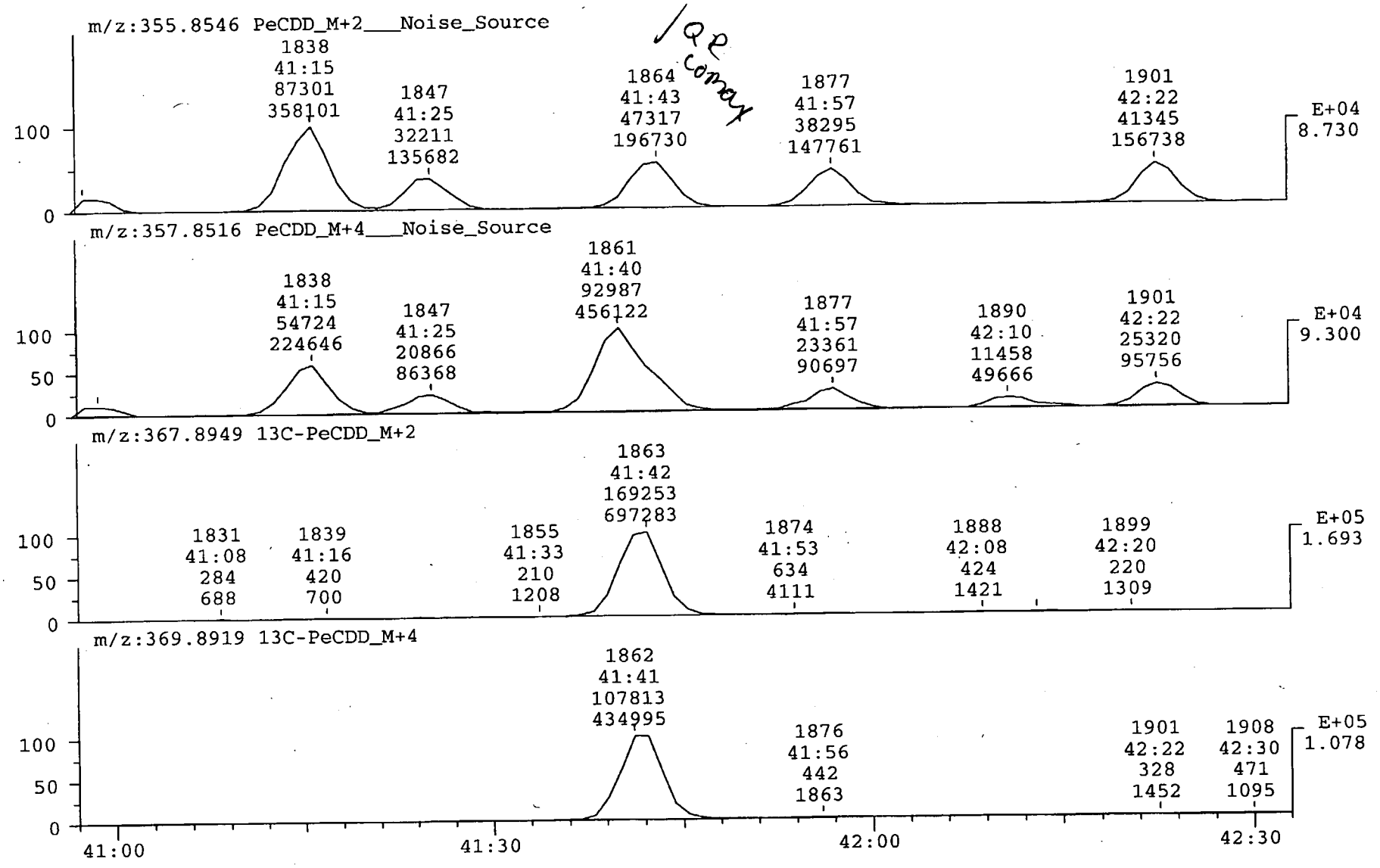


7053

(7001-7937)

C7E020142

CHRO: btjv38ma 17-May-07 Elapse: 41:42 1863
Samp: Vial 16 WO=jv38m1aa Meth=IN2 Dil=1 Start : 22:59:44 2694
Comm: Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 16
Peak: 100.00 ppm Label wndw: 1820 > 1911 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area

