Table Of Contents

ANALYSIS: BNA METHOD NO.: 8270

ARDL Report(s) #: 006616 + 006617 MATRIX: SEA WEED (LIMU)

	PAGE
Organic Package Review Checklist	2
Case Narrative and/or Nonconformance Reports	5
Sample Receipt Information	8
Field Sample Results	13
QC Summary Forms	25
Sample Preparation Information	33
Standard Preparation Information	41
Analytical Run Data	81
Example Calculation	176
Miscellaneous Additional Data	178

	By:	Date:
Package Preparation	JTA	04/09/14
Analytical Review	PEK	4/9/2014
Final Review	JO	4/11/14
QA Review	DLD	4/14/14

Rev. 1.1

Organic Package Review Checklist

Rev. 1.1

ORGANIC PACKAGE REVIEW CHECKLIST

METHOD: 8270

	Initial	Date
Case Narrative and/or Nonconformance Reports		
Case Narrative / Analyst Comment Sheets	PEK	4/9/14
Nonconformance / Noncompliance Reports (if applicable)	↓	↓
Sample Receipt Information		
Copies of Original Chain-of-Custody Forms	PEK	4/9/14
Cooler Receipt Form and Airbills	↓	↓
Phone Messages (If applicable)	↓	↓
Field Sample Results	PEK	4/9/14
QC Summary Forms		
Surrogate Summary, if applicable	PEK	4/9/14
Spike Blank and/or MS Summary	↓	↓
Blank Results & Blank Summary, if applicable	↓	↓
ISTD Area Summary, if applicable	↓	↓
Sample Preparation Information (if applicable)		
Total Solids Determination (If applicable)	PEK	4/9/14
Extraction Log (If applicable)	↓	↓
Extraction Notebook Pages (If applicable)	↓	↓
Spiking Solutions Notebook Pages	↓	↓
MS/MSD's	↓	↓
Surrogate/ISTDs	↓	↓
Spiking Solutions Certificates Of Analyses	↓	↓
MS/MSD's	↓	↓
Surrogates/ISTDs	↓	↓
Certificates of Analysis (Vendor)	↓	↓
Standard Preparation Information		
Instrument Logs/Analysis Notebook Pages	PEK	4/9/14
Certificates of Analysis (Vendor)	↓	↓
Analytical Run Number 1		
Calibration Information	PEK	4/9/14
Tune Data	↓	↓
Initial Calibration	↓	↓
Continuing Calibration	↓	↓
Instrument Logs/Analysis Notebook Pages	↓	↓
Blank/Sample/Field QC Data	↓	↓
Analytical Run Number 2 (if required)		
Calibration Information	N/A	
Tune Data	↓	↓
Initial Calibration	↓	↓
Continuing Calibration	↓	↓
Instrument Logs/Analysis Notebook Pages	↓	↓
Blank/Sample/Field QC Data	↓	↓

Rev. 1.1

ORGANIC PACKAGE REVIEW CHECKLIST (Continued)

METHOD: 8270

	Initial	Date
Analytical Run Number 3 (if required)		
Calibration Information	N/A	
Tune Data		
Initial Calibration		
Continuing Calibration		
Instrument Logs/Analysis Notebook Pages		
Blank/Sample/Field QC Data		
Analytical Run Number 4 (if required)		
Calibration Information	N/A	
Tune Data		
Initial Calibration		
Continuing Calibration		
Instrument Logs/Analysis Notebook Pages		
Blank/Sample/Field QC Data		
Analytical Run Number 5 (if required)		
Calibration Information	N/A	
Tune Data		
Initial Calibration		
Continuing Calibration		
Instrument Logs/Analysis Notebook Pages		
Blank/Sample/Field QC Data		
Analytical Run Number 6 (if required)		
Calibration Information	N/A	
Tune Data		
Initial Calibration		
Continuing Calibration		
Instrument Logs/Analysis Notebook Pages		
Blank/Sample/Field QC Data		
Example Calculation		
Example Calculation Sheet	PEK	4/9/14
Miscellaneous Additional Data (if applicable)	N/A	

NA = Not Applicable

I have checked this package for completeness and verify the following:

1. Pencils, whiteout, whiteout tape, and dark highlighters were not used. ✓
2. All notebook pages are signed. ✓
3. All corrections contain the original data "struck through" with initials and date. ✓
4. All comments found throughout the data are defined as required. ✓
5. All pages are legible. ✓
6. Manual integrations, if applicable, are printed out and include an explanation with signature of the analyst and date. ✓

Package Completeness Checked By/Date: PEK 4/9/2014

Rev. 1.1

Case Narrative and/or Nonconformance Reports

Rev. 1.1

ORGANIC ANALYSIS CASE NARRATIVE

Corps of Engineers – ERDC, Vicksburg **Date: 4/11/14**

ARDL Report No.: 6616, 6617 **Lab Name: ARDL, Inc.**

Project Name: MAKAU MILITARY RESERVATION OAHU (LIMU)

Samples Received at ARDL: 03/14/2014

Lab ID No.	Sample ID No.	Date Collected	Date Extracted	Analysis Requested
006616-01	MAK120L	01/31/2014	04/01/2014	BNA
006616-02	MAK121L	01/31/2014	04/01/2014	BNA
006616-03	MAK122L	01/31/2014	04/01/2014	BNA
006616-04	MAK123L	01/31/2014	04/01/2014	BNA
006616-05	MAK124L	01/31/2014	04/01/2014	BNA
006616-06	MAK126L	01/31/2014	04/01/2014	BNA
006616-07	MAK127L	02/11/2014	04/01/2014	BNA
006616-08	MAK128L	02/11/2014	04/01/2014	BNA
006617-01	MAK116L	01/31/2014	04/01/2014	BNA
006617-02	MAK117L	01/31/2014	04/01/2014	BNA
006617-03	MAK118L	01/31/2014	04/01/2014	BNA

SEMIVOLATILE FRACTION – METHOD 8270C

Eleven (11) tissue (limu) samples were received by ARDL, Inc. on March 14, 2014, for 8270C analysis.

Due to specific project requirements and the unusual nature of the subject samples, some changes were made to standard method protocol. Since the requested analyte list was limited to five Phthalate Esters and Pyrene, only the three Base/Neutral surrogate compounds were used and evaluated in all calibrations, QC and sample analyses. A sample weight of 5 grams was used for extraction resulting in a 1,000 ug/Kg reporting limit. All extractions were performed with methylene chloride as the only solvent in order to avoid probable matrix interferences.

INITIAL CALIBRATION

The initial calibration was performed using six calibration points and passed method criteria.

CONTINUING CALIBRATION

All continuing calibrations met criteria.

SURROGATES

All QC and samples met surrogate recovery criteria.

INTERNAL STANDARD

All Internal standard recoveries were acceptable for all analyses.

LCS

The LCS analysis met the recovery criteria.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The MS/MSD analysis was performed on sample MAK123L. Diethylphthalate recovery was outside limits (57-112%) for the MS at 36.5% and the MSD at 28.4%. Di-n-butylphthalate recovery was outside limits (54-118%) for the MSD at 48.9%. The LCS passed all recovery criteria, therefore the low recovery of both Diethylphthalate and Di-n-butylphthalate is attributed to matrix interference and/or non-homogeneity of the sample. All other compounds met recovery criteria.

ORGANIC ANALYSIS CASE NARRATIVE

Corps of Engineers – ERDC, Vicksburg **Date: 4/11/14**

ARDL Report No.: 6616, 6617 **Lab Name: ARDL, Inc.**

Project Name: MAKAU MILITARY RESERVATION OAHU (LIMU)

Samples Received at ARDL: 03/14/2014

METHOD BLANKS

No target analytes were detected in the method blank above the reporting limit.

ORGANIC DATA REPORTING QUALIFIERS

The following organic data reporting qualifiers are used as required.

