Y-12

OAK RIDGE Y-12 PLANT

MARTIN MARIETTA

Final Report from VFL Technologies
for the Pilot-Scale Thermal Treatment of
Lower East Fork Poplar Creek
Floodplain Soils

LEFPC Appendices
Volume 2
Appendix V-A

Prepared by VFL Technology Corporation
for
Martin Marietta Energy Systems
P.O. Box 2002
Oak Ridge, TN 37831 - 6501
Subcontract No. 82Y-05556V

September 1994

MARTIN MARIETTA ENERGY
SYSTEMS, INC.
managing the
Oak Ridge, Y-12 Plant
Oak Ridge, Tennessee
under contract DE-AC05-84OR21400
for the
U.S. Department of Energy

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

MASTER

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DISCLAIMER

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APPENDIX V - A

FINAL VERIFICATION RUN DATA PACKAGE

Sample Matrix Table

Validation Of Analytical Data For R.F. Weston

Dioxins

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED *ww*

SAMPLE MATRIX TABLE

NAME	SAMPLE NAME	SAMPLE TIME	SAMPLE # 1661B - _ _ _ / LAB NUMBER BATCH SAMPLE NUMBER										
SOIL INPUT	FEED 1	1610	61/3214004	62/9405L630	63/3214002	64/3214005	65/3214001	66/3214003					
	FEED 2	1710	67/3213655	68/9405L624	69/3213619	70/3213637	71/3213601	72/3213673					
	FEED 3	1810	76/9405L624	94/3213656	95/3213620	96/3213638	97/3213674	98/3213602					
	FEED 4	1910	77/9405L624	104/3213657	105/3213621	106/3213675	107/3213603	108/3213639					
	FEED 4 DUP.	1910	78/9405L624	109/3213658	110/3213622	111/3213640	112/3213676	113/3213604					
	FEED 5	2010	79/9405L624	114/3213659	115/3213623	116/3213677	117/3213605	118/3213641					
	FEED 6	2110	80/9405L624	119/3213660	120/3213624	121/3213642	122/3213678	123/3213606					
	FEED 7	2210	81/9405L624	124/3213661	125/3213625	126/3213679	127/3213607	128/3213643					
	FEED 8	2310	82/9405L624	129/3213662	130/3213626	131/3213644	132/3213608	133/3213680					
PRODUCT OUTPUT	TMO 1	1740	84/9405L630	134/MMES	135/3214009	136/MMES	137/MMES	138/3214007	139/3214008	140/3214006	141/3214010		
	TMO 2	1840	85/9405L624	142/MMES	143/3213664	144/MMES	145/3213628	146/MMES	147/3213610	148/3213646	149/3213682		
	TMO 3	1940	86/9405L624	150/MMES	151/3213665	152/MMES	153/MMES	154/3213629	155/3213647	156/3213611	157/3213683		
	TMO 4	2040	87/9405L624	158/MMES	159/3213666	160/MMES	161/MMES	162/3213630	163/3213689	164/3213648	165/3213612		
	TMO 4 DUP.	2040	88/9405L624	166/MMES	167/MMES	168/3213667	169/MMES	170/3213631	171/3213685	172/3213631	173/3213649		
	TMO 5	2140	89/9405L624	174/MMES	175/3213668	176/MMES	177/MMES	178/3213632	179/3213686	180/3213650	181/3213614		
	TMO 6	2240	90/9405L624	182/MMES	183/MMES	184/3213669	185/3213633	186/MMES	187/3213615	188/3213651	189/3213687		
	TMO 7	2340	91/9405L624	190/MMES	191/MMES	192/3213670	193/3213634	194/MMES	195/3213688	196/3213616	197/3213652		
	TMO 8	0040	92/9405L624	198/MMES	199/MMES	200/3213671	201/3213635	202/MMES	203/3213689	204/3213617	205/3213653		
OTHER OUTPUTS	SLUDGE (SOLIDS)	-	220/3213693	221/3213695	222/3213655	223/3213696	224/3213697						
	CONDENSER LIQUID	-	225/32136102	226/32136102	227/32136103	228/32136103	236/3213698	237/3213699	238/32136100	239/32136101			
	COLD TRAP	-	229/32136104	229B/32136104	230/32136105	231/32136105	232/32136106	233/32136107	234/32136108	235/32136109			
FIELD BLANKS	FEED	1630	83/9405L624										
	PRODUCT	0010	93/9405L624	206/3213690	207/MMES	208/NV	209/MMES	210/MMES	211/NV	212/3213618	213/3213654		
	CONDENSER LIQUID	-	73/NV	99/NV	100/NV	101/3213681	102/3213609	103/3213645					
	CONDENSER SOLID	-	74/NV										
	TRIP BLANK		240/MMES	241/MMES	242/3213691	243/3213692							

NOTE:

NV = NOT ENOUGH VOLUME

DRUM IDENTIFICATION NUMBERS HAVE NOT BEEN PROVIDED AS ALL WASTE WAS HOMOGENIZED TO ENSURE CONSISTENCY OF INFEEED.

Nuclear Fuel Services, Inc.
1205 Banner Hill Rd.
Erwin, TN 37650
(615) 743-9141

FSI

MAR-94-027
DEV-03-08

June 21, 1994

Joe Fabrizio
VFL Technology Corp.
42 Lloyd Ave.
Malvern, PA 19355

Subject: Review and Validation of LEFPC Analytical Data
From Roy F. Weston Laboratory

Reference: LEFPC Project

Dear Mr. Fabrizio:

Data packages RFW 9405L630 and RFW 9405L624 were reviewed for compliance to the Purchase Order requirements QA Plan requirements and also to determine if they met SW-846 method 8280 (The Analysis of Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofurans). Based on the review, it was determined that the analytical packages include the information required by Purchase Order B940300318 and the technical and QA requirements of SW-846 and are therefore acceptable for project use.

Attached is a copy of the technical/validation review performed by Mr. J. D. Davis.

If you have any questions and/or comments concerning the data packages, please do not hesitate to contact us.

attachment

Sincerely,

M. A. Rush
LEFPC Project Operations Manager

C. W. Tilson
LEFPC Project QA Manager

MEMO

To: M.A. Rush
From: J.D. Davis
Date: June 20, 1994
Subject: Validation of LEFPC Analytical Data from Roy F. Weston Laboratory

Data packages RFW 9405L630 and RFW 9405L624 were reviewed for compliance with SW-846 Method 8280, *The Analysis of Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans*.

Package RFW 9405L630 contained the analytical data for LEFPC samples 1661B-062 and 1661B-084. This package contained all GC chromatograms for samples, QC samples, and calibration standards; summaries of the GC data; and an acceptable case narrative discussing the overall performance in regards to the analysis of these samples. Chain of custody documentation was maintained correctly and all holding time requirements were met. All of the requirements of SW-846 Method 8280 concerning initial and continuing calibration and QC checks relating to the identification and quantification of target analytes were met. This package was judged to meet the requirements of an AQL-IV data package and the data contained therein to be valid.

Package RFW 9405L624 contained the analytical data for LEFPC samples 1661B-068, 077, 076, 078, 080, 081, 082, 079, 085, 086, 087, 088, 089, 090, 091, 092, 093, 083. This package contained data summaries for each of the samples and applicable QC samples and an acceptable case narrative discussing the overall performance in regards to the analysis of these samples. Chain of custody documentation was maintained correctly and all holding time requirements were met. All of the requirements of SW-846 Method 8280 concerning QC checks relating to the identification and quantification of target analytes were met. This package was judged to meet the requirements of an AQL-III data package and the data contained therein to be valid.

The only potential concern with the data was a notation on the chain of custody that the temperature of the samples at receipt was 8.7C (SW-846 guidance suggests 4C). Conversation with Weston concerning this matter revealed that the temperature measurement is performed only to confirm that samples are received "chilled". This measurement is not intended as determination of the actual internal measurement of the sample matrix. Weston chills all samples to 4C in their sample storage area prior to sample preparation. Weston has stated that in their opinion, due to the low volatility of the analytes of interest and the method in which the temperature is measured, the receiving temperature noted should not affect the validity of the data for these samples. I concur with the opinion of Weston concerning this matter.

J.D. Davis

JDD-94-012

LIONVILLE ANALYTICAL LABORATORY
208 WELSH POOL ROAD
LIONVILLE, PA 19341-1313
215-524-6100 • FAX: 215-524-6141

June 8, 1994

Mr. Doug Davis
Nuclear Fuel Services, Inc.
205 Banner Hill Road
Erwin, TN 37650

Re: Dioxin/Furan Data
RFW Batch Number 9405L630

Dear Mr. Davis:

Enclosed area two copies of the documentation data packages for samples 1161B-062 and 1161B-084 which were submitted for 8280 Dioxin/Furan analysis on May 17, 1994.

The additional samples submitted for 8280 analysis are presently being completed and will be reported within the next several days. In the meantime, please contact me at (610) 701-6100 if you should have any questions regarding the data enclosed.

Very truly yours,

ROY F. WESTON, INC.

Sharon A. Nordstrom
Section Project Manager

/clk

Enclosure:

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: NUCLEAR FUEL SERVICES
RFW #: 9405L630

W.O. #: 10627-001-001-9999-00
Date Received: 05-17-94

DIOXIN

The set of samples consisted of two (2) soil samples collected on 05-12-94.

The samples were extracted on 05-23-94 and analyzed according to criteria set forth in SW 846 Method 8280 (modified as per applicable WESTON SOPs) for Tetra through Octachlorinated Dibenzo-p-dioxin and Dibenzofuran target compounds on 05-26-94.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All internal standard recoveries were within SW 846 limits (SW 846 Method 8280, Rev. 0, September, 1986).
2. All matrix spike recoveries were within EPA QC limits.
3. All results for soil matrices were reported on a wet-weight basis.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

06.02.94

Date

GC/MS SPECIAL PROJECTS DATA FLAGS

- B = Compound was detected in the associated method blank.
- D = Indicates compounds that were quantitated from an analysis at a secondary dilution factor. Also used to indicate that surrogate recoveries were not obtained because the extract had to be diluted for analysis.
- E = Indicates an estimated value. Used in cases where a target analyte is detected at a level greater than the upper quantification limit of instrument calibration.
- H = Peak height (instead of peak area) was used to calculate the isotopic or confirmation/quantitation ion ratio and to quantitate the analyte. Peak must meet all other identification criteria.
- I = Accurate quantitation was prevented due to interference.
- J = Indicates an estimated value. Used in cases where a target analyte is detected at a level less than the lower quantification limit of instrument calibration.
- S = Signal-to-noise ratio of the confirmation ion (M-COCl₂ for PCDD/PCDF) does not meet 2.5 S/N requirement, but peak was determined to be positive in the judgement of the GC/MS analyst.
- U = Indicates that the compound was analyzed for but not detected. The estimated detection limit for the sample (EDL; not the method detection limit) is reported with the U.
- X = Isotope ratio criteria are not met using either peak height or peak area (used for EMPC only).
- Y = Lab-defined (can change with each data package).
- Z = Lab-defined (can change with each data package).

ABBREVIATIONS

BS = Blank Spike
BSD = Blank Spike Duplicate
CONC = Concentration
DF = Dilution Factor
DL = Dilution
EDL = Estimated Detection Limit
EMPC = Estimated Maximum Possible Concentration
(peak was observed that did not
meet identification criteria)
FL = Flag
MS = Matrix Spike
MSD = Matrix Spike Duplicate
NA = Not Applicable
NR = Not Required
R = Replicate
S = Spike (used in RFW #)
SP = Spike Compound
T = Spike Duplicate (used in RFW #)

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L630 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE 1

Sample Information	Client ID:	1661B-062	1661B-084	1661B-084 MS
	RFW#:	001	002	002S
	D.F.:	1	1	1
	Matrix:	SOIL	SOIL	SOIL
	Units:	ng/g	ng/g	ng/g

C-13 TCDD RECOVERY:	82 %	84 %	77 %
C-13 TCDF RECOVERY:	74 %	77 %	70 %
C-13 HXCDD RECOVERY:	81 %	84 %	80 %
C-13 HPCDF RECOVERY:	79 %	84 %	82 %
C-13 OCDD RECOVERY:	85 %	90 %	86 %

	CONC	EDL	FL	CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....		0.1	U		0.1	U	108%	0.1	
TOTAL TCDD		0.1	U		0.1	U	108%	0.1	
TOTAL PECDD.....		0.2	U		0.2	U	110%	0.2	
TOTAL HXCDD.....	0.6	0.1	JS		0.2	U	93%	0.2	
TOTAL HPCDD.....	5.0	0.1			0.2	U	120%	0.2	
OCDD.....	11	0.1		0.3	0.2	JS	90%	0.2	
2,3,7,8-TCDF.....		0.1	U		0.1	U	96%	0.1	
TOTAL TCDF		0.1	U		0.1	U	96%	0.1	
TOTAL PECDF.....	0.5	0.1	JS		0.2	U	112%	0.1	
TOTAL HXCDF.....	1.4	0.1			0.1	U	96%	0.1	
TOTAL HPCDF.....	2.6	0.1			0.1	U	106%	0.1	
OCDF.....	1.5	0.1			0.2	U	102%	0.1	

EDL = ESTIMATED DETECTION LIMIT
 FL = FLAG
 ND = NONE DETECTED
 NA = NOT APPLICABLE
 * = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L630 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 2

Sample Information	Client ID:	1661B-084 MSD	LABORATORY BLANK
	RFW#:	002T	(94LS0039)
	D.F.:	1	MB1
	Matrix:	SOIL	SOIL
	Units:	ng/g	ng/g

C-13 TCDD RECOVERY:	81 %	79 %
C-13 TCDF RECOVERY:	75 %	72 %
C-13 HXCDD RECOVERY:	76 %	108 %
C-13 HPCDF RECOVERY:	60 %	84 %
C-13 OCDD RECOVERY:	90 %	48 %

	CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....	104%	0.1			0.1	U
TOTAL TCDD	104%	0.1			0.1	U
TOTAL PECDD.....	115%	0.2			0.2	U
TOTAL HXCDD.....	93%	0.1			0.8	U
TOTAL HPCDD.....	125%	0.1			0.2	U
OCDD.....	92%	0.1			0.6	U
2,3,7,8-TCDF.....	92%	0.1			0.1	U
TOTAL TCDF	92%	0.1			0.1	U
TOTAL PECDF.....	109%	0.1			0.2	U
TOTAL HXCDF.....	107%	0.1			0.2	U
TOTAL HPCDF.....	107%	0.2			0.2	U
OCDF.....	94%	0.1			0.6	U

EDL = ESTIMATED DETECTION LIMIT

FL = FLAG

ND = NONE DETECTED

NA = NOT APPLICABLE

* = OUTSIDE QC LIMITS

III. CASE NARRATIVE

208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE, PA 19341-1313
PHONE: (215) 524-7360
TELEX: 83-5348

June 14, 1994

Mr. Doug Davis
Nuclear Fuel Services, Inc.
205 Banner Hill Road
Erwin, TN 37650

Re: Dioxin/Furan Data
RFW Batch Number 9405L624

Dear Mr. Davis:

Enclosed are two copies of our data reports for the soil & water samples which were submitted for 8280 Dioxin/Furan analysis on May 17, 1994.

This completes all analysis requirements for the samples currently in-house. Please feel free to contact me at (610) 701-6100 if you should have any questions regarding the data enclosed, or if we may assist you further.

Very truly yours,

ROY F. WESTON, INC.

A handwritten signature in cursive script, appearing to read "Sharon Nordstrom".

Sharon A. Nordstrom
Section Project Manager

/clk

Enclosure:

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: NUCLEAR FUEL SERVICES
RFW #: 9405L624

W.O. #: 10627-001-001-9999-00
Date Received: 05-17-94

DIOXIN

The set of samples consisted of two (2) water samples and sixteen (16) soil samples collected on 05-12,13-94.

The samples were extracted on 05-23,26-94 and analyzed according to criteria set forth in SW 846 Method 8280 (modified as per applicable WESTON SOPs) for Tetra through Octachlorinated Dibenzo-p-dioxin and Dibenzofuran target compounds on 05-26-94 and 06-03-94.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All internal standard recoveries were within SW 846 limits (SW 846 Method 8280, Rev. 0, September, 1986).
2. Soil matrix spike analyses are associated with RFW lot 9405L630.
3. All water blank spike recoveries were within EPA QC limits.
4. All results for soil matrices were reported on a wet-weight basis.
5. Small peaks required manual integration due to rough shape and noisy baseline.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

06.14.94.

Date

PCDD/DF ESTIMATED MAXIMUM POSSIBLE CONCENTRATIONS

Client: NUCLEAR FUEL SERVICES

RFW #: 9405L624

Results have been reported based on the identification criteria in SW846 Method 8230 (ie. two quantitation ions present with a signal-to-noise ratio > 2.5 and exhibiting the correct isotopic abundance ratio). Additional peaks were observed in the samples listed below that met the signal-to-noise criteria but did not meet the isotopic ratio criteria. An Estimated Maximum Possible Concentration (EMPC) has been calculated for these congeners to account for the possibility that a PCDD or PCDF could be present and co-eluting with another compound that distorts the isotope ratio. EMPC's were only calculated for samples that also contained peaks that met all identification criteria, thus increasing the probability that other congeners might be present.

The following calculation was used to determine the EMPC:

$$EMPC = C + \frac{(\text{Height of PCDD/PCDF Peak}) \times (\text{IS Amount in ng})}{(\text{Height of IS}) \times (\text{RRF}) \times (\text{SA}) \times (\% \text{ Solids as required})}$$

C= Concentration of peaks that meet identification criteria
 IS= Internal Standard
 RRF= Relative Response Factor
 SA= Sample amount in liters or grams

Sample -----	Congener -----	EMPC -----	Units -----
1661B-077	PeCDF	0.6	NG/G
1661B-076	TCDF	0.2	"
1661B-080	HxCDD	0.7	"

GC/MS SPECIAL PROJECTS DATA FLAGS

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- I = Accurate quantitation was prevented due to interference.
- J = Indicates an estimated value. Used in cases where a target analyte is detected at a level less than the lower quantification limit of instrument calibration.
- S = Signal-to-noise ratio of the confirmation ion (M-COC1+ for PCDD/PCDF) does not meet 2.5 S/N requirement, but peak was determined to be positive in the judgement of the GC/MS analyst.
- U = Indicates that the compound was analyzed for but not detected. The estimated detection limit for the sample (EDL; not the method detection limit) is reported with the U.
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ABBREVIATIONS

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DL	=	Dilution
EDL	=	Estimated Detection Limit
EMPC	=	Estimated Maximum Possible Concentration (peak was observed that did not meet identification criteria)
FL	=	Flag
MS	=	Matrix Spike
MSD	=	Matrix Spike Duplicate
NA	=	Not Applicable
NR	=	Not Required
R	=	Replicate
S	=	Spike (used in RFW #)
SP	=	Spike Compound
T	=	Spike Duplicate (used in RFW #)

C1405L624

WESTON
MANAGER OF SOURCE CODE & TRADE

Page 7 of 8

RFW 21-21-001/A-7/91

L372

L373

L375

L377

L378

Ref#

Cooler#

381-596a

9405L624

WESTON
MANAGE RE DESIGN RE COMBIA TANTI
Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

WESTON Analytics Use Only

Samples were:

- 1) Shipped or Hand Delivered Airbill # 502
- 2) Ambient or Chilled
- 3) Received in Good Condition Y or N Y
- 4) Labels Indicate Properly Preserved Y or N Y
- 5) Received Within Holding Times Y

COC Tape was:

- 1) Present on Outer Package Y or N Y
- 2) Unbroken on Outer Package Y or N Y
- 3) Present on Sample Y or N Y
- 4) Unbroken on Sample Y or N Y
- 5) COC Record Present Upon Sample Rec'd Y or N Y

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Airborne	M. Henrich	5/17/94	1635				
	M. Henrich	5/17/94			M. Henrich	5/17/94	

Discrepancies Between
Samples Labels and
COC Record? Y or N
NOTES:

Roy F. Weston, Inc. - Lionville Laboratory
TDF ANALYTICAL DATA PACKAGE FOR
NUCLEAR FUEL SERVICES

DATE RECEIVED: 05/17/94

RFW LOT # :9405L630

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
1661B-062	001	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-084	002	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-084	002 MS	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-084	002 MSD	S	94LS0039	05/12/94	05/23/94	05/26/94

LAB QC:

BLK	MB1	S	94LS0039	N/A	05/23/94	05/26/94
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Roy F. Weston, Inc. - Lionville Laboratory
TDF ANALYTICAL DATA PACKAGE FOR
NUCLEAR FUEL SERVICES

DATE RECEIVED: 05/17/94

RFW LOT # :9405L624

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
1661B-068	001	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-077	002	S	94LS0039	05/12/94	05/23/94	06/03/94
1661B-076	003	S	94LS0039	05/12/94	05/23/94	06/03/94
1661B-078	004	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-080	005	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-081	006	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-082	007	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-079	008	S	94LS0039	05/12/94	05/23/94	06/03/94
1661B-085	009	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-086	010	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-087	011	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-088	012	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-089	013	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-090	014	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-091	015	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-092	016	S	94LS0039	05/13/94	05/23/94	05/26/94
1661B-093	017	W	94LS0040	05/13/94	05/26/94	06/03/94
1661B-083	018	W	94LS0040	05/12/94	05/26/94	06/03/94

LAB QC:

BLK	MB1	S	94LS0039	N/A	05/23/94	05/26/94
BLK	MB1	W	94LS0040	N/A	05/26/94	06/03/94
BLK	MB1 BS	W	94LS0040	N/A	05/26/94	06/03/94

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L624 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 1

Sample Information	Client ID: RFW#: D.F.: Matrix: Units:	1661B-068 001 1 SOIL ng/g	1661B-077 002 1 SOIL ng/g	1661B-076 003 1 SOIL ng/g
--------------------	---	---------------------------------------	---------------------------------------	---------------------------------------

C-13 TCDD RECOVERY:	85 %	86 %	89 %
C-13 TCDF RECOVERY:	81 %	78 %	85 %
C-13 HXCDD RECOVERY:	86 %	86 %	84 %
C-13 HPCDF RECOVERY:	84 %	85 %	80 %
C-13 OCDD RECOVERY:	96 %	93 %	95 %

	CONC	EDL	FL		CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....		0.1	U			0.1	U		0.1	U
TOTAL TCDD		0.1	U			0.1	U		0.1	U
TOTAL PECDD.....		0.2	U			0.1	U		0.1	U
TOTAL HXCDD.....	0.8	0.1	JS		0.9	0.1	JS	0.8	0.1	J
TOTAL HPCDD.....	6.0	0.1			6.0	0.1		5.4	0.1	
OCDD.....	12	0.1			13	0.1		12	0.1	
2,3,7,8-TCDF.....		0.1	U			0.1	U		0.1	U
TOTAL TCDF		0.1	U		0.1	0.1	JS	0.1	0.1	JS
TOTAL PECDF.....	0.5	0.1	JS		0.5	0.1	JS	0.5	0.1	J
TOTAL HXCDF.....	1.7	0.1			1.9	0.1		1.8	0.1	
TOTAL HPCDF.....	2.9	0.1			3.1	0.1		2.8	0.1	
OCDF.....	1.6	0.1			1.7	0.1		1.5	0.1	

EDL = ESTIMATED DETECTION LIMIT
 FL = FLAG
 ND = NONE DETECTED
 NA = NOT APPLICABLE
 * = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L624 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 2

Sample Information	Client ID:	1661B-078	1661B-080	1661B-081
	RFW#:	004	005	006
	D.F.:	1	1	1
	Matrix:	SOIL	SOIL	SOIL
	Units:	ng/g	ng/g	ng/g

C-13 TCDD RECOVERY:	82 %	84 %	84 %
C-13 TCDF RECOVERY:	81 %	83 %	84 %
C-13 HXCDD RECOVERY:	80 %	80 %	84 %
C-13 HPCDF RECOVERY:	75 %	75 %	78 %
C-13 OCDD RECOVERY:	72 %	73 %	76 %

	CONC	EDL	FL	CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....		0.1	U		0.1	U		0.2	U
TOTAL TCDD		0.1	U		0.1	U		0.2	U
TOTAL PECDD.....		0.1	U		0.2	U		0.2	U
TOTAL HXCDD.....	0.6	0.2	JS	0.5	0.2	JS	0.6	0.1	JS
TOTAL HPCDD.....	6.0	0.2		5.6	0.2		5.4	0.1	
OCDD.....	12	0.1		13	0.1		12	0.1	
2,3,7,8-TCDF.....		0.2	U		0.1	U		0.1	U
TOTAL TCDF		0.2	U		0.1	U		0.1	U
TOTAL PECDF.....	0.5	0.1	JS	0.4	0.2	JS	0.5	0.1	S
TOTAL HXCDF.....	1.6	0.1		1.6	0.2	S	1.7	0.2	
TOTAL HPCDF.....	3.2	0.2		3.3	0.2		3.1	0.2	
OCDF.....	2.0	0.1		2.4	0.1		2.1	0.1	

EDL = ESTIMATED DETECTION LIMIT
 FL = FLAG
 ND = NONE DETECTED
 NA = NOT APPLICABLE
 * = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L624 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 3

Sample	Client			
Information	ID:	1661B-082	1661B-079	1661B-085
	RFW#:	007	008	009
	D.F.:	1	1	1
	Matrix:	SOIL	SOIL	SOIL
	Units:	ng/g	ng/g	ng/g

C-13 TCDD RECOVERY:	84 %		92 %		97 %
C-13 TCDF RECOVERY:	81 %		88 %		86 %
C-13 HXCDD RECOVERY:	83 %		85 %		82 %
C-13 HPCDF RECOVERY:	74 %		85 %		81 %
C-13 OCDD RECOVERY:	73 %		99 %		80 %

	CONC	EDL	FL		CONC	EDL	FL		CONC	EDL	FL
2,3,7,8-TCDD.....		0.1	U			0.1	U			0.1	U
TOTAL TCDD		0.1	U			0.1	U			0.1	U
TOTAL PECDD.....		0.2	U			0.1	U			0.1	U
TOTAL HXCDD.....	0.7	0.2	JS		0.7	0.1	JS			0.1	U
TOTAL HPCDD.....	5.5	0.2			5.0	0.1			0.2	0.1	JS
OCDD.....	12	0.2			10	0.1			0.4	0.1	JS
2,3,7,8-TCDF.....		0.1	U			0.1	U			0.1	U
TOTAL TCDF	0.2	0.1	JS			0.1	U			0.1	U
TOTAL PECDF.....	2.7	0.1			0.4	0.1	J			0.1	U
TOTAL HXCDF.....	2.7	0.2			1.6	0.1				0.1	U
TOTAL HPCDF.....	3.2	0.2			2.8	0.1				0.1	U
OCDF.....	1.6	0.2			1.8	0.1				0.1	U

EDL = ESTIMATED DETECTION LIMIT

FL = FLAG

ND = NONE DETECTED

NA = NOT APPLICABLE

* = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L624 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 4

Sample Information	Client ID: RFW#: D.F.: Matrix: Units:	1661B-086 010 1 SOIL ng/g	1661B-087 011 1 SOIL ng/g	1661B-088 012 1 SOIL ng/g
--------------------	---	---------------------------------------	---------------------------------------	---------------------------------------