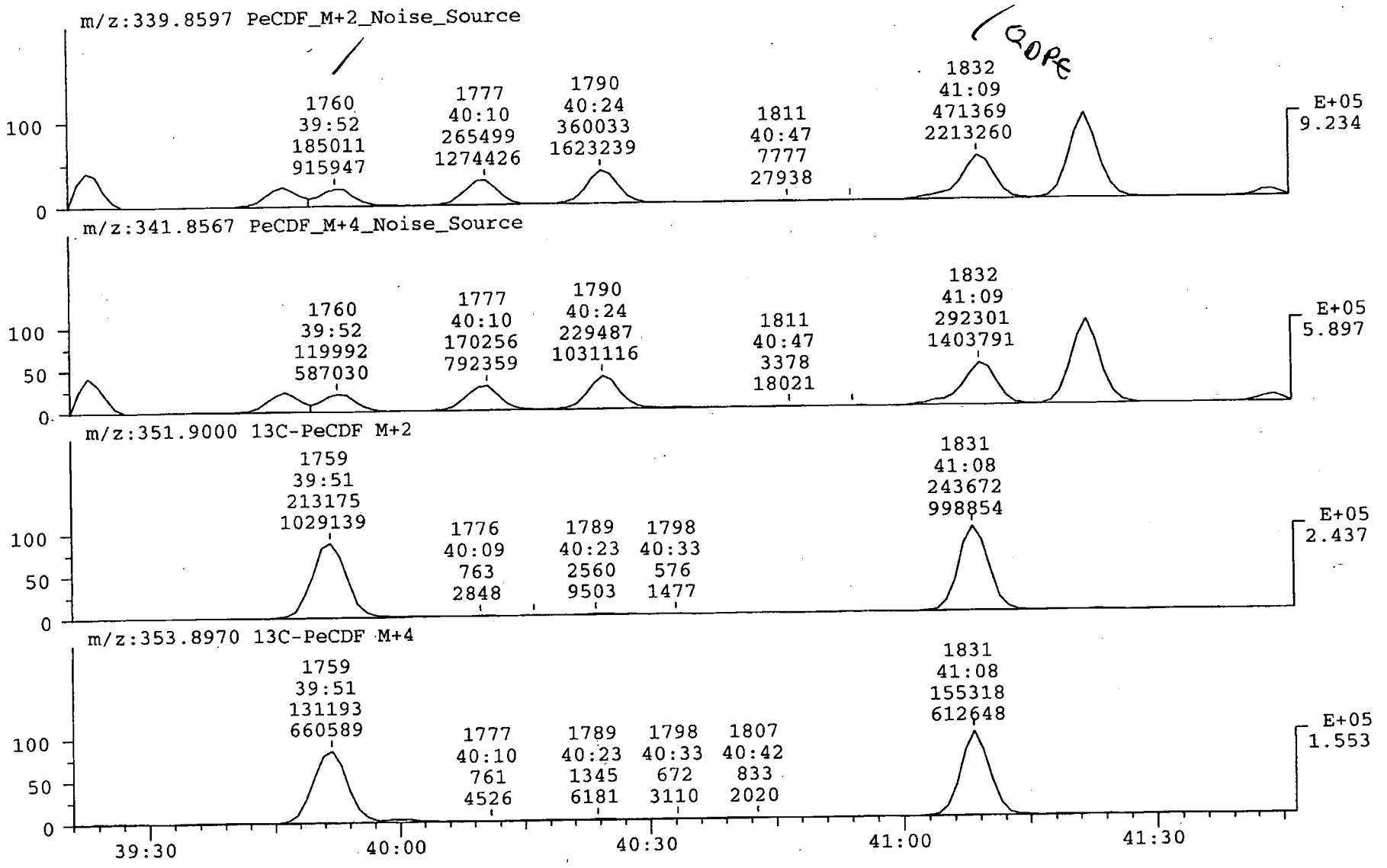


7057

(7001-7937)

C7E020142

CHRO: btjv38ma 17-May-07 Elapse: 55:14 2622
Samp: Vial 16 WO=jv38m1aa Meth=IN2 Dil=1 Start : 22:59:44 2694
Comm: Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 16
Peak: 100.00 ppm Label wndw: 1758 > 1840 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



7059

(7001-7937)

C7E020142

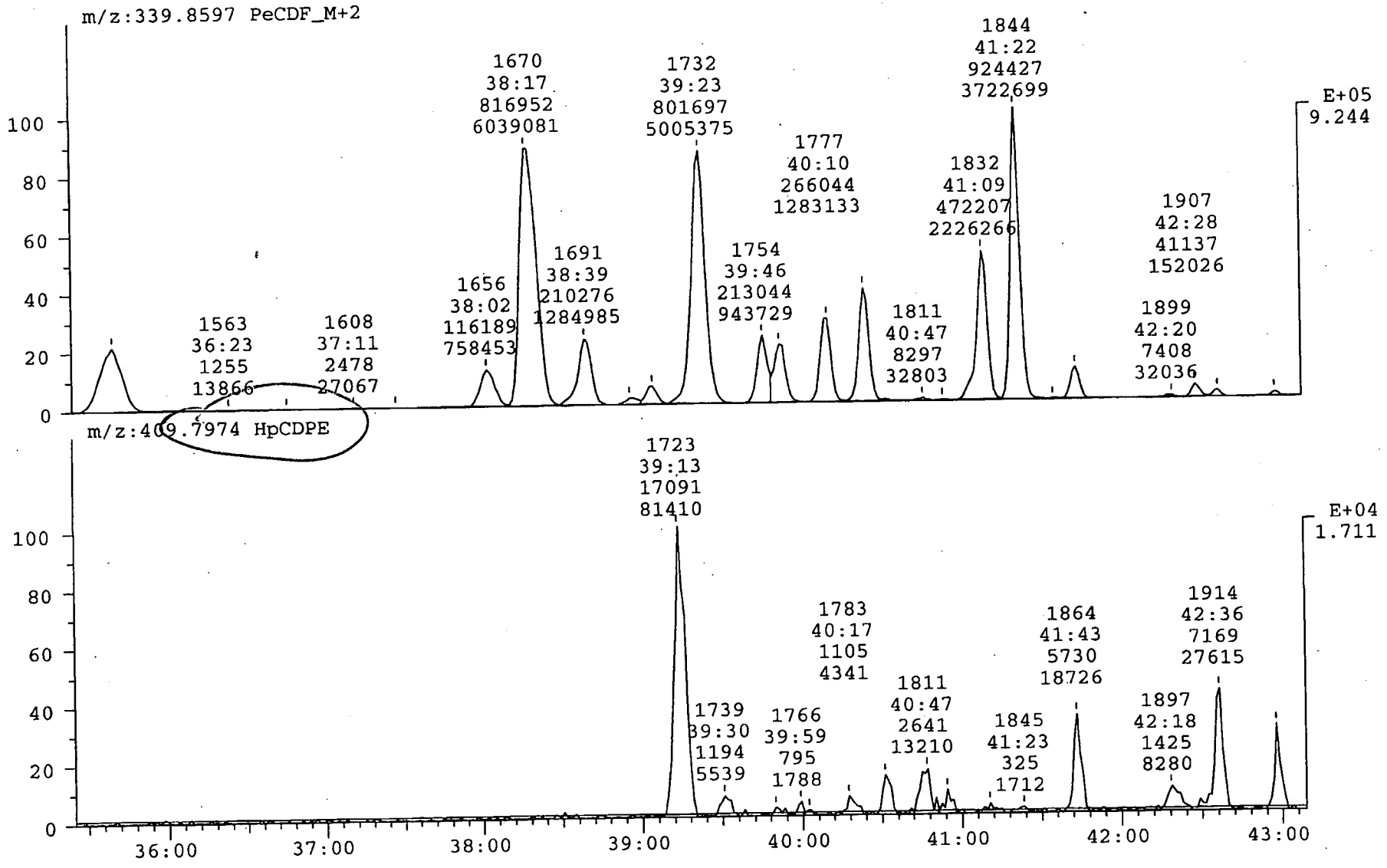
7060

(7001-7937)