ND- Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. This flag is used when estimating a concentration of a compound that meets identification criteria but the result is less than the quantitation or reporting limit but greater than the method detection limit.

P - This flag is used for any two column confirmation methodology when there is greater than 40% difference for detected concentrations between the two columns. The primary column value is reported on the Form 1 and flagged with a "P".

B - This flag is used when the analyte is found above the reporting limit in the blank as well as the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.

Dean S. Dickerson
Technical Services Manager

Sample Receipt Information

Rev. 1.1

ARDL, Inc

P.O. Box 1566, 400 Aviation Drive, Mount Vernon, Illinois 62864
Phone (618) 244-3235, Fax (618) 244-1149

CHAIN OF CUSTODY RECORD

Project
ARDL / Makau Military Reservation Oahu, Hawaii Project

SAMPLERS (Signature)

SAMPLE NUMBER	DATE	TIME	Comp	Grab	# of Containers	Purgeable Organics 8260B	Explosives 8330	OCPs 8081	SVCOs 8270C	ARDL, Inc Remarks or Sample Location	PRESERVATION ICED	PRESERVATION Specify Chemicals added and final pH if known
MAK111C	1/31/2014	1000		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK113C	1/31/2014	1120		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK114C	1/31/2014	1155		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK115C	1/31/2014	1300		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK116C	1/31/2014	1330		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK117C	1/31/2014	1435		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK118C	1/31/2014	1605		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK120C	2/11/2014	1030		x	1	x	x	x	x	Mokuleia Site - Sea Cucumber	x	
MAK120L	1/31/2014	1040		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK121L	1/31/2014	1130		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK122L	1/31/2014	1405		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK123L	1/31/2014	1455		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK124L	1/31/2014	1540		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK126L	1/31/2014	1615		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK127L	2/11/2014	1304		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK128L	2/11/2014	1415		x	1	x	x	x	x	Mokuleia Site - Limu	x	
MAK116L	1/31/2014	820		x	1	x	x	x	x	Maena Point Site - Limu	x	
MAK117L	1/31/2014	835		x	1	x	x	x	x	Maena Point Site - Limu	x	
MAK118L	1/31/2014	910		x	1	x	x	x	x	Maena Point Site - Limu	x	

Relinquished by: (Signature)	Date	Time	Relinquished by: (Signature)
[signature]	3/13/14	1600	
Relinquished by: (Signature)	Date	Time	Relinquished by: (Signature)
Received for Laboratory by: (Signature)	Date	Time	Shipping Ticket No.
[signature]	3/14/14	0915	

REMARKS / SPECIAL INSTRUCTIONS:

Project Samples. Please treat each matrix separately.

Please send level 4 hardcopy report and excel edd to: Dean Dickerson, c/o ARDL, Inc. 400 Aviation Drive, Mount Vernon, IL 62864. Email questons to ddickerson@ardlinc.com.

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 6615-6617

Cooler # 6160
Number of Coolers in Shipment: 1

Project: MAKAU MILITARY RESERVATION oahu

Date Received: 3-14-14

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 3-14-14 (Signature) D L Cochrum

1. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO

   If YES, enter carrier name and airbill number here: Fed-ex 9325 1888 1273

2. Were custody seals on outside of cooler? ..... YES NO N/A

   How many and where? 1 (front) , Seal Date: 3-13-14 , Seal Name: ? Can't read

3. Were custody seals unbroken and intact at the date and time of arrival? ..... (YES) NO
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag ~~and taped inside to the lid~~? dlc 3/14/14 ..... (YES) NO
6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES ____ NO ✓ Cooler Temp. 1.4 C

B. **LOG-IN PHASE:** Date samples were logged-in: 3-14-14 (Signature) D L Cochrum

10. Describe type of packing in cooler: bubble pack / bubble bags
11. Were all bottles sealed in separate plastic bags? ... not sealed ..... YES NO N/A
12. Did all bottles arrive unbroken and were labels in good condition? ..... YES (NO)
13. Were bottle labels complete? ..... (YES) NO
14. Did all bottle labels agree with custody papers? ..... (YES) NO
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... YES NO (N/A)
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: ____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... (YES) NO N/A

Comments and/or Corrective Action:
12) MAK 114C - lid leaken / seal intact
MAK 127L - lid leaken / seal not intact.
MAK 116L - lid leaken / seal intact
MAK 117C - lid leaken / seal intact
MAK 122L - lid leaken / seal intact
(By: Signature) dlc Date: 3-14-14

Sample Transfer	
Fraction: All	Fraction
Area #: freezer	Area #
By: dlc	By
On: 3-14-14	On

M:\ADMIN\FORMS\COOLER RECEIPT REPORT.doc Rev. 05/07/07

ORIGIN ID:GRBA (920) 469-2436
SHIPPING
PACE ANALYTICAL
1241 BELLEVUE

GREEN BAY, WI 54302
UNITED STATES US

SHIP DATE: 13MAR14
ACTWGT: 42.0 LB MAN
CAD: 255289/CAFE2704

DRY ICE: 2.3 KGS
BILL THIRD PARTY

TO DONNA COCKRUM
ARDL
400 AVIATION DRIVE
P.O BOX 1566
MOUNT VERNON IL 62864
(618) 244-3235 REF:
INV:
PO: DEPT:

518C1/CC4F/GF03

FedEx Express

J131113052301 26

FRI - 14 MAR AA
STANDARD OVERNIGHT

TRK# 0201 9325 1888 1273

ICE
62864
IL-US STL

NA MVNA

Part # 156148-434 RIT2 03/12

ORIGIN ID:GRBA (920) 469-2436
SHIPPING
PACE ANALYTICAL
1241 BELLEVUE

GREEN BAY, WI 54302
UNITED STATES US

SHIP DATE: 13MAR14
ACTWGT: 42.0 LB MAN
CAD: 255289/CAFE2704

DRY ICE: 2.3 KGS
BILL THIRD PARTY

TO DONNA COCKRUM
ARDL
400 AVIATION DRIVE
P.O BOX 1566
MOUNT VERNON IL 62864
(618) 244-3235 REF:
INV:
PO: DEPT:

518C1/CC4F/6F03

FedEx Express

J131113052301126

FRI - 14 MAR AA
STANDARD OVERNIGHT

TRK# 0201 9325 1888 1273

ICE
62864
IL-US STL

NA MVNA

Part # 156148-434 RIT2 03/12

Field Sample Results

Rev. 1.1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK120L	ARDL Lab No.:	006616-01
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403405
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1040	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	88%
2-Fluorobiphenyl	30-130	93%
Terphenyl-d14	30-130	100%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-01, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK121L	ARDL Lab No.:	006616-02
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403406
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1130	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	87%
2-Fluorobiphenyl	30-130	86%
Terphenyl-d14	30-130	102%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-02, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK122L	ARDL Lab No.:	006616-03
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403407
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1405	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	90%
2-Fluorobiphenyl	30-130	93%
Terphenyl-d14	30-130	101%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-03, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK123L	ARDL Lab No.:	006616-04
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403408
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1455	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	1520		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	78%
2-Fluorobiphenyl	30-130	78%
Terphenyl-d14	30-130	96%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-04, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK124L	ARDL Lab No.:	006616-05
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403411
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1540	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	79%
2-Fluorobiphenyl	30-130	79%
Terphenyl-d14	30-130	98%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-05, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK126L	ARDL Lab No.:	006616-06
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403412
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1615	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	87%
2-Fluorobiphenyl	30-130	91%
Terphenyl-d14	30-130	100%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-06, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK127L	ARDL Lab No.:	006616-07
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403413
Sample Date:	02/11/2014	Received Date:	03/14/2014
Sample Time:	1304	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	77%
2-Fluorobiphenyl	30-130	60%
Terphenyl-d14	30-130	94%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-07, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK128L	ARDL Lab No.:	006616-08
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403414
Sample Date:	02/11/2014	Received Date:	03/14/2014
Sample Time:	1415	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	69%
2-Fluorobiphenyl	30-130	81%
Terphenyl-d14	30-130	94%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-08, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006617 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK116L	ARDL Lab No.:	006617-01
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403415
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	0820	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	70%
2-Fluorobiphenyl	30-130	81%
Terphenyl-d14	30-130	100%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006617-01, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006617 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK117L	ARDL Lab No.:	006617-02
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403416
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	0835	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	73%
2-Fluorobiphenyl	30-130	68%
Terphenyl-d14	30-130	94%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006617-02, BNA'S (METHOD 8270) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006617 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK118L	ARDL Lab No.:	006617-03
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403417
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	0910	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	77%
2-Fluorobiphenyl	30-130	58%
Terphenyl-d14	30-130	99%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006617-03, BNA'S (METHOD 8270)