C-13 TCDD RECOVERY:	80 %	78 %	84 %
C-13 TCDF RECOVERY:	75 %	78 %	82 %
C-13 HXCDD RECOVERY:	81 %	79 %	81 %
C-13 HPCDF RECOVERY:	78 %	81 %	81 %
C-13 OCDD RECOVERY:	75 %	73 %	75 %

	CONC	EDL	FL	CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....		0.1	U		0.1	U		0.1	U
TOTAL TCDD		0.1	U		0.1	U		0.1	U
TOTAL PECDD.....		0.1	U		0.2	U		0.1	U
TOTAL HXCDD.....		0.2	U		0.1	U		0.1	U
TOTAL HPCDD.....		0.1	U		0.2	U		0.1	U
OCDD.....	0.2	0.1	JS	0.3	0.1	JS	0.3	0.1	JS
2,3,7,8-TCDF.....		0.1	U		0.1	U		0.1	U
TOTAL TCDF		0.1	U		0.1	U		0.1	U
TOTAL PECDF.....		0.1	U		0.2	U		0.2	U
TOTAL HXCDF.....		0.1	U		0.1	U		0.1	U
TOTAL HPCDF.....		0.2	U		0.1	U		0.1	U
OCDF.....		0.1	U		0.1	U		0.1	U

EDL = ESTIMATED DETECTION LIMIT

FL = FLAG

ND = NONE DETECTED

NA = NOT APPLICABLE

* = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L624 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 5

Sample Information	Client								
	ID:	1661B-089		1661B-090			1661B-091		
	RFW#:	013		014			015		
	D.F.:	1		1			1		
	Matrix:	SOIL		SOIL			SOIL		
	Units:	ng/g		ng/g			ng/g		
C-13 TCDD RECOVERY:		76 %		89 %			78 %		
C-13 TCDF RECOVERY:		75 %		87 %			76 %		
C-13 HXCDD RECOVERY:		78 %		87 %			77 %		
C-13 HPCDF RECOVERY:		77 %		86 %			76 %		
C-13 OCDD RECOVERY:		69 %		78 %			72 %		
	CONC	EDL	FL	CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....		0.1	U		0.1	U		0.2	U
TOTAL TCDD		0.1	U		0.1	U		0.2	U
TOTAL PECDD.....		0.2	U		0.2	U		0.2	U
TOTAL HXCDD.....		0.1	U		0.1	U		0.2	U
TOTAL HPCDD.....		0.1	U		0.2	U		0.2	U
OCDD.....	0.3	0.1	JS	0.3	0.1	JS		0.2	U
2,3,7,8-TCDF.....		0.2	U		0.2	U		0.2	U
TOTAL TCDF		0.2	U		0.2	U		0.2	U
TOTAL PECDF.....		0.2	U		0.2	U		0.2	U
TOTAL HXCDF.....		0.1	U		0.1	U		0.1	U
TOTAL HPCDF.....		0.1	U		0.1	U		0.2	U
OCDF.....		0.2	U		0.2	U		0.1	U

EDL = ESTIMATED DETECTION LIMIT

FL = FLAG

ND = NONE DETECTED

NA = NOT APPLICABLE

* = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L624 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 6

Sample Information	Client								
	ID:	1661B-092		1661B-093			1661B-083		
	RFW#:	016		017			018		
	D.F.:	1		1			1		
	Matrix:	SOIL		WATER			WATER		
	Units:	ng/g		ng/L			ng/L		
C-13 TCDD RECOVERY:		77 %		84 %			81 %		
C-13 TCDF RECOVERY:		74 %		85 %			84 %		
C-13 HXCDD RECOVERY:		76 %		88 %			89 %		
C-13 HPCDF RECOVERY:		72 %		99 %			92 %		
C-13 OCDD RECOVERY:		67 %		96 %			87 %		
	CONC	EDL	FL	CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....	0.1		U	1.4		U	1.3		U
TOTAL TCDD	0.1		U	1.4		U	1.3		U
TOTAL PECDD.....	0.2		U	2.6		U	2.0		U
TOTAL HXCDD.....	0.2		U	2.6		U	1.6		U
TOTAL HPCDD.....	0.2		U	1.6		U	1.7		U
OCDD.....	0.2		U	2.0		U	1.8		U
2,3,7,8-TCDF.....	0.2		U	1.1		U	0.9		U
TOTAL TCDF	0.2		U	1.1		U	1.1		U
TOTAL PECDF.....	0.2		U	2.0		U	1.8		U
TOTAL HXCDF.....	0.1		U	1.6		U	1.5		U
TOTAL HPCDF.....	0.1		U	1.5		U	2.0		U
OCDF.....	0.1		U	1.7		U	1.6		U

EDL = ESTIMATED DETECTION LIMIT

FL = FLAG

ND = NONE DETECTED

NA = NOT APPLICABLE

* = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L624 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 7

Sample Information	Client	LABORATORY BLANK			LABORATORY BLANK			BLANK SPIKE		
	ID:	(94LS0039)			(94LS0040)			(94LS0040)		
	RFW#:	MB1			MB1			MB1S		
	D.F.:	1			1			1		
	Matrix:	SOIL			WATER			WATER		
	Units:	ng/g			ng/L			ng/L		
C-13 TCDD RECOVERY:		79 %			81 %			84 %		
C-13 TCDF RECOVERY:		72 %			82 %			83 %		
C-13 HXCDD RECOVERY:		108 %			88 %			86 %		
C-13 HPCDF RECOVERY:		84 %			101 %			75 %		
C-13 OCDD RECOVERY:		48 %			100 %			93 %		
	CONC	EDL	FL		CONC	EDL	FL	CONC	EDL	FL
2,3,7,8-TCDD.....		0.1	U		0.6	U		110%	0.4	
TOTAL TCDD		0.1	U		0.6	U		110%	0.4	
TOTAL PECDD.....		0.2	U		0.5	U		116%	0.4	
TOTAL HXCDD.....		0.8	U		0.6	U		93%	0.5	
TOTAL HPCDD.....		0.2	U		0.7	U		120%	0.4	
OCDD.....		0.6	U		0.6	U		91%	0.4	
2,3,7,8-TCDF.....		0.1	U		0.2	U		94%	0.3	
TOTAL TCDF		0.1	U		0.3	U		94%	0.3	
TOTAL PECDF.....		0.2	U		0.5	U		97%	0.4	
TOTAL HXCDF.....		0.2	U		0.4	U		105%	0.4	
TOTAL HPCDF.....		0.2	U		0.5	U		104%	0.4	
OCDF.....		0.6	U		0.5	U		102%	0.4	

EDL = ESTIMATED DETECTION LIMIT

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NA = NOT APPLICABLE

* = OUTSIDE QC LIMITS

LIONVILLE ANALYTICAL LABORATORY
208 WELSH POOL ROAD
LIONVILLE, PA 19341-1313
215-524-6100 • FAX: 215-524-6141

June 8, 1994

Mr. Doug Davis
Nuclear Fuel Services, Inc.
205 Banner Hill Road
Erwin, TN 37650

Re: Dioxin/Furan Data
RFW Batch Number 9405L630

Dear Mr. Davis:

Enclosed are two copies of the documentation data packages for samples 1161B-062 and 1161B-084 which were submitted for 8280 Dioxin/Furan analysis on May 17, 1994.

The additional samples submitted for 8280 analysis are presently being completed and will be reported within the next several days. In the meantime, please contact me at (610) 701-6100 if you should have any questions regarding the data enclosed.

Very truly yours,

ROY F. WESTON, INC.

Sharon A. Nordstrom
Section Project Manager

/clk

Enclosure:

Roy F. Weston, Inc. - Lionville Laboratory
TDF ANALYTICAL DATA PACKAGE FOR
NUCLEAR FUEL SERVICES

DATE RECEIVED: 05/17/94

RFW LOT # :9405L630

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
1661B-062	001	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-084	002	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-084	002 MS	S	94LS0039	05/12/94	05/23/94	05/26/94
1661B-084	002 MSD	S	94LS0039	05/12/94	05/23/94	05/26/94

LAB QC:

BLK	MB1	S	94LS0039	N/A	05/23/94	05/26/94
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TABLE OF CONTENTS

	PAGE
I. Chain Of Custody.....	1
II. Data Summary.....	3
III. Case Narrative.....	6
IV. QC Summary.....	10
A. Surrogate Recovery (if applicable)	
B. Matrix Spike/Matrix Spike Duplicate (if applicable)	
C. Method Blank Summary (if applicable)	
V. Sample Data Package.....	14
A. Sample Data in Increasing RFW# Order	
1. Tabulated Results	
2. Mass Chromatograms/Quantitation Report	
VI. Standards Data Package.....	55
A. System Performance Check Analysis	
B. Analysis Run Log	
C. Initial Calibration Summary & Mass Chromatograms	
D. Continuing Calibration Summary & Mass Chromatograms	
VII. Raw QC Data Package.....	414
A. Method Blank Data	
1. Tabulated Results (Form 1)	
2. Mass Chromatograms/quantitation Report	
B. Matrix Spike Data	
1. Tabulated Results (if applicable)	
2. Mass Chromatograms/Quantitation Report	
C. Matrix Spike Duplicate Data (if applicable)	
1. Tabulated Results	
2. Mass Chromatograms/Quantitation	

I. CHAIN OF CUSTODY

0001

Custody Transfer Record/Lab Work Request

WESTON
A THOMSON COMPANY
10000 WESTON DRIVE
ANN ARBOR MI 48106-1500
TEL: 734/769-7000
FAX: 734/769-7001
WWW.WESTON.COM

Page (of

[illegible]

II. DATA SUMMARY

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

RFW BATCH NUMBER: 9405L630 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE 1

Sample Information	Client ID:	1661B-062	1661B-084	1661B-084 MS
	RFW#:	001	002	002S
	D.F.:	1	1	1
	Matrix:	SOIL	SOIL	SOIL
	Units:	ng/g	ng/g	ng/g

C-13 TCDD RECOVERY:	82 %	84 %	77 %
C-13 TCDF RECOVERY:	74 %	77 %	70 %
C-13 HXCDD RECOVERY:	81 %	84 %	80 %
C-13 HPCDF RECOVERY:	79 %	84 %	82 %
C-13 OCDD RECOVERY:	85 %	90 %	86 %

CONC	EDL	FL	CONC	EDL	FL	CONC	EDL	FL
------	-----	----	------	-----	----	------	-----	----

2,3,7,8-TCDD.....	0.1	U	0.1	U	108%	0.1
TOTAL TCDD	0.1	U	0.1	U	108%	0.1
TOTAL PECDD.....	0.2	U	0.2	U	110%	0.2
TOTAL HXCDD.....	0.6	0.1	JS	0.2	U	93%
TOTAL HPCDD.....	5.0	0.1	0.2	U	120%	0.2
OCDD.....	11	0.1	0.3	0.2	JS	90%
2,3,7,8-TCDF.....	0.1	U	0.1	U	96%	0.1
TOTAL TCDF	0.1	U	0.1	U	96%	0.1
TOTAL PECDF.....	0.5	0.1	JS	0.2	U	112%
TOTAL HXCDF.....	1.4	0.1	0.1	U	96%	0.1
TOTAL HPCDF.....	2.6	0.1	0.1	U	106%	0.1
OCDF.....	1.5	0.1	0.2	U	102%	0.1

EDL = ESTIMATED DETECTION LIMIT

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NA = NOT APPLICABLE

* = OUTSIDE QC LIMITS

WESTON ANALYTICS
DIOXINS/FURANS DATA SUMMARY

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RFW BATCH NUMBER: 9405L630 CLIENT: NUCLEAR FUEL SERVICES W.O.#: 10627-001-001-9999-00 PAGE: 2

Sample Information	Client ID:	1661B-084 MSD	LABORATORY BLANK	5
	RFW#:	002T	(94LS0039)	0
	D.F.:	1	MB1	0
	Matrix:	SOIL	1	0
	Units:	ng/g	SOIL	
			ng/g	

C-13 TCDD RECOVERY:	81 %		79 %
C-13 TCDF RECOVERY:	75 %		72 %
C-13 HXCDD RECOVERY:	76 %		108 %
C-13 HPCDF RECOVERY:	60 %		84 %
C-13 OCDD RECOVERY:	90 %		48 %

	CONC	EDL	FL	CONC	EDL	FL
=====						
2,3,7,8-TCDD.....	104%	0.1			0.1	U
TOTAL TCDD	104%	0.1			0.1	U
TOTAL PECDD.....	115%	0.2			0.2	U
TOTAL HXCDD.....	93%	0.1			0.8	U
TOTAL HPCDD.....	125%	0.1			0.2	U
OCDD.....	92%	0.1			0.6	U
2,3,7,8-TCDF.....	92%	0.1			0.1	U
TOTAL TCDF	92%	0.1			0.1	U
TOTAL PECDF.....	109%	0.1			0.2	U
TOTAL HXCDF.....	107%	0.1			0.2	U
TOTAL HPCDF.....	107%	0.2			0.2	U
OCDF.....	94%	0.1			0.6	U

EDL = ESTIMATED DETECTION LIMIT
 FL = FLAG
 ND = NONE DETECTED
 NA = NOT APPLICABLE
 * = OUTSIDE QC LIMITS

III. CASE NARRATIVE

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: NUCLEAR FUEL SERVICES
RFW #: 9405L630

W.O. #: 10627-001-001-9999-00
Date Received: 05-17-94

DIOXIN

The set of samples consisted of two (2) soil samples collected on 05-12-94.

The samples were extracted on 05-23-94 and analyzed according to criteria set forth in SW 846 Method 8280 (modified as per applicable WESTON SOPs) for Tetra through Octachlorinated Dibenzo-p-dioxin and Dibenzofuran target compounds on 05-26-94.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All internal standard recoveries were within SW 846 limits (SW 846 Method 8280, Rev. 0, September, 1986).
2. All matrix spike recoveries were within EPA QC limits.
3. All results for soil matrices were reported on a wet-weight basis.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

06.02.94.

Date

GC/MS SPECIAL PROJECTS DATA FLAGS

- B = Compound was detected in the associated method blank.
- D = Indicates compounds that were quantitated from an analysis at a secondary dilution factor. Also used to indicate that surrogate recoveries were not obtained because the extract had to be diluted for analysis.
- E = Indicates an estimated value. Used in cases where a target analyte is detected at a level greater than the upper quantification limit of instrument calibration.
- H = Peak height (instead of peak area) was used to calculate the isotopic or confirmation/quantitation ion ratio and to quantitate the analyte. Peak must meet all other identification criteria.
- I = Accurate quantitation was prevented due to interference.
- J = Indicates an estimated value. Used in cases where a target analyte is detected at a level less than the lower quantification limit of instrument calibration.
- S = Signal-to-noise ratio of the confirmation ion (M-COC1+ for PCDD/PCDF) does not meet 2.5 S/N requirement, but peak was determined to be positive in the judgement of the GC/MS analyst.
- U = Indicates that the compound was analyzed for but not detected. The estimated detection limit for the sample (EDL; not the method detection limit) is reported with the U.
- X = Isotope ratio criteria are not met using either peak height or peak area (used for EMPC only).
- Y = Lab-defined (can change with each data package).
- Z = Lab-undefined (can change with each data package).

ABBREVIATIONS

BS = Blank Spike

BSD = Blank Spike Duplicate

CONC = Concentration

DF = Dilution Factor

DL = Dilution

EDL = Estimated Detection Limit

EMPC = Estimated Maximum Possible Concentration
(peak was observed that did not
meet identification criteria)

FL = Flag

MS = Matrix Spike

MSD = Matrix Spike Duplicate

NA = Not Applicable

NR = Not Required

R = Replicate

S = Spike (used in RFW #)

SP = Spike Compound

T = Spike Duplicate (used in RFW #)

IV. QC SUMMARY

- A. Surrogate Recovery
(if applicable)
- B. Matrix Spike/Matrix Spike Duplicate
(if applicable)
- C. Method Blank Summary
(if applicable)

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 0627-01-01

Case No.: NUCLEAR FUEL SERVICES

Level: (low/med) LOW

RFW Lot No.: 9405L630

	CLIENT SAMPLE NO.	S1 (TCD) #	S2 (TCF) #	S3 (HxD) #	S4 (HPF) #	S5 (OCD) #	S6 () #	OTHER	TOT OUT
01	1661B-062	82	74	81	79	85			0
02	1661B-084	84	77	84	84	90			0
03	1661B-084MS	77	70	80	82	86			0
04	1661B-084MSD	81	75	76	60	90			0
05	BLKLS0039-MB1	79	72	108	84	48			0

QC LIMITS

S1 (TCD) = 13C-2378-TCDD

(40-120)

S2 (TCF) = 13C-2378-TCDF

(40-120)

S3 (HxD) = 13C-123678-HxCDD

(40-120)

S4 (HPF) = 13C-1234678-HpCDF

(40-120)

S5 (OCD) = 13C-OCDD

(40-120)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogates diluted out

PCDD/PCDF SOIL MATRIX SPIKE RECOVERY

LAB NAME: ROY F. WESTON, INC. -- LIONVILLE

WORK ORDER NO.: 10627-001-001-9999-00

CLIENT: NUCLEAR FUEL SERVICES

RFW LOT NO.: 9405L630-002

CLIENT ID: 1661B-084

SPIKE MULTIPLIER: 1

COMPOUND	AMOUNT SPIKED (ng)	SAMPLE WEIGHT (g)	FINAL SPIKE CONC. (ng/g)	SAMPLE CONCENTRATION (ng/g)	MS CONCENTRATION (ng/g)	MS % REC	REC QC LIMITS
2378-TCDD	25.0	10.0	2.5	0.0	2.7	108	50-150%
TCDD (TOTAL)	25.0	10.0	2.5	0.0	2.7	108	50-150%
2378-TCDF	25.0	10.0	2.5	0.0	2.4	96	50-150%
TCDF (TOTAL)	25.0	10.0	2.5	0.0	2.4	96	50-150%
12378-PECDD	62.5	10.0	6.3	0.0	6.9	110	50-150%
PECDD (TOTAL)	62.5	10.0	6.3	0.0	6.9	110	50-150%
12378-PECDF	62.5	10.0	6.3	0.0	7.0	112	50-150%
PECDF (TOTAL)	62.5	10.0	6.3	0.0	7.0	112	50-150%
123678-HXCDD	62.5	10.0	6.3	0.0	5.8	93	50-150%
HXCDD (TOTAL)	62.5	10.0	6.3	0.0	5.8	93	50-150%
123678-HXCDF	62.5	10.0	6.3	0.0	6.0	96	50-150%
HXCDF (TOTAL)	62.5	10.0	6.3	0.0	6.0	96	50-150%
1234678-HPCDD	62.5	10.0	6.3	0.0	7.5	120	50-150%
HPCDD (TOTAL)	62.5	10.0	6.3	0.0	7.5	120	50-150%
1234678-HPCDF	62.5	10.0	6.3	0.0	6.6	106	50-150%
HPCDF (TOTAL)	62.5	10.0	6.3	0.0	6.6	106	50-150%
OCDD	125.0	10.0	12.5	0.3	11.5	90	50-150%
OCDF	125.0	10.0	12.5	0.0	12.8	102	50-150%

COMPOUND	AMOUNT SPIKED (ng)	SAMPLE DUP. WEIGHT (g)	FINAL SPIKE CONC. (ng/g)	MSD CONCENTRATION (ng/g)	MSD % REC	% RPD	%RPD QC LIMIT	REC QC LIMITS
2378-TCDD	25.0	10.0	2.5	2.6	104	3.8	50%	50-150%
TCDD (TOTAL)	25.0	10.0	2.5	2.6	104	3.8	50%	50-150%
2378-TCDF	25.0	10.0	2.5	2.3	92	4.3	50%	50-150%
TCDF (TOTAL)	25.0	10.0	2.5	2.3	92	4.3	50%	50-150%
12378-PECDD	62.5	10.0	6.3	7.2	115	-4.3	50%	50-150%
PECDD (TOTAL)	62.5	10.0	6.3	7.2	115	-4.3	50%	50-150%
12378-PECDF	62.5	10.0	6.3	6.8	109	2.9	50%	50-150%
PECDF (TOTAL)	62.5	10.0	6.3	6.8	109	2.9	50%	50-150%
123678-HXCDD	62.5	10.0	6.3	5.8	93	0.0	50%	50-150%
HXCDD (TOTAL)	62.5	10.0	6.3	5.8	93	0.0	50%	50-150%
123678-HXCDF	62.5	10.0	6.3	6.7	107	-11	50%	50-150%
HXCDF (TOTAL)	62.5	10.0	6.3	6.7	107	-11	50%	50-150%
1234678-HPCDD	62.5	10.0	6.3	7.8	125	-3.9	50%	50-150%
HPCDD (TOTAL)	62.5	10.0	6.3	7.8	125	-3.9	50%	50-150%
1234678-HPCDF	62.5	10.0	6.3	6.7	107	-1.5	50%	50-150%
HPCDF (TOTAL)	62.5	10.0	6.3	6.7	107	-1.5	50%	50-150%
OCDD	125.0	10.0	12.5	11.8	92	-2.6	50%	50-150%
OCDF	125.0	10.0	12.5	11.7	94	9.0	50%	50-150%

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 0627-01-01Case No.: NUCLEAR FUEL SERVICESLab File ID: Z052608Lab Sample ID: 94LS0039-MB1Date Extracted: 05/23/94Extraction: (SepF/Cont/Sonc) CONTDate Analyzed: 05/26/94Time Analyzed: 1404Matrix: (Soil/Water) SOILLevel: (low/med) LOWInstrument ID: 4600Z

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	=====	=====	=====	=====
01	1661B-084	9405L630-002	Z052604	05/26/94
02	1661B-084MS	9405L630-002S	Z052605	05/26/94
03	1661B-084MSD	9405L630-002T	Z052606	05/26/94
04	1661B-062	9405L630-001	Z052609	05/26/94

COMMENTS:

V. SAMPLE DATA PACKAGE

- A. Sample Data in increasing RFW# order
 - 1. tabulated results
 - 2. mass chromatograms/quantitation report

ROY F. WESTON, INC.
PCDD/PCDF DATA SUMMARY

CLIENT: *Nuclear Fuel Services*

RFW NUMBER: *94052630-001*

SAMPLE ID: *1661B-062*

GC/MS FILENAME: *2052607*

DATE ANALYZED: *5/26/94*

C-13 TCDD RECOVERY: *82* %

MATRIX: *SxK*

C-13 TCDF RECOVERY: *74* %

SAMPLE AMOUNT: *10.0g*

C-13 HXCDD RECOVERY: *81* %

UNITS: *ng/g*

C-13 HPCDF RECOVERY: *79* %

C-13 OCDD RECOVERY: *85* %

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		<i>0.1</i>	<i>U</i>
TOTAL TCDD		<i>0.1</i>	<i>U</i>
TOTAL PECDD		<i>0.2</i>	<i>U</i>
TOTAL HXCDD	<i>0.6</i>	<i>0.1</i>	<i>JS</i>
TOTAL HPCDD	<i>5.0</i>	<i>0.1</i>	
OCDD	<i>11</i>	<i>0.1</i>	
2378-TCDF		<i>0.1</i>	<i>U</i>
TOTAL TCDF		<i>0.1</i>	<i>U</i>
TOTAL PECDF	<i>0.5</i>	<i>0.1</i>	<i>JS</i>
TOTAL HXCDF	<i>1.4</i>	<i>0.1</i>	
TOTAL HPCDF	<i>2.6</i>	<i>0.1</i>	
OCDF	<i>1.5</i>	<i>0.1</i>	

PCDD/PCDF DATA ANALYSIS

RFW #: 9405L630-001

TEST: OTDF

FILENAME: 2052609

WEIGHT: 10.0 G

ANALYSIS DATE: 05/26/94

CPC/WINDOW: 2052602

ANALYSIS TIME: 1450

DILUTION FACTOR: 1.000

ANALYST: JDL

OF DILUTION STEPS: 1

INSTRUMENT: 4600Z

% SOLIDS: 100 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7
1.0 to 20 for C1-8

UNITS: NG/G

*** INTERNAL STANDARD DATA ***

STANDARD	M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF (IS #2)	316 318	-- 200641	560000 715935	0.78	0.65-0.89	1.670	50	5.0	3.7	74 %
C13 1234-TCDD (RS #1)	332 334	NA NA	451183 580243	0.78	0.65-0.89	50 NG				
C13 2378-TCDD (IS #1)	332 334	-- 139953	400519 524893	0.76	0.65-0.89	1.099	50	5.0	4.1	82 %

		HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD (IS #3)	402 404	86395 --	386575 315983	0.82	0.69-0.93	0.951	50	5.0	4.0	81 %
C13 123789-HxCDD (RS #2)	402 404	NA NA	508042 408293	0.80	0.69-0.93	50 NG				
C13 1234678-HpCDF (IS #4)	420 422	221092 --	1075060 1003840	0.93	0.83-1.12	1.441	100	10.0	7.9	79 %
C13 OCDD (IS #5)	470 472	-- 101499	529679 572047	0.93	0.75-1.01	0.707	100	10.0	8.5	85 %

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

05/26/94

*** ANALYTE RESULTS ***

ANALYTE QUANTIFICATION:

(SUM of ANALYTE AREAS) x (IS AMOUNT in ng)

(SUM of IS AREAS) x (SAMPLE WT./VOL.) x (% SOLIDS) x (RESPONSE FACTOR)

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

2.5 x (NOISE HEIGHT) x (IS AMOUNT in ng)

(IS HEIGHT) x (SAMPLE WT./VOL.) x (% SOLIDS) x (RESPONSE FACTOR)

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

(under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA		320/322	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 320	m/z 322			m/z 320	m/z 322			
2378-TCDD	0.993	0	0	ERR	0.65-0.89	--	1000	0.0	0.1	0
TCDD #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #22	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD (TOTAL)	0.993					--	1100	0.0	0.1	0

TCDF (IS #2)	RRF	AREA		304/306	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 304	m/z 306			m/z 304	m/z 306			
2378-TCDF	0.993	0	0	ERR	0.65-0.89	--	1740	0.0	0.1	0
TCDF #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #11	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #12	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #38	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF (TOTAL)	0.993					--	1740	0.0	0.1	0

PeCDD (IS #1)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 356	m/z 358		m/z 356	m/z 358			
12378-PECDD	0.721	0	0	ERR	0.55-0.75	--	X	0.0	0.0 U
PeCDD #2	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDD #3	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDD #4	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDD #5	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDD #6	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDD #7	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDD #8	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDD #14	0.721	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PECDD (TOTAL)	0.721					--	1260	0.0	0.2 U

PeCDF (IS #2)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 340	m/z 342		m/z 340	m/z 342			
12378-PECDF	0.743	0	0	ERR	0.55-0.75	--	X	0.0	0.0 U
23478-PECDF	0.750	0	0	ERR	0.55-0.75	--	X	0.0	0.0 U
PeCDF #3	0.743	35536	21788	0.61	0.55-0.75	--	--	0.3	-- J
PeCDF #4	0.743	18885	12959	0.69	0.55-0.75	--	--	0.2	-- --
PeCDF #5	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDF #6	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDF #7	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDF #8	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDF #9	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDF #10	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDF #11	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PeCDF #28	0.743	0	0	ERR	0.55-0.75	--	--	0.0	-- --
PECDF (TOTAL)	0.743					--	1480	0.5	0.1 JS