CHRO: btjv38ma
Samp: Vial 16 WO=jv38m1aa Meth=IN2 Dil=1
Comm: Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode: EI +VE +LMR ESCAN LR NRM
Oper: PMP Client: C7E020142-005
Peak: 100.00 ppm Label Wndw: 1508 > 1945
Area: 5, 0.50, 15 Baseline : 100, 3
Disp: Height Area

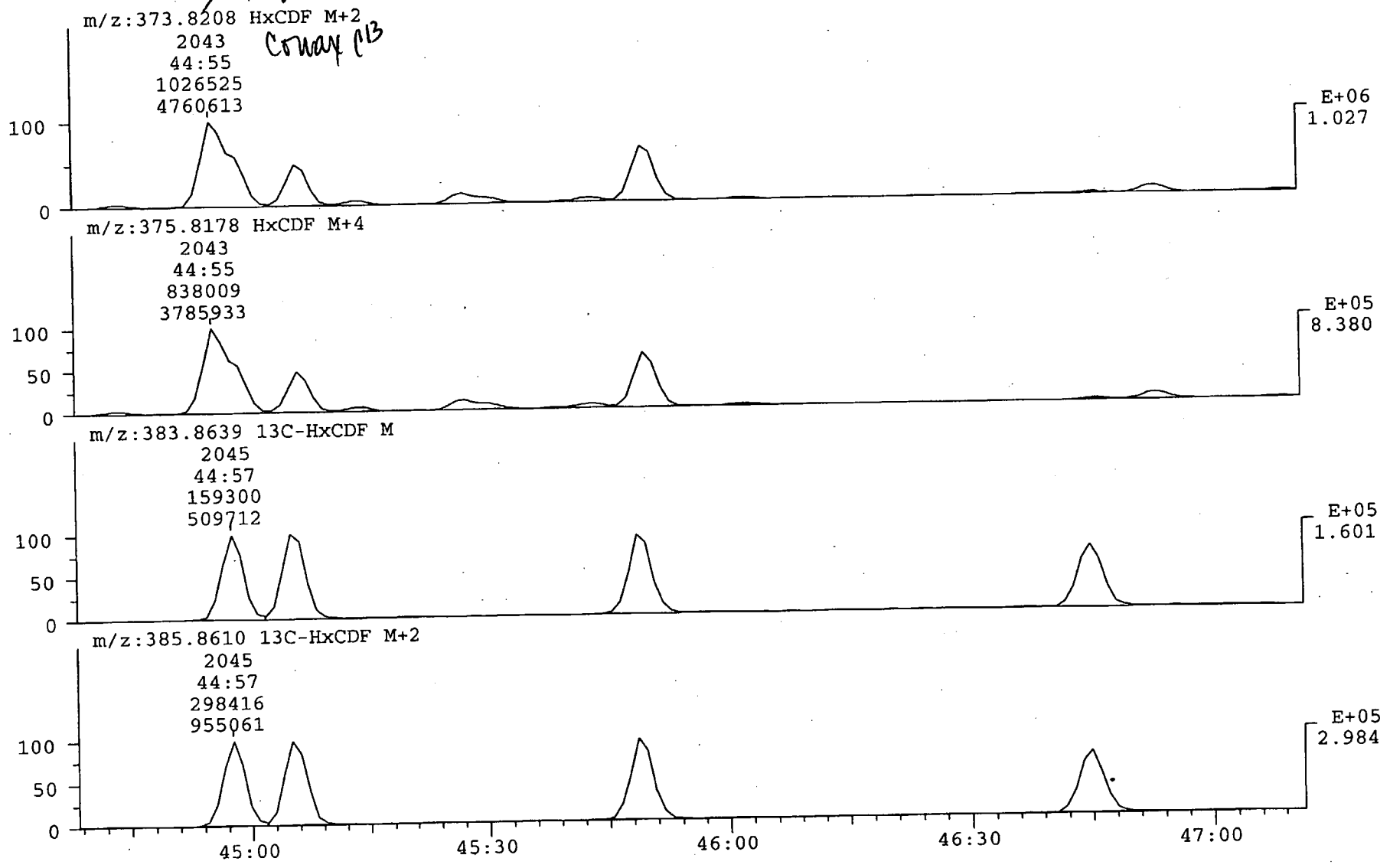
17-May-07

Elapse: 40:33 1798
Start : 22:59:44 2694
Study : 7129262 (10.0g)
Inlet : GC Vial 16
Masses: 293 > 514
Label : -2, 3.0



C7E020142

CHRO: btjv38ma 17-May-07 Elapse: 44:57 2045
Samp: Vial 16 WO=jv38m1aa Meth=IN2 Dil=1 Start : 22:59:44 2694
Comm: Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 16
Peak: 100.00 ppm Label wndw: 2042 > 2048 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area/QDPC