Page 1 of 1

QC Summary Forms

Surrogate Summary, if applicable

Spike Blank and/or MS Summary

Blank Results & Blank Summary, if applicable

ISTD Area Summary, if applicable

Rev. 1.1

2C

LIMU SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: ---

Lab Code: --- Case No.: --- SAS No.: --- SDG No.: ---

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 ( ) #	S5 ( ) #	S6 ( ) #	TOT OUT
01	BLANK B10179	94	101	101				0
02	SPBK B10179	80	102	105				0
03	MAK120L	88	93	100				0
04	MAK121L	87	86	102				0
05	MAK122L	90	93	101				0
06	MAK123L	78	78	96				0
07	MAK123LMS	88	78	103				0
08	MAK123LMSD	84	73	99				0
09	MAK124L	79	79	98				0
10	MAK126L	87	91	100				0
11	MAK127L	77	60	94				0
12	MAK128L	69	81	94				0
13	MAK116L	70	81	100				0
14	MAK117L	73	68	94				0
15	MAK118L	77	58	99				0
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

		QC LIMITS
S1	Nitrobenzene-d5	(30 - 130)
S2	2-Fluorobiphenyl	(30 - 130)
S3	Terphenyl-d14	(30 - 130)
S4		(-)
S5		(-)
S6		(-)

column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270) Analytical Method: 8270C
Project No.: Prep Method: 3550A

Matrix: QC Material QC Batch: B6705 Prep. Date: 04/01/2014
Amount Used: 5 g Level: LOW Analysis Date: 04/03/2014

Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Dimethylphthalate	4120	5000	82	--	--	--	67-104	--	--
Diethylphthalate	4110	5000	82	--	--	--	65-108	--	--
Di-n-butylphthalate	4260	5000	85	--	--	--	68-115	--	--
Pyrene	4300	5000	86	--	--	--	47-122	--	--
bis(2-Ethylhexyl)phthalate	4040	5000	81	--	--	--	52-128	--	--
Di-n-octylphthalate	4120	5000	82	--	--	--	36-150	--	--

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Nitrobenzene-d5	80.3	--	30-130
2-Fluorobiphenyl	101.6	--	30-130
Terphenyl-d14	105.2	--	30-130

'*' indicates a recovery outside of standard limits.

Spike Blanks for 006616-04, BNA'S (METHOD 8270)

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270) Analytical Method: 8270C
Project No.: Prep Method: 3550A

Field ID: MAK123L
Desc/Location: MAKAU MILITARY RES OAHU
Sample Date: 01/31/2014
Sample Time: 1455
Matrix: TISSUE

Prep. Date: 04/01/2014
Amount Used: 5 g
% Moisture: No Moisture Present
QC Batch: B6705
Level: LOW

ARDL Lab No.: 006616-04
Lab Filename:
Received Date: 03/14/2014
Analysis Date: 04/03/2014

Parameter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Dimethylphthalate	ND	4030	5000	80.6	3750	5000	74.9	57-110	7.3	30
Diethylphthalate	1520	3350	5000	36.5 *	2940	5000	28.4 *	57-112	12.9	30
Di-n-butylphthalate	ND	2810	5000	56.2	2440	5000	48.9 *	54-118	14.1	30
Pyrene	ND	3030	5000	60.6	2850	5000	56.9	43-119	6.3	30
bis(2-Ethylhexyl)phthalate	ND	3870	5000	77.5	3790	5000	75.8	57-116	2.2	30
Di-n-octylphthalate	ND	4050	5000	81.1	3950	5000	79	32-152	2.6	30

SURROGATE RECOVERIES:	MS %R	MSD %R	%R Limits
Nitrobenzene-d5	88	84	30-130
2-Fluorobiphenyl	78	73	30-130
Terphenyl-d14	103	99	30-130

'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 006616-04, BNA'S (METHOD 8270)

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLANK B10179

Lab Name: ARDL, INC. Contract: ---

Lab Code: --- Case No.: --- SAS No.: --- SDG No.: ---

Lab File ID: E0403403 Lab Sample ID: 006616-04B1

Instrument ID: AG5 Date Extracted: 04/01/14

Matrix: (soil/water) LIMU Date Analyzed: 04/03/14

Level: (low/med) --- Time Analyzed: 09:45

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SPBK B10179	006616-04K1	E0403404	04/03/14
02	MAK120L	006616-01	E0403405	04/03/14
03	MAK121L	006616-02	E0403406	04/03/14
04	MAK122L	006616-03	E0403407	04/03/14
05	MAK123L	006616-04	E0403408	04/03/14
06	MAK123LMS	006616-04MS	E0403409	04/03/14
07	MAK123LMSD	006616-04MD	E0403410	04/03/14
08	MAK124L	006616-05	E0403411	04/03/14
09	MAK126L	006616-06	E0403412	04/03/14
10	MAK127L	006616-07	E0403413	04/03/14
11	MAK128L	006616-08	E0403414	04/03/14
12	MAK116L	006617-01	E0403415	04/03/14
13	MAK117L	006617-02	E0403416	04/03/14
14	MAK118L	006617-03	E0403417	04/03/14
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

METHOD BLANK REPORT
ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	NA	ARDL Lab No.:	006616-04B1
Desc/Location:	NA	Lab Filename:	E0403403
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	04/01/2014
Matrix:	QC Material	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	NA	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units
Dimethylphthalate	200	1000	ND		UG/KG
Diethylphthalate	200	1000	ND		UG/KG
Di-n-butylphthalate	200	1000	ND		UG/KG
Pyrene	200	1000	ND		UG/KG
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG
Di-n-octylphthalate	200	1000	ND		UG/KG

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	94%
2-Fluorobiphenyl	30-130	101%
Terphenyl-d14	30-130	101%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Blank for Run B6705, BNA'S (METHOD 8270)

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: --- SAS No.: --- SDG No.: ---

Lab File ID (Standard): E0307408 Date Analyzed: 03/07/14

Instrument ID: AG5 Time Analyzed: 18:08

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STANDARD	3210755	7.40	12445918	9.37	6929396	12.29
	UPPER LIMIT	6421510	7.90	24891836	9.87	13858792	12.79
	LOWER LIMIT	1605378	6.90	6222959	8.87	3464698	11.79
	EPA SAMPLE NO.						
1	BLANK B10179	3915488	7.39	14827642	9.36	8112546	12.28
2	SPBK B10179	3851713	7.39	14706576	9.36	8058564	12.28
3	MAK120L	3885267	7.40	14608258	9.36	8020065	12.28
4	MAK121L	3846295	7.40	13993419	9.37	7609751	12.28
5	MAK122L	4008941	7.40	14379950	9.36	7718936	12.28
6	MAK123L	4251303	7.40	15079305	9.37	8214395	12.28
7	MAK123LMS	4158721	7.40	14681114	9.37	7905903	12.28
8	MAK123LMSD	4059988	7.40	14321800	9.37	7764194	12.28
9	MAK124L	3885476	7.40	14724491	9.36	8050976	12.28
10	MAK126L	3976518	7.40	15087167	9.36	8263940	12.28
11	MAK127L	4175868	7.40	15323880	9.37	8406132	12.28
12	MAK128L	4097167	7.40	15066293	9.37	8180668	12.28
13	MAK116L	4018979	7.40	14922715	9.37	8078777	12.28
14	MAK117L	4062526	7.40	15189133	9.36	8317217	12.28
15	MAK118L	4262858	7.40	15613970	9.36	8379172	12.28
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard are
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +.50 minutes of internal standard RT
RT LOWER LIMIT = -.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk
* Values outside of QC limits