HxCDD (IS #3)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 390	m/z 392		m/z 390	m/z 392			
123478-HxCDD	0.916	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
123678-HxCDD	1.053	16225	12536	0.77	0.69-0.93	X	--	0.2	0.0 JS
123789-HxCDD	1.035	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
HxCDD #4	0.916	24224	21928	0.91	0.69-0.93	--	--	0.4	-- --
HxCDD #5	0.916	6580	5752	0.87	0.69-0.93	--	--	0.1	-- --
HxCDD #6	0.916	0	0	ERR	0.69-0.93	--	--	0.0	-- --
HxCDD #7	0.916	0	0	ERR	0.69-0.93	--	--	0.0	-- --
HxCDD #10	0.916	0	0	ERR	0.69-0.93	--	--	0.0	-- --
HxCDD (TOTAL)	0.916					600	--	0.6	0.1 JS

HxCDF (IS #4)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 374	m/z 376		m/z 374	m/z 376			
123478-HxCDF	0.971	11141	9148	0.82	0.69-0.93	X	--	0.1	0.0 J
123678-HxCDF	1.087	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
234678-HxCDF	0.934	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
123789-HxCDF	0.866	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
HxCDF #5	0.866	18008	15900	0.88	0.69-0.93	--	--	0.2	-- J
HxCDF #6	0.866	51154	41837	0.82	0.69-0.93	--	--	0.5	-- --
HxCDF #7	0.866	54032	46700	0.86	0.69-0.93	--	--	0.6	-- --
HxCDF #8	0.866	0	0	ERR	0.69-0.93	--	--	0.0	-- --
HxCDF #9	0.866	0	0	ERR	0.69-0.93	--	--	0.0	-- --
HxCDF #10	0.866	0	0	ERR	0.69-0.93	--	--	0.0	-- --
HxCDF (TOTAL)	0.866					515	--	1.4	0.1 JS

DD (IS #3)	RRF	AREA		426/424	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 424	m/z 426			m/z 424	m/z 426			
1234678-HPCDD	0.844	197376	193900	0.98	0.83-1.12	X	--	3.3	0.0	
HPCDD #2	0.844	99966	107364	1.07	0.83-1.12	--	--	1.7	--	
HPCDD (TOTAL)	0.844					610	--	5.0	0.1	

HPCDF (IS #4)	RRF	AREA		410/408	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 408	m/z 410			m/z 408	m/z 410			
1234678-HPCDF	0.918	84965	82644	0.97	0.83-1.12	X	--	0.9	0.0	
1234789-HPCDF	0.745	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
HPCDF #3	0.745	137301	130000	0.95	0.83-1.12	--	--	1.7	--	
HPCDF #4	0.745	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HPCDF (TOTAL)	0.745					910	--	2.6	0.1	

OCDD (IS #5)	RRF	AREA		458/460	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 458	m/z 460			m/z 458	m/z 460			
OCDD (IS #5)	1.223	696811	761079	0.92	0.75-1.01	--	480	10.8	0.1	

OCDF (IS #5)	RRF	AREA		442/444	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 442	m/z 444			m/z 442	m/z 444			
OCDF (IS #5)	1.341	106412	119873	0.89	0.75-1.01	--	670	1.5	0.1	

BOY F. WESTON, Inc. - LIONVILLE
GCMS SPECIAL PROJECTS

GUIDE FOR LOCATING DIOXIN ANALYTES
USING RELATIVE RETENTION TIMES FROM DAILY STANDARDS

GCMS FILENAME: Z052609

WINDOW FILENAME: Z052602

RFW #: 9405L630-001

CCL FILENAME: Z052603

2378-SUBSTITUTED CONGENERS

ANALYTE WINDOW

INTERNAL STANDARD	* IS SCAN #	CONGENER	RRT	PREDICTED SCAN		FIRST	LAST
C13 2378-TCDD (IS #1)	1554	2378-TCDD	1.000	1554	TCDD	RRT WINDOW: 0.931 to 1.032 SCAN RANGE: 1447 to 1604	
		12378-PECDD	1.156	1796	PECDD	RRT WINDOW: 1.083 to 1.178 SCAN RANGE: 1683 to 1831	
3 2378-TCDF (IS #2)	1521	2378-TCDF	1.000	1521	TCDF	RRT WINDOW: 0.919 to 1.055 SCAN RANGE: 1398 to 1605	
		12378-PECDF	1.136	1728	PECDF	RRT WINDOW: 1.062 to 1.211 SCAN RANGE: 1615 to 1842	
		23478-PECDF	1.165	1772			
C13 123678-HxCDD (IS #3)	2049	123478-HxCDD	0.997	2043	HxCDD	RRT WINDOW: 0.949 to 1.012 SCAN RANGE: 1945 to 2074	
		123678-HxCDD	1.000	2049			
		123789-HxCDD	1.013	2076			
		1234678-HPCDD	1.136	2328	HPCDD	RRT WINDOW: 1.105 to 1.137 SCAN RANGE: 2264 to 2330	
C13 1234678-HpCDF (IS #4)	2237	123478-HxCDF	0.886	1982	HxCDF	RRT WINDOW: 0.851 to 0.940 SCAN RANGE: 1904 to 2103	
		123678-HxCDF	0.890	1991			
		234678-HxCDF	0.909	2033			
		123789-HxCDF	0.937	2096			
		1234678-HPCDF	1.000	2237	HPCDF	RRT WINDOW: 1.000 to 1.057 SCAN RANGE: 2237 to 2365	
		1234789-HPCDF	1.057	2365			
C13 OCDD (IS #5)	2604	OCDD	1.000	2604			
		OCDF	1.005	2617			

* Use the scan number from the ion with the largest area
unless the other ion has a better peak shape.

[Handwritten signature]
5/27/21
0020

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 9405L630-001

5.3.4

COND5.: 4600Z, GCZE, OTDFH1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0

QUAN: A 4, 1.0 J

Q BASE: U 20, 3

SCANS 1350 TO 1650

DATA: 2052609 #1

CALI: 2052609 #3

0021

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 9405L630-001 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052609 #1

CALI: Z052609 #3

SCANS 1400 TO 1650

0022

MIDMASS CHROMATOGRAMS
 05/26/94 14:50:00
 SAMPLE: 9405L530-001 NFS
 CONDS.: 45002, GC22, OTDFN1(AS)
 RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3
 DATA: 2052609 #1
 CALL: 2052609 #3
 SCANS 1500 TO 1570

0023

1500 1510 1520 1530 1540 1550 1560 1570 SCAN
 334 79.4 332 62.2 318 100.0 316 78.7 315 315.942 ± 0.500 158208. 333.934 ± 0.500 159488.

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 94051630-001

COND.: 46002, GC22, QTOFNI(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1570 TO 1850

DATA: 2052609 #1

CALI: 2052609 #3

NFS

1617

2048.

10584.

1657

1275.

3550.

1724

1515.

2672.

1751

1528.

4504.

1789

1422.

4560.

1827

1567.

7555.

30.1

277

2144.

276.900

± 0.500

1616

5847.

35536.

1556

1070.

4544.

1708

1269.

5906.

1747

1522.

5749.

1774

1874.

11745.

7120.

339.860

± 0.500

1617

4612.

21788.

1538

1477.

5472.

1703

1526.

2113.

1742

1403.

5816.

1788

1410.

6572.

1835

976.

4483.

4735.

341.856

± 0.500

1621

1419.

1824.

1549

1336.

3552.

1732

903.

3215.

1761

1044.

3030.

1822

1804.

8449.

1935.

409.800

± 0.500

1500

1700

1750

1800

1850

SCAN

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 94051630-001

COND.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052509 #1

CALI: 2052509 #3

SCANS 1640 TO 1850

LO
2
0
0

MIDMASS CHROMATOGRAMS

05/25/94 14:50:00

SAMPLE: 9405L530-001 NFS

COND.: 4500Z, GC2Z, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052509 #1

CALI: 2052509 #3

SCANS 1865 TO 2130

00200

SCAN

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 9405L530-001 NFS

CONDS.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052509 #1

CALI: 2052509 #3

SCANS 1900 TO 2100

0027

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 9405L630-001

COND5.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052509 #1

CALI: 2052509 #3

SCANS 1970 TO 2110

00200

100.0 402 79.6 404

401.855
± 0.500

86144.

403.853
± 0.500

SCAN

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 9405L630-001 NPS

CONDS.: 4600Z, GC2Z, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2.1.0

DATA: 2052509 #1

CALI: 2052509 #3

SCANS 2190 TO 2400

QUAN: A 4.1.0 J 0 BASE: U 20. 3

2273

5670.

29824.

21.0

2238

3404.

22250.

2206

898.

1547.

2332

1057.

5700.

2366

888.

1229.

5840.

344.900

± 0.500

2273

27684.

137301.

100.0

2238

17819.

84955.

2210

859.

2735.

2309

906.

2175.

2338

752.

2150.

2366

1354.

13581.

27872.

407.782

± 0.500

HPCDF

2273

25095.

130000.

94.7

2238

17004.

82544.

2203

782.

3248.

2307

788.

2325.

2328

787.

3776.

2352

843.

2432.

26400.

409.779

± 0.500

2275

1138.

4487.

2218

996.

3315.

2301

952.

2563.

2325

724.

949.

2347

477.

756.

2375

1142.

2288.

1392.

479.700

± 0.500

2200

2250

2300

2350

2400

SCAN

MIDMASS CHROMATOGRAMS

05/25/94 14:50:00

SAMPLE: 9405L630-001 NFS

CONDS.: 4500Z, GC2Z, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052509 #1

CALI: 2052509 #3

SCANS 2235 TO 2350

0000

HPD

2240 2260 2280 2300 2320 2340 2360 SCAN

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 9405L630-001 NFS

CONDS.: 4500Z, GC22, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052609 #1

CALI: 2052609 #3

SCANS 2180 TO 2300

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 94051630-001 NFS

CONDS.: 4600Z, GC22, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2.1.0 QIAN: A 4.1.0 J 0 BASE: U 20.3

DATA: 2052609 #1

CALI: 2052609 #3

SCANS 2530 TO 2650

2
0
0
3
2

MIDMASS CHROMATOGRAMS
 05/26/94 14:50:00
 SAMPLE: 9405L630-001 NFS
 CONDS.: 4600Z, GC2Z, OTDFN1(A5)
 RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3
 DATA: 2052609 #1
 CALI: 2052609 #3
 SCANS 2530 TO 2660

DATA: 2052609 #1
CALI: 2052609 #3

52

COND5.: 4600Z, GCZZ, OTDFN1 (AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

0303D

MIDMASS CHROMATOGRAMS

05/26/94 14:50:00

SAMPLE: 9405L630-001

NFS

CONDS.: 4600Z, GC22, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0

QUAN: A 4, 1.0 J

BASE: U 20, 3

SCANS 2530 TO 2660

DATA: 2052609 #1

CALI: 2052609 #3

7800

93824.

469.778
± 0.500

101632.

471.775
± 0.500

ROY F. WESTON, INC.

PCDD/PCDF DATA SUMMARY

CLIENT: *Nuclear Fuel Services* RFW NUMBER: *9405L630-002*
 SAMPLE ID: *1661B-084* GC/MS FILENAME: *7052604*
 DATE ANALYZED: *5/26/94* C-13 TCDD RECOVERY: *84* %
 MATRIX: *SOIL* C-13 TCDF RECOVERY: *77* %
 SAMPLE AMOUNT: *10.0g* C-13 HXCDD RECOVERY: *84* %
 UNITS: *ng/g* C-13 HPCDF RECOVERY: *84* %
 C-13 OCDD RECOVERY: *90* %

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		<i>0.1</i>	<i>U</i>
TOTAL TCDD		<i>0.1</i>	<i>U</i>
TOTAL PECDD		<i>0.2</i>	<i>U</i>
TOTAL HXCDD		<i>0.2</i>	<i>U</i>
TOTAL HPCDD		<i>0.2</i>	<i>U</i>
OCDD	<i>0.3</i>	<i>0.2</i>	<i>JS</i>
2378-TCDF		<i>0.1</i>	<i>U</i>
TOTAL TCDF		<i>0.1</i>	<i>U</i>
TOTAL PECDF		<i>0.2</i>	<i>U</i>
TOTAL HXCDF		<i>0.1</i>	<i>U</i>
TOTAL HPCDF		<i>0.1</i>	<i>U</i>
OCDF		<i>0.2</i>	<i>U</i>

PCDD/PCDF DATA ANALYSIS

RFW #: 9405L630-002

TEST: OTDF

FILENAME: Z052604

WEIGHT: 10.0 G

ANALYSIS DATE: 05/26/94

CPC/WINDOW: Z052602

ANALYSIS TIME: 1104

DILUTION FACTOR: 1.000

ANALYST: JDL

OF DILUTION STEPS: 1

INSTRUMENT: 4600Z

% SOLIDS: 100 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7
1.0 to 20 for C1-8

UNITS: NG/G

*** INTERNAL STANDARD DATA ***

STANDARD	M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RE or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF (IS #2)	316	--	447394	0.79	0.65-0.89	1.670	50	5.0	3.8	77 %
	318	157472	563953							
		HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD (RS #1)	332	NA	339306	0.75	0.65-0.89	50 NG				
	334	NA	449748							
C13 2378-TCDD (IS #1)	332	--	313978	0.76	0.65-0.89	1.099	50	5.0	4.2	84 %
	334	107836	413399							

		HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD (IS #3)	402	61977	271364	0.82	0.69-0.93	0.951	50	5.0	4.2	84 %
	404	--	221352							
C13 123789-HxCDD (RS #2)	402	NA	346752	0.79	0.69-0.93	50 NG				
	404	NA	273213							
		HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF (IS #4)	420	161977	781119	0.93	0.83-1.12	1.441	100	10.0	8.4	84 %
	422	--	725423							
		HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD (IS #5)	470	--	375692	0.91	0.75-1.01	0.707	100	10.0	9.0	90 %
	472	75885	412235							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

0036

*** ANALYTE RESULTS ***

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

(under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA		320/322	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 320	m/z 322			m/z 320	m/z 322			
2378-TCDD	0.993	0	0	ERR	0.65-0.89	--	1140	0.0	0.1	0
TCDD #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #22	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD (TOTAL)	0.993					--	1140	0.0	0.1	0

TCDF (IS #2)	RRF	AREA		304/306	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 304	m/z 306			m/z 304	m/z 306			
2378-TCDF	0.993	0	0	ERR	0.65-0.89	--	1070	0.0	0.1	0
TCDF #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #11	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #12	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #38	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF (TOTAL)	0.993					--	1390	0.0	0.1	0

0037

PeCDD (IS #1)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 356	m/z 358		m/z 356	m/z 358			
12378-PECDD	0.721	0	0	ERR	0.55-0.75	--	X	0.0	0.0 U
PeCDD #2	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDD #3	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDD #4	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDD #5	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDD #6	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDD #7	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDD #8	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDD #14	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--
PECDD (TOTAL)	0.721					--	1300	0.0	0.2 U

PeCDF (IS #2)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 340	m/z 342		m/z 340	m/z 342			
12378-PECDF	0.743	0	0	ERR	0.55-0.75	--	X	0.0	0.0 U
23478-PECDF	0.750	0	0	ERR	0.55-0.75	--	X	0.0	0.0 U
PeCDF #3	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #4	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #5	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #6	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #7	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #8	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #9	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #10	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #11	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PeCDF #28	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--
PECDF (TOTAL)	0.743					--	1420	0.0	0.2 U

HxCDD (IS #3)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 390	m/z 392		m/z 390	m/z 392			
123478-HxCDD	0.916	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
123678-HxCDD	1.053	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
123789-HxCDD	1.035	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
HxCDD #4	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDD #5	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDD #6	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDD #7	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDD #10	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDD (TOTAL)	0.916					760	--	0.0	0.2 U

HxCDF (IS #4)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 374	m/z 376		m/z 374	m/z 376			
123478-HxCDF	0.971	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
123678-HxCDF	1.087	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
234678-HxCDF	0.934	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
123789-HxCDF	0.866	0	0	ERR	0.69-0.93	X	--	0.0	0.0 U
HxCDF #5	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDF #6	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDF #7	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDF #8	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDF #9	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDF #10	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--
HxCDF (TOTAL)	0.866					620	--	0.0	0.0 U

HpCDD (IS #3)	RRF	AREA		426/424	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 424	m/z 426			m/z 424	m/z 426			
1234678-HPCDD	0.844	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
HpCDD #2	0.844	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HPCDD (TOTAL)	0.844					740	--	0.0	0.2	U

HpCDF (IS #4)	RRF	AREA		410/408	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 408	m/z 410			m/z 408	m/z 410			
1234678-HPCDF	0.918	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
1234789-HPCDF	0.745	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
HpCDF #3	0.745	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HpCDF #4	0.745	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HPCDF (TOTAL)	0.745					710	--	0.0	0.1	U

OCDD (IS #5)	RRF	AREA		458/460	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 458	m/z 460			m/z 458	m/z 460			
1.223	14208	15464	0.92	0.75-1.01	--	680	0.3	0.2	J S	

OCDF (IS #5)	RRF	AREA		442/444	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 442	m/z 444			m/z 442	m/z 444			
1.341	0	0	ERR	0.75-1.01	--	670	0.0	0.2	U	

ROY F. WESTON, Inc. - LIONVILLE
GCMS SPECIAL PROJECTS

GUIDE FOR LOCATING DIOXIN ANALYTES
USING RELATIVE RETENTION TIMES FROM DAILY STANDARDS

GCMS FILENAME: Z052604

WINDOW FILENAME: Z052602

RFW #: 94051630-002

CCL FILENAME: Z052603

2378-SUBSTITUTED CONGENERS

ANALYTE WINDOW

INTERNAL STANDARD	* IS SCAN #	CONGENER	RRT	PREDICTED SCAN		FIRST	LAST
C13 2378-TCDD (IS #1)	1551	2378-TCDD	1.000	1551	TCDD	RRT WINDOW: 0.931 to 1.032 SCAN RANGE: 1444 to 1601	
		12378-PECDD	1.156	1793	PECDD	RRT WINDOW: 1.083 to 1.178 SCAN RANGE: 1680 to 1827	
C13 2378-TCDF (IS #2)	1519	2378-TCDF	1.000	1519	TCDF	RRT WINDOW: 0.919 to 1.055 SCAN RANGE: 1396 to 1603	
		12378-PECDF	1.136	1726	PECDF	RRT WINDOW: 1.062 to 1.211 SCAN RANGE: 1613 to 1840	
		23478-PECDF	1.165	1770			
C13 123678-HxCDD (IS #3)	2045	123478-HxCDD	0.997	2039	HxCDD	RRT WINDOW: 0.949 to 1.012 SCAN RANGE: 1941 to 2070	
		123678-HxCDD	1.000	2045			
		123789-HxCDD	1.013	2072			
		1234678-HPCDD	1.136	2323	HPCDD	RRT WINDOW: 1.105 to 1.137 SCAN RANGE: 2260 to 2325	
C13 1234678-HpCDF (IS #4)	2232	123478-HxCDF	0.886	1978	HxCDF	RRT WINDOW: 0.851 to 0.940 SCAN RANGE: 1899 to 2098	
		123678-HxCDF	0.890	1986			
		234678-HxCDF	0.909	2029			
		123789-HxCDF	0.937	2091			
		1234678-HPCDF	1.000	2232	HPCDF	RRT WINDOW: 1.000 to 1.057 SCAN RANGE: 2232 to 2359	
		1234789-HPCDF	1.057	2359			
C13 OCDD (IS #5)	2600	OCDD	1.000	2600			
		OCDF	1.005	2613			

* Use the scan number from the ion with the largest area
unless the other ion has a better peak shape.

[Signature]
5/27/94
0040

MIDPASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L630-002 NFS

COND5.: 4500Z, GCZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1350 TO 1650

DATA: 2052604 #1

CALI: 2052604 #3

1200

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 94051630-002 NFS

CONDS.: 4500Z, GC22, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052504 #1

CALI: 2052504 #3

SCANS 1400 TO 1650

0042

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L630-002 NFS

COND5.: 4600Z, GCZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052604 #1 SCANS 1500 TO 1570

CALI: 2052604 #3

£ 7 0 0

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 94051630-002 NFS

COND5.: 4600Z, GC22, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052604 #1

CALI: 2052604 #3

SCANS 1570 TO 1850

7700

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L630-002 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052504 #1

CALI: Z052504 #3

SCANS 1640 TO 1850

2700

1650 1700 1750 1800 1850 SCAN

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L530-002 NFS

CONDS.: 46002, GC22, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052604 #1

CALI: 2052604 #3

SCANS 1865 TO 2130

9700

1963 2072

1541.

8434.

2009

1323.

1736.

1534.

1792.

1930

1124.

5528.

2116

1229.

3104.

1872.

310.900
± 0.500

95.9

311

2091

913.

2732.

2023

654.

2080.

1986

605.

1104.

1923

624.

1616.

1894

539.

965.

61.5

374

1200.

373.821
± 0.500

1920

980.

980.

1954

953.

1344.

2007

667.

3840.

2069

714.

2445.

HEAD

57.4

376

1120.

375.817
± 0.500

2004

1706.

2372.

2103

1401.

5365.

2060

1009.

3777.

1961

939.

1792.

1908

955.

1960.

100.0

446

1952.

445.700
± 0.500

1900

25.00

1950

25.00

2000

25.00

2050

27.00

2100

28.00

SCAN

TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L630-002 NFS

CONDS.: 4600Z, GCZZ, OTIDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1900 TO 2100

DATA: 2052504 #1

CALI: 2052504 #3

77.00

HCCD

190. 25.00

1950 25.00

26 25.40

2050 27.00

3 SCAN 26.00 TIME

MIDMASS CHROMATOGRAMS
 05/26/94 11:04:00
 DATA: 2052604 #1
 CALI: 2052604 #3
 SAMPLE: 9405L630-002 NFS
 CONDS.: 4600Z, GC22, OTDFN1(AS)
 RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1970 TO 2110

0700

75904.

$^{13}C_{12}$ 123678 H4CDD
 $^{13}C_{12}$ 123789 HyCDD

401.855
± 0.500

61504.

403.853
± 0.500

SCAN
TIME

MID-MASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L630-002 NFS

COND5.: 4600Z, GCZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2190 TO 2400

DATA: 2052604 #1

CILI: Z052604 #3

22-00 SCARF TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 94051630-002 NFS

CONDS.: 4600Z, GC22, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2235 TO 2360

DATA: 2052604 #1

CALI: 2052604 #3

0
0
0
0

100.0

361

2246
1152.
2448.

2272
1552.
3184.

2291
1704.
7084.

2313
1253.
3784.
3659.

2342
607.
2355.

360.800
± 0.500

1936.

2259
994.
4792.

66.9

424

2287
489.
908.

2313
758.
3176.

2334
739.
1384.

2348
402.
1355.

1296.

423.777
± 0.500

HpCDD

96.7

426

2259
1256.
9248.

2247
563.
1654.

2280
487.
2020.

2298
610.
2253.

2314
809.
3300.

2323
1624.
8227.

2339
562.
1849.

1872.

425.774
± 0.500

40
no. 50

2250
no. 60

2280
no. 70

2310
no. 80

2320
no. 90

2340
no. 100

SCAN
TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L630-002 NFS

COND5.: 4500Z, GC22, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2180 TO 2300

DATA: 2052504 #1

CALI: 2052504 #3

1
L
0
0

74240.
417.824
± 0.500

162048.
419.822
± 0.500

151296.
421.818
± 0.500

¹³C₁₂ 1234678 H₂PCDF

2180 2200 2220 2240 2260 2280 2300
NO. 01 NO. 02 NO. 03 NO. 04 NO. 05 NO. 06 NO. 07 NO. 08 NO. 09 NO. 10
SCAN
NO. 10 TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 94051630-002 NFS

COND.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2530 TO 2660

DATA: 2052604 #1

CALI: 2052604 #3

2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660

SCAN TIME

MID-MASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L530-002 NFS

CONDS.: 4600Z, GC2Z, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2530 TO 2660

DATA: Z052604 #1

CALI: 2052604 #3

MIDMASS CHROMATOGRAMS

05/26/94 11:04:00

SAMPLE: 9405L630-002 NFS

COND.: 4600Z, GC2Z, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20. 3

DATA: 2052604 #1

CALI: 2052604 #3

SCANS 2530 TO 2660

7 6 0 0

91.6

470

69531.
375692.

2600

2571
492.
708.

2622
403.
712.

2542
657.
1588.

469.778
± 0.500

100.0

472

2600
75885.
412235.

12.12 ODD

2561
475.
780.

2583
721.
1048.

2624
454.
1200.

2649
571.
816.