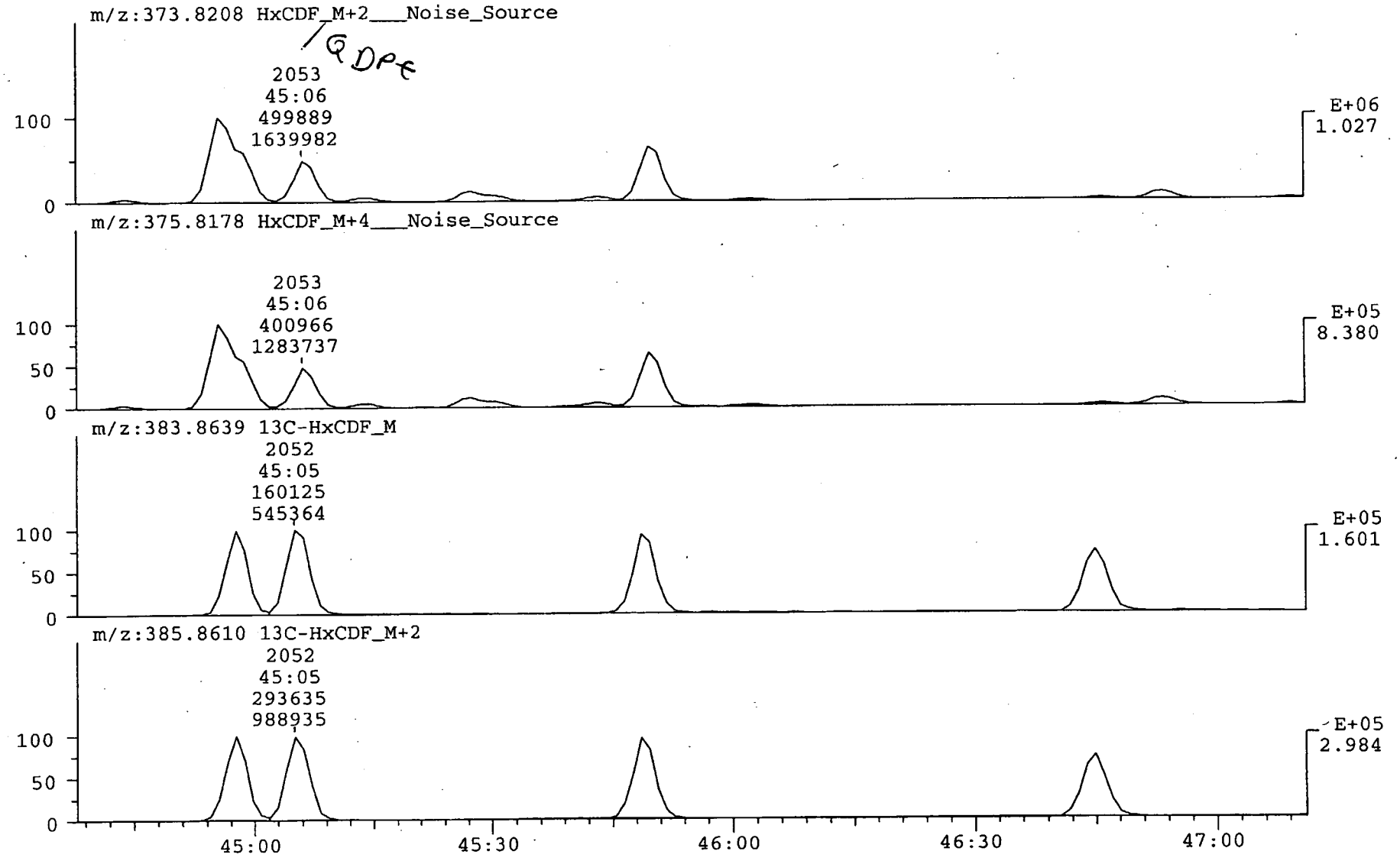


7064

(7001-7937)

C7E020142

CHRO: btjv38ma 17-May-07 Elapse: 45:05 2052
Samp: Vial 16 WO=jv38m1aa Meth=IN2 Dil=1 Start : 22:59:44 2694
Comm: Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 16
Peak: 100.00 ppm Label wndw: 2048 > 2056 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



7065

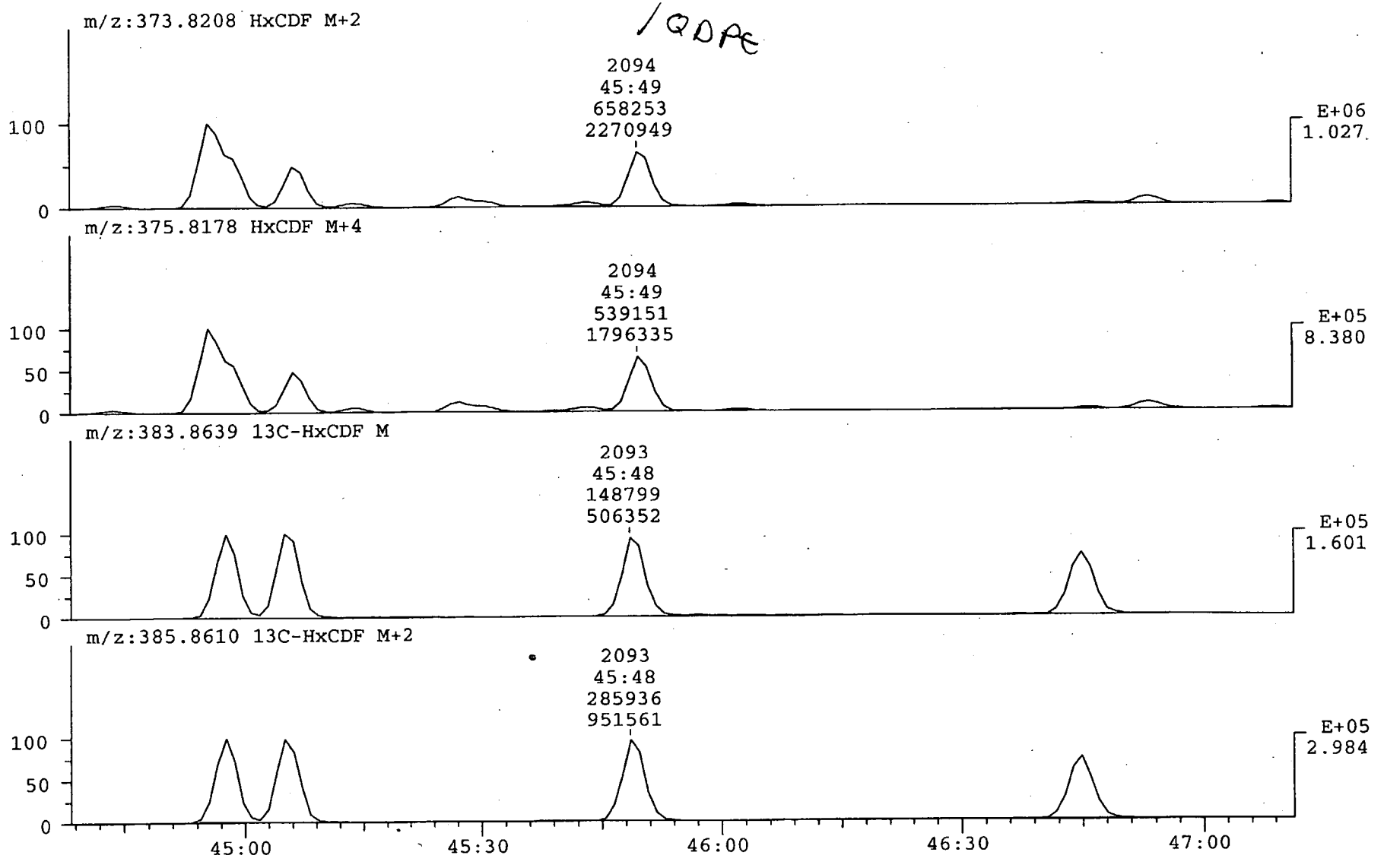
(7001-7937)