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: --- SAS No.: --- SDG No.: ---

Lab File ID (Standard): E0307408 Date Analyzed: 03/07/14

Instrument ID: AG5 Time Analyzed: 18:08

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STANDARD	11541208	14.86	13396136	20.48	13707138	25.43
	UPPER LIMIT	23082416	15.36	26792272	20.98	27414276	25.93
	LOWER LIMIT	5770604	14.36	6698068	19.98	6853569	24.93
	EPA SAMPLE NO.						
1	BLANK B10179	13654809	14.85	16331919	20.47	15525394	25.42
2	SPBK B10179	13401313	14.85	16149565	20.46	15434311	25.42
3	MAK120L	13468215	14.85	17058908	20.47	13615928	25.42
4	MAK121L	12847568	14.85	16162361	20.46	11321390	25.41
5	MAK122L	13270267	14.85	16592017	20.47	12163047	25.42
6	MAK123L	14011618	14.85	17746187	20.47	12259251	25.42
7	MAK123LMS	13572309	14.85	17071747	20.47	11452061	25.42
8	MAK123LMSD	13333959	14.85	16660605	20.47	10087002	25.42
9	MAK124L	13211329	14.85	16516926	20.47	12513693	25.42
10	MAK126L	13560145	14.85	17057359	20.47	12615473	25.42
11	MAK127L	14099411	14.85	17559865	20.47	10780435	25.42
12	MAK128L	14047301	14.85	17433136	20.47	10372196	25.42
13	MAK116L	13771648	14.85	16870376	20.47	8611292	25.42
14	MAK117L	14060750	14.85	17370370	20.47	8827254	25.41
15	MAK118L	14317941	14.85	17359393	20.47	7521318	25.42
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard are
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +.50 minutes of internal standard RT
RT LOWER LIMIT = -.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk
* Values outside of QC limits

Sample Preparation Information

(Not Applicable for VOA Purge and Trap Method)

Rev. 1.1

3550
8270 BNA Tissues

DATE : 04/ 01 / 2014 **BATCH # B10179**

CUST: Makau Military Reservation Oahu **ARDL # 6616, 6617**

SAMPLES: BLK; SP BLK; 6616-1 thru 8; 6617-1 thru 3
QC SAMPLE: 6616-4ms/msd

SOLVENT USED: $MeCL_2$ # 0000068488
REAGENTS USED: Na_2SO_4 # 0000066287

SURROGATE # 20006-050613 CONC BN 1000 PPM __X__ AMOUNT 25 uL __X__

SPIKE # 16088 CONC 250 PPM __X__ AMOUNT 100 uL __X__

EXTRACTION METHOD: SONICATION __X__ MED/LEVEL_____ DILUTION ____

FINAL VOLUME 1 mL

EXTRACTION PERSONNEL: SMN, JAD, JWM

SPIKER: SMN **WITNESS: JAD**

SAMPLE #	WEIGHT/G	pH	Vf		SAMPLE #	WEIGHT/G	pH	Vf
BLK	5.00 g	-----	1 mL		6617-2	5.02 g	-----	1 mL
SP BLK	5.00 g	"	"		6617-3	5.02 g	"	"
6616-1	5.02 g	"	"					
6616-2	5.00 g	"	"					
6616-3	5.02 g	"	"					
6616-4	5.01 g	"	"					
6616-4ms	5.01 g	"	"					
6616-4msd	5.01 g	"	"					
6616-5	5.04 g	"	"					
6616-6	5.03 g	"	"					
6616-7	5.02 g	"	"					
6616-8	5.01 g	"	"					
6617-1	5.00 g	"	"					

RECEIVED BY: PEK
DATE: 4/1/2014

DELIVERED BY: SMN
DATE: 4/1/14

B10179 8270-BNA-Tissues

Sample I.D.	W_I	V_f	Date:	Time:
BLK	5.00g	1mL	4/1/14	10:30
SpBLK	5.00g	1mL		
6616-1	5.02g	1mL	Water Bath Temp: 92°C	
-2	5.00g	1mL		
-3	5.02g	1mL		
-4(A)	5.01g	1mL		
-4MS(A)	5.01g	1mL		
-4MSD(A)	5.01g	1mL		
-5	5.04g	1mL		
-6	5.03g	1mL		
-7	5.02g	1mL		
-8	5.01g	1mL		
6617-1	5.00g	1mL		
-2	5.02g	1mL		
-3	5.02g	1mL		

All samples contain 25µl of surrogate # 20606-050613 (1000ppm).

SpBLK, MS, MSD contain 100µl of spike #16088.

Solvent Used: $MeCl_2$ # 0000068488.

Reagent Used: Na_2SO_4 # 0000066287.

Spiker SMW Witness JAD

Continued on Page

Read and Understood By

Steve Newcomb 4/1/14 Signed Date

Signed 4/1/14 Date

Absolute St[illegible]ards, Inc.
800-368-1131
www.absolutestandards.com

Certified R[illegible]rence Material CRM

ISO 90[illegible]S Registered
ISO 17025-34[illegible]-43 Accredited
Scopes: http://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

Part Number:	20006	**Solvent(s):**	Lot # 28951	Methylene chloride
Lot Number:	050613			
Description:	CLP Semi-Volatiles Base/Neutral Surrogate Standard			
	SOW July'91 GC/MS Calibration - 4 components			
Expiration Date:	050618			
Recommended Storage:	Refrigerate (4 °C)			
Nominal Concentration (µg/mL):	1000			

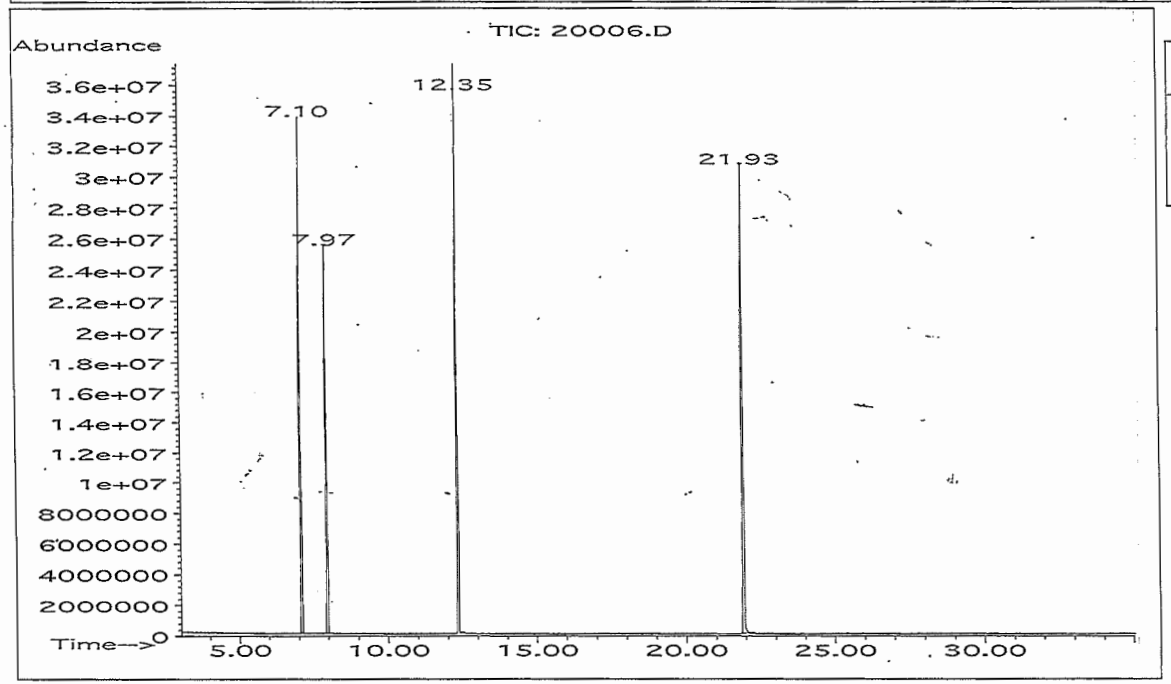
Formulated By:	Gabriel Helland	050613	DATE
Reviewed By:	Pedro L. Rentas	050613	DATE