471.775
± 0.500

2540
20.50

2550
21.00

2580
21.21

2600
21.48

2620
21.56

2640
25.10

SCAN
25.20 TIME

VI. STANDARDS DATA PACKAGE

- A. System Performance Check Analysis
- B. Analysis Run Log
- C. Initial Calibration Summary & Mass Chromatograms
- D. Continuing Calibration Summary & Mass Chromatograms

6DFD
METHOD 8280 PCDD/PCDF INITIAL CALIBRATION

Lab Name: Roy F. Weston. Inc. - Lionville Contract: 10627-001-001-9999-00
Client: NUCLEAR FUEL SERVICES RFW Lot: 9405L630
GC Column: 60m x 0.32mm ID x 0.25um DB-5 Instrument ID: 4600Z

Init. Calib. Dates: 03/24/94, 03/25/94, 03/28/94

STANDARD: CC1

FILENAMES

COMPOUND NAME	Z032403	Z032504	Z032804	DEVIATION	MEAN	%RSD
2378-TCDD	0.961	0.898	0.987	0.0458	0.9487	4.8
2378-TCDF	0.977	0.888	0.939	0.0447	0.9347	4.8
12378-PeCDF	0.599	0.700	0.778	0.0897	0.6923	13.0
12378-PeCDD	0.634	0.611	0.681	0.0357	0.6420	5.6
123478-PeCDF	0.606	0.685	0.804	0.0997	0.6983	14.3
123478-HxCDF	0.870	0.839	0.847	0.0161	0.8520	1.9
123678-HxCDF	0.937	0.929	1.023	0.0521	0.9630	5.4
123478-HxCDD	0.789	0.799	0.843	0.0287	0.8103	3.5
123678-HxCDD	0.932	0.939	1.033	0.0564	0.9680	5.8
123789-HxCDD	0.943	0.924	0.986	0.0318	0.9510	3.3
234678-HxCDF	0.823	0.798	0.832	0.0176	0.8177	2.2
123789-HxCDF	0.747	0.749	0.820	0.0416	0.7720	5.4
1234678-HpCDF	0.827	0.800	0.905	0.0545	0.8440	6.5
1234678-HpCDD	0.694	0.680	0.873	0.1076	0.7490	14.4
1234789-HpCDF	0.574	0.624	0.752	0.0918	0.6500	14.1
OCDD	1.110	1.144	1.096	0.0247	1.1167	2.2
OCDF	1.178	1.174	1.098	0.0451	1.1500	3.9
13C-2378-TCDD	1.121	1.093	1.079	0.0214	1.0977	1.9
13C-2378-TCDF	1.801	1.602	1.651	0.1037	1.6847	6.2
13C-123678-HxCDD	0.930	0.956	0.976	0.0231	0.9540	2.4
13C-1234678-HpCDF	1.457	1.473	1.474	0.0095	1.4680	0.6
13C-OCDD	0.637	0.682	0.760	0.0622	0.6930	9.0

QC Limit: %RSD must be less than or equal to 15.0%

0056

6DFE

lit. Calib. Dates: 03/24/94. 03/25/94. 03/28/94

STANDARD: CC2

FILENAMES

COMPOUND NAME	Z032404	Z032508	Z032805	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	0.975	0.971	0.992	0.0112	0.9793	1.1
2378-TCDF	1.002	0.969	0.986	0.0165	0.9857	1.7
12378-PeCDF	0.698	0.741	0.769	0.0358	0.7360	4.9
12378-PeCDD	0.709	0.698	0.707	0.0059	0.7047	0.8
23478-PeCDF	0.673	0.728	0.817	0.0727	0.7393	9.8
123478-HxCDF	0.930	0.960	0.888	0.0362	0.9260	3.9
123678-HxCDF	1.058	1.123	0.983	0.0701	1.0547	6.6
123478-HxCDD	0.801	0.917	0.897	0.0620	0.8717	7.1
123678-HxCDD	0.993	1.134	1.041	0.0717	1.0560	6.8
123789-HxCDD	0.948	1.026	1.004	0.0402	0.9927	4.1
234678-HxCDF	0.896	0.983	0.813	0.0850	0.8973	9.5
123789-HxCDF	0.837	0.881	0.781	0.0501	0.8330	6.0
1234678-HpCDF	0.917	0.976	0.892	0.0431	0.9283	4.6
1234678-HpCDD	0.687	0.871	0.827	0.0961	0.7950	12.1
1234789-HpCDF	0.674	0.733	0.700	0.0296	0.7023	4.2
OCDD	1.149	1.283	1.192	0.0684	1.2080	5.7
OCDF	1.233	1.324	1.179	0.0733	1.2453	5.9
13C-2378-TCDD	1.087	1.089	1.091	0.0020	1.0890	0.2
13C-2378-TCDF	1.768	1.587	1.635	0.0938	1.6633	5.6
13C-123678-HxCDD	0.992	0.959	0.976	0.0165	0.9757	1.7
13C-1234678-HpCDF	1.461	1.434	1.520	0.0440	1.4717	3.0
13C-OCDD	0.682	0.734	0.764	0.0415	0.7267	5.7

STANDARD: CC3

FILENAMES

COMPOUND NAME	Z032405	Z032503	Z032809	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	1.066	0.981	1.060	0.0474	1.0357	4.6
2378-TCDF	1.086	0.951	0.990	0.0695	1.0090	6.9
12378-PeCDF	0.731	0.710	0.814	0.0550	0.7517	7.3
12378-PeCDD	0.788	0.678	0.769	0.0588	0.7450	7.9
23478-PeCDF	0.730	0.717	0.826	0.0595	0.7577	7.9
123478-HxCDF	1.088	1.029	0.959	0.0646	1.0253	6.3
123678-HxCDF	1.160	1.181	1.102	0.0409	1.1477	3.6
123478-HxCDD	0.924	0.946	0.904	0.0210	0.9247	2.3
123678-HxCDD	1.088	1.051	1.085	0.0206	1.0747	1.9
123789-HxCDD	1.095	1.032	1.078	0.0326	1.0683	3.1
234678-HxCDF	1.007	0.994	0.962	0.0232	0.9877	2.3
123789-HxCDF	0.948	0.889	0.897	0.0320	0.9113	3.5
1234678-HpCDF	0.956	0.938	0.975	0.0185	0.9563	1.9
1234678-HpCDD	0.801	0.824	0.892	0.0473	0.8390	5.6
1234789-HpCDF	0.760	0.754	0.772	0.0092	0.7620	1.2
OCDD	1.264	1.318	1.258	0.0330	1.2800	2.6
OCDF	1.433	1.373	1.407	0.0301	1.4043	2.1
13C-2378-TCDD	1.070	1.056	1.088	0.0160	1.0713	1.5
13C-2378-TCDF	1.743	1.574	1.632	0.0859	1.6497	5.2
13C-123678-HxCDD	0.930	0.945	0.948	0.0096	0.9410	1.0
13C-1234678-HpCDF	1.359	1.416	1.434	0.0392	1.4035	2.8
13C-OCDD	0.605	0.683	0.727	0.0618	0.6717	9.2

QC Limit: %RSD must be less than or equal to 15.0%

6DFF

lit. Calib. Dates: 03/24/94, 03/25/94, 03/28/94

STANDARD: CC4

FILENAMES

COMPOUND NAME	2032406	2032506	2032807	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	1.020	0.978	0.991	0.0215	0.9963	2.2
2378-TCDF	1.075	0.999	0.979	0.0506	1.0177	5.0
12378-PeCDF	0.725	0.771	0.782	0.0302	0.7593	4.0
12378-PeCDD	0.756	0.711	0.736	0.0225	0.7343	3.1
23478-PeCDF	0.757	0.736	0.806	0.0359	0.7663	4.7
123478-HxCDF	1.088	1.007	0.958	0.0657	1.0177	6.5
123678-HxCDF	1.166	1.123	1.095	0.0358	1.1280	3.2
123478-HxCDD	0.979	0.983	0.951	0.0174	0.9710	1.8
123678-HxCDD	1.062	1.100	1.034	0.0331	1.0653	3.1
123789-HxCDD	1.085	1.046	1.091	0.0244	1.0740	2.3
234678-HxCDF	0.999	0.965	0.952	0.0243	0.9720	2.5
123789-HxCDF	0.943	0.909	0.853	0.0454	0.9017	5.0
1234678-HpCDF	0.920	0.916	0.922	0.0031	0.9193	0.3
1234678-HpCDD	0.841	0.931	0.914	0.0478	0.8953	5.3
1234789-HpCDF	0.806	0.782	0.803	0.0131	0.7970	1.6
OCDD	1.251	1.259	1.179	0.0441	1.2297	3.6
OCDF	1.495	1.431	1.374	0.0605	1.4333	4.2
13C-2378-TCDD	1.123	1.096	1.133	0.0191	1.1173	1.7
13C-2378-TCDF	1.753	1.561	1.655	0.0960	1.6563	5.8
13C-123678-HxCDD	0.934	0.946	0.966	0.0162	0.9487	1.7
13C-1234678-HpCDF	1.353	1.462	1.515	0.0826	1.4433	5.7
13C-OCDD	0.645	0.730	0.791	0.0733	0.7220	10.2

STANDARD: CC5

FILENAMES

COMPOUND NAME	2032407	2032507	2032808	STANDARD DEVIATION	MEAN	%RSD
2378-TCDD	1.046	0.975	0.989	0.0376	1.0033	3.7
2378-TCDF	1.067	0.991	0.996	0.0425	1.0180	4.2
12378-PeCDF	0.732	0.761	0.828	0.0492	0.7737	6.4
12378-PeCDD	0.790	0.740	0.804	0.0336	0.7780	4.3
23478-PeCDF	0.729	0.771	0.864	0.0691	0.7880	8.8
123478-HxCDF	1.121	1.037	0.948	0.0865	1.0353	8.4
123678-HxCDF	1.168	1.181	1.073	0.0590	1.1407	5.2
123478-HxCDD	1.003	0.969	1.039	0.0350	1.0037	3.5
123678-HxCDD	1.131	1.059	1.108	0.0368	1.0993	3.3
123789-HxCDD	1.107	1.047	1.117	0.0379	1.0903	3.5
234678-HxCDF	1.021	1.000	0.960	0.0310	0.9937	3.1
123789-HxCDF	0.975	0.925	0.843	0.0666	0.9143	7.3
1234678-HpCDF	0.968	0.956	0.907	0.0323	0.9437	3.4
1234678-HpCDD	0.893	0.946	0.984	0.0457	0.9410	4.9
1234789-HpCDF	0.848	0.795	0.798	0.0298	0.8137	3.7
OCDD	1.291	1.321	1.235	0.0437	1.2823	3.4
OCDF	1.514	1.492	1.411	0.0542	1.4723	3.7
13C-2378-TCDD	1.133	1.137	1.095	0.0232	1.1217	2.1
13C-2378-TCDF	1.834	1.629	1.625	0.1195	1.6960	7.0
13C-123678-HxCDD	0.952	0.945	0.910	0.0225	0.9357	2.4
13C-1234678-HpCDF	1.392	1.393	1.474	0.0471	1.4197	3.3
13C-OCDD	0.682	0.702	0.777	0.0501	0.7203	7.0

QC Limit: %RSD must be less than or equal to 15.0%

6DFG

Init. Calib. Dates: 03/24/94. 03/25/94. 03/28/94

COMPOUND NAME	MEANS					AVERAGE RRF
	CC1	CC2	CC3	CC4	CC5	
2378-TCDD	0.9487	0.9793	1.0357	0.9963	1.0033	0.993
2378-TCDF	0.9347	0.9857	1.0090	1.0177	1.0180	0.993
12378-PeCDF	0.6923	0.7360	0.7517	0.7593	0.7737	0.743
12378-PeCDD	0.6420	0.7047	0.7450	0.7343	0.7780	0.721
23478-PeCDF	0.6983	0.7393	0.7577	0.7663	0.7880	0.750
123478-HxCDF	0.8520	0.9260	1.0253	1.0177	1.0353	0.971
123678-HxCDF	0.9630	1.0547	1.1477	1.1280	1.1407	1.087
123478-HxCDD	0.8103	0.8717	0.9247	0.9710	1.0037	0.916
123678-HxCDD	0.9680	1.0560	1.0747	1.0653	1.0993	1.053
123789-HxCDD	0.9510	0.9927	1.0683	1.0740	1.0903	1.035
234678-HxCDF	0.8177	0.8973	0.9877	0.9720	0.9937	0.934
123789-HxCDF	0.7720	0.8330	0.9113	0.9017	0.9143	0.866
234678-HpCDF	0.8440	0.9283	0.9563	0.9193	0.9437	0.918
234678-HpCDD	0.7490	0.7950	0.8390	0.8953	0.9410	0.844
1234789-HpCDF	0.6500	0.7023	0.7620	0.7970	0.8137	0.745
OCDD	1.1167	1.2080	1.2800	1.2297	1.2823	1.223
OCDF	1.1500	1.2453	1.4043	1.4333	1.4723	1.341
13C-2378-TCDD	1.0977	1.0890	1.0713	1.1173	1.1217	1.099
13C-2378-TCDF	1.6847	1.6633	1.6497	1.6563	1.6960	1.670
13C-123678-HxCDD	0.9540	0.9757	0.9410	0.9487	0.9357	0.951
13C-1234678-HpCDF	1.4680	1.4717	1.4030	1.4433	1.4197	1.441
13C-OCDD	0.6930	0.7267	0.6717	0.7220	0.7203	0.707

6DFA
PCDD/PCDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville

W.O. # : 10627-001-001-9999-00

Client: NUCLEAR FUEL SERVICES

RFW Lot: 9405L630

GC Column: 60m x 0.32mm ID x 0.25 um DB-5

Instrument ID: 4600Z

Init. Calib. Date(s): 03/24/94

CC1: Z032403 CC2: Z032404 CC3: Z032405 CC4: Z032406 CC5: Z032407

NATIVE ANALYTES VS. INTERNAL STDS.	RRF (N)					MEAN RRF	%RSD
	CC1	CC2	CC3	CC4	CC5		
=====	=====	=====	=====	=====	=====	=====	=====
2378-TCDD	0.961	0.975	1.066	1.020	1.046	1.013	4.4
2378-TCDF	0.977	1.002	1.086	1.075	1.067	1.041	4.7
12378-PeCDF	0.599	0.698	0.731	0.725	0.732	0.697	8.1
13478-PeCDD	0.634	0.709	0.788	0.756	0.790	0.735	8.9
23478-PeCDF	0.606	0.673	0.730	0.757	0.729	0.699	8.6
123478-HxCDF	0.870	0.930	1.088	1.088	1.121	1.020	11.0
123678-HxCDF	0.937	1.058	1.160	1.166	1.168	1.098	9.2
123478-HxCDD	0.789	0.801	0.924	0.979	1.003	0.899	11.0
123678-HxCDD	0.932	0.993	1.088	1.062	1.131	1.041	7.6
123789-HxCDD	0.943	0.948	1.095	1.085	1.107	1.035	8.0
234678-HxCDF	0.823	0.896	1.007	0.999	1.021	0.949	9.1
123789-HxCDF	0.747	0.837	0.948	0.943	0.975	0.890	10.7
1234678-HpCDF	0.827	0.917	0.956	0.920	0.968	0.918	6.0
1234678-HpCDD	0.694	0.687	0.801	0.841	0.893	0.783	11.6
1234789-HpCDF	0.574	0.674	0.760	0.806	0.848	0.733	14.9
OCDD	1.110	1.149	1.264	1.251	1.291	1.213	6.5
OCDF	1.178	1.233	1.433	1.495	1.514	1.371	11.3
INTERNAL STANDARDS VS. RECOVERY STDS.							
=====	=====	=====	=====	=====	=====	=====	=====
13C-2378-TCDD	1.121	1.087	1.070	1.123	1.133	1.107	2.4
13C-2378-TCDF	1.801	1.768	1.743	1.753	1.834	1.780	2.1
13C-123678-HxCDD	0.930	0.992	0.930	0.934	0.952	0.948	2.8
13C-1234678-HpCDF	1.457	1.461	1.359	1.353	1.392	1.404	3.7
13C-OCDD	0.637	0.682	0.605	0.645	0.682	0.650	5.0

QC Limits: %RSD must be less than or equal to 15.0%

6DEFB
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
Client: NUCLEAR FUEL SERVICES RFW Lot: 9405L630
GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z
Init. Calib. Date(s): 03/24/94
CC1: Z032403 CC2: Z032404 CC3: Z032405 CC4: Z032406 CC5: Z032407

NATIVE ANALYTES	SELECTED IONS	ION ABUNDANCE RATIO					FLAG	QC LIMITS
		CC1	CC2	CC3	CC4	CC5		
=====	=====	=====	=====	=====	=====	=====	=====	=====
2378-TCDD	320/322	0.84	0.80	0.80	0.80	0.81		0.65-0.89
2378-TCDF	304/306	0.80	0.77	0.78	0.77	0.79		0.65-0.89
12378-PeCDF	342/340	0.68	0.62	0.64	0.65	0.65		0.55-0.75
12378-PeCDD	358/356	0.56	0.61	0.63	0.63	0.65		0.55-0.75
23478-PeCDF	342/340	0.65	0.64	0.66	0.67	0.66		0.55-0.75
123478-HxCDF	376/374	0.78	0.79	0.77	0.79	0.80		0.69-0.93
123678-HxCDF	376/374	0.82	0.82	0.77	0.77	0.80		0.69-0.93
123478-HxCDD	392/390	0.74	0.76	0.78	0.81	0.81		0.69-0.93
123678-HxCDD	392/390	0.78	0.75	0.80	0.78	0.78		0.69-0.93
123789-HxCDD	392/390	0.78	0.79	0.83	0.80	0.80		0.69-0.93
234678-HxCDF	376/374	0.76	0.79	0.79	0.79	0.79		0.69-0.93
123789-HxCDF	376/374	0.79	0.78	0.79	0.80	0.80		0.69-0.93
1234678-HpCDF	410/408	1.01	0.94	0.95	0.97	0.96		0.83-1.12
1234678-HpCDD	426/424	0.93	0.97	1.00	0.99	1.01		0.83-1.12
1234789-HpCDF	410/408	0.92	0.99	0.96	0.95	0.98		0.83-1.12
OCDD	458/460	0.93	0.91	0.92	0.93	0.93		0.75-1.01
OCDF	442/444	0.88	0.86	0.88	0.90	0.88		0.75-1.01
INTERNAL STANDARDS								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-2378-TCDD	332/334	0.76	0.74	0.75	0.76	0.76		0.65-0.89
13C-2378-TCDF	316/318	0.75	0.76	0.76	0.76	0.76		0.65-0.89
13C-123678-HxCDD	404/402	0.80	0.78	0.80	0.80	0.77		0.69-0.93
13C-123678-HpCDF	422/420	0.93	0.92	0.93	0.97	0.93		0.83-1.12
13C-OCDD	470/472	0.90	0.91	0.93	0.94	0.92		0.75-1.01
RECOVERY STANDARDS								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-1234-TCDD	332/334	0.75	0.77	0.76	0.78	0.76		0.65-0.89
13C-123789-HxCDD	404/402	0.79	0.80	0.78	0.80	0.79		0.69-0.93

QC limits represent +/- 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

6DFA
PCDD/PCDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
 Client: NUCLEAR FUEL SERVICES RFW Lot: 9405L630
 GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z
 Init. Calib. Date(s): 03/25/94
 CC1: Z032504 CC2: Z032508 CC3: Z032503 CC4: Z032506 CC5: Z032507

NATIVE ANALYTES VS. INTERNAL STDS.	RRF (N)					MEAN RRF	%RSD
	CC1	CC2	CC3	CC4	CC5		
=====	=====	=====	=====	=====	=====	=====	=====
2378-TCDD	0.898	0.971	0.981	0.978	0.975	0.960	3.7
2378-TCDF	0.888	0.969	0.951	0.999	0.991	0.960	4.6
12378-PeCDF	0.700	0.741	0.710	0.771	0.761	0.736	4.2
13478-PeCDD	0.611	0.698	0.678	0.711	0.740	0.687	7.0
23478-PeCDF	0.685	0.728	0.717	0.736	0.771	0.727	4.3
123478-HxCDF	0.839	0.960	1.029	1.007	1.037	0.974	8.3
123678-HxCDF	0.929	1.123	1.181	1.123	1.181	1.107	9.4
123478-HxCDD	0.799	0.917	0.946	0.983	0.969	0.923	8.0
123678-HxCDD	0.939	1.134	1.051	1.100	1.059	1.057	7.0
123789-HxCDD	0.924	1.026	1.032	1.046	1.047	1.015	5.1
234678-HxCDF	0.798	0.983	0.994	0.965	1.000	0.948	8.9
123789-HxCDF	0.749	0.881	0.889	0.909	0.925	0.871	8.1
1234678-HpCDF	0.800	0.976	0.938	0.916	0.956	0.917	7.5
1234678-HpCDD	0.680	0.871	0.824	0.931	0.946	0.850	12.6
1234789-HpCDF	0.624	0.733	0.754	0.782	0.795	0.738	9.2
OCDD	1.144	1.283	1.318	1.259	1.321	1.265	5.7
OCDF	1.174	1.324	1.373	1.431	1.492	1.359	8.9
INTERNAL STANDARDS VS. RECOVERY STDS.							
=====	=====	=====	=====	=====	=====	=====	=====
13C-2378-TCDD	1.093	1.089	1.056	1.096	1.137	1.094	2.7
13C-2378-TCDF	1.602	1.587	1.574	1.561	1.629	1.590	1.7
13C-123678-HxCDD	0.956	0.959	0.945	0.946	0.945	0.950	0.7
13C-1234678-HpCDF	1.473	1.434	1.416	1.462	1.393	1.435	2.3
13C-OCDD	0.682	0.734	0.683	0.730	0.702	0.706	3.5

QC Limits: %RSD must be less than or equal to 15.0%

6DFB
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
Client: NUCLEAR FUEL SERVICES RFW Lot: 9405L630
GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z
Init. Calib. Date(s): 03/25/94
CC1: Z032504 CC2: Z032508 CC3: Z032503 CC4: Z032506 CC5: Z032507

NATIVE ANALYTES	SELECTED IONS	ION ABUNDANCE RATIO					FLAG	QC LIMITS
		CC1	CC2	CC3	CC4	CC5		
=====	=====	=====	=====	=====	=====	=====	=====	=====
2378-TCDD	320/322	0.77	0.79	0.80	0.76	0.77		0.65-0.89
2378-TCDF	304/306	0.72	0.72	0.74	0.75	0.74		0.65-0.89
12378-PeCDF	342/340	0.65	0.64	0.61	0.62	0.64		0.55-0.75
12378-PeCDD	358/356	0.68	0.64	0.59	0.66	0.65		0.55-0.75
23478-PeCDF	342/340	0.61	0.62	0.65	0.67	0.64		0.55-0.75
123478-HxCDF	376/374	0.80	0.84	0.81	0.80	0.78		0.69-0.93
123678-HxCDF	376/374	0.84	0.77	0.80	0.80	0.82		0.69-0.93
123478-HxCDD	392/390	0.69	0.81	0.76	0.78	0.80		0.69-0.93
123678-HxCDD	392/390	0.78	0.82	0.78	0.79	0.78		0.69-0.93
123789-HxCDD	392/390	0.81	0.76	0.78	0.79	0.79		0.69-0.93
234678-HxCDF	376/374	0.74	0.80	0.79	0.81	0.79		0.69-0.93
123789-HxCDF	376/374	0.76	0.81	0.77	0.82	0.81		0.69-0.93
1234678-HpCDF	410/408	0.97	0.94	0.99	0.99	0.98		0.83-1.12
1234678-HpCDD	426/424	0.93	0.94	0.94	0.95	0.96		0.83-1.12
1234789-HpCDF	410/408	1.08	1.00	1.02	0.96	0.97		0.83-1.12
OCDD	458/460	1.00	0.89	0.92	0.92	0.93		0.75-1.01
OCDF	442/444	0.88	0.85	0.92	0.90	0.90		0.75-1.01
INTERNAL STANDARDS								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-2378-TCDD	332/334	0.80	0.77	0.78	0.80	0.79		0.65-0.89
13C-2378-TCDF	316/318	0.80	0.78	0.79	0.80	0.80		0.65-0.89
13C-123678-HxCDD	404/402	0.81	0.82	0.78	0.81	0.78		0.69-0.93
13C-123678-HpCDF	422/420	0.90	0.91	0.88	0.91	0.89		0.83-1.12
13C-OCDD	470/472	0.96	0.94	0.97	0.96	0.96		0.75-1.01
RECOVERY STANDARDS								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-1234-TCDD	332/334	0.76	0.78	0.77	0.80	0.80		0.65-0.89
13C-123789-HxCDD	404/402	0.80	0.81	0.79	0.82	0.80		0.69-0.93

QC limits represent +/- 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

6DFA
PCDD/PCDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY

Lab Name: Rov F. Weston. Inc. Lionville

W.O. # : 10627-001-001-9999-00

Client: NUCLEAR FUEL SERVICES

RFW Lot: 9405L630

GC Column: 60m x 0.32mm ID x 0.25 um DB-5

Instrument ID: 4600Z

Init. Calib. Date(s): 03/28/94

CC1: Z032804

CC2: Z032805

CC3: Z032809

CC4: Z032807

CC5: Z032808

NATIVE ANALYTES VS. INTERNAL STDS. =====	RRF (N)					MEAN RRF	%RSD
	CC1	CC2	CC3	CC4	CC5		
2378-TCDD	0.987	0.992	1.060	0.991	0.989	1.004	3.1
2378-TCDF	0.939	0.986	0.990	0.979	0.996	0.978	2.3
12378-PeCDF	0.778	0.769	0.814	0.782	0.828	0.794	3.2
13478-PeCDD	0.681	0.707	0.769	0.736	0.804	0.739	6.6
23478-PeCDF	0.804	0.817	0.826	0.806	0.864	0.823	3.0
123478-HxCDF	0.847	0.888	0.959	0.958	0.948	0.920	5.4
123678-HxCDF	1.023	0.983	1.102	1.095	1.073	1.055	4.8
123478-HxCDD	0.843	0.897	0.904	0.951	1.039	0.927	7.9
123678-HxCDD	1.033	1.041	1.085	1.034	1.108	1.060	3.2
123789-HxCDD	0.986	1.004	1.078	1.091	1.117	1.055	5.4
234678-HxCDF	0.832	0.813	0.962	0.952	0.960	0.904	8.3
123789-HxCDF	0.820	0.781	0.897	0.853	0.843	0.839	5.1
1234678-HpCDF	0.905	0.892	0.975	0.922	0.907	0.920	3.5
1234678-HpCDD	0.873	0.827	0.892	0.914	0.984	0.898	6.4
1234789-HpCDF	0.752	0.700	0.772	0.803	0.798	0.765	5.4
OCDD	1.096	1.192	1.258	1.179	1.235	1.192	5.2
OCDF	1.098	1.179	1.407	1.374	1.411	1.294	11.2
INTERNAL STANDARDS VS. RECOVERY STDS. =====							
13C-2378-TCDD	1.079	1.091	1.088	1.133	1.095	1.097	1.9
13C-2378-TCDF	1.651	1.635	1.632	1.655	1.625	1.640	0.8
13C-123678-HxCDD	0.976	0.976	0.948	0.966	0.910	0.955	2.9
13C-1234678-HpCDF	1.474	1.520	1.434	1.515	1.474	1.483	2.4
13C-OCDD	0.760	0.764	0.727	0.791	0.777	0.764	3.1

QC Limits: %RSD must be less than or equal to 15.0%

0064

6DFB
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00

Client: NUCLEAR FUEL SERVICES RFW Lot: 9405L630

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Init. Calib. Date(s): 03/28/94

CC1: Z032804 CC2: Z032805 CC3: Z032809 CC4: Z032807 CC5: Z032808

NATIVE ANALYTES	SELECTED IONS	ION ABUNDANCE RATIO					FLAG	QC LIMITS
		CC1	CC2	CC3	CC4	CC5		
=====	=====	=====	=====	=====	=====	=====	=====	=====
2378-TCDD	320/322	0.88	0.76	0.74	0.77	0.77		0.65-0.89
2378-TCDF	304/306	0.80	0.82	0.77	0.77	0.77		0.65-0.89
12378-PeCDF	342/340	0.61	0.65	0.62	0.64	0.62		0.55-0.75
12378-PeCDD	358/356	0.58	0.60	0.62	0.64	0.64		0.55-0.75
23478-PeCDF	342/340	0.67	0.68	0.67	0.61	0.65		0.55-0.75
123478-HxCDF	376/374	0.71	0.77	0.81	0.81	0.80		0.69-0.93
123678-HxCDF	376/374	0.75	0.84	0.77	0.81	0.78		0.69-0.93
123478-HxCDD	392/390	0.77	0.84	0.77	0.78	0.79		0.69-0.93
123678-HxCDD	392/390	0.80	0.70	0.78	0.80	0.79		0.69-0.93
123789-HxCDD	392/390	0.85	0.81	0.78	0.78	0.78		0.69-0.93
234678-HxCDF	376/374	0.88	0.75	0.77	0.77	0.82		0.69-0.93
123789-HxCDF	376/374	0.76	0.75	0.77	0.76	0.78		0.69-0.93
1234678-HpCDF	410/408	0.93	1.00	0.97	0.96	0.95		0.83-1.12
1234678-HpCDD	426/424	1.03	1.00	0.97	1.02	0.94		0.83-1.12
1234789-HpCDF	410/408	0.93	0.87	1.01	0.94	0.95		0.83-1.12
OCDD	458/460	0.84	0.96	0.91	0.90	0.90		0.75-1.01
OCDF	442/444	0.83	0.93	0.94	0.89	0.90		0.75-1.01
INTERNAL STANDARDS								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-2378-TCDD	332/334	0.74	0.73	0.78	0.76	0.72		0.65-0.89
13C-2378-TCDF	316/318	0.82	0.77	0.79	0.80	0.77		0.65-0.89
13C-123678-HxCDD	404/402	0.78	0.80	0.77	0.81	0.78		0.69-0.93
13C-123678-HpCDF	422/420	0.94	0.93	0.93	0.93	0.95		0.83-1.12
13C-OCDD	470/472	0.91	0.93	0.90	0.87	0.94		0.75-1.01
RECOVERY STANDARDS								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-1234-TCDD	332/334	0.76	0.75	0.75	0.75	0.77		0.65-0.89
13C-123789-HxCDD	404/402	0.77	0.78	0.81	0.81	0.80		0.69-0.93

QC limits represent +/- 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

5DFA

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 μ m DB-5 COLUMN

Name : Roy F. Weston, Inc. Lionville	W.O. # : 10627-001-001-9999-00
Client : NUCLEAR FUEL SERVICES	Instrument ID: 4600Z
Beginning Lab File ID : Z032402	End Lab File ID : Z032408
Date Analyzed : 03/24/94	Date Analyzed : 03/24/94
Time Analyzed : 13:11:00	Time Analyzed : 17:54:00
Analyst (1) : JDL	Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.80	0.80	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.80	0.79	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.77	0.77	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.78	0.75	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.61	0.66	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.63	0.66	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.81	0.80	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.80	0.80	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.78	0.79	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.79	0.79	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	1.03	1.01	0.83 - 1.12
1,2,3,4,6,7,8-Hepta CDD	426 / 424	0.98	0.98	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.94	0.92	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.91	0.92	0.75 - 1.01

* Indicates ratio out of acceptable range.