C7E020142

7066

(7001-7937)

```
CHRO:  btjv38ma                                  17-May-07   Elapse:  45:50      2095
Samp:  Vial 16 WO=jv38m1aa Meth=IN2 Dil=1                    Start :  22:59:44   2694
Comm:  Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode:  EI +VE +LMR  ESCAN LR NRM                             Study :  7129262 (10.0g)
Oper:  PMP            Client:  C7E020142-005                 Inlet :  GC     Vial  16
Peak:  100.00  ppm      Label wndw:   2092 > 2098            Masses:  293 > 514
Area:  5, 0.50, 15      Baseline  :   100, 3                 Label :  -2, 3.0
Disp:  Height  Area
```

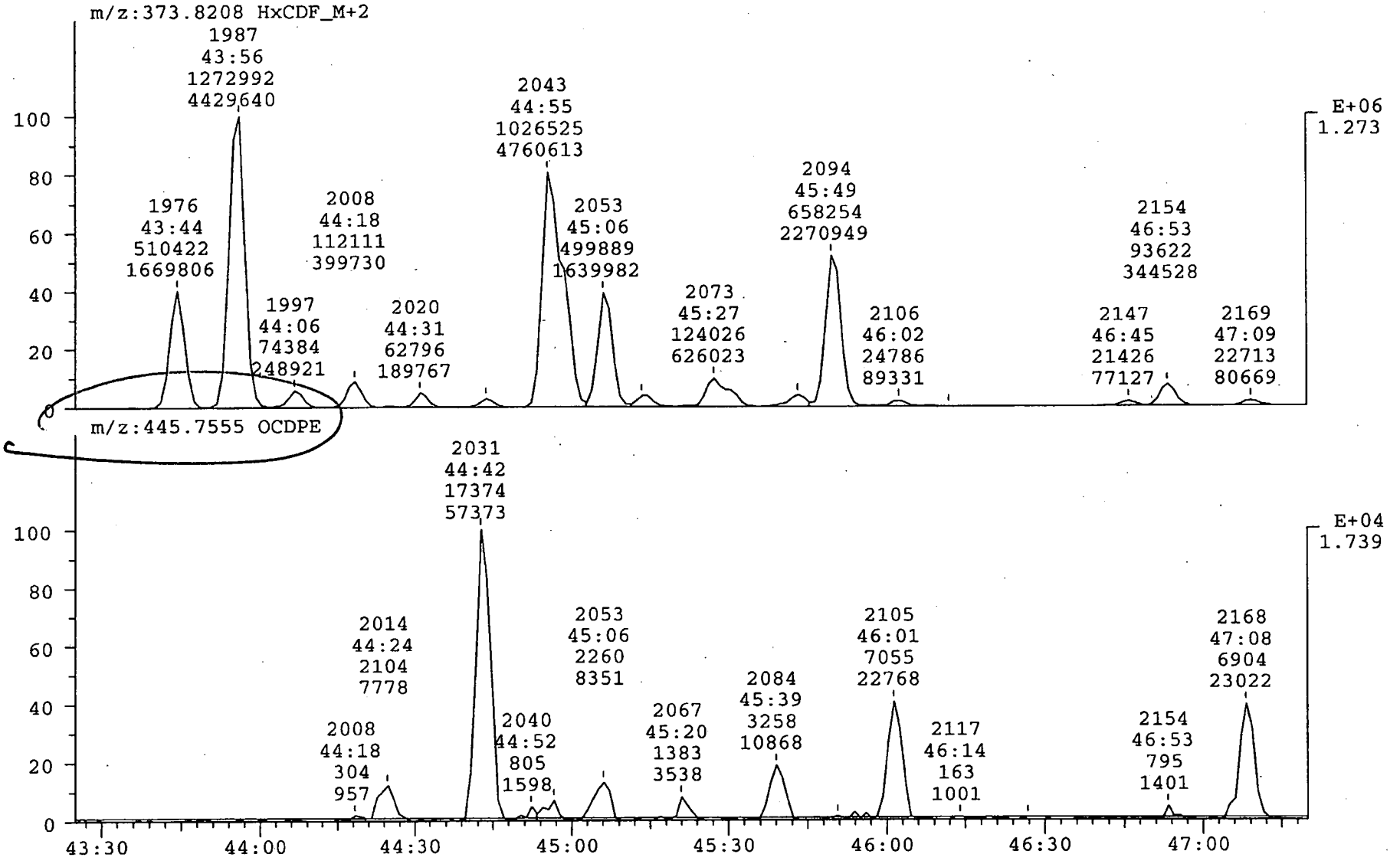


C7E020142

7068

(7001-7937)