5E-05 Balance Uncertainty

Weight(s) shown below were combined and diluted to: 200.0 0.007 Flask Uncertainty

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Expanded Uncertainty	CAS#	MSDS Information (Solvent Safety Info. On Attached pg.) OSHA PEL (TWA)	LD50
1. 2-Fluorobiphenyl	187	MKAA3698	1000	96	0.2	0.20832	0.20852	1001.0	0.0042	00321-60-8	N/A	N/A
2. p-Terphenyl-d14	272	P-6109	1000	98	0.2	0.20407	0.20438	1001.5	0.0041	01718-51-0	1 ppm (CL)	orl-rbt 2400mg/kg
3. Nitrobenzene-d5	229	U538P20	1000	99.7	0.2	0.20059	0.20091	1001.6	0.0040	04165-60-0	1 ppm (5mg/m3/8H)(skin)	orl-rat 640mg/kg
4. 1,2-Dichlorobenzene-d4	128	PR-18653/12207DB2	1000	99	0.2	0.20201	0.20245	1002.2	0.0041	02199-69-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 200°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Melissa Stonier.



Peak No.	Name	MSD RT (min.)
1	1,2-Dichlorobenzene-d4	7.10
2	Nitrobenzene-d5	7.97
3	2-Fluorobiphenyl	12.35
4	p-Terphenyl-d14	21.93

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

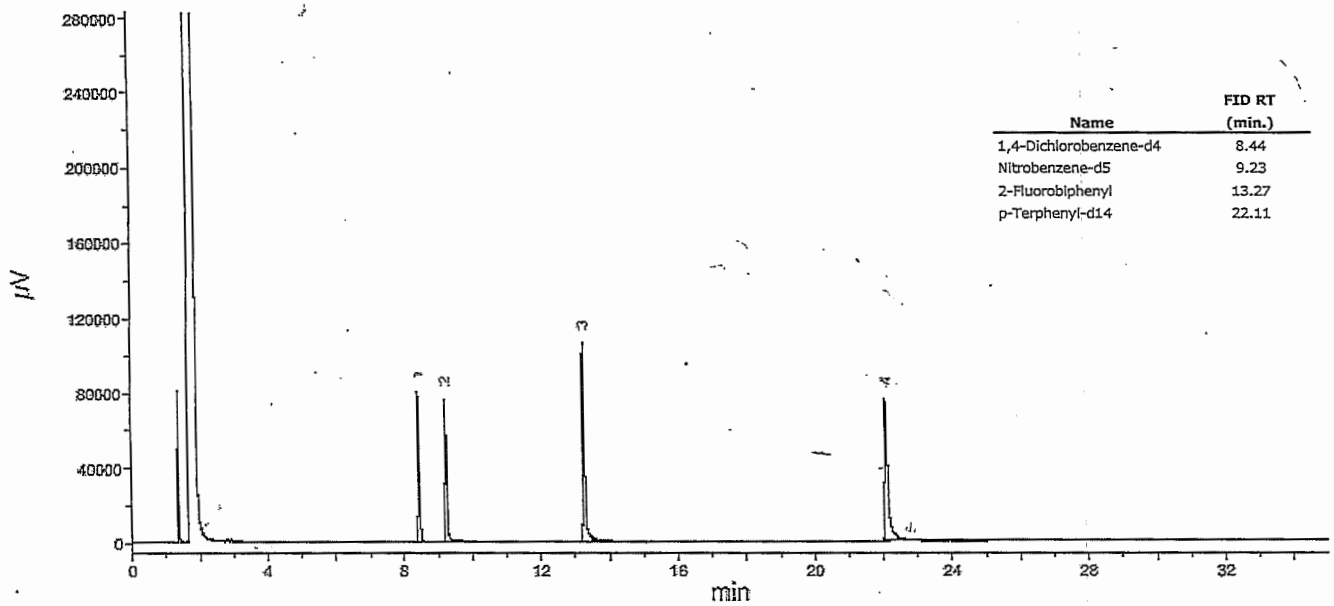
Certified Reference Material CRM

ISO 9001 QS Registered
ISO 17025-34-35-43 Accredited
Scopes: http://AbsoluteStandards.com

Run 59, "P20006 L050613 [1000µg/mL in MeCl2]"

Run Length: 35.00 min, 20998 points at 10 points/second.
Created: Thu, May 9, 2013 at 2:30:34 AM.
Sampled: Sequence "050713-GC9M1", Method "GC9-M1".
Analyzed using Method "GC9-M1".

Comments
GC9M1 Analysis by Candice Warren
SPB-5 30 meter x 0.53 µm x 1.5 df
Flow Rates; Total Flow = 300 mL/min, Helium (carrier)=6mL, Helium (makeup)=25mL,
Hydrogen (detector)=30, Air (detector)=360, Oven Temp 1 = 50 C (1 min)
Rate = 10 C/min, Oven Temp 2 = 300 (9 min), Total Run Time=35 min.
Injector Temp = 200 C, FID Temp = 300 C, FID Signal = Edaq Channel 1
Gas Chromatograph = HP5890, Standard Injection = 0.5 uL, Range =4



Name	FID RT (min.)
1,4-Dichlorobenzene-d4	8.44
Nitrobenzene-d5	9.23
2-Fluorobiphenyl	13.27
p-Terphenyl-d14	22.11

STOCK

16086-R

RESTEK Made in USA
Cat# 31282
Sonicate ampule 15 minutes prior to opening
Pyrene Standard
1000 ug/mL each in Methanol
Lot# A071610 Exp. Date: 01/2017 Store: Room Temperature
Restek Corporation - 110 Benner Circle - Bellefonte, PA 16823
Rec'd 10.17.13
opened 10/22/13

STOCK

16087-R

RESTEK 110 Benner Circle Bellefonte, PA 16823 Made in USA
Catalog # 31031
606 Phthalate Esters Calibration Mix
2000 ug/mL each in Methanol
Lot# A082368 Exp. Date: 10/2015 Store: 10°C or colder
Rec'd 10.17.13
opened 10/22/13

16088 HI Spike mix (Tissues)

1.00 mL of # 16086-R Pyrene (1,000 µg/mL)
0.5 mL of # 16087-R 606 Phthalate Esters (2,000 µg/mL)
2.50 mL Methanol (Macron Lot 44064)
4.00 mL of 250 µg/mL each

JO 10/22/13 exp 10/22/14

16089 25 PPM DFTPP

1 µL of 14810-S (25,000 PPM exp 03/2014). Brought to 1.0 mL VF with MeCl2. = 25 PPM DFTPP

MeCl2 PEK exp
00000 54901 10/24/2013 10/31/2013

16090 10 PPM STD D/D UM84

10 µL each 15960-AB (1000 PPM exp. 12/2016), 15961-AB (1000 PPM exp. 05/2016), and 15962-US (1000 PPM exp 03/2016). Brought to 1.0 mL VF with MeCl2.
1.0 mL of 10 µg/mL + 5 µL of 15972-S (2000 µg/mL exp. 05/2016).