	BEG. VALLEY	END VALLEY
RESOLUTION CHECK (VALLEY < 25%)	PASS	PASS

0066

5DFB

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 um DB-5 COLUMN

Name : Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
 Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
 Beginning Lab File ID : Z032402 End Lab File ID : Z032408
 Date Analyzed : 03/24/94 Date Analyzed : 03/24/94
 Time Analyzed : 13:11:00 Time Analyzed : 17:54:00
 Analyst (1) : JDL Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1.3.6.8-Tetra CDF	304 / 306	0.78	0.76	0.65 - 0.89
1.2.8.9-Tetra CDF	304 / 306	0.77	0.77	0.65 - 0.89
13C12-2.3.7.8-Tetra CDF	316 / 318	0.76	0.76	0.65 - 0.89
1.3.4.6.8-Penta CDF	342 / 340	0.64	0.68	0.55 - 0.75
1.2.3.8.9-Penta CDF	342 / 340	0.63	0.63	0.55 - 0.75
1.2.3.4.6.8-Hexa CDF	376 / 374	0.78	0.79	0.69 - 0.93
1.2.3.4.8.9-Hexa CDF	376 / 374	0.75	0.78	0.69 - 0.93
1.2.3.4.6.7.8-Hepta CDF	410 / 408	0.97	0.97	0.83 - 1.12
1.2.3.4.7.8.9-Hepta CDF	410 / 408	0.97	0.95	0.83 - 1.12
13C12-1.2.3.4.6.7.8-Hepta CDF	422 / 420	0.95	0.92	0.83 - 1.12
1.2.3.4.6.7.8.9-Octa CDF	442 / 444	0.86	0.87	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
<i>PCDD/PCDF ICAL</i>	PCDD/PCDF CC1	Z032403	03/24/94	13:58:00
	PCDD/PCDF CC2	Z032404	03/24/94	14:44:00
	PCDD/PCDF CC3	Z032405	03/24/94	15:31:00
	PCDD/PCDF CC4	Z032406	03/24/94	16:19:00
	PCDD/PCDF CC5	Z032407	03/24/94	17:06:00

0067

5DFC

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

L Name : Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
 Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
 Beginning Lab File ID : Z032402 End Lab File ID : Z032408
 Date Analyzed : 03/24/94 Date Analyzed : 03/24/94
 Time Analyzed : 13:11:00 Time Analyzed : 17:54:00
 Analyst (1) : JDL Analyst (2) : JDL

INTERNAL STANDARD	ANALYTES	RRT WINDOW
13C12-2,3,7,8-TCDD	TCDD	0.931-1.032
	PeCDD	1.083-1.176
13C12-2,3,7,8-TCDF	TCDF	0.919-1.055
	PeCDF	1.062-1.209
13C12-1,2,3,6,7,8-HxCDD	HxCDD	0.949-1.012
	HbCDD	1.104-1.134
13C12-1,2,3,4,6,7,8-HpCDF	HxCDF	0.853-0.941
	HpCDF	1.001-1.056
13C12-OCDD	OCDD	1.000
	OCDF	1.005

5DFA

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lame : Roy F. Weston. Inc. Lionville W.O. # : 10627-001-001-9999-00
 Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
 Beginning Lab File ID : Z032502 End Lab File ID : Z032509
 Date Analyzed : 03/25/94 Date Analyzed : 03/25/94
 Time Analyzed : 10:48:00 Time Analyzed : 17:25:00
 Analyst (1) : JDL Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.82	0.76	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.78	0.77	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.81	0.78	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.77	0.77	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.60	0.64	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.60	0.59	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.78	0.79	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.83	0.79	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.79	0.80	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.78	0.79	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	1.06	0.99	0.83 - 1.12
1,2,3,4,6,7,8-Hepta CDD	426 / 424	0.94	0.97	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.93	0.91	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.94	0.94	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

0069

5DFB

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

I. Name : Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
 Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
 Beginning Lab File ID : Z032502 End Lab File ID : Z032509
 Date Analyzed : 03/25/94 Date Analyzed : 03/25/94
 Time Analyzed : 10:48:00 Time Analyzed : 17:25:00
 Analyst (1) : JDL Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1.3,6,8-Tetra CDF	304 / 306	0.80	0.70	0.65 - 0.89
1.2,8,9-Tetra CDF	304 / 306	0.73	0.76	0.65 - 0.89
13C12-2,3,7,8-Tetra CDF	316 / 318	0.80	0.79	0.65 - 0.89
1.3,4,6,8-Penta CDF	342 / 340	0.65	0.70	0.55 - 0.75
1.2,3,8,9-Penta CDF	342 / 340	0.65	0.59	0.55 - 0.75
1.2,3,4,6,8-Hexa CDF	376 / 374	0.79	0.78	0.69 - 0.93
1.2,3,4,8,9-Hexa CDF	376 / 374	0.77	0.78	0.69 - 0.93
1.2,3,4,6,7,8-Hepta CDF	410 / 408	0.94	1.00	0.83 - 1.12
1.2,3,4,7,8,9-Hepta CDF	410 / 408	0.95	1.02	0.83 - 1.12
13C12-1,2,3,4,6,7,8-Hepta CDF	422 / 420	0.90	0.89	0.83 - 1.12
1.2,3,4,6,7,8,9-Octa CDF	442 / 444	0.88	0.90	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
PCDD/PCDF FCAE	PCDD/PCDF CC3	Z032503	03/25/94	13:03:00
	PCDD/PCDF CC1	Z032504	03/25/94	13:47:00
	PCDD/PCDF CC4	Z032506	03/25/94	15:16:00
	PCDD/PCDF CC5	Z032507	03/25/94	15:58:00
	PCDD/PCDF CC2	Z032508	03/25/94	16:41:00

0070

5DFC

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville W.O. # : 10627-001-001-9999-00
Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
Beginning Lab File ID : Z032502 End Lab File ID : Z032509
Date Analyzed : 03/25/94 Date Analyzed : 03/25/94
Time Analyzed : 10:48:00 Time Analyzed : 17:25:00
Analyst (1) : JDL Analyst (2) : JDL

INTERNAL STANDARD	ANALYTES	RRT WINDOW
13C12-2,3,7,8-TCDD	TCDD	0.931-1.032
	PeCDD	1.083-1.178
13C12-2,3,7,8-TCDF	TCDF	0.919-1.055
	PeCDF	1.062-1.210
13C12-1,2,3,6,7,8-HxCDD	HxCDD	0.949-1.012
	HpCDD	1.103-1.134
13C12-1,2,3,4,6,7,8-HpCDF	HxCDF	0.853-0.941
	HpCDF	1.001-1.056
13C12-OCDD	OCDD	1.000
	OCDF	1.005

0071

5DFA

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
 Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
 Beginning Lab File ID : Z032803 End Lab File ID : Z032810
 Date Analyzed : 03/28/94 Date Analyzed : 03/28/94
 Time Analyzed : 11:51:00 Time Analyzed : 17:39:00
 Analyst (1) : RGC Analyst (2) : RGC

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.76	0.79	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.77	0.76	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.75	0.72	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.75	0.73	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.64	0.67	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.64	0.61	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.82	0.80	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.81	0.82	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.77	0.78	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.81	0.78	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	0.98	0.96	0.83 - 1.12
1,2,3,4,6,7,8-Hepta CDD	426 / 424	0.93	0.96	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.92	0.86	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.90	0.89	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

5DFB

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00
Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
Beginning Lab File ID : Z032803 End Lab File ID : Z032810
Date Analyzed : 03/28/94 Date Analyzed : 03/28/94
Time Analyzed : 11:51:00 Time Analyzed : 17:39:00
Analyst (1) : RGC Analyst (2) : RGC

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDF	304 / 306	0.77	0.77	0.65 - 0.89
1,2,8,9-Tetra CDF	304 / 306	0.77	0.79	0.65 - 0.89
13C12-2,3,7,8-Tetra CDF	316 / 318	0.76	0.78	0.65 - 0.89
1,3,4,6,8-Penta CDF	342 / 340	0.64	0.68	0.55 - 0.75
1,2,3,8,9-Penta CDF	342 / 340	0.63	0.66	0.55 - 0.75
1,2,3,4,6,8-Hexa CDF	376 / 374	0.80	0.77	0.69 - 0.93
1,2,3,4,8,9-Hexa CDF	376 / 374	0.79	0.81	0.69 - 0.93
1,2,3,4,6,7,8-Hepta CDF	410 / 408	0.97	0.98	0.83 - 1.12
1,2,3,4,7,8,9-Hepta CDF	410 / 408	0.95	0.96	0.83 - 1.12
13C12-1,2,3,4,6,7,8-Hepta CDF	422 / 420	0.95	0.94	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDF	442 / 444	0.95	0.90	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
<i>PCDD/PCDF ICA</i>	PCDD/PCDF CC1	Z032804	03/28/94	12:35:00
	PCDD/PCDF CC2	Z032805	03/28/94	13:19:00
	PCDD/PCDF CC4	Z032807	03/28/94	14:46:00
	PCDD/PCDF CC5	Z032808	03/28/94	16:10:00
	PCDD/PCDF CC3	Z032809	03/28/94	16:55:00

5DFC

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville W.O. # : 10627-001-001-9999-00
Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
Beginning Lab File ID : Z032803 End Lab File ID : Z032810
Date Analyzed : 03/28/94 Date Analyzed : 03/28/94
Time Analyzed : 11:51:00 Time Analyzed : 17:39:00
Analyst (1) : RGC Analyst (2) : RGC

INTERNAL STANDARD	ANALYTES	RRT WINDOW
13C12-2,3,7,8-TCDD	TCDD	0.930-1.033
	PeCDD	1.084-1.179
13C12-2,3,7,8-TCDF	TCDF	0.919-1.056
	PeCDF	1.062-1.211
13C12-1,2,3,6,7,8-HxCDD	HxCDD	0.948-1.011
	HpCDD	1.105-1.135
13C12-1,2,3,4,6,7,8-HpCDF	HxCDF	0.851-0.940
	HpCDF	1.000-1.057
13C12-OCDD	OCDD	1.000
	OCDF	1.004

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

SCANS 1370 TO 1670

CALI: Z032402 #3

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

CALI: Z032402 #3

SCANS 1430 TO 1670

MIDWASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4688Z, GCZZ,OTDFP

RANGE: G 1.2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1530 TO 1610

DATA: 2032402 #1

CALI: 2032402 #3

198400
315.942
± 0.500

13 C₁₂ 2370700

13 C₁₂ 1234700

13 C₁₂ 2370700

333.934
± 0.500

1610 SCAN
21:28 TIME

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

SCANS 1590 TO 1900

CALI: Z032402 #3

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

CALI: Z032402 #3

SCANS 1650 TO 1885

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

SCANS 1920 TO 2180

CALI: Z032402 #3

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

SCANS 1930 TO 2170

CALI: Z032402 #3

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2718 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20. 3

DATA: 2032402 #1

CALI: 2032402 #3

SCANS 2030 TO 2170

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

CALI: Z032402 #3

SCANS 2230 TO 2450

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1
CALI: Z032402 #3

SCANS 2280 TO 2430

63682
0082

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

COND.S.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

SCANS 2230 TO 2360

CALI: Z032402 #3

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

CALI: Z032402 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

COND5.: 4500Z, GCZZ,OTDFP

RANGE: G 1,2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

CALI: Z032402 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/24/94 13:11:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2718 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032402 #1

SCANS 2580 TO 2700

CALI: Z032402 #3

SCANS 1370 TO 1670

03/24/94 17:54:00

CALI: Z032408 #3

SAMPLE: PCDD/PCOF WINDOW

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 1430 TO 1670

1450
19:20

1500
20:00

1550
20:40

1600
21:20

1650
22:00

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

SCANS 1530 TO 1610

CALI: Z032408 #3

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

SCANS 1590 TO 1900

CALI: Z032408 #3

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 1650 TO 1885

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

SCANS 1920 TO 2180

CALI: Z032408 #3

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 46002, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 1930 TO 2170

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2032408 #1

SCANS 2030 TO 2170

CALI: 2032408 #3

76004

90368.

401.855
± 0.500

71936.

403.853
± 0.500

2040 27:12 2060 27:28 2080 27:44 2100 28:00 2120 28:16 2140 28:32 2160 28:48

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 2230 TO 2450

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 2280 TO 2430

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 46002, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 2230 TO 2360

2240
29:52

2260
30:08

2280
30:24

2300
30:40

2320
30:56

2340
31:12

2360 SCAN
31:28 TIME

03/24/94 17:54:00

CALI: Z032408 #3

SAMPLE: PCDD/PCDF WINDOW

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J_0 BASE: U 20, 3

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/24/94 17:54:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032408 #1

CALI: Z032408 #3

SCANS 2580 TO 2700

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2650 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 1370 TO 1670

CALI: Z032502 #3

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/OF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 1430 TO 1670

CALI: Z032502 #3

5588.

258.900
± 0.500

0102

29472.

319.896
± 0.500

19936.

321.894
± 0.500

1450
19:20

1500
20:00

1550
20:40

1600
21:20

1650
22:00

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

CALI: Z032502 #3

SCANS 1530 TO 1610

0103

1530 20:24 1540 20:32 1550 20:40 1560 20:48 1570 20:56 1580 21:04 1590 21:12 1600 21:20 1610 21:28 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

CONDOS.: 4600Z, GCZZ,OTIDFP

RANGE: G 1,2750

QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1590 TO 1900

DATA: Z032502 #1

CALI: Z032502 #3

1640 2441. 9944.

1550 293. 840. 1716 1753 309. 376.

1639 18946. 69201.

1613 495. 1080. 1671 375. 509. 1710 269. 393. 1742 479. 560.

1639 11896. 45228.

1552 357. 498. 1702 421. 1203. 1737 444. 719. 1794 374. 795. 1849 528. 1720.

1629 472. 1161.

1664 292. 523. 1701 347. 469. 1745 428. 1000. 1793 383. 803. 1847 158. 354.

1500 21:20

1550 22:00

1700 22:40

1750 23:20

1800 24:00

1850 24:40

1900 SCAN

25:20 TIME

277 13.4

276.900 ± 0.500

19040. 339.850 ± 0.500

11952. 341.856 ± 0.500

500. 409.800 ± 0.500

1859 1703. 8128.

1868 11984. 49402.

1858 7724. 31900.

1847 158. 354.

1850 24:40

1900 SCAN

25:20 TIME

277 13.4

276.900 ± 0.500

19040. 339.850 ± 0.500

11952. 341.856 ± 0.500

500. 409.800 ± 0.500

1859 1703. 8128.

1868 11984. 49402.

1858 7724. 31900.

1847 158. 354.

1850 24:40

1900 SCAN

25:20 TIME

277 13.4

276.900 ± 0.500

19040. 339.850 ± 0.500

11952. 341.856 ± 0.500

500. 409.800 ± 0.500

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

COND.S.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 1650 TO 1885

CALI: Z032502 #3

MIDMASS CHROMATOGRAMS
03/25/94 10:48:00
SAMPLE: PCDD/DF WINDOW
COND.: 46002, GCZZ,OTDFP
RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1
CALI: Z032502 #3

SCANS 1920 TO 2180

MIDMASS CHROMATOGRAMS
 03/25/94 10:48:00
 SAMPLE: PCDD/DF WINDOW
 CONDS.: 4600Z, GCZZ, OTDFP
 RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1
 CALI: Z032502 #3

SCANS 1930 TO 2170

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 2030 TO 2170

CALI: Z032502 #3

0108

401.855
± 0.500

403.853
± 0.500

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

CALI: Z032502 #3

SCANS 2230 TO 2450

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 2280 TO 2430

CALI: Z032502 #3

360.800
± 0.500

423.777
± 0.500

425.774
± 0.500

2280 30:24 2300 30:40 2320 30:56 2340 31:12 2360 31:28 2380 31:44 2400 32:00 2420 32:16 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

CALI: Z032502 #3

SCANS 2230 TO 2360

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 2580 TO 2700

CALI: Z032502 #3

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 2580 TO 2700

CALI: Z032502 #3

MIDMASS CHROMATOGRAMS

03/25/94 10:48:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032502 #1

SCANS 2580 TO 2700

CALI: Z032502 #3

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

SCANS 1370 TO 1670

CALI: Z032509 #3

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

SCANS 1430 TO 1670

CALI: Z032509 #3

9360.0116

258.900
± 0.500

55488.

319.896
± 0.500

36608.

321.894
± 0.500

1450
19:20

1500
20:00

1550
20:40

1600
21:20

1650
22:00

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 17:25:08

SAMPLE: PCDD/OF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1530 TO 1610

DATA: Z032509 #1
CALI: Z032509 #3

2110

90240.

315.942
± 0.500

$^{13}C_{12}$ 2370720F

112640.

317.938
± 0.500

58550.

331.937
± 0.500

$^{13}C_{12}$ 12347200

$^{13}C_{12}$ 23707200 75392.

333.934
± 0.500

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

SCANS 1590 TO 1900

CALI: Z032509 #3

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1
CALI: Z032509 #3

SCANS 1650 TO 1885

0.119

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

CALI: Z032509 #3

SCANS 1915 TO 2180

0120

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

CALI: Z032509 #3

SCANS 1930 TO 2170

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

CALI: Z032509 #3

SCANS 2030 TO 2170

0122

2040 27:12 2050 27:28 2080 27:44 2100 28:00 2120 28:16 2140 28:32 2160 28:48

SCAN
TIME

403.853
± 0.500

401.855
± 0.500

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

CALI: Z032509 #3

SCANS 2230 TO 2450

0123

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

CALI: Z032509 #3

SCANS 2280 TO 2430

0124

3672.

360.800
± 0.500

51264.

423.777
± 0.500

17280.

425.774
± 0.500

2280 30:24 2300 30:40 2320 30:56 2340 31:12 2360 31:28 2380 31:44 2400 32:00 2420 32:16 SCAN TIME

MIDMASS CHROMATOGRAMS
 03/25/94 17:25:00
 SAMPLE: PCDD/DF WINDOW
 CONDS.: 4600Z, GCZZ,OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1
 CALI: Z032509 #3

SCANS 2230 TO 2360

0125

Handwritten: 13C₁₂ 1234678H₁₀PCDD H₂O/F PCDD PCDF 3/26/94

SCAN	TIME
2240	29:52
2260	30:08
2280	30:24
2300	30:40
2320	30:56
2340	31:12
2360	31:28

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

SCANS 2580 TO 2700

CALI: Z032509 #3

0126

MIDMASS CHROMATOGRAMS

03/25/94 17:25:00

SAMPLE: PCDD/DF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032509 #1

CALI: Z032509 #3

SCANS 2580 TO 2700

0127

SCANS 2580 TO 2700

03/25/94 17:25:00

CALI: Z032509 #3

SAMPLE: PCDD/DF WINDOW

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 1370 TO 1670

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 1430 TO 1670

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 1530 TO 1610

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4500Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

SCANS 1590 TO 1900

CALI: Z032803 #3

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 1650 TO 1885

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 1915 TO 2180

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 1930 TO 2170

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20.

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 2030 TO 2170

MIDMASS CHROMATOGRAMS
 03/28/94 11:51:00
 SAMPLE: PCDD/PCDF WINDOW
 CONDS.: 4600Z, GCZZ, OTDFP
 RANGE: G 1.2750 LABEL: N

DATA: Z032803 #1
 CALI: Z032803 #3

SCANS 2230 TO 2450

QUAN: A 4, 1.0 J 0 BASE: U 20, 3

2010
 3392.
 344.900
 ± 0.500

2450 SCAN
 32:40 TIME

2400
 32:00

2350
 31:20

2300
 30:40

2250
 30:00

Hxop

MIDMASS CHROMATOGRAMS
 03/28/94 11:51:00
 SAMPLE: PCDD/PCDF WINDOW
 COND.: 4600Z, GCZZ,OTDFP
 RANGE: G 1,2750 LABEL: N

DATA: Z032803 #1
 CALI: Z032803 #3

SCANS 2280 TO 2430

2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 2230 TO 2360

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/28/94 11:51:00

SAMPLE: PCDD/PCDF WINDOW

COND.: 4500Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032803 #1

CALI: Z032803 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDS.: 4600Z, GC22, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

CALI: Z032810 #3

SCANS 1370 TO 1675

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

SCANS 1430 TO 1675

CALI: Z032810 #3

1450
19:20

1500
20:00

1550
20:40

1600
21:20

1650
22:00

SCAN
TIME

0144

MIDMASS CHROMATOGRAMS
 03/28/94 17:39:00
 SAMPLE: PCD/PCDF WINDOW
 CONDS.: 4600Z, GC22, OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1
 CALI: Z032810 #3

SCANS 1535 TO 1620

0145

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

SCANS 1590 TO 1910

CALI: Z032810 #3

MIDMASS CHROMATOGRAMS
 03/28/94 17:39:00
 SAMPLE: PCD/PCDF WINDOW
 CONDS.: 4600Z, GCZZ,OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1
 CALI: Z032810 #3

SCANS 1650 TO 1910

0147

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

SCANS 1940 TO 2185

CALI: Z032810 #3

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

CALI: Z032810 #3

SCANS 1930 TO 2170

0149

MIDMASS CHROMATOGRAMS
 03/28/94 17:39:00
 SAMPLE: PCD/PCDF WINDOW
 CONDS.: 4600Z, GCZZ,OTDFP
 RANGE: G 1.2750 LABEL: N 2, 1.0

DATA: Z032810 #1
 CALI: Z032810 #3

SCANS 2030 TO 2170

QUAN: A 4, 1.0 J 0 BASE: U 20, 3

69375.0150

401.855
 ± 0.500

55064.

403.853
 ± 0.500

SCAN
 TIME

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDS.: 4600Z, GC22, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

SCANS 2260 TO 2470

CALI: Z032810 #3

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

SCANS 2305 TO 2430

CALI: Z032810 #3

0152

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

CALI: Z032810 #3

SCANS 2230 TO 2360

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

CALI: Z032810 #3

SCANS 2610 TO 2740

0154

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

CALI: Z032810 #3

SCANS 2610 TO 2740

5408.0155

394.800
± 0.500

25984.

457.738
± 0.500

28800.

459.735
± 0.500

2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 2720 36:16 2740 36:32 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 17:39:00

SAMPLE: PCD/PCDF WINDOW

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032810 #1

CALI: Z032810 #3

SCANS 2610 TO 2740

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

COND5.: 4500Z, GCZZ, OI DFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2032403 #1
CALI: 2032403 #3

SCANS 1370 TO 1670

2010

SCAN
TIME

1650
22:00

1600
21:20

1550
20:40

1500
20:00

1450
19:20

1400
18:40

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 1430 TO 1670

0.128

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

SCANS 1530 TO 1610

CALI: Z032403 #3

SCANS 1590 TO 1900

DATA: Z032403 #1
CALI: Z032403 #3

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20. 3

0010

2544.

276.900
± 0.500

14688.

339.860
± 0.500

8240.

341.856
± 0.500

352.

409.800
± 0.500

1900 SCAN
25:20 TIME

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 1650 TO 1885

0161

1650.
22:00

1700
22:40

1750
23:20

1800
24:00

1850
24:40

SCAN
TIME

PCDD

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 1920 TO 2180

2
0
1
0
2

SCAN
TIME

2150
28:40

2100
28:00

2050
27:20

2000
26:40

1950
26:00

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4500Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 1930 TO 2170

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 2030 TO 2170

65536
0104

401.855
± 0.500

52800.

403.853
± 0.500

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

COND.: 4600Z, GCZZ, 0TDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

SCANS 2230 TO 2450

CALI: Z032403 #3

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2. 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 2280 TO 2430

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0

QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 2230 TO 2360

84224.6
CO
O

417.824
± 0.500

190208.

419.822
± 0.500

170752.

421.818
± 0.500

13C₁₂ 1234678HPCDF

2360 SCAN
31:28 TIME

2340
31:12

2320
30:56

2300
30:40

2280
30:24

2260
30:08

2240
29:52

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 2580 TO 2700

MIDWASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

COND.S.: 4500Z, GC2Z,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 2580 TO 2700

2637 2308. 10658.

2613 259. 741.

2659 324. 876.

2678 246. 450.

394.800 ± 0.500

2420

9232.

457.738 ± 0.500

9744.

459.735 ± 0.500

2580 34:24

2600 34:40

2620 34:56

2640 35:12

2660 35:28

2680 35:44

2700 36:00

TIME

2595 137. 365.

2672 78. 146.

2657 115. 115.

2638 9134. 39273.

2620 87. 204.

2638 9683. 42149.

2580 34:24

2600 34:40

2620 34:56

2640 35:12

2660 35:28

2680 35:44

2700 36:00

TIME

2595 137. 365.

2672 78. 146.

2657 115. 115.

2638 9134. 39273.

2620 87. 204.

2638 9683. 42149.

2580 34:24

2600 34:40

2620 34:56

2640 35:12

2660 35:28

2680 35:44

2700 36:00

TIME

MIDMASS CHROMATOGRAMS

03/24/94 13:58:00

SAMPLE: PCDD/PCDF CC1

CONDOS.: 4600Z, GCZZ.0TDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032403 #1

CALI: Z032403 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 1370 TO 1670

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

COND5.: 4500Z, GCZZ, OI DFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2032504 #1

CALI: 2032504 #3

SCANS 1430 TO 1670

1583

1261.

5915.

1502

363.

786.

1536

279.

1039.

1492

215.

513.

1456

325.

1376.

1446

415.

1219.

1516

408.

1593.

1550

48142.

164909.

1583

4762.

17131.

1550

9864.

35458.

1583

5367.

22196.

1629

228.

419.

1500

21:20

1550

22:00

SCAN

TIME

2.8

259

100.0

320

20.5

322

1450

19:20

1500

20:00

1550

20:40

1600

21:20

1650

22:00

SCAN

TIME

1368.5

258.900
± 0.500

48255.

319.896
± 0.500

9888.

321.894
± 0.500

IS

700

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

SCANS 1530 TO 1610

CALI: Z032504 #3

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

SCANS 1590 TO 1900

CALI: Z032504 #3

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDS.: 4500Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 1650 TO 1885

27.7

293

1698

257.

595.

1740

365.

923.

1784

305.

1140.

1829

982.

3860.

1847

172.

600.

292.900

± 0.500

11120

4008.

355.854

± 0.500

2716.