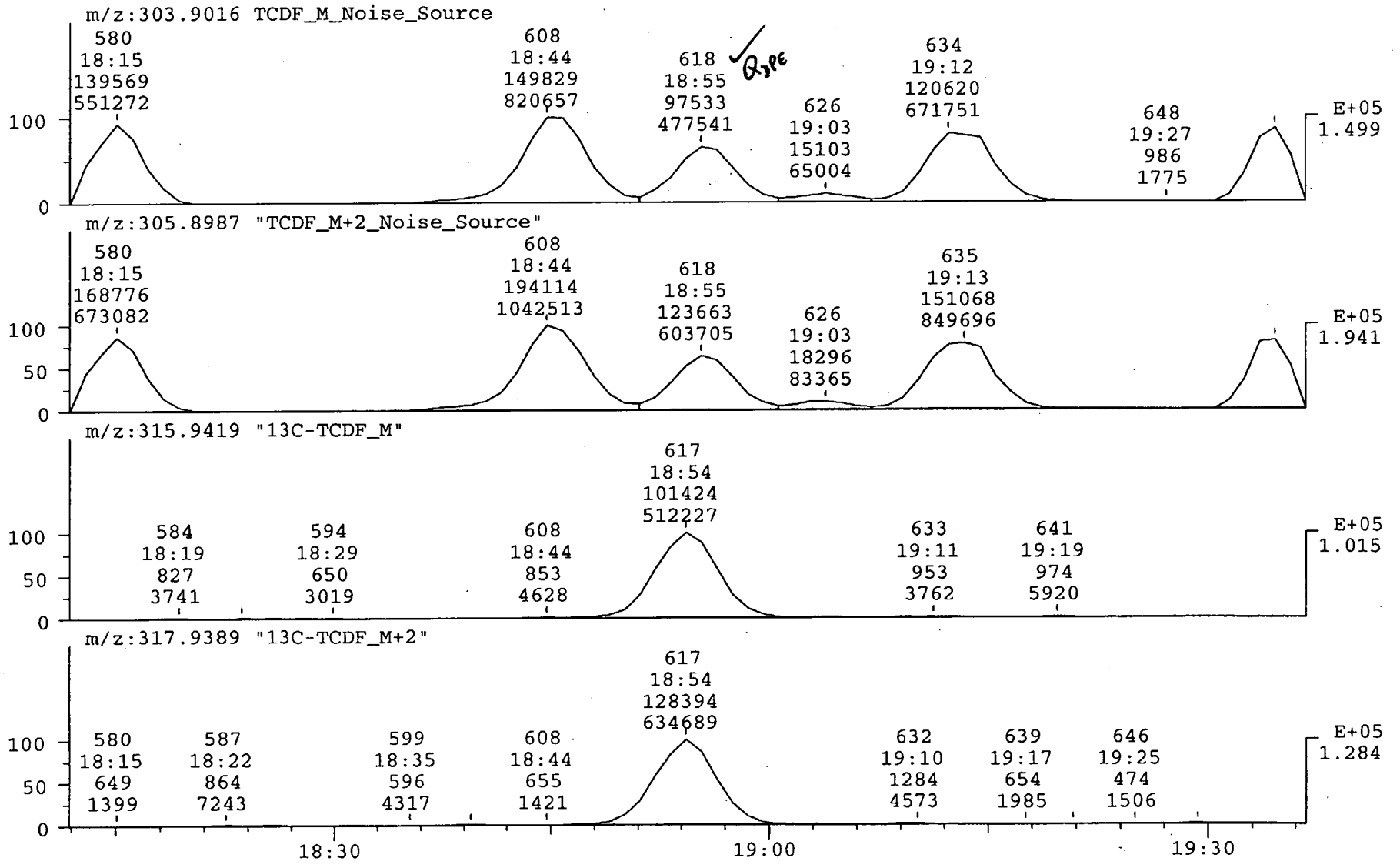
CHRO: btjv38ma 17-May-07 Elapse: 45:05 2052
Samp: Vial 16 WO=jv38m1aa Meth=IN2 Dil=1 Start : 22:59:44 2694
Comm: Inst=m2a/718318 Batch=20070517s3 Ccal=B070517S3
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 16
Peak: 100.00 ppm Label wndw: 1958 > 2179 Masses: 293 > 514
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area



C7E020142

03TP 06-0102-05

CHRO: afjv38m 22-May-07 Elapse: 18:54.3 617
Samp: Vial 8 WO=jv38m1ae Meth=INc Dil=1 Start : 01:56:42 1132
Comm: Inst=m1c/7206044 Batch=20070521s1 Ccal=A070521S1
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 8
Peak: 100.00 ppm Label wndw: 577 > 657 Masses: 293 > 376
Area: 5, 0.50, 15 Baseline : 100, 3 Label : -2, 3.0
Disp: Height Area