MeCl2 PEK exp.
00000 54901 10/24/2013 10/31/2013

Continued on Page

Read and Understood By

PEK 10/24/2013 RC 10/29/13
Signed Date Signed Date

Certificate of Analysis

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

Catalog No. : 31282 **Lot No.:** A071610

Description : Pyrene Standard

Expiration Date[1] : January 2017 **Storage:** Room Temperature

Handling: Sonicate ampule 15 minutes prior to opening

Elution Order	Compound	CAS #	Percent Purity 2	Concentration (weight/volume) 3	% Uncertainty (95% C.L.; K=2) 4
1	Pyrene	129-00-0	98%	999.600 ug/ml	+/-0.59 %
Solvent:	Methanol	67-56-1	99%		

Column:
30m x .25mm x .25um
Rtx-5 (cat.#10223)

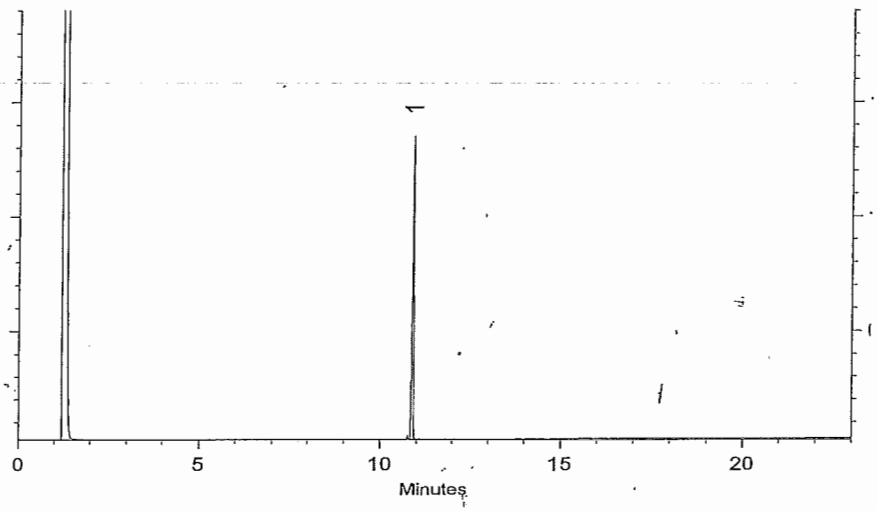
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 5 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:



Adam K. Clark
Adam Clark - QA Analyst

Date Passed: 12/02/2009 **Balance:** 1128342314

Manufactured under Restek's ISO 9001-2000
Registered Quality System
Certificate #FM80397

1 Expiration date of the unopened ampule stored at recommended temperature.

2A Purity was determined by one or more of the following techniques: GC/FID, HPLC, GC/ECD, GC/MS. Value rounded to the nearest whole number. In addition to detectors listed above, chemical identity and purity are confirmed using one or more of the following: MS, DSC, solid probe MS, GC/FPD, GC/NPD, GC/TC, FTIR, melting point, refractive index, and Karl Fisher. See data pack or contact Restek for further details.

2B Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities.

2C Compounds with a listed purity of less than 99% may be salts, derivatives, or hydrates. The listed purity is actually a correction factor that was used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound.

2D Purity of isomeric compounds is reported as the sum of the isomers. Value is rounded to the nearest whole number after summation.

3 Based upon gravimetric preparation with balance calibration verified using NIST traceable weights (seven mass levels).

4 Uncertainties determined using repeatability and reproducibility data for balances and glassware from measurement systems analysis methodology, balance and glassware tolerances, raw material purity, and, where applicable, eccentricity and linearity values from an accredited calibration laboratory.

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.Restek.com

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

Catalog No. : 31031 **Lot No.:** A082358

Description : 606 Phthalate Esters Calibration Mix

SV Mix, 600 Series Method, 606 Calibration Std, phthalate esters, 2,000µg/ml, Methanol, 1ml/ampule

Container Size : 5 ~~2 mL~~ 1 **Pkg Amt:** 5 ~~> 1 mL~~

Expiration Date : October 2015 **Storage:** 10°C or colder

Elution Order	Compound	CAS #	Percent Purity 2	Grav. Conc. (weight/volume) 3	Grav.Uncert. (95% C.L.; K=2) 4
1	Dimethylphthalate	131-11-3	99%	2,000.0 ug/mL	+/- 11.6 ug/mL
2	Diethylphthalate	84-66-2	99%	2,000.0 ug/mL	+/- 11.6 ug/mL
3	Di-n-butylphthalate	84-74-2	99%	2,000.0 ug/mL	+/- 11.6 ug/mL
4	Benzyl butyl phthalate	85-68-7	99%	2,000.0 ug/mL	+/- 11.6 ug/mL
5	Bis(2-ethylhexyl)phthalate	117-81-7	99%	2,000.0 ug/mL	+/- 11.6 ug/mL
6	Di-n-octyl phthalate	117-84-0	99%	2,000.0 ug/mL	+/- 11.6 ug/mL
Solvent:	Methanol	67-56-1	99%		

Column:
30m x .25mm x .25um
Rtx-5 (cat.#10223)

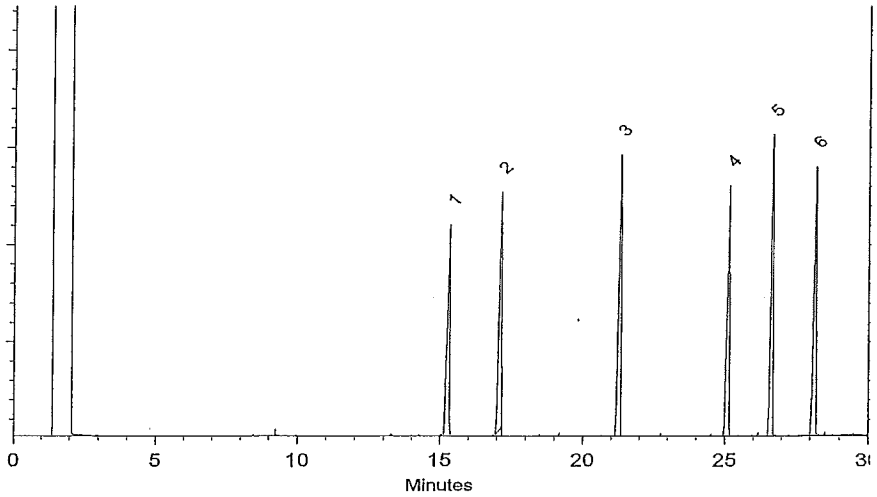
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



Standards Preparation Information

Rev. 1.1

PROJECT

Continued From Page

16288-R 2000 µg/mL Acid Surr Mix

100 µL 16287-R (10,000 µg/mL exp 03/2021)
900 µL $MeCl_2$ (000000632 23)
1.0 mL 2000 µg/mL Acid Surr Mix
PEK exp
3/7/2014 3/7/2015

16289 8270 Tune

50 µL 16102-R (1000 µg/mL exp 01/2016)
950 µL $MeCl_2$ (000000632 23)
1.0 mL of 50 PPM 8270 Tune
PEK exp
3/7/2014 6/7/2014

16290-R

RESTEK Made in USA
Cat# 31496
Azobenzene Standard
1000 ug/mL each in Methylene Chloride
Lot# A071936 Exp. Date: 12/2014 Store: Refrigerate
Restek Corporation • 110 Benner Circle • Bellefonte, PA 16823

Recieved 10/14/2011
Opened 3/7/2014

PEK
3/7/2014

PEK 3/7/14
16291-~~R~~S

NOTEBOOK INSERT LABEL

Semi-Volatile Base-Neutral Surrogate Spike Mix 4-8935
Lot: LC01909 EXP: JUL/2016 STORAGE: REFRIGERATE 1 x 1ml
DATE RECEIVED: 9/25/2013
SUPELCO Solutions within.
595 North Harrison Road • Bellefonte, PA 16823-0048 USA • Phone 814-359-3441

Opened 3/7/2014

PEK
3/7/2014

16292 60 µg/mL 8270 STD

150 µL of the following: 15651-R (2000 PPM exp. 02/2015), 15682-R (2000 PPM exp 03/2014), 15703-R (2000 PPM exp 10/2014), 15652-R (2000 PPM exp. 03/2014), 16139-R (2000 PPM exp. 03/2018), 16015-R (2000 PPM exp 08/2017), 15881-R (2000 PPM exp 02/2015), 16288-R (2000 PPM exp 3/7/2015), 16004-R (2000 PPM exp 04/2016).