357.852

± 0.500

SCAN

TIME

1850

24:40

1800

24:00

1750

23:20

1700

22:40

1650

22:00

1550

1500

1450

1400

1350

1300

1250

1200

1150

1100

1050

1000

950

900

850

800

750

700

650

600

550

500

450

400

350

300

250

200

150

100

50

0

-50

-100

-150

-200

-250

-300

-350

-400

-450

-500

-550

-600

-650

-700

-750

-800

-850

-900

-950

-1000

-1050

-1100

-1150

-1200

-1250

-1300

-1350

-1400

-1450

-1500

-1550

-1600

-1650

-1700

-1750

-1800

-1850

-1900

-1950

-2000

-2050

-2100

-2150

-2200

-2250

-2300

-2350

-2400

-2450

-2500

-2550

-2600

-2650

-2700

-2750

-2800

-2850

-2900

-2950

-3000

-3050

-3100

-3150

-3200

-3250

-3300

-3350

-3400

-3450

-3500

-3550

-3600

-3650

-3700

-3750

-3800

-3850

-3900

-3950

-4000

-4050

-4100

-4150

-4200

-4250

-4300

-4350

-4400

-4450

-4500

-4550

-4600

-4650

-4700

-4750

-4800

-4850

-4900

-4950

-5000

-5050

-5100

-5150

-5200

-5250

-5300

-5350

-5400

-5450

-5500

-5550

-5600

-5650

-5700

-5750

-5800

-5850

-5900

-5950

-6000

-6050

-6100

-6150

-6200

-6250

-6300

-6350

-6400

-6450

-6500

-6550

-6600

-6650

-6700

-6750

-6800

-6850

-6900

-6950

-7000

-7050

-7100

-7150

-7200

-7250

-7300

-7350

-7400

-7450

-7500

-7550

-7600

-7650

-7700

-7750

-7800

-7850

-7900

-7950

-8000

-8050

-8100

-8150

-8200

-8250

-8300

-8350

-8400

-8450

-8500

-8550

-8600

-8650

-8700

-8750

-8800

-8850

-8900

-8950

-9000

-9050

-9100

-9150

-9200

-9250

-9300

-9350

-9400

-9450

-9500

-9550

-9600

-9650

-9700

-9750

-9800

-9850

-9900

-9950

-10000

-10050

-10100

-10150

-10200

-10250

-10300

-10350

-10400

-10450

-10500

-10550

-10600

-10650

-10700

-10750

-10800

-10850

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 1915 TO 2180

SCANS 1930 TO 2170

03/25/94 13:47:00

CALI: 2032504 #3

SAMPLE: PCDD/DF CC1

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 2030 TO 2170

36416.178
401.855
± 0.500

31328.
403.853
± 0.500

2040
27:12

2060
27:28

2080
27:44

2100
28:00

2120
28:16

2140
28:32

2160
28:48

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

COND5.: 46002, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 2230 TO 2450

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2032504 #1

CALI: 2032504 #3

SCANS 2280 TO 2430

SCANS 2280 TO 2430

2364

511.

2011.

2335

246.

505.

2405

371.

1053.

350.800

± 0.500

2160.

423.777

± 0.500

2072.

425.774

± 0.500

SCAN

TIME

HP-100

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

SCANS 2230 TO 2360

CALI: Z032504 #3

48512.0181

417.824
± 0.500

110208.

419.822
± 0.500

¹³C₁₂ 1234670 HPLC
AG 3/20/94

100608.

421.818
± 0.500

2240 29:52 2260 30:08 2280 30:24 2300 30:40 2320 30:56 2340 31:12 2360 31:28 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

CONDS.: 4500Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/25/94 13:47:00

SAMPLE: PCDD/DF CC1

COND.S.: 4600Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032504 #1

CALI: Z032504 #3

SCANS 2580 TO 2700

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

COND.: 4600Z, GC22, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 1370 TO 1670

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 1430 TO 1670

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 1530 TO 1610

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

SCANS 1590 TO 1900

CALI: Z032804 #3

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4680Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 1650 TO 1885

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4500Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

SCANS 1915 TO 2180

CALI: Z032804 #3

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

SCANS 1930 TO 2170

CALI: Z032804 #3

0191

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

SCANS 2030 TO 2170

CALI: Z032804 #3

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

COND.: 4600Z, GCZZ,DTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

SCANS 2230 TO 2450

CALI: Z032804 #3

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 2280 TO 2430

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 2230 TO 2360

0195

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/28/94 12:35:00

SAMPLE: PCDD/PCDF CC1

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032804 #1

CALI: Z032804 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: PCDD/PCDF CC2

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 1370 TO 1670

0199

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: PCDD / PCDF C12

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 1430 TO 1670

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: *p,p'-DDE*

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 1530 TO 1610

0201

SCANS 1590 TO 1900

DATA: Z032404 #1

CALI: Z032404 #3

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: P000/p007F CUL

COND.: 4600Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2.1.0 QUAN: A 4.1.0 J 0 BASE: U 20.3

0202

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: *Peropropyl*

COND.: 4600Z, GCZZ, OTDFF

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 1650 TO 1885

00203

PCDD

SCAN TIME

MIDMASS CHROMATOGRAMS
 03/24/94 14:44:00
 SAMPLE: PLOOF/POFCEL
 COND5.: 4600Z, GCZZ,OTDFP
 RANGE: G 1.2750 LABEL: N 2.1.0 QUAN: A 4.1.0 J 0 BASE: U 20. 3

DATA: Z032404 #1
 CALI: Z032404 #3

SCANS 1930 TO 2170

5205

1950 26:00
 2000 26:40
 2050 27:20
 2100 28:00
 2150 28:40
 SCAN TIME

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: P0001P0F02

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 2030 TO 2170

0206

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: P001P00FULL

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 2230 TO 2450

0207

2250 30:00 2300 30:40 2350 31:20 2400 32:00 2450 SCAN 32:40 TIME

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: P001P0F02

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 2280 TO 2430

0.208

HPCDD

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: *PCDD/PCDF*

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

SCANS 2230 TO 2360

CALI: Z032404 #3

0209

SCAN	TIME
2240	29:52
2250	30:08
2260	30:24
2270	30:40
2280	30:56
2290	31:12
2300	31:28

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: 20011005 002

COND5.: 4500Z, GCZZ, OTDFF

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2580 TO 2700

DATA: Z032404 #1

CALI: Z032404 #3

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

SAMPLE: PC001P00F002

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032404 #1

CALI: Z032404 #3

SCANS 2580 TO 2700

0211

2580	2600	2620	2640	2660	2680	2700	SCAN
34:24	34:40	34:56	35:12	35:28	35:44	36:00	TIME

MIDMASS CHROMATOGRAMS

03/24/94 14:44:00

DATA: Z032404 #1

SCANS 2580 TO 2700

SAMPLE: PLOOIR OF CUL

CALI: Z032404 #3

0212

COND5.: 4500Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

459.778
± 0.500

83840.

471.775
± 0.500

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

COND.: 4600Z. GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 1370 TO 1670

0213

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

COND5.: 4600Z, GCZZ,OTIDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 1430 TO 1670

0214

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 1530 TO 1610

0215

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 1590 TO 1900

0216

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 1650 TO 1885

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 1915 TO 2180

0218

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 1930 TO 2170

0.219

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

COND5.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 2030 TO 2170

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4500Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 2230 TO 2450

0221

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4600Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 2280 TO 2430

0222

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4500Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 2230 TO 2360

0223

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 2580 TO 2700

0224

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, .3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 2580 TO 2700

0225

MIDMASS CHROMATOGRAMS

03/25/94 16:41:00

SAMPLE: PCDD/DF CC2

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032508 #1

CALI: Z032508 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS
 03/28/94 13:19:00
 SAMPLE: PCDD/PCDF CC2
 CONDS.: 4600Z, GCZZ,OTDFP
 RANGE: G 1.2750 LABEL: N 2, 1.0

DATA: Z032805 #1
 CALI: Z032805 #3

SCANS 1370 TO 1670

BASE: U 20, 3

0227

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 1430 TO 1670

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 1530 TO 1610

0229

1530 20:24 1540 20:32 1550 20:40 1560 20:48 1570 20:56 1580 21:04 1590 21:12 1600 21:20 1610 21:28 TIME

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 1590 TO 1900

0230

1600 1650 1700 1750 1800 1850 1900 SCAN
21:20 22:00 22:40 23:20 24:00 24:40 25:20 TIME

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 1650 TO 1885

0231

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 1915 TO 2180

0232

1950
26:00

2000
26:40

2050
27:20

2100
28:00

2150
28:40

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 1930 TO 2170

0233

1950 26:00 2000 26:40 2050 27:20 2100 28:00 2150 28:40 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 2030 TO 2170

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDS.: 4500Z, GC2Z,OTDFF

RANGE: G 1.2750 LABEL: N 2, 1.0

QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 2230 TO 2450

15
14
13
12

2450 SCAN
32:40 TIME

2400
32:00

2350
31:20

2300
30:40

2250
30:00

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 2280 TO 2430

0236

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 2230 TO 2360

2240 2260 2280 2300 2320 2340 2360 SCAN
29:52 30:08 30:24 30:40 30:56 31:12 31:28 TIME

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

SCANS 2580 TO 2700

CALI: Z032805 #3

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/28/94 13:19:00

SAMPLE: PCDD/PCDF CC2

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032805 #1

CALI: Z032805 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1370 TO 1670

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1430 TO 1670

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1530 TO 1610

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

SCANS 1590 TO 1900

CALI: Z032405 #3

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1650 TO 1885

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1920 TO 2180

0240

1950 26:00 2000 26:40 2050 27:20 2100 28:00 2150 28:40 SCAN TIME

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDOS.: 4600Z, GC22, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1930 TO 2170

2088

11623.

49883.

2115

10259.

39079.

1955

1492.

7284.

1994

600.

4264.

2143

1112.

9224.

32.5

327

11654Q

326.900

± 0.500

100.0

390

131400

3/25/94

1959

285.

1531.

2017

162.

351.

2060

111.

217.

35904.

389.815

± 0.500

88.9

392

17400

102774

1957

124.

228.

2005

115.

296.

2058

142.

237.

2087

31310.

122843.

2114

31863.

125721.

31904.

391.812

± 0.500

1950

26:00

2000

26:40

2050

27:20

2100

28:00

2150

28:40

SCAN

TIME

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 2030 TO 2170

MIDMASS CHROMATOGRAMS
 03/24/94 15:31:00
 SAMPLE: PCDD/PCDF CC3
 CONDS.: 4600Z, GCZZ, OTDFP
 RANGE: G 1,2750

DATA: Z032405 #1
 CALI: Z032405 #3

SCANS 2230 TO 2450

LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

249

2250 30:00 2300 30:40 2350 31:20 2400 32:00 2450 SCAN 32:40 TIME

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

COND.: 4500Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 2280 TO 2430

59380 250

360.800
± 0.500

23264.

423.777
± 0.500

23584.

425.774
± 0.500

2280	2300	2320	2340	2360	2380	2400	2420	SCAN TIME
30:24	30:40	30:56	31:12	31:28	31:44	32:00	32:16	

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 2230 TO 2360

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 2580 TO 2700

253

MIDMASS CHROMATOGRAMS

03/24/94 15:31:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 2580 TO 2700

80768. 0254

469.778
± 0.500

87680.

471.775
± 0.500

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

CONDS.: 4600Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 1370 TO 1670

0255

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 1430 TO 1670

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

CONDS.: 4500Z, GCZZ, OTDFP

RANGE: G 1,2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

SCANS 1530 TO 1610

CALI: Z032503 #3

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND.: 4500Z, GCZZ, OTDFP

RANGE: G 1,2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 1590 TO 1900

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

CONDS.: 4600Z, GC22.0TDFP

RANGE: G 1.2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1550 TO 1885

DATA: Z032503 #1

CALI: Z032503 #3

0
2
5
9

Peak

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND5.: 46002, GCZZ,OTOFF

RANGE: G 1,2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

SCANS 1915 TO 2180

CALI: Z032503 #3

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 1930 TO 2170

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND.: 4500Z, GCZZ, OTDFP

RANGE: G 1.2572 LABEL: N 2.1.0 QUAN: A 4.1.0 J 0 BASE: U 20. 3

DATA: 2032503 #1

CALI: 2032503 #3

SCANS 2030 TO 2170

2
0
2
0

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 2230 TO 2450

0263

2250
30:00

2300
30:40

2350
31:20

2400
32:00

2450
32:40 TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 2280 TO 2430

0264

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/TF C03

COND.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 2230 TO 2360

15
9
2
0
44095.

417.824
± 0.500

94720.

419.822
± 0.500

84864.

421.818
± 0.500

2360 SCAN
31:28 TIME

2340
31:12

2320
30:56

2300
30:40

2280
30:24

2260
30:08

2240
29:52

13 G₁₂ 1234678910111213
HPDF
PCZZ

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND.: 4500Z, GCZZ, OTDFP

RANGE: G 1.2672 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 2580 TO 2700

0266

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 2580 TO 2700

0.267
3196.

394.800
± 0.500

21536.

457.738
± 0.500

23776.

459.735
± 0.500

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 13:03:00

SAMPLE: PCDD/DF CC3

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032503 #1

CALI: Z032503 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDFCC3

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 1370 TO 1675

0269

MIDMASS CHROMATOGRAMS

03/28/94 15:55:00

SAMPLE: PCDD/PCDF CC3

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 1430 TO 1675

0270

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

SCANS 1535 TO 1620

CALI: Z032809 #3

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 1590 TO 1910

0272

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 1650 TO 1910

0273

8576.

292.900
± 0.500

24384.

355.854
± 0.500

15664.

357.852
± 0.500

PCDD

1650 22:00 1700 22:40 1750 23:20 1800 24:00 1850 24:40 1900 25:20 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 1940 TO 2185

0274

1950
26:00

2000
26:40

2050
27:20

2100
28:00

2150
28:40

SCAN
TIME

MIDMASS CHROMATOGRAMS
 03/28/94 16:55:00
 SAMPLE: PCDD/PCDF CC3
 CONDS.: 4600Z, GCZZ, OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0

DATA: Z032809 #1
 CALI: Z032809 #3

SCANS 1930 TO 2170

0275

6768.

326.900
 ± 0.500

21376.

389.815
 ± 0.500

16352.

391.812
 ± 0.500

1950
 26:00

2000
 26:40

2050
 27:20

2100
 28:00

2150
 28:40

SCAN
 TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 2030 TO 2170

0276

52224.

401.855
± 0.500

42240.

403.853
± 0.500

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1, 2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2032809 #1

SCANS 2260 TO 2470

CALI: 2032809 #3

0277

2300 30:40 2350 31:20 2400 32:00 2450 32:40 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 2305 TO 2430

0278

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 2230 TO 2360

0279

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 2610 TO 2740

0280

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 2610 TO 2740

0281

MIDMASS CHROMATOGRAMS

03/28/94 16:55:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032809 #1

CALI: Z032809 #3

SCANS 2610 TO 2740

0202

2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 2720 36:16 2740 36:32 SCAN TIME

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDOS.: 4600Z, GC2Z,OTIDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 1370 TO 1670

02883

SCAN
TIME

1550
22:00

1600
21:20

1550
20:40

1500
20:00

1450
19:20

1400
18:40

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1430 TO 1670

0287

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 1530 TO 1610

0.285

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

SCANS 1590 TO 1900

CALI: Z032406 #3

0286

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

COND.S.: 4500Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 1650 TO 1885

0287

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDOS.: 4600Z, GCZZ.0TDFP

RANGE: G 1.2750 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20. 3

DATA: Z032406 #1

SCANS 1920 TO 2180

CALI: Z032406 #3

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 1930 TO 2170

0289

29280.

326.900
± 0.500

79872.

389.815
± 0.500

63936.

391.812
± 0.500

1950
26:00

2000
26:40

2050
27:20

2100
28:00

2150
28:40

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 2030 TO 2170

71680.0290

401.855
± 0.500

59904.

403.853
± 0.500

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 2230 TO 2450

0291

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 2280 TO 2430

0292

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

COND.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0

DATA: Z032405 #1

CALI: Z032405 #3

SCANS 2230 TO 2350

QUAN: A 4, 1.0 J 0 BASE: U 20, 3

3290

13 G₂ 1234670 H₂O₂ H₂O₂ 120/149

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 2580 TO 2700

0294

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 2580 TO 2700

0295

MIDMASS CHROMATOGRAMS

03/24/94 16:19:00

SAMPLE: PCDD/PCDF CC4

COND.S.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032406 #1

CALI: Z032406 #3

SCANS 2580 TO 2700

0296

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 1370 TO 1670

0297

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 1430 TO 1670

0298

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 1530 TO 1610

0209

1530 20:24 1540 20:32 1550 20:40 1560 20:48 1570 20:56 1580 21:04 1590 21:12 1600 21:20 1610 21:28 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 1590 TO 1900

0000300

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 1650 TO 1885

0301

12815.

292.900
± 0.500

48000.

355.854
± 0.500

31808.

357.852
± 0.500

1650
22:00

1700
22:40

1750
23:20

1800
24:00

1850
24:40

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GC22, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 1915 TO 2180

0302

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 1930 TO 2170

0303

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 2030 TO 2170

0304

401.855
± 0.500

403.853
± 0.500

2040
27:12

2060
27:28

2080
27:44

2100
28:00

2120
28:16

2140
28:32

2160
28:48

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

SCANS 2230 TO 2450

CALI: Z032506 #3

0305

2250
30:002300
30:402350
31:202400
32:002450 SCAN
32:40 TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

COND5.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 2280 TO 2430

0306

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

COND.S.: 4500Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

SCANS 2230 TO 2360

CALI: Z032506 #3

0307

13 C₁₂ 1234670 HPCDP

2240 29:52 2260 30:08 2280 30:24 2300 30:40 2320 30:56 2340 31:12 2360 31:28 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

SCANS 2580 TO 2700

CALI: Z032506 #3

0308

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 2580 TO 2700

0309

0600

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:16:00

SAMPLE: PCDD/DF CC4

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032506 #1

CALI: Z032506 #3

SCANS 2580 TO 2700

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 1370 TO 1675

0311

1400 1450 1500 1550 1600 1650
18:40 19:20 20:00 20:40 21:20 22:00

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 1430 TO 1675

0312

16000.

258.900
± 0.500

59392.

319.896
± 0.500

73600.

321.894
± 0.500

1450
19:20

1500
20:00

1550
20:40

1600
21:20

1650
22:00

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

COND.S.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

SCANS 1535 TO 1620

CALI: Z032807 #3

0313

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

SCANS 1590 TO 1900

CALI: Z032807 #3

0314

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 1650 TO 1900

0315

MIDMASS CHROMATOGRAMS
 03/28/94 14:46:00
 SAMPLE: PCDD/PCDF CC4
 CONDS.: 4600Z, GCZZ,OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0

DATA: 2032807 #1
 CALI: 2032807 #3

SCANS 1915 TO 2185

QUAN: A 4, 1.0 J 0 BASE: U 20, 3

0316

MIDMASS CHROMATOGRAMS
 03/28/94 14:46:00
 SAMPLE: PCDD/PCDF CC4
 CONDS.: 4600Z, GCZZ,OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1
 CALI: Z032807 #3

SCANS 1930 TO 2170

0317

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 2030 TO 2170

0318

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 2260 TO 2470

0319

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 2305 TO 2430

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

CONDOS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 2230 TO 2350

0321

44992.

417.824
± 0.500

98816.

419.822
± 0.500

92928.

421.818
± 0.500

13C₁₂1234678HpCDF
GCDF RG 3/20/94

2240 2260 2280 2300 2320 2340 2360 SCAN
29:52 30:08 30:24 30:40 30:56 31:12 31:28 TIME

MIDMASS CHROMATOGRAMS

03/28/94 14:45:00

SAMPLE: PCDD/PCDF CC4

CONDOS.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 2640 TO 2740

0322

MIDMASS CHROMATOGRAMS

03/28/94 14:46:00

SAMPLE: PCDD/PCDF CC4

COND5.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 2640 TO 2740

0323

2640 35:12 2650 35:28 2680 35:44 2700 36:00 2720 36:16 2740 36:32 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 14:45:00

SAMPLE: PCDD/PCDF CC4

COND5.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032807 #1

CALI: Z032807 #3

SCANS 2640 TO 2740

MIDMASS CHROMATOGRAMS

03/24/94 17:06:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 1370 TO 1670

0325

1400 18:40 1450 19:20 1500 20:00 1550 20:40 1600 21:20 1650 22:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/24/94 17:06:00

SAMPLE: PCDD/PCDF CC5

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 1430 TO 1670

MIDMASS CHROMATOGRAMS

03/24/94 17:06:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

SCANS 1530 TO 1610

CALI: Z032407 #3

MIDMASS CHROMATOGRAMS
03/24/94 17:05:00
SAMPLE: PCDD/PCDF CC5
CONDS.: 4500Z, GCZZ, OTDFP
RANGE: G 1,2750 LABEL: N 2, 1.0

DATA: Z032407 #1
CALI: Z032407 #3

SCANS 1590 TO 1900

BASE: U 20, 3

MIDMASS CHROMATOGRAMS
 03/24/94 17:06:00
 SAMPLE: PCDD/PCDF CC5
 COND5.: 4600Z, GCZZ.OTDFF
 RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1
 CALI: Z032407 #3

SCANS 1650 TO 1885

58880
 29
 0

199680.

355.854
 ± 0.500

130815.

357.852
 ± 0.500

SCAN
 TIME

MIDWASS CHROMATOGRAMS

03/24/94 17:06:00

SAMPLE: PCDD/PCDF CC5

COND5.: 4600Z, GC2Z,OTDFF

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 1920 TO 2180

41408.00
310.900
± 0.500

262144.
373.821
± 0.500

205592.
375.817
± 0.500

440.
445.700
± 0.500

SCAN
TIME

2150
28:40

2100
28:00

2050
27:20

2000
26:40

1950
26:00

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2032407 #1

CALI: 2032407 #3

SCANS 1930 TO 2170

MIDMASS CHROMATOGRAMS

03/24/94 17:05:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 2030 TO 2170

2
3
3
768000

401.855
± 0.500

62656.

403.853
± 0.500

13 Cp 123784 HXCD

13 Cp 123670 HXCD

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/24/94 17:05:00

SAMPLE: PCDD/PCDF CCS

CONDS.: 4500Z, GCZZ,OTIDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 2230 TO 2450

369920
369920
369920

2450 SCAN
32:40 TIME

MIDMASS CHROMATOGRAMS

03/24/94 17:05:00

SAMPLE: PCDD/PCDF CC5

COND5.: 4600Z, GCZZ.OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 2280 TO 2430

334

MIDMASS CHROMATOGRAMS

03/24/94 17:05:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 2230 TO 2360

0335

855040

417.824
± 0.500

198400.

419.822
± 0.500

188416.

421.818
± 0.500

2240 2260 2280 2300 2320 2340 2360 SCAN
29:52 30:08 30:24 30:40 30:56 31:12 31:28 TIME

MIDMASS CHROMATOGRAMS

03/24/94 17:06:00

SAMPLE: PCDD/PCDF CC5

CONDOS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 2580 TO 2700

MIDWAY>> CHROMATOGRAMS
03/24/94 17:06:00
SAMPLE: PCDD/PCDF CC5
CONDS.: 4600Z, GCZZ,OTDFF
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1
CALI: Z032407 #3

SCANS 2580 TO 2700

0337
45335.00

2700 SCAN
36:00 TIME

MIDMASS CHROMATOGRAMS

03/24/94 17:06:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GC22,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032407 #1

CALI: Z032407 #3

SCANS 2580 TO 2700

469.778
± 0.500

77056.

471.775
± 0.500

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 1370 TO 1670

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

CUNDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 1430 TO 1670

073
324160

100224.
319.896
± 0.500

134656.
321.894
± 0.500

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

CUNDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 1530 TO 1610

1 4 3 807585

13C₁₂ 2370720

1567
103116.
375555.

13C₁₂ 1234720

13C₁₂ 2370720

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 1590 TO 1900

277
340
65.0

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

COND5.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 1650 TO 1885

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

COND5.: 4600Z, GC2Z,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

SCANS 1915 TO 2180

CALI: Z032507 #3

4
3
4

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CCS

COND.S.: 4600Z, GCZZ, OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1930 TO 2170

DATA: Z032507 #1

CALI: Z032507 #3

27200.

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 2030 TO 2170

9736
43200

401.855
± 0.500

33152.

13C1236790HXLOO

403.853
± 0.500

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

SCANS 2230 TO 2450

CALI: Z032507 #3

17347

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

COND.S.: 4600Z, GC22,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 2280 TO 2430

21.4
361
16208.5

75776.
423.777
± 0.500

425.774
± 0.500

SCAN
TIME

30:24 30:40 30:55 31:12 31:28 31:44 32:00 32:16

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 2230 TO 2360

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 2580 TO 2700

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

COND.: 4500Z, GCZZ,OTIDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 2580 TO 2700

1
2
3
27776

394.800
± 0.500

151808.

457.738
± 0.500

165144.

459.735
± 0.500

2700 SCAN
36:00 TIME

MIDMASS CHROMATOGRAMS

03/25/94 15:58:00

SAMPLE: PCDD/DF CC5

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032507 #1

CALI: Z032507 #3

SCANS 2580 TO 2700

581760352

469.778
± 0.500

57984.

471.775
± 0.500

2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 1370 TO 1675

MIDMASS CHROMATOGRAMS
 03/28/94 16:10:00
 SAMPLE: PCDD/PCDF CC5
 CONDS.: 4600Z, GCZZ, OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1
 CALI: Z032808 #3

SCANS 1430 TO 1675

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 1535 TO 1620

10
10
3

1540 20:32 1550 20:40 1560 20:48 1570 20:56 1580 21:04 1590 21:12 1600 21:20 1610 21:28 1620 21:36 TIME

MIDMASS CHROMATOGRAMS
 03/28/94 16:10:00
 SAMPLE: PCDD/PCDF CC5
 CONDS.: 4600Z, GCZZ,OTDFP
 RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1
 CALI: Z032808 #3

SCANS 1590 TO 1910

6
 5
 3

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 1650 TO 1910

357

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ, OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

SCANS 1940 TO 2185

CALI: Z032808 #3

MIDMASS CHROMATOGRAMS
03/28/94 15:10:00
SAMPLE: PCDD/PCDF CC5
COND5.: 4500Z, GCZZ,OTDFP
RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1
CALI: Z032808 #3

SCANS 1930 TO 2170

24448.0
326.900
± 0.500

89500.

72575.

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 2030 TO 2170

0360

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2. 1.0 QUAN: A 4. 1.0 J 0 BASE: U 20. 3

DATA: Z032808 #1

SCANS 2260 TO 2470

CALI: Z032808 #3

0.361

SCAN
TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4500Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 2305 TO 2430

362

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 2230 TO 2360

0363

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

CONDS.: 4600Z, GCZZ,OTDFP

RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 2610 TO 2740

364

2620 34:56 2640 35:12 2660 35:28 2680 35:44 2700 36:00 2720 36:16 2740 36:32 SCAN TIME

MIDMASS CHROMATOGRAMS

03/28/94 16:10:00

SAMPLE: PCDD/PCDF CC5

COND.: 4600Z, GCZZ,OTDFP

RANGE: G 1,2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1

CALI: Z032808 #3

SCANS 2610 TO 2740

0365

MIDMASS CHROMATOGRAMS
 03/28/94 16:10:00
 SAMPLE: PCDD/PCDF CC5
 CONDS.: 4500Z, GCZZ,OTDFP
 RANGE: G 1.2750 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z032808 #1
 CALI: Z032808 #3

SCANS 2610 TO 2740

44416.0

469.778
 $\pm$ 0.500

46592.