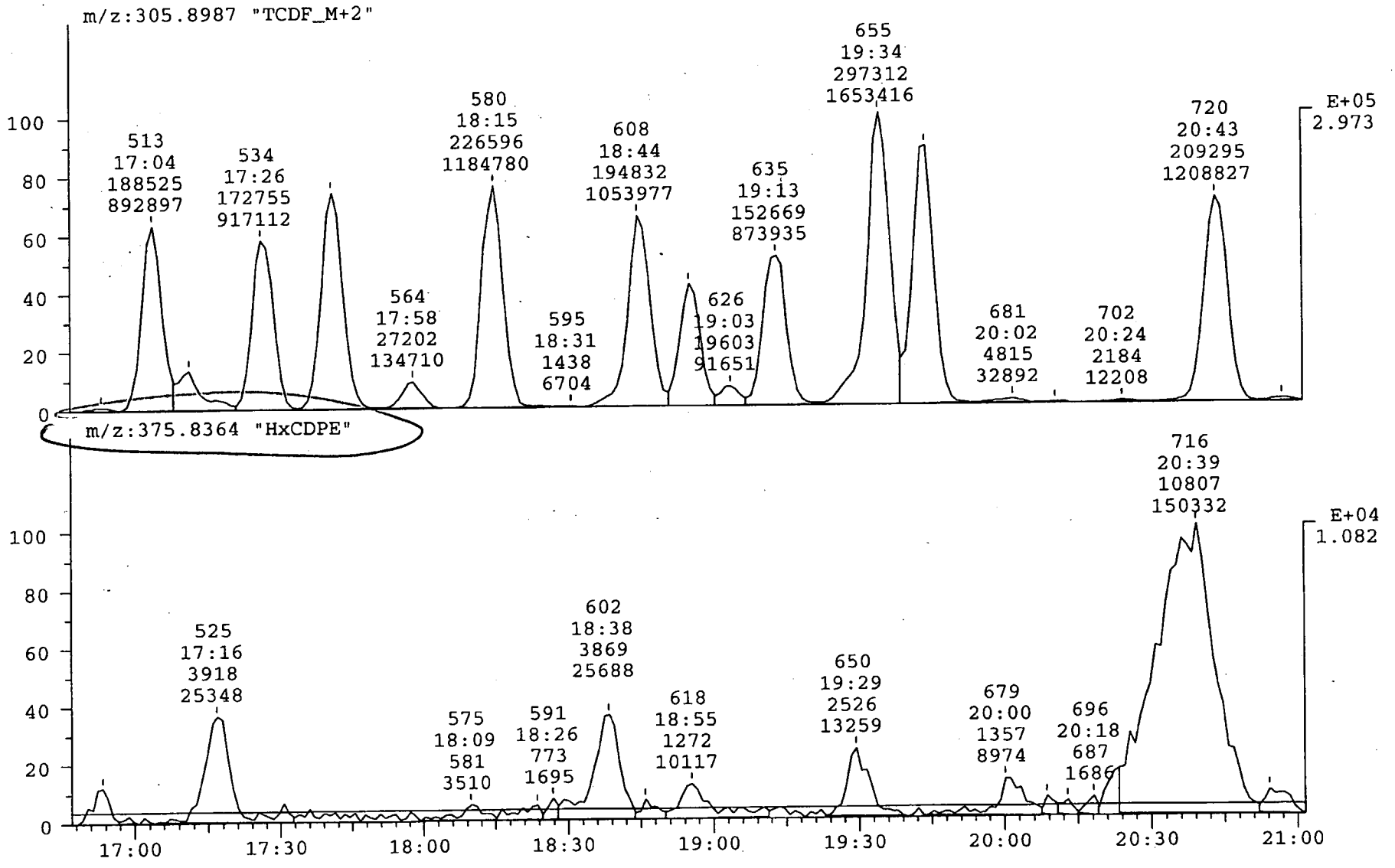


7088

(7001-7937)

C7E020142

CHRO: afjv38m 22-May-07 Elapse: 18:54.3 617
Samp: Vial 8 WO=jv38m1ae Meth=INc Dil=1 Start : 01:56:42 1132
Comm: Inst=m1c/7206044 Batch=20070521s1 Ccal=A070521S1
Mode: EI +VE +LMR ESCAN LR NRM Study : 7129262 (10.0g)
Oper: PMP Client: C7E020142-005 Inlet : GC Vial 8
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



7089

(7001-7937)

EVALUATION OF ORGANIC DUPLICATE ANALYSIS PRECISION

Precision Objectives		Compound >or=5xCRQL/MDL	Compound <5xCRQL
	Aqueous	RPD<or=30%	Difference < or =CRQL/MDL
	Solid	RPD<or=50%	Difference < or =2xCRQL/MDL
	Air	RPD<or=20%	Difference < or =CRQL/MDL

Sample ID:	**03TP06-0102-05**		**03TP06-0809-03**				
Laboratory ID:							
Sample Date:	**5/1/2007**		**5/1/2007**				
Duplicate:	**03TP06-0809-03**		**03TP06-0102-05**				
	RESULT	**QUAL**	**RESULT**	**QUAL**	**RPD**	**CRQL/MDL**	**NOTES**
PARAMETERS	**mg/Kg**		**mg/Kg**				
1,2,3,4,6,7,8,9-OCDD	2200		1700		25.6	14	1, IN
1,2,3,4,6,7,8,9-OCDF	420		190		75.4	14	1, J
1,2,3,4,6,7,8-HPCDD	650		380		52.4	7.1	1, J
1,2,3,4,6,7,8-HPCDF	1100		490		76.7	7.1	1, J
1,2,3,4,7,8,9-HPCDF	88		36		83.9	7.1	1, J
1,2,3,4,7,8-HXCDD	39		16		NC	7.1	2, J
1,2,3,4,7,8-HXCDF	690		270		87.5	7.1	1, J
1,2,3,6,7,8-HXCDD	94		40		80.6	7.1	1, J
1,2,3,6,7,8-HXCDF	230		89		88.4	7.1	1, J
1,2,3,7,8,9-HXCDD	120		49		84.0	7.1	1, J
1,2,3,7,8,9-HXCDF	14		3.2		NC	7.1	2, IN
1,2,3,7,8-PECDD	43		16		NC	7.1	2, J
1,2,3,7,8-PECDF	130		52		85.7	7.1	1, J
2,3,4,6,7,8-HXCDF	350		150		80.0	7.1	1, J
2,3,4,7,8-PECDF	300		110		92.7	7.1	1, J
2,3,7,8-TCDD	17		17		0.0	1.4	1, IN
2,3,7,8-TCDF	130		59		75.1	1.4	1, J

NOTES

1 - When both results are > or = 5xCRQL/MDL, the acceptance limit is the relative percent difference must be < or = 30% for aqueous and air samples and must be < 50% for solid samples.

2 - When at least one of the results is < 5x CRQL/MDL, the acceptance limit is the difference between the results must be < or = CRQL/MDL for aqueous and air samples and < or = 2xCRQL/MDL for solid samples.

Q - The qualifier is entered to indicate if the anlayte was not detected or qualitatively questionable in the sample.

U - the compound was not detected in the sample at or above the associated numerical value.

NC - The RPD was not calculated because one of the results was not detected; the acceptance limit used is the difference between the results must be < or = CRQL/MDL for aqueous and air samples and < or = 2xCRQL/MDL for solid samples.

J - The positive results should be considered estimated.