300 µL of the following: 16290-R (1000 µg/mL exp 12/2014) + 16291-S (~~20~~ 1000 µg/mL exp 07/2016) PEK 3/7/14
PEK exp
3/7/2014 3/31/2014

Continued on Page

Read and Understood By

PEK 3/7/2014 3/11/14
Signed Date Signed Date

10/17/12 opened the following:

15651-R

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog # 31007
SV Calibration Mix #1
2000 ug/mL each in Methylene Chloride
Lot# A086821 Exp. Date: 02/2015 Store: 10°C or colder

15652-R

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog # 31010
Sonicate prior to use.
SV Calibration Mix #4
2000 ug/mL each in Methylene Chloride
Lot# A078618 Exp. Date: 03/2014 Store: 10°C or colder

AC 10/17/12

15653 30 Ng Val Stnd (8270)

Diluted the following volumes to 1mL VF:

Vol	Mix #	Mix Name	Exp Date	Conc
15µL	15651-R	S/V mix #1	02/2015	2000ug/mL
	14667-R	#2	04/2013	
	14685-R	#3	11/2012	
	15652-R	#4	03/2014	
	15238-R	#5	03/2018	
	14688-R	Benzidines	05/2019	
	14931-R	S/V mix #7	04/2013	
	15402-S	Acid SurR	Dec/2013	
30µL	15094-US	1,2,4,5-TCB	07/31/2013	1000ug/mL
	14756-R	Azobenzene	12/2014	
	15208-R	Aniline	03/2018	
	15209-AB	Pyridine	02/15/14	
	15400-S	B/N SurR	Nov/2013	

plus 20µL of ISTD# 15639-S (Exp May/2014)

MeCl2 407501 DAC 10/17/12 RGP 10/24/12

Continued on Page

Read and Understood By

Doug Casale 10/17/12 Signed Date

JD 1/28/13 Signed Date

11/26/12 opened:

NOTEBOOK INSERT LABEL

Semi-Volatile Base-Neutral Surrogate Spike Mix 4-8935
Lot: LB80026 EXP: NOV/2013 STORAGE: REFRIGERATE 1 x 1ml
DATE RECEIVED: 1/12/12
SUPELCO Analytical
595 North Harrison Road • Bellefonte, PA 16823-0048 USA • Phone 814-359-3441

15679-S

11/26/12

15680 50 Ng DFTPP (8270 PNAs by SIM)

Diluted 2uL of # 14810-S (exp Mar 2014) to 1mL VF

15681 5 PPM Vol Std (8270 PNAs by SIM)

Diluted 250uL of # 15635 (exp 1/12/13), plus 5uL of B/N SURR # 15679-S (exp Nov 2013) to 1mL VF, plus 5uL of ISTD # 15639-S (exp May 2014)

MeCl2 DAC Exp
207501 11/26/12 12/3/12

11/29/12 opened:

15682-R

RESTEK
Cat# 31008
SV Calibration Mix #2
2000 ug/mL each in Methylene Chloride
Lot# A066336 Exp. Date: 03/2014 Store: Refrigerate
Restek Corporation - 110 Benner Circle - Bellefonte, PA 16823

15683-R

RESTEK
Made in USA
Cat# 31009
Sonicate ampule 10 minutes prior to opening
SV Calibration Mix #3
2000 ug/mL each in Methylene Chloride
Lot# A069965 Exp. Date: 11/2012 Store: Refrigerate
Restek Corporation - 110 Benner Circle - Bellefonte, PA 16823

11/29/12

Continued on Page

Read and Understood By

Signed 11/29/12 Date Signed 12/13/12 Date

Initial Calibration Standards (8270)

Std #	Std Conc	Vol of "A" Mix #15692 (exp 2/30/13)	Vol of "B" Mix #15693 (exp 2/30/13)	Vol of ISTD 15639-S (May/14)
15694	Blank	—	—	20 µL
15695	10 Ng	40 µL	40 µL	
15696	20	80	80	
15697	30	120	120	
15698	40	160	160	
15699	50	200	200	
15700	60	240	240	
15701	70	280	280	
15702	80	320	320	

All standards are 1mL VF

	DAC	EXP
MeCl2 L07501	11/30/12	12/7/12

12/5/12 opened

15703-R

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog # 31009
Sonicate prior to use.
SV Calibration Mix #3
2000 ug/mL each in Methylene Chloride
Lot# A083302 Exp. Date: 10/2014 Store: 10°C or colder

15704-R

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog # 31496
Azobenzene Standard
1000 ug/mL each in Methylene Chloride
Lot# A086727 Exp. Date: 02/2017 Store: 10°C or colder

12/5/12

Continued on Page

Read and Understood By

Signed	Date	Signed	Date
Doug Carroll	12/5/12	GD	12/13/12

16014 Dioxane Standard

5 µL of 15890-AB (1000 µg/mL exp. 06/2017)
2 µL of 15940-S (2000 µg/mL exp. 06/2016)
Brought to volume (1 mL VF) with MeCl2 = 5.0 µg/mL Diox. Std.
Added 5 µL of 15972-S (2000 µg/mL exp. 05/2016).

MeCl2 PEK exp.
0000045564 ~~9/5/2013~~ PEK 9/5/2013 9/12/2013
9/5/2013

16015-R

RESTEK 110 Benner Circle Bellefonte, PA 16823 Made in USA
Catalog # 31030
605 Benzidines Calibration Mix
Received 07/29/2013
2000 ug/mL each in Methanol
Lot# A092934 Exp. Date: 08/2017 Store: 10°C or colder
Opened 9/6/2013
PEK
9/6/2013

16016 50 ng DFTPP

2 µL of 14810-S (25,000 ppm exp 03/2014). Brought to 1.0 mL VF with MeCl2 = 50 ng DFTPP

MeCl2 PEK exp
0000045564 9/6/2013 9/13/2013

16017 PNA Calibration Standard

250 µL #15993 (20 ppm)
750 µL MeCl2
1000 µL of 5.0 µg/mL with 5 µL 16001-S (exp 05/2014)

MeCl2 PEK exp
0000045564 9/6/2013 10/6/2013

Continued on Page

Read and Understood By

PEK 9/11/2013 9/11/13
Signed Date Signed Date

15881-R

RESTEK
Catalog # 31013
SV Calibration Mix #7
110 Banner Circle
Bellefonte, PA 16823
Made in USA
2000 ug/mL each in Methylene Chloride
Lot# A086710 Exp. Date: 02/2015 Store: 10°C or colder

opened. 6/6/13

15882 8270 - ICV - (30 ppm)

15 µL - 15651-R (2,000 ppm) SVmix1 Xp 02/2015
- 15682-R 2 03/14
- 15703-R 3 10/14
- 15652-R 4 03/14
- 15238-R PNA 03/18
- 14688-R Benzidines 05/2019
- 15881-R Mix #7 Xp 02/2015
15 µL - 15779-S Acid Surr (2000 ppm) Xp 12/2013