471.775
 $\pm$ 0.500

13C₁₂ O₂ O₂

2740 SCAN
 36:32 TIME

2720
 36:16

2700
 36:00

2680
 35:44

2660
 35:28

2640
 35:12

2620
 34:56

5DFA

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 μ m DB-5 COLUMN

Lab Name : Roy F. Weston, Inc. Lionville

W.O. # : 10627-001-001-9999-00

Client : NUCLEAR FUEL SERVICES

Instrument ID: 4600Z

Beginning Lab File ID : Z052602

End Lab File ID : Z052614

Date Analyzed : 05/26/94

Date Analyzed : 05/26/94

Time Analyzed : 8:41:00

Time Analyzed : 17:36:00

Analyst (1) : RGC

Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1,3,6,8-Tetra CDD	320 / 322	0.80	0.74	0.65 - 0.89
1,2,8,9-Tetra CDD	320 / 322	0.79	0.78	0.65 - 0.89
13C12-1,2,3,4-Tetra CDD	332 / 334	0.78	0.78	0.65 - 0.89
13C12-2,3,7,8-Tetra CDD	332 / 334	0.78	0.77	0.65 - 0.89
1,2,4,6,8/1,2,4,7,9-Penta CDD	358 / 356	0.65	0.67	0.55 - 0.75
1,2,3,8,9-Penta CDD	358 / 356	0.64	0.64	0.55 - 0.75
1,2,4,6,7,9/1,2,4,6,8,9-Hexa CDD	392 / 390	0.79	0.85	0.69 - 0.93
1,2,3,4,6,7-Hexa CDD	392 / 390	0.79	0.79	0.69 - 0.93
13C12-1,2,3,6,7,8-Hexa CDD	404 / 402	0.78	0.79	0.69 - 0.93
13C12-1,2,3,7,8,9-Hexa CDD	404 / 402	0.79	0.79	0.69 - 0.93
1,2,3,4,6,7,9-Hepta CDD	426 / 424	0.92	1.00	0.83 - 1.12
1,2,3,4,6,7,8-Hepta CDD	426 / 424	0.95	1.00	0.83 - 1.12
1,2,3,4,6,7,8,9-Octa CDD	458 / 460	0.88	0.90	0.75 - 1.01
13C12-Octa CDD	470 / 472	0.94	0.92	0.75 - 1.01

* Indicates ratio out of acceptable range.

		BEG. VALLEY	END VALLEY	
RESOLUTION CHECK (VALLEY < 25%)		PASS	PASS	

0367

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc. Lionville	W.O. # : 10627-001-001-9999-00
Client : NUCLEAR FUEL SERVICES	Instrument ID: 4600Z
Beginning Lab File ID : Z052602	End Lab File ID : Z052614
Date Analyzed : 05/26/94	Date Analyzed : 05/26/94
Time Analyzed : 8:41:00	Time Analyzed : 17:36:00
Analyst (1) : RGC	Analyst (2) : JDL

COMPOUND	IONS RATIOED	BEG. RATIO	END RATIO	RATIO LIMITS
1.3.6.8-Tetra CDF	304 / 306	0.78	0.76	0.65 - 0.89
1.2.8.9-Tetra CDF	304 / 306	0.78	0.78	0.65 - 0.89
13C12-2.3.7.8-Tetra CDF	316 / 318	0.77	0.79	0.65 - 0.89
1.3.4.6.8-Penta CDF	342 / 340	0.68	0.65	0.55 - 0.75
1.2.3.8.9-Penta CDF	342 / 340	0.65	0.62	0.55 - 0.75
1.2.3.4.6.8-Hexa CDF	376 / 374	0.83	0.82	0.69 - 0.93
1.2.3.4.8.9-Hexa CDF	376 / 374	0.82	0.78	0.69 - 0.93
1.2.3.4.6.7.8-Hepta CDF	410 / 408	0.96	0.97	0.83 - 1.12
1.2.3.4.7.8.9-Hepta CDF	410 / 408	0.99	0.97	0.83 - 1.12
13C12-1.2.3.4.6.7.8-Hepta CDF	422 / 420	0.96	0.95	0.83 - 1.12
1.2.3.4.6.7.8.9-Octa CDF	442 / 444	0.90	0.93	0.75 - 1.01

* Indicates ratio out of acceptable range

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS. MSD. BLANKS AND STANDARDS:

CLIENT SAMPLE	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
<i>PCDD/PCDF CCL</i>	PCDD/PCDF CC3	Z052603	05/26/94	9:27:00
<i>1661B-084</i>	9405L630-002	Z052604	05/26/94	11:04:00
<i>L MS</i>	9405L630-002S	Z052605	05/26/94	11:50:00
<i>MSD</i>	9405L630-002T	Z052606	05/26/94	12:36:00
<i>Soil Blank</i>	94LS0039-MB1	Z052608	05/26/94	14:04:00
<i>1661B-062</i>	9405L630-001	Z052609	05/26/94	14:50:00

5DFC

PCDD/PCDF WINDOW DEFINING MIXTURE SUMMARY
60m x 0.32mm ID x 0.25 µm DB-5 COLUMN

Lab Name : Roy F. Weston, Inc, Lionville W.O. # : 10627-001-001-9999-00
Client : NUCLEAR FUEL SERVICES Instrument ID: 4600Z
Beginning Lab File ID : Z052602 End Lab File ID : Z052614
Date Analyzed : 05/26/94 Date Analyzed : 05/26/94
Time Analyzed : 8:41:00 Time Analyzed : 17:36:00
Analyst (1) : RGC Analyst (2) : JDL

INTERNAL STANDARD	ANALYTES	RRT WINDOW
13C12-2,3,7,8-TCDD	TCDD	0.931-1.032
	PeCDD	1.083-1.178
13C12-2,3,7,8-TCDF	TCDF	0.919-1.055
	PeCDF	1.062-1.211
13C12-1,2,3,6,7,8-HxCDD	HxCDD	0.949-1.012
	HpCDD	1.105-1.137
13C12-1,2,3,4,6,7,8-HpCDF	HxCDF	0.851-0.940
	HpCDF	1.000-1.057
13C12-OCDD	OCDD	1.000
	OCDF	1.005

7DFA
PCDD/PCDF CONTINUING CALIBRATION SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00

Client: NUCLEAR FUEL SERVICES

RFW Lot: 9405L630

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Date Analyzed: 05/26/94

Time Analyzed: 9:27:00

CCL Lab File ID: Z052603

Init. Calib. Date(s): 03/24/94 03/25/94 03/28/94

NATIVE ANALYTES	SELECTED IONS	RRF	MEAN RRF	%D	RRF FLAG	ION RATIO	ION FLAG	QC LIMITS
=====	=====	=====	=====	=====	=====	=====	=====	=====
2378-TCDD	320/322	0.989	0.993	0.4		0.73		0.65-0.89
2378-TCDF	304/306	1.030	0.993	-3.7		0.76		0.65-0.89
12378-PeCDF	342/340	0.821	0.743	-10.4		0.65		0.55-0.75
12378-PeCDD	358/356	0.769	0.721	-6.6		0.65		0.55-0.75
23478-PeCDF	342/340	0.842	0.750	-12.3		0.62		0.55-0.75
123478-HxCDF	376/374	0.940	0.971	3.2		0.82		0.69-0.93
123678-HxCDF	376/374	1.050	1.087	3.4		0.83		0.69-0.93
123478-HxCDD	392/390	1.029	0.916	-12.4		0.82		0.69-0.93
123678-HxCDD	392/390	1.108	1.053	-5.2		0.79		0.69-0.93
123789-HxCDD	392/390	1.067	1.035	-3.1		0.83		0.69-0.93
234678-HxCDF	376/374	0.923	0.934	1.2		0.84		0.69-0.93
123789-HxCDF	376/374	0.880	0.866	-1.6		0.82		0.69-0.93
1234678-HpCDF	410/408	0.992	0.918	-8.1		0.99		0.83-1.12
1234678-HpCDD	426/424	0.978	0.844	-15.9		0.94		0.83-1.12
1234789-HpCDF	410/408	0.803	0.745	-7.8		0.96		0.83-1.12
OCDD	458/460	1.299	1.223	-6.2		0.91		0.75-1.01
OCDF	442/444	1.432	1.341	-6.8		0.87		0.75-1.01
INTERNAL STANDARDS vs. RECOVERY STDS.								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-2378-TCDD	332/334	1.072	1.099	2.5		0.77		0.65-0.89
13C-2378-TCDF	316/318	1.518	1.670	9.1		0.80		0.65-0.89
13C-123678-HxCDD	404/402	0.976	0.951	-2.6		0.80		0.69-0.93
13C-1234678-HpCDF	422/420	1.503	1.441	-4.3		0.93		0.83-1.12
13C-OCDD	470/472	0.754	0.707	-6.6		0.93		0.75-1.01
RECOVERY STANDARDS								
=====	=====	=====	=====	=====	=====	=====	=====	=====
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.77		0.65-0.89
13C-123789-HxCDD	404/402	NA	NA	NA	NA	0.80		0.69-0.93

QC limits shown are for ion abundance ratios.

Maximun %D for RRF is +/- 30.0%

The laboratory must flag any analyte which does not meet criteria for %D or ion abundance ratio by placing an asterisk in the appropriate flag column.

0370

7DFB
2,3,7,8-SUBSTITUTED PCDD/PCDF
RETENTION TIME SUMMARY

Lab Name: Roy F. Weston, Inc. Lionville W.O. # : 10627-001-001-9999-00

Client: NUCLEAR FUEL SERVICES

RFW Lot: 9405L630

GC Column: 60m x 0.32mm ID x 0.25 um DB-5 Instrument ID: 4600Z

Date Analyzed: 05/26/94

Time Analyzed: 9:27:00

CCL Lab File ID: Z052603

Init. Calib. Date(s): 03/24/94 03/25/94 03/28/94

INTERNAL STANDARD	RETENTION TIME	ANALYTE	RETENTION TIME	RRT
=====	=====	=====	=====	=====
13C-2378-TCDD	20:43	2378-TCDD	20:43	1.000
		12378-PeCDD	23:57	1.156
13C-2378-TCDF	20:18	2378-TCDF	20:18	1.000
		12378-PeCDF	23:03	1.136
		23478-PeCDF	23:38	1.165
13C-123678-HxCDD	27:18	123478-HxCDD	27:13	0.997
		123678-HxCDD	27:18	1.000
		123789-HxCDD	27:39	1.013
		1234678-HpCDD	31:00	1.136
13C-1234678-HpCDF	29:48	123478-HxCDF	26:25	0.886
		123678-HxCDF	26:32	0.890
		234678-HxCDF	27:05	0.909
		123789-HxCDF	27:56	0.937
		1234678-HpCDF	29:49	1.000
		1234789-HpCDF	31:30	1.057
13C-OCDD	34:42	OCDD	34:43	1.000
		OCDF	34:52	1.005

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

SCANS 1350 TO 1650

CALI: Z052602 #3

0372

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GC2Z, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1400 TO 1650

DATA: 2052602 #1

CALI: 2052602 #3

0373

1650 SCAN
22:00 TIME

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 1500 TO 1570

0374

1500 20:00 1510 20:08 1520 20:16 1530 20:24 1540 20:32 1550 20:40 1560 20:48 1570 20:56 SCAN TIME

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

SCANS 1570 TO 1850

CALI: Z052602 #3

0375

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,270 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 1640 TO 1850

0376

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

SCANS 1865 TO 2130

CALI: Z052602 #3

0377

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 1900 TO 2100

0378

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 1970 TO 2110

0379

MID-MASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCOD/PCDF WINDOW

COND5: 4600E, GCZZ, DTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2190 TO 2400

DATA: Z052602 #1

CALI: Z052602 #3

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052602 #1

SCANS 2235 TO 2360

CALI: 2052602 #3

0381

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 2180 TO 2300

2
8
3
0

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 2530 TO 2660

03030

1760.

513.600
± 0.500

2540 33:52 2560 34:08 2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 SCAN TIME

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 2530 TO 2660

4
0
3
0

MIDMASS CHROMATOGRAMS

05/26/94 8:41:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052602 #1

CALI: Z052602 #3

SCANS 2530 TO 2660

L3
03
0

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

COND5.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0, BASE: U 20, 3

DATA: 2052603 #1

CALI: 2052603 #3

SCANS 1350 TO 1650

00
00
00
00

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GC22, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 1400 TO 1650

0387

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 1500 TO 1570

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

COND5.: 4500Z, GCZZ, OTDFN1(A5)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052603 #1

CALI: 2052603 #3

SCANS 1570 TO 1850

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 1640 TO 1850

0300

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

COND5.: 4600Z, GCEZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052503 #1
CALI: Z052503 #3

SCANS 1855 TO 2130

18.7 311 100.0 374 84.1 376 2.4 445

1900 25:20 1950 25:00 2000 25:40 2050 27:20 2100 28:00

SCAN TIME

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 1900 TO 2100

2
3
3
0

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 1970 TO 2110

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

SCANS 2190 TO 2400

CALI: Z052603 #3

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052603 #1

CALI: 2052603 #3

SCANS 2235 TO 2360

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 2180 TO 2300

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

COND5.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 2530 TO 2660

7
9
0
3
0

1408.

513.600
± 0.500

2540 33:52 2560 34:08 2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 SCAN TIME

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GC2Z, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 2530 TO 2660

MIDMASS CHROMATOGRAMS

05/26/94 9:27:00

SAMPLE: PCDD/PCDF CC3

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052603 #1

CALI: Z052603 #3

SCANS 2530 TO 2660

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

COND5.: 4600Z, GC22, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

SCANS 1350 TO 1650

CALI: Z052614 #3

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 1400 TO 1650

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052614 #1

CALI: 2052614 #3

SCANS 1500 TO 1570

20402

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 1570 TO 1850

0.003

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 1640 TO 1850

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

COND5.: 4600Z, GCZZ, OTDFNI(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052514 #1

CALI: Z052514 #3

SCANS 1855 TO 2130

LO 0 7 0

12448.
51375.
1902

19.9
311
1902
63500.
280495.
1901
52587.
229590.
1900
52572.
375.817
± 0.500

1939
1179.
3975.
5272.
2021
1371.
3778.
9114.
2047
1688.
9114.
2100
11651.
53785.
12672.
310.900
± 0.500

1882
672.
1535.
1936
940.
3340.
11787.
2045
941.
2344.
2100
47110.
234155.
63808.
373.821
± 0.500

82.5
376
1941
955.
955.
12853.
1980
2291.
2038
540.
769.
2100
39194.
181752.
52572.
375.817
± 0.500

2.4
446
1890
986.
2848.
1927
1270.
4048.
1988
1224.
2992.
2015
1032.
1544.
2057
953.
1179.
1552.
445.700
± 0.500

1900 25:20
1950 25:00
2000 26:40
2050 27:20
2100 28:00

SCAN
TIME

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 1900 TO 2100

9070

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 1970 TO 2110

7070

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

SCANS 2190 TO 2400

CALI: Z052614 #3

0.400

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 1, 1.0 J 0 BASE: U 20, 3

A: 2052614 #1

J: 7052614 #3

SCANS 2235 TO 2360

6070

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052614 #1

CALI: 2052614 #3

SCANS 2180 TO 2300

0.10

136448.

417.824
± 0.500

299520.

419.822
± 0.500

281600.

421.818
± 0.500

2180
29:04

2200
29:20

2220
29:36

2240
29:52

2260
30:08

2280
30:24

2300 SCAN
30:40 TIME

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 2530 TO 2660

1 1 2 0

CCDF

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 2530 TO 2660

0492

PCDD

SCAN
TIME

MIDMASS CHROMATOGRAMS

05/26/94 17:36:00

SAMPLE: PCDD/PCDF WINDOW

CONDS.: 4500Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052614 #1

CALI: Z052614 #3

SCANS 2530 TO 2660

0413

123008.

469.778
± 0.500

137728.

471.775
± 0.500

SCAN	TIME
2540	33:52
2560	34:08
2580	34:24
2600	34:40
2620	34:56
2640	35:12
2660	35:28

VII. RAW QC DATA PACKAGE

- A. Method Blank Data
 - 1. tabulated results (form 1)
 - 2. mass chromatograms/quantitation report
- B. Matrix Spike Data
 - 1. tabulated results (if applicable)
 - 2. mass chromatograms/quantitation report
- C. Matrix Spike Duplicate Data (if applicable)
 - 1. tabulated results
 - 2. mass chromatograms/quantitation

ROY F. WESTON, INC.

PCDD/PCDF DATA SUMMARY

CLIENT: *Nuclear Fuel Services*

RFW NUMBER: *94LS0039-MB1*

SAMPLE ID: *SOIL Blank*

GC/MS FILENAME: *2052608*

DATE ANALYZED: *5/26/94*

C-13 TCDD RECOVERY: *79* %

MATRIX: *SOIL*

C-13 TCDF RECOVERY: *72* %

SAMPLE AMOUNT: *10.0g*

C-13 HXCDD RECOVERY: *108* %

UNITS: *mg/g*

C-13 HPCDF RECOVERY: *84* %

C-13 OCDD RECOVERY: *48* %

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD		<i>0.1</i>	<i>4</i>
TOTAL TCDD		<i>0.1</i>	
TOTAL PECDD		<i>0.2</i>	
TOTAL HXCDD		<i>0.8</i>	
TOTAL HPCDD		<i>0.2</i>	
OCDD		<i>0.6</i>	
2378-TCDF		<i>0.1</i>	
TOTAL TCDF		<i>0.1</i>	
TOTAL PECDF		<i>0.2</i>	
TOTAL HXCDF		<i>0.2</i>	
TOTAL HPCDF		<i>0.2</i>	
OCDF		<i>0.6</i>	<i>✓</i>

0415

5/27/94
WJH

PCDD/PCDF DATA ANALYSIS

RFW #: 94LS0039-MB1
 TEST: OTDF
 FILENAME: Z052608
 WEIGHT: 10.0 G
 ANALYSIS DATE: 05/26/94
 CPC/WINDOW: Z052602
 ANALYSIS TIME: 1404
 DILUTION FACTOR: 1.000
 ANALYST: RGC
 # OF DILUTION STEPS: 1
 INSTRUMENT: 4600Z
 % SOLIDS: 100 (NOT DETERMINED)
 CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7
 UNITS: NG/G
 1.0 to 20 for C1-8

*** INTERNAL STANDARD DATA ***

STANDARD	M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RF or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF (IS #2)	316 318	-- 143889	390344 490464	0.80	0.65-0.89	1.670	50	5.0	3.6	72 %
C13 1234-TCDD (RS #1)	332 334	NA NA	316984 411104	0.77	0.65-0.89	50 NG				
C13 2378-TCDD (IS #1)	332 334	-- 97152	273533 355712	0.77	0.65-0.89	1.099	50	5.0	3.9	79 %

	HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD (IS #3)	402 404	41829 33040	194544 164256	0.84	0.69-0.93	0.951	50	5.0	5.4 108 %
C13 123789-HxCDD (RS #2)	402 404	NA NA	190092 158720	0.83	0.69-0.93	50 NG			
C13 1234678-HpCDF (IS #4)	420 422	84826 --	437416 407290	0.93	0.83-1.12	1.441	100	10.0	8.4 84 %
C13 OCDD (IS #5)	470 472	-- 22094	111524 126367	0.88	0.75-1.01	0.707	100	10.0	4.8 48 %

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

0.78 5/21/94

*** ANALYTE RESULTS ***

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

(under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA		320/322	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 320	m/z 322			m/z 320	m/z 322			
2378-TCDD	0.993	0	0	ERR	0.65-0.89	--	1140	0.0	0.1	0
TCDD #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #22	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD (TOTAL)	0.993					--	1140	0.0	0.1	0

TCDF (IS #2)	RRF	AREA		304/306	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 304	m/z 306			m/z 304	m/z 306			
2378-TCDF	0.993	0	0	ERR	0.65-0.89	--	1240	0.0	0.1	0
TCDF #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #11	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #12	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #38	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF (TOTAL)	0.993					--	1240	0.0	0.1	0

PeCDD (IS #1)	RRF	AREA		358/356	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 356	m/z 358			m/z 356	m/z 358			
12378-PECDD	0.721	0	0	ERR	0.55-0.75	--	X	0.0	0.0	U
PeCDD #2	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #3	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #4	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #5	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #6	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #7	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #8	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #14	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PECDD (TOTAL)	0.721					--	1040	0.0	0.2	U

PeCDF (IS #2)	RRF	AREA		342/340	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 340	m/z 342			m/z 340	m/z 342			
12378-PECDF	0.743	0	0	ERR	0.55-0.75	--	X	0.0	0.0	U
23478-PECDF	0.750	0	0	ERR	0.55-0.75	--	X	0.0	0.0	U
PeCDF #3	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #4	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #5	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #6	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #7	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #8	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #9	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #10	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #11	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #28	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PECDF (TOTAL)	0.743					--	1290	0.0	0.2	U

HxCDD (IS #3)	RRF	AREA		392/390	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 390	m/z 392			m/z 390	m/z 392			
123478-HxCDD	0.916	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123678-HxCDD	1.053	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123789-HxCDD	1.035	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
HxCDD #4	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #5	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #6	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #7	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #10	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD (TOTAL)	0.916					--	4680	0.0	0.8	U

HxCDF (IS #4)	RRF	AREA		376/374	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 374	m/z 376			m/z 374	m/z 376			
123478-HxCDF	0.971	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123678-HxCDF	1.087	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
234678-HxCDF	0.934	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123789-HxCDF	0.866	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
HxCDF #5	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #6	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #7	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #8	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #9	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #10	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF (TOTAL)	0.866					720	--	0.0	0.4	U

	RRF	AREA m/z 424	AREA m/z 426	426/424	QC LIMITS	NOISE HEIGHT m/z 424	NOISE HEIGHT m/z 426	RESULT	EDL	FLAG
HpCDD (IS #3)										
1234678-HPCDD	0.844	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
HpCDD #2	0.844	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HPCDD (TOTAL)	0.844					680	--	0.0	0.2	U

	RRF	AREA m/z 408	AREA m/z 410	410/408	QC LIMITS	NOISE HEIGHT m/z 408	NOISE HEIGHT m/z 410	RESULT	EDL	FLAG
HpCDF (IS #4)										
1234678-HPCDF	0.918	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
1234789-HPCDF	0.745	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
HpCDF #3	0.745	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HpCDF #4	0.745	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HPCDF (TOTAL)	0.745					610	--	0.0	0.2	U

	RRF	AREA m/z 458	AREA m/z 460	458/460	QC LIMITS	NOISE HEIGHT m/z 458	NOISE HEIGHT m/z 460	RESULT	EDL	FLAG
OCDD (IS #5)	1.223	0	0	ERR	0.75-1.01	--	700	0.0	0.6	U

	RRF	AREA m/z 442	AREA m/z 444	442/444	QC LIMITS	NOISE HEIGHT m/z 442	NOISE HEIGHT m/z 444	RESULT	EDL	FLAG
OCDF (IS #5)	1.341	0	0	ERR	0.75-1.01	--	740	0.0	0.6	U

BOY F. WESTON, Inc. - LIONVILLE
GCMS SPECIAL PROJECTS

GUIDE FOR LOCATING DIOXIN ANALYTES
USING RELATIVE RETENTION TIMES FROM DAILY STANDARDS

GCMS FILENAME: Z052608 -

WINDOW FILENAME: Z052602

RFW #: 94LS0039-MB1

CCL FILENAME: Z052603

2378-SUBSTITUTED CONGENERS

ANALYTE WINDOW

INTERNAL STANDARD	* IS SCAN #	CONGENER	RRT	PREDICTED SCAN		FIRST	LAST
C13 2378-TCDD (IS #1)	1555	2378-TCDD	1.000	1555	TCDD	RRT WINDOW: 0.931 to 1.032 SCAN RANGE: 1448 to 1605	
		12378-PECDD	1.156	1798	PECDD	RRT WINDOW: 1.083 to 1.178 SCAN RANGE: 1684 to 1832	
C13 2378-TCDF (IS #2)	1523	2378-TCDF	1.000	1523	TCDF	RRT WINDOW: 0.919 to 1.055 SCAN RANGE: 1400 to 1607	
		12378-PECDF	1.136	1730	PECDF	RRT WINDOW: 1.062 to 1.211 SCAN RANGE: 1617 to 1844	
		23478-PECDF	1.165	1774			
C13 123678-HxCDD (IS #3)	2049	123478-HxCDD	0.997	2043	HxCDD	RRT WINDOW: 0.949 to 1.012 SCAN RANGE: 1945 to 2074	
		123678-HxCDD	1.000	2049			
		123789-HxCDD	1.013	2076			
		1234678-HPCDD	1.136	2328	HPCDD	RRT WINDOW: 1.105 to 1.137 SCAN RANGE: 2264 to 2330	
C13 1234678-HpCDF (IS #4)	2237	123478-HxCDF	0.886	1982	HxCDF	RRT WINDOW: 0.851 to 0.940 SCAN RANGE: 1904 to 2103	
		123678-HxCDF	0.890	1991			
		234678-HxCDF	0.909	2033			
		123789-HxCDF	0.937	2096			
		1234678-HPCDF	1.000	2237	HPCDF	RRT WINDOW: 1.000 to 1.057 SCAN RANGE: 2237 to 2365	
		1234789-HPCDF	1.057	2365			
C13 OCDD (IS #5)	2605	OCDD	1.000	2605			
		OCDF	1.005	2618			

* Use the scan number from the ion with the largest area
unless the other ion has a better peak shape.

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

COND5.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1350 TO 1650

DATA: Z052508 #1

CALI: Z052508 #3

0421

TODF

1350 18:00 1400 18:40 1450 19:20 1500 20:00 1550 20:40 1600 21:20 1650 22:00 TIME

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

SCANS 1400 TO 1650

CALI: Z052608 #3

2270

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

CALI: Z052608 #3

SCANS 1500 TO 1570

0 2 2 3

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

CONDS.: 4600Z, GC22, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

SCANS 1570 TO 1850

CALI: Z052608 #3

4240

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

CONDS.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 1855 TO 2130

DATA: Z052608 #1

CALI: Z052608 #3

9270

1878
1596.
2384.
1958.
310.900
± 0.500

2074
1136.
5072.

2043
1808.
5728.

2001
1291.
3355.

1965
1164.
6733.

1926
1420.
10056.

100.0

311

1899
770.
1141.

1943
688.
1824.

1979
801.
2500.

2011
716.
1544.

2049
859.
1264.

2081
554.
1427.

54.5

374

1072.
373.821
± 0.500

HCDF

1973
717.
2552.

51.0

376

2081
758.
2054.

1200.
375.817
± 0.500

1970
1869.
11188.

1928
1078.
2096.

1901
1048.
1568.

95.9

446

2058
1243.
4683.

2034
1514.
9583.

1838.
445.700
± 0.500

1900
25:20

1950
26:00

2000
26:40

2050
27:20

2100
28:00

SCAN
TIME

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

CONDS.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

SCANS 1900 TO 2100

CALI: Z052608 #3

0427

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

CALI: Z052608 #3

SCANS 1970 TO 2110

0428

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94LS0039-NB1

COND5.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

SCANS 2190 TO 2400

DATA: Z052508 #1

CALI: Z052508 #3

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

COND5.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052608 #1

CALI: 2052608 #3

SCANS 2235 TO 2360

0 3 0

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94LS0039-MB1

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052608 #1

CALI: 2052608 #3

SCANS 2180 TO 2300

0431

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94L50039-MB1

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

SCANS 2530 TO 2660

CALI: Z052608 #3

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94LS0039-MB1

COND5.: 46002, GC22, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

CALI: Z052608 #3

SCANS 2530 TO 2660

2597
1500.
6362.