B - The result should be considered non-detected or qualitatively questionable due to blank contamination.

IN - The results are acceptable.

COMMENTS

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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MATRIX/MATRIX SPIKE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...:	C7E020142	Work Order # ...:	JV38A1CA-MS	Matrix .....:	SOLID
OS Lot-Sample# :	C7E020142 - 003		JV38A1CC-MSD		
Prep Date .....:	05/09/07	Analysis Date ..:	05/22/07		
Prep Batch # ...:	7129262				
Dilution Factor :	1				
Analyst ID.....:	Patricia(Trish) M. Parsly	Instrument ID..:	M1C	Method.....:	SW846 8290
Initial Wgt/Vol:	10 g				

PARAMETER	SAMPLE AMOUNT	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS
2,3,7,8-TCDD	17	28.3	61.4	pg/g	156 a	(74 - 132)		
	17	28.3	124	pg/g	379 a p Q	(74 - 132)	68	(0 - 15)
1,2,3,7,8-PeCDD	16	141	185	pg/g	119 Q	(75 - 125)		
	16	141	211	pg/g	138 a Q	(75 - 125)	13	(0 - 15)
1,2,3,4,7,8-HxCDD	16	141	155	pg/g	98 Q	(64 - 135)		
	16	141	205	pg/g	133 p	(64 - 135)	27	(0 - 15)
1,2,3,6,7,8-HxCDD	40	141	231	pg/g	135 a	(74 - 124)		
	40	141	238	pg/g	140 a	(74 - 124)	3.0	(0 - 15)
1,2,3,7,8,9-HxCDD	49	141	246	pg/g	140	(53 - 155)		
	49	141	264	pg/g	152	(53 - 155)	6.7	(0 - 15)
1,2,3,4,6,7,8-HpCDD	380	141	681	pg/g	211 a	(60 - 136)		
	380	141	937	pg/g	392 a p	(60 - 136)	32	(0 - 15)
OCDD	1700	283	2970	pg/g	468 a B	(45 - 143)		
	1700	283	4760	pg/g	1100a p B	(45 - 143)	46	(0 - 15)
2,3,7,8-TCDF	59	28.3	159	pg/g	353 a X	(53 - 151)		
	59	28.3	187	pg/g	454 a p X	(53 - 151)	17	(0 - 15)
1,2,3,7,8-PeCDF	52	141	244	pg/g	135 a	(68 - 126)		
	52	141	303	pg/g	177 a p	(68 - 126)	22	(0 - 15)
2,3,4,7,8-PeCDF	110	141	372	pg/g	187 a Q	(66 - 133)		
	110	141	413	pg/g	216 a	(66 - 133)	10	(0 - 15)
1,2,3,4,7,8-HxCDF	270	141	304	pg/g	26 a Q	(44 - 169)		
	270	141	801	pg/g	378 a p Q	(44 - 169)	90	(0 - 15)
1,2,3,6,7,8-HxCDF	89	141	320	pg/g	163 a Q	(60 - 144)		
	89	141	339	pg/g	177 a Q	(60 - 144)	5.9	(0 - 15)
2,3,4,6,7,8-HxCDF	150	141	394	pg/g	175 a	(72 - 123)		
	150	141	452	pg/g	216 a	(72 - 123)	14	(0 - 15)
1,2,3,7,8,9-HxCDF	3.2	141	153	pg/g	106	(73 - 123)		
	3.2	141	180	pg/g	125 a p	(73 - 123)	16	(0 - 15)
1,2,3,4,6,7,8-HpCDF	490	141	975	pg/g	345 a	(68 - 131)		
	490	141	1180	pg/g	487 a p	(68 - 131)	19	(0 - 15)
1,2,3,4,7,8,9-HpCDF	36	141	211	pg/g	124	(58 - 139)		
	36	141	258	pg/g	157 a p	(58 - 139)	20	(0 - 15)
OCDF	190	283	513	pg/g	112	(45 - 161)		
	190	283	684	pg/g	173 a p	(45 - 161)	29	(0 - 15)

SOG_Stnd_msmsd_rev1.rpt 5/22/07

MATRIX/MATRIX SPIKE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...:	C7E020142	**Work Order # ...:**	JV38A1CA-MS	**Matrix .....:**	SOLID
OS Lot-Sample# :	C7E020142 - 003		JV38A1CC-MSD		
Prep Date .....:	05/09/07	**Analysis Date ..:**	05/22/07		
Prep Batch # ...:	7129262				
Dilution Factor :	1				
Analyst ID.....:	Patricia(Trish) M. Parsly	**Instrument ID..:**	M1C	**Method.....:**	SW846 8290
Initial Wgt/Vol:	10 g				

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	43	(40 - 135)
	47	(40 - 135)
13C-1,2,3,7,8-PeCDD	30 *	(40 - 135)
	36 *	(40 - 135)
13C-1,2,3,4,7,8-HxCDD	45	(40 - 135)
	50	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	41	(40 - 135)
	51	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	35 *	(40 - 135)
	39 *	(40 - 135)
13C-OCDD	28 *	(40 - 135)
	32 *	(40 - 135)
13C-2,3,7,8-TCDF	44 X	(40 - 135)
	54 X	(40 - 135)
13C-1,2,3,7,8-PeCDF	31 *	(40 - 135)
	36 *	(40 - 135)
13C-2,3,4,7,8-PeCDF	30 *	(40 - 135)
	36 *	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	44	(40 - 135)
	50	(40 - 135)
13C-1,2,3,6,7,8-HxCDF	41	(40 - 135)
	51	(40 - 135)
13C-2,3,4,6,7,8-HxCDF	39 *	(40 - 135)
	47	(40 - 135)
13C-1,2,3,7,8,9-HxCDF	36 *	(40 - 135)
	40	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	30 *	(40 - 135)
	34 *	(40 - 135)
13C-1,2,3,4,7,8,9-HpCDF	25 *	(40 - 135)
	26 *	(40 - 135)

SOG_Stnd_msmsd_rev1.rpt 5/22/07