MIDMASS CHROMATOGRAMS

05/26/94 14:04:00

SAMPLE: 94LS0039-MB1

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052608 #1

CALI: Z052608 #3

SCANS 2530 TO 2660

ROY F. WESTON, INC.

PCDD/PCDF DATA SUMMARY

CLIENT: *Nuclear Fuel Services*

RFW NUMBER: *94052630-0025*

SAMPLE ID: *1661B-084 MS*

GC/MS FILENAME: *2052605*

DATE ANALYZED: *5/26/94*

C-13 TCDD RECOVERY: *77* %

MATRIX: *SOIL*

C-13 TCDF RECOVERY: *70* %

SAMPLE AMOUNT: *10.0g*

C-13 HXCDD RECOVERY: *80* %

UNITS: *ng/g*

C-13 HPCDF RECOVERY: *82* %

C-13 OCDD RECOVERY: *86* %

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD	<i>108 %</i>	<i>0.1</i>	
TOTAL TCDD	<i>108</i>	<i>0.1</i>	
TOTAL PECDD	<i>110</i>	<i>0.2</i>	
TOTAL HXCDD	<i>93</i>	<i>0.2</i>	
TOTAL HPCDD	<i>120</i>	<i>0.2</i>	
OCDD	<i>90</i>	<i>0.2</i>	
2378-TCDF	<i>96</i>	<i>0.1</i>	
TOTAL TCDF	<i>96</i>	<i>0.1</i>	
TOTAL PECDF	<i>112</i>	<i>0.1</i>	
TOTAL HXCDF	<i>96</i>	<i>0.1</i>	
TOTAL HPCDF	<i>106</i>	<i>0.1</i>	
OCDF	<i>102</i>	<i>0.1</i>	

0434

PCDD/PCDF DATA ANALYSIS

REF #: 94051630-002 —
 TEST: OTDF-S —
 FILENAME: Z052605 —
 WEIGHT: 10.0 G
 ANALYSIS DATE: 05/26/94 —
 CPC/WINDOW: Z052602
 ANALYSIS TIME: 1150 —
 DILUTION FACTOR: 1.000
 ANALYST: RGC
 # OF DILUTION STEPS: 1
 INSTRUMENT: 4600Z
 % SOLIDS: 100 (NOT DETERMINED)
 CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7
 1.0 to 20 for C1-8
 UNITS: NG/G

*** INTERNAL STANDARD DATA ***

STANDARD	M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RE or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF (IS #2)	316	--	435536	0.78	0.65-0.89	1.670	50	5.0	3.5	70 %
	318	151658	560229							
		HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD (RS #1)	332	NA	376614	0.78	0.65-0.89	50 NG				
	334	NA	480656							
C13 2378-TCDD (IS #1)	332	--	324113	0.81	0.65-0.89	1.099	50	5.0	3.8	77 %
	334	113022	400344							
<hr/>										
		HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD (IS #3)	402	64900	284384	0.81	0.69-0.93	0.951	50	5.0	4.0	80 %
	404	--	229016							
C13 123789-HxCDD (RS #2)	402	NA	371488	0.81	0.69-0.93	50 NG				
	404	NA	299930							
		HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF (IS #4)	420	166619	820592	0.94	0.83-1.12	1.441	100	10.0	8.2	82 %
	422	--	772272							
		HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD (IS #5)	470	--	395555	0.93	0.75-1.01	0.707	100	10.0	8.6	86 %
	472	74944	424560							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

0435

*** ANALYTE RESULTS ***

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DELM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DELM01.1) to yield the highest possible concentration and most conservative risk value

* (under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA		320/322	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 320	m/z 322			m/z 320	m/z 322			
2378-TCDD	0.993	162404	219264	0.74	0.65-0.89	--	910	2.7	0.1	
TCDD #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #22	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD (TOTAL)	0.993					--	910	2.7	0.1	

TCDF (IS #2)	RRF	AREA		304/306	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 304	m/z 306			m/z 304	m/z 306			
2378-TCDF	0.993	219302	258576	0.85	0.65-0.89	--	1560	2.4	0.1	
TCDF #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #11	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #12	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #38	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF (TOTAL)	0.993					--	1560	2.4	0.1	

0.436

PeCDD (IS #1)	RRF	AREA		358/356	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 356	m/z 358			m/z 356	m/z 358			
12378-PECDD	0.721	439767	277541	0.63	0.55-0.75	--	X	6.9	0.0	
PeCDD #2	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #3	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #4	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #5	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #6	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #7	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #8	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #14	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PECDD (TOTAL)	0.721					--	1560	6.9	0.2	

PeCDF (IS #2)	RRF	AREA		342/340	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 340	m/z 342			m/z 340	m/z 342			
12378-PECDF	0.743	627263	403555	0.64	0.55-0.75	--	X	7.0	0.0	
23478-PECDF	0.750	0	0	ERR	0.55-0.75	--	X	0.0	0.0	U
PeCDF #3	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #4	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #5	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #6	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #7	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #8	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #9	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #10	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #11	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #28	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PECDF (TOTAL)	0.743					--	1030	7.0	0.1	

HxCDD (IS #3)	RRF	AREA		392/390	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 390	m/z 392			m/z 390	m/z 392			
123478-HxCDD	0.916	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123678-HxCDD	1.053	343610	280195	0.82	0.69-0.93	X	--	5.8	0.0	
123789-HxCDD	1.035	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
HxCDD #4	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #5	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #6	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #7	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #10	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD (TOTAL)	0.916					780	--	5.8	0.2	

HxCDF (IS #4)	RRF	AREA		376/374	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 374	m/z 376			m/z 374	m/z 376			
123478-HxCDF	0.971	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123678-HxCDF	1.087	566471	464242	0.82	0.69-0.93	X	--	6.0	0.0	
234678-HxCDF	0.934	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123789-HxCDF	0.866	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
HxCDF #5	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #6	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #7	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #8	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #9	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #10	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF (TOTAL)	0.866					700	--	6.0	0.1	

HpCDD (IS #3)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 424	m/z 426 426/424		m/z 424	m/z 426			
1234678-HPCDD	0.844	330007	319098 0.97	0.83-1.12	X	--	7.5	0.0	
HpCDD #2	0.844	0	0 ERR	0.83-1.12	--	--	0.0	--	--
HPCDD (TOTAL)	0.844				825	--	7.5	0.2	

HpCDF (IS #4)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 408	m/z 410 410/408		m/z 408	m/z 410			
1234678-HPCDF	0.918	484959	477691 0.99	0.83-1.12	X	--	6.6	0.0	
1234789-HPCDF	0.745	0	0 ERR	0.83-1.12	X	--	0.0	0.0	U
HpCDF #3	0.745	0	0 ERR	0.83-1.12	--	--	0.0	--	--
HpCDF #4	0.745	0	0 ERR	0.83-1.12	--	--	0.0	--	--
HPCDF (TOTAL)	0.745				710	--	6.6	0.1	

OCDD (IS #5)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 458	m/z 460 458/460		m/z 458	m/z 460			
	1.223	549967	603281 0.91	0.75-1.01	--	690	11.5	0.2	

OCDF (IS #5)	RRF	AREA	AREA	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 442	m/z 444 442/444		m/z 442	m/z 444			
	1.341	667839	744551 0.90	0.75-1.01	--	500	12.8	0.1	

ROY F. WESTON, Inc. - LIONVILLE
GCMS SPECIAL PROJECTS

GUIDE FOR LOCATING DIOXIN ANALYTES
USING RELATIVE RETENTION TIMES FROM DAILY STANDARDS

GCMS FILENAME: Z052605

WINDOW FILENAME: Z052602

RFW #: 9405L630-002S

CCL FILENAME: Z052603

2378-SUBSTITUTED CONGENERS						ANALYTE WINDOW			
INTERNAL STANDARD		* IS SCAN #	CONGENER	RRT	PREDICTED SCAN		FIRST		LAST
-----		-----	-----	-----	-----		-----		-----
C13 2378-TCDD	(IS #1)	1553	2378-TCDD	1.000	1553	TCDD	RRT WINDOW:	0.931	to 1.032
							SCAN RANGE:	1446	to 1603
			12378-PECDD	1.156	1795	PECDD	RRT WINDOW:	1.083	to 1.178
							SCAN RANGE:	1682	to 1829
C13 2378-TCDF	(IS #2)	1521	2378-TCDF	1.000	1521	TCDF	RRT WINDOW:	0.919	to 1.055
							SCAN RANGE:	1398	to 1605
			12378-PECDF	1.136	1728	PECDF	RRT WINDOW:	1.062	to 1.211
			23478-PECDF	1.165	1772		SCAN RANGE:	1615	to 1842
C13 123678-HxCDD	(IS #3)	2047	123478-HxCDD	0.997	2041	HxCDD	RRT WINDOW:	0.949	to 1.012
			123678-HxCDD	1.000	2047		SCAN RANGE:	1943	to 2072
			123789-HxCDD	1.013	2074				
			1234678-HPCDD	1.136	2325	HPCDD	RRT WINDOW:	1.105	to 1.137
							SCAN RANGE:	2262	to 2327
C13 1234678-HpCDF	(IS #4)	2236	123478-HxCDF	0.886	1981	HxCDF	RRT WINDOW:	0.851	to 0.940
			123678-HxCDF	0.890	1990		SCAN RANGE:	1903	to 2102
			234678-HxCDF	0.909	2033				
			123789-HxCDF	0.937	2095				
			1234678-HPCDF	1.000	2236	HPCDF	RRT WINDOW:	1.000	to 1.057
			1234789-HPCDF	1.057	2363		SCAN RANGE:	2236	to 2363
C13 OCDD	(IS #5)	2602	OCDD	1.000	2602				
			OCDF	1.005	2615				

* Use the scan number from the ion with the largest area
unless the other ion has a better peak shape.

0439

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 46002, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

SCANS 1350 TO 1650

CALI: Z052605 #3

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

CALI: Z052605 #3

SCANS 1400 TO 1650

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

COND5.: 4600Z, GC22, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052605 #1

CALI: 2052605 #3

SCANS 1500 TO 1570

2770

315.942
± 0.500

118784

151808

317.938
± 0.500

101248

331.937
± 0.500

131584

333.934
± 0.500

1500 20:00 1510 20:08 1520 20:16 1530 20:24 1540 20:32 1550 20:40 1560 20:48 1570 20:56 TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

SCANS 1570 TO 1850

CALI: Z052605 #3

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

SCANS 1640 TO 1850

CALI: Z052605 #3

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 46002, GC22, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

SCANS 1865 TO 2130

CALI: Z052605 #3

5
4
7
0

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

CALI: Z052605 #3

SCANS 1900 TO 2100

9740

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

SCANS 1970 TO 2110

CALI: Z052605 #3

0.447

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

SCANS 2190 TO 2400

CALI: Z052605 #3

847.0

2200
29:20

2250
30:00

2300
30:40

2350
31:20

2400
32:00 TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

CALI: Z052605 #3

SCANS 2235 TO 2350

6770

HPCDD

2240
29:52

2250
30:08

2280
30:24

2300
30:40

2320
30:56

2340
31:12

2350 SCAN
31:28 TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

CALI: Z052605 #3

SCANS 2180 TO 2300

0570

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

COND5.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052605 #1

CALI: 2052605 #3

SCANS 2530 TO 2660

0451

OCDF

2540 33:52 2560 34:08 2580 34:24 2600 34:40 2620 34:56 2640 35:12 2660 35:28 SCAN TIME

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052605 #1

CALI: Z052605 #3

SCANS 2530 TO 2660

0452

MIDMASS CHROMATOGRAMS

05/26/94 11:50:00

SAMPLE: 9405L630-0025 NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052605 #1

CALI: 2052605 #3

SCANS 2530 TO 2660

3520

92.2 470 100.0 472

469.778
± 0.500

75008.

471.775
± 0.500

2540 33:52 2550 34:08 2560 34:24 2570 34:40 2580 34:56 2590 35:12 2600 35:28 2610 35:44 2620 36:00 2630 36:16 2640 36:32 2650 36:48 2660 37:04

ROY F. WESTON, INC.

PCDD/PCDF DATA SUMMARY

CLIENT: *Nuclear Fuel Services*

RFW NUMBER: *94052630-002T*

SAMPLE ID: *1661B-084*

GC/MS FILENAME: *2052606*

DATE ANALYZED: *5/26/94*

C-13 TCDD RECOVERY: *81* %

MATRIX: *SOIL*

C-13 TCDF RECOVERY: *75* %

SAMPLE AMOUNT: *10.0g*

C-13 HXCDD RECOVERY: *76* %

UNITS: *ng/g*

C-13 HPCDF RECOVERY: *60* %

C-13 OCDD RECOVERY: *90* %

COMPOUND	CONC.	EDL	FLAG(S)
2378-TCDD	<i>104</i> <i>92</i>	<i>0.1</i>	
TOTAL TCDD	<i>104</i> <i>1</i>	<i>0.1</i>	
TOTAL PECDD	<i>115</i>	<i>0.2</i>	
TOTAL HXCDD	<i>93</i>	<i>0.1</i>	
TOTAL HPCDD	<i>125</i>	<i>0.1</i>	
OCDD	<i>92</i>	<i>0.1</i>	
2378-TCDF	<i>92</i>	<i>0.1</i>	
TOTAL TCDF	<i>92</i>	<i>0.1</i>	
TOTAL PECDF	<i>109</i>	<i>0.1</i>	
TOTAL HXCDF	<i>107</i>	<i>0.1</i>	
TOTAL HPCDF	<i>107</i>	<i>0.2</i>	
OCDF	<i>94</i> <i>V</i>	<i>0.1</i>	

PCDD/PCDF DATA ANALYSIS

RFN #: 9405L630-002 ✓

TEST: OTDF-T -

FILENAME: Z052606 ✓

WEIGHT: 10.0 G

ANALYSIS DATE: 05/26/94 ✓

GPC/WINDOW: Z052602

ANALYSIS TIME: 1236 ✓

DILUTION FACTOR: 1.000

ANALYST: JDL

OF DILUTION STEPS: 1

INSTRUMENT: 4600Z

% SOLIDS: 100 (NOT DETERMINED)

CALIBRATION RANGE: 0.5 to 10 for C1-4 through C1-7
1.0 to 20 for C1-8

UNITS: NG/G

*** INTERNAL STANDARD DATA ***

STANDARD	M/Z	HEIGHT	AREA	ION RATIO 316/318	QC LIMITS	IS RE or RS SPIKE AMOUNT	IS ADDED (NG)	* IS CONC. NG/G	* IS MEASURED NG/G	IS RECOVERY
C13 2378-TCDF (IS #2)	316	--	492144 ✓	0.78 ✓	0.65-0.89	1.670	50	5.0	3.8	75 %
	318	168252 ✓	628708 ✓							
		HEIGHT	AREA	332/334	QC LIMITS					
C13 1234-TCDD (RS #1)	332	NA	389675 ✓	0.78 ✓	0.65-0.89	50 NG				
	334	NA	501033 ✓							
C13 2378-TCDD (IS #1)	332	--	347245 ✓	0.78 ✓	0.65-0.89	1.099	50	5.0	4.0	81 %
	334	126114 ✓	444839 ✓							

		HEIGHT	AREA	404/402	QC LIMITS					
C13 123678-HxCDD (IS #3)	402	69749 ✓	298688 ✓	0.80 ✓	0.69-0.93	0.951	50	5.0	3.8	76 %
	404	--	239098 ✓							
C13 123789-HxCDD (RS #2)	402	NA	417535 ✓	0.79 ✓	0.69-0.93	50 NG				
	404	NA	330962 ✓							
		HEIGHT	AREA	422/420	QC LIMITS					
C13 1234678-HpCDF (IS #4)	420	141183 ✓	668143 ✓	0.93 ✓	0.83-1.12	1.441	100	10.0	6.0	60 %
	422	--	622154 ✓							
		HEIGHT	AREA	470/472	QC LIMITS					
C13 OCDD (IS #5)	470	--	451855 ✓	0.91 ✓	0.75-1.01	0.707	100	10.0	9.0	90 %
	472	90012 ✓	496407 ✓							

* This amount is only used to determine IS recovery (NOT USED FOR QUANTIFICATION)

0455
1/5/20/94

*** ANALYTE RESULTS ***

ANALYTE QUANTIFICATION:

$$\frac{(\text{SUM of ANALYTE AREAS}) \times (\text{IS AMOUNT in ng})}{(\text{SUM of IS AREAS}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for "non-2378" isomers= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

DETECTION LIMIT CALCULATION:

$$\frac{2.5 \times (\text{NOISE HEIGHT}) \times (\text{IS AMOUNT in ng})}{(\text{IS HEIGHT}) \times (\text{SAMPLE WT./VOL.}) \times (\% \text{ SOLIDS}) \times (\text{RESPONSE FACTOR})}$$

Note: RRF used for congener "TOTAL's"= lowest of all that were determined (as per CLP SOW DFLM01.1) to yield the highest possible concentration and most conservative risk value

* (under EDL)= EMPC [i.e. A peak was observed at > 2.5:1 signal-to-noise that did not meet all identification criteria (for 'TOTAL': height= sum of all EMPC heights); 2.5 factor not applied to EMPC's]

TCDD (IS #1)	RRF	AREA m/z 320	AREA m/z 322	320/322	QC LIMITS	NOISE HEIGHT m/z 320	NOISE HEIGHT m/z 322	RESULT	EDL	FLAG
2378-TCDD	0.993	179718	228373	0.79	0.65-0.89	--	1070	2.6	0.1	
TCDD #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD #22	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDD (TOTAL)	0.993					--	1070	2.6	0.1	

TCDF (IS #2)	RRF	AREA m/z 304	AREA m/z 306	304/306	QC LIMITS	NOISE HEIGHT m/z 304	NOISE HEIGHT m/z 306	RESULT	EDL	FLAG
2378-TCDF	0.993	221139	290024	0.76	0.65-0.89	--	1240	2.3	0.1	
TCDF #2	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #3	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #4	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #5	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #6	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #7	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #8	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #9	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #10	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #11	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #12	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF #38	0.993	0	0	ERR	0.65-0.89	--	--	0.0	--	--
TCDF (TOTAL)	0.993					--	1240	2.3	0.1	

0456

PeCDD (IS #1)	RRF	AREA	AREA	358/356	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 356	m/z 358			m/z 356	m/z 358			
12378-PECDD	0.721	498127	323204	0.65	0.55-0.75	--	X	7.2	0.0	
PeCDD #2	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #3	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #4	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #5	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #6	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #7	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #8	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDD #14	0.721	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PECDD (TOTAL)	0.721					--	1710	7.2	0.2	

PeCDF (IS #2)	RRF	AREA	AREA	342/340	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 340	m/z 342			m/z 340	m/z 342			
12378-PECDF	0.743	701534	437025	0.62	0.55-0.75	--		6.8	0.0	
23478-PECDF	0.750	0	0	ERR	0.55-0.75	--	X	0.0	0.0	U
PeCDF #3	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #4	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #5	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #6	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #7	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #8	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #9	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #10	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #11	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PeCDF #28	0.743	0	0	ERR	0.55-0.75	--	--	0.0	--	--
PECDF (TOTAL)	0.743					--	1340	6.8	0.1	

HxCDD (IS #3)	RRF	AREA	AREA	392/390	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 390	m/z 392			m/z 390	m/z 392			
123478-HxCDD	0.916	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123678-HxCDD	1.053	369007	289701	0.79	0.69-0.93	X	--	5.8	0.0	
123789-HxCDD	1.035	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
HxCDD #4	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #5	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #6	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #7	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD #10	0.916	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDD (TOTAL)	0.916					700	--	5.8	0.1	

HxCDF (IS #4)	RRF	AREA	AREA	376/374	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 374	m/z 376			m/z 374	m/z 376			
123478-HxCDF	0.971	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123678-HxCDF	1.087	515001	421695	0.82	0.69-0.93	X	--	6.7	0.0	
234678-HxCDF	0.934	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
123789-HxCDF	0.866	0	0	ERR	0.69-0.93	X	--	0.0	0.0	U
HxCDF #5	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #6	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #7	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #8	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #9	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF #10	0.866	0	0	ERR	0.69-0.93	--	--	0.0	--	--
HxCDF (TOTAL)	0.866					680	--	6.7	0.457	

HpCDD (IS #3)	RRF	AREA	AREA	426/424	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 424	m/z 426			m/z 424	m/z 426			
1234678-HPCDD	0.844	359105	345965	0.96	0.83-1.12	X	--	7.8	0.0	
HpCDD #2	0.844	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HpCDD (TOTAL)	0.844					540	--	7.8	0.1	

HpCDF (IS #4)	RRF	AREA	AREA	410/408	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 408	m/z 410			m/z 408	m/z 410			
1234678-HPCDF	0.918	404139	386423	0.96	0.83-1.12	X	--	6.7	0.0	
1234789-HPCDF	0.745	0	0	ERR	0.83-1.12	X	--	0.0	0.0	U
HpCDF #3	0.745	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HpCDF #4	0.745	0	0	ERR	0.83-1.12	--	--	0.0	--	--
HpCDF (TOTAL)	0.745					910	--	6.7	0.2	

OCDD (IS #5)	RRF	AREA	AREA	458/460	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 458	m/z 460			m/z 458	m/z 460			
1.223	654768	718239	0.91	0.75-1.01	--	440	11.8	0.1		

OCDF (IS #5)	RRF	AREA	AREA	442/444	QC LIMITS	NOISE HEIGHT		RESULT	EDL	FLAG
		m/z 442	m/z 444			m/z 442	m/z 444			
1.341	706560	780527	0.91	0.75-1.01	--	640	11.7	0.1		

Jul 27/87

ROY F. WESTON, Inc. - LIONVILLE
GCMS SPECIAL PROJECTS

GUIDE FOR LOCATING DIOXIN ANALYTES
USING RELATIVE RETENTION TIMES FROM DAILY STANDARDS

GCMS FILENAME: Z052606

WINDOW FILENAME: Z052602

REF #: 9405L630-002T

CCL FILENAME: Z052603

2378-SUBSTITUTED CONGENERS						ANALYTE WINDOW		
INTERNAL STANDARD	* IS SCAN #	CONGENER	RRT	PREDICTED SCAN		FIRST	LAST	
C13 2378-TCDD (IS #1)	1556	2378-TCDD	1.000	1556	TCDD	RRT WINDOW: 0.931 to 1.032		
						SCAN RANGE: 1449 to 1606		
		12378-PECDD	1.156	1799	PECDD	RRT WINDOW: 1.083 to 1.178		
						SCAN RANGE: 1685 to 1833		
C13 2378-TCDF (IS #2)	1524	2378-TCDF	1.000	1524	TCDF	RRT WINDOW: 0.919 to 1.055		
						SCAN RANGE: 1401 to 1608		
		12378-PECDF	1.136	1731	PECDF	RRT WINDOW: 1.062 to 1.211		
		23478-PECDF	1.165	1775		SCAN RANGE: 1618 to 1846		
C13 123678-HxCDD (IS #3)	2050	123478-HxCDD	0.997	2044	HxCDD	RRT WINDOW: 0.949 to 1.012		
		123678-HxCDD	1.000	2050		SCAN RANGE: 1945 to 2075		
		123789-HxCDD	1.013	2077				
		1234678-HPCDD	1.136	2329	HPCDD	RRT WINDOW: 1.105 to 1.137		
						SCAN RANGE: 2265 to 2331		
C13 1234678-HpCDF (IS #4)	2238	123478-HxCDF	0.886	1983	HxCDF	RRT WINDOW: 0.851 to 0.940		
		123678-HxCDF	0.890	1992		SCAN RANGE: 1905 to 2104		
		234678-HxCDF	0.909	2034				
		123789-HxCDF	0.937	2097				
		1234678-HPCDF	1.000	2238	HPCDF	RRT WINDOW: 1.000 to 1.057		
		1234789-HPCDF	1.057	2366		SCAN RANGE: 2238 to 2366		
C13 OCDD (IS #5)	2607	OCDD	1.000	2607				
		OCDF	1.005	2620				

* Use the scan number from the ion with the largest area
unless the other ion has a better peak shape.

0970

SCANS 1350 TO 1650

DATA: 2052606 #1
CALI: 2052606 #3

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

CONDS.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

CALI: Z052606 #3

SCANS 1400 TO 1650

0461

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

COND.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

SCANS 1500 TO 1570

CALI: Z052606 #3

2462

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

SCANS 1570 TO 1850

CALI: Z052606 #3

0463

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

COND5.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

SCANS 1640 TO 1850

CALI: Z052606 #3

4940

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00
 SAMPLE: 9405L530-002T NFS
 COND5.: 4500Z, GCZZ, OTDFN1(AS)
 RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3
 DATA: Z052606 #1
 CALI: Z052606 #3

SCANS 1865 TO 2130

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

CALI: Z052606 #3

SCANS 1900 TO 2100

9970

HICOD

1900
25:20

1950
26:00

2000
26:40

2050
27:20

2100
28:00 TIME

MIDMASS CHROMATOGRAMS

05/26/94 12:35:00

SAMPLE: 9405L630-002T NFS

CONDS.: 4500Z, GCZZ, OTDFN1(A5)

RANGE: G 1,2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

CALI: Z052606 #3

SCANS 1970 TO 2110

2970
0460

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

COND5.: 4600Z, GCZZ, OTDFN1(A5)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

SCANS 2190 TO 2400

CALI: Z052606 #3

8970

MIDMASS CHROMATOGRAMS

05/26/94 12:35:00

SAMPLE: 9405L630-002T NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

CALI: Z052606 #3

SCANS 2235 TO 2360

6940

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

COND5.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

CALI: Z052606 #3

SCANS 2180 TO 2300

0470

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L530-002T NFS

CONDS.: 4500Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: Z052606 #1

CALI: Z052606 #3

SCANS 2530 TO 2660

0.770

2660 SCAN
35:28 TIME

2640
35:12

2620
34:56

2600
34:40

2580
34:24

2560
34:08

2540
33:52

MIDMASS CHROMATOGRAMS

05/26/94 12:36:00

SAMPLE: 9405L630-002T NFS

CONDS.: 4600Z, GCZZ, OTDFN1(AS)

RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3

DATA: 2052605 #1

CALI: 2052605 #3

SCANS 2530 TO 2660

0472

OOD

2540 2560 2580 2600 2620 2640 2660 SCAN
33:52 34:08 34:24 34:40 34:56 35:12 35:28 TIME

MIDMASS CHROMATOGRAMS
 05/26/94 12:36:00
 SAMPLE: 9405L630-002T NFS
 CONDS.: 4500Z, GCZZ, OTDFN1(AS)
 RANGE: G 1.2700 LABEL: N 2, 1.0 QUAN: A 4, 1.0 J 0 BASE: U 20, 3
 DATA: 2052606 #1
 CALI: 2052606 #3
 SCANS 2530 TO 2660

83200.

469.778
± 0.500

90112.

471.775
± 0.500

2540 33:52
 2560 34:08
 2580 34:24
 2620 34:56
 2640 35:12
 2660 35:28
 SCAN TIME

END OF DATA PACKAGE

0474