30 µL - 15691-US 1,2,4,5 TCB (1000) Xp. 07/31/13
- 15704-R Azobenz. (1000) 02/2017
- 15209-AB Pyridine 02/2014
30 µL - 15854-S B/N Surr 11/2013
760 µL MeCl2
1,000 µL + 20 µL ISTD 15849-S

6/6/13 Xp 12/31/2013

15883 8270 - ICV STD (30 ppm)

Made same as 15882 above except made sure ISTD mix was at room temp before adding

6/7/13 6/21/13

Continued on Page

Read and Understood By

Signed 6/7/13 Date Signed 06/12/13 Date

8270 Cal STDs

[redacted]

STD #	Name	µL 16077	µL 16078	µL 15880-S	Vf MeCl2
16095	Cal BLK	—	—	—	1.0 mL
16096	5 PPM	20 µL	20 µL	2.5 µL	
16097	10 PPM	40	40	5	
16098	20 PPM	80	80	10	
16099	30 PPM	120	120	15	
16100	40 PPM	160	160	20	
16101	60 PPM	240	240	30	

All w/ 20µL ISTD 16076-S (2000 µg/mL exp 05/2014)

MeCl2
0000054901

PEK
10/30/2013

exp
2/30/2014

16102-R

8270 Tune Mixture Stock

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog # 31615
GC/MS Tuning Mixture
1000 ug/mL each in Methylene Chloride
Lot# A092906 Exp. Date: 01/2016 Store: 10°C or colder

Opened 11/4/2013
Recieved 11/1/2013

PEK
11/4/2013

16103

50 PPM 8270 Tune Mixture

50µL of 16102-R (1000 µg/mL exp 1/2016)
950µL MeCl2 (0000054901)
1.0 mL of 50 PPM 8270 Tune

PEK
11/4/2013

exp
2/4/2014

Continued on Page

Read and Understood By

Signed	Date	Signed	Date
PEK	11/4/2013	JD	11/8/13

8270 Cal Stds

STD #	Name	µL 16292	VF MeCl2	µL 16286-S (2000 µg/mL, exp 07/2016)
16293	BLK	—	1.0 mL	20 µL
16294	5 PPM	PEK ~~170~~ 85 µL		
16295	10 PPM	3/7/14 ~~330~~ 170 µL		
16296	20 PPM	330 µL		
16297	30 PPM	500 µL		
16298	40 PPM	670 µL		
16299	60 PPM	1000 µL	1.0 mL	20 µL

PEK 3/7/14 — exp 3/31/14

16300 30 PPM 8270 STD (ICV)

150 µL Spike ~~#16088~~ PEK 3/13/2013 9002782 (2000 PPM exp 11/2016)
30 µL Surr # 20006-050613
820 µL MeCl2 (000000 63223)
1.0 mL of 30 PPM STD w/ 20 µL 16286-S (2000 µg/mL exp 07/2016)

PEK 3/7/2014 — exp 3/31/14

16301 25 PPM DFTPP

1 µL of 14810-S (25,000 PPM exp 03/2014). Brought to 1.0 mL VF w/ MeCl2 (000000 63223). = 1.0 mL 25 PPM DFTPP

PEK 3/10/2014 — exp 3/17/2014

16302 10 PPM VMSH STD

10 µL 16165-AB (1000 µg/mL exp 12/11/2016)
10 µL 16166-AB (1000 µg/mL exp 5/10/2016)
10 µL 16167-MS (1000 µg/mL exp 3/31/2016)
970 µL MeCl2 (000000 63223)
1.0 mL of 10 PPM STD w/ 5 µL ISTD 16230 (2000 µg/mL exp 05/2016).

PEK 3/10/2014 — exp 3/17/2014

Continued on Page

Read and Understood By

PEK — Signed
3/10/2014 — Date
[illegible] — Signed
3/11/14 — Date

Continued From Page

PROJECT

9002781 8015M - Diesel Spike 9/16/13
Diluted 500ul of stnd. # 51006 (20,000 ug/mL, lot #041912, exp: 04/19/17) from Absolute Exp: 12/16/13
into 10mL of Acetone (JTBaker # 000005140 3). Final conc. = 1000 ppm SMW

9002782 BNA Matrix Spike Mix opened 9/17/13 9/17/13
Cerilliant 8270 CS Mix, cat. # ERS-077, lot # ER111711-01, 200 ug/mL, exp: 11/2016 SMW

9002783 Pest / PCB Surrogate 10/8/13
Diluted 125ul of stnd. # 20023 (lot # 020212, 200 ug/mL, exp: 02/02/17) from Absolute into Exp: 1/8/14
2.5mL of Acetone (JTBaker #51403). Final conc. = 1ppm SMW

9002784 8015M - Surrogate soln 10/9/13
Diluted 1mL of stnd. # 71225 (lot # 112912, 1000 ug/mL, exp: 11/29/17) from Absolute Exp: 1/9/14
into 5mL of Acetone (JTBaker # 51403). Final conc. = 200 ppm SMW

9002785 PNA/SIM Surrogate soln 10/11/13
Diluted 250ul of stnd. # 20006 (lot # 050613, 1000 ug/mL, exp: 05/06/18) from Absolute Exp: 1/11/14
into 5mL of MeOH (Mallinckrodt # K03E03). Final conc. = 50 ppm SMW

10/23/13 SMW

Continued on Page

Read and Understood By

Steve Muzzon 10/23/13 10/23/13
Signed Date Signed Date

NDMA Cal Stds

Std #	Name	µL 16276-R	µL 16277	µL 16275	µL 16274	VF MeCl2
16278	BLK	—	—	0 ~~5 µL~~ PEK 3/5/14	5 µL	1.0 mL
16279	1 PPB	—	10 µL	5 µL		
16280	5 PPB	—	50 µL			
16281	10 PPB	—	100 µL			
16282	25 PPB	5 µL	—			
16283	50 PPB	10 µL	—			
16284	100 PPB	—	195 µL	5 µL	5 µL	1.0 mL

PEK 3/5/2014 exp 3/31/2014

16285 50 PPB NDMA ICV

~~5 µL 16285-ABC~~ PEK 3/5/2014 5 µL 16183 (10 µg/mL exp 3/18/14), 5 µL 16275 (10 µg/mL exp 9/5/14) and 5 µL 16274 (5 µg/mL exp 9/5/14). Brought to 1.0 mL VF w/ MeCl2 (0000063223).

PEK 3/5/2014 exp 3/31/2014

16286-S

NOTEBOOK INSERT LABEL

Semivolatile Internal Std Mix
Lot: LC03378V EXP: OCT/2016
CRM48902
STORAGE: REFRIGERATE 2 x 1ml
DATE RECEIVED: 10/25/2013
SUPELCO Solutions within.
595 North Harrison Road • Bellefonte, PA 16823-0048 USA • Phone 814-359-3441

Opened 3/7/2014

PEK 3/7/2014

16287-R

RESTEK
Catalog# 31063
110 Benner Circle Bellefonte, PA 16823
Made in USA
Acid Surrogate Standard Mix (4/89)
10000 ug/mL each in Methanol
Lot# A093841 Exp. Date: 03/2021 Store: 10°C or colder

Received 11/1/2013
Opened 3/7/2014

PEK 3/7/2014

Continued on Page

Read and Understood By

Signed	Date	Signed	Date
PEK	3/7/2014	TRC	3/11/14

PROJECT

Continued From Page

16002 8270 (ICV) Restek

15 µL	15651-R	2000 ppm	exp. 02/2015
	15682-R		03/2014
	15703-R		10/2014
	15652-R		03/2014
	15238-R		03/2018
	14688-R		05/2019
	15881-R		02/2015
15 µL	15779-S	2000 ppm (Acid Surrogate)	12/2013
30 µL	15704-R	1000 ppm	02/2017
30 µL	15209-AB	1000 ppm (Pyridine)	02/2014
30 µL	15834-S	1000 ppm (B/N Surrogate)	11/2013

775 µL MeCl2 45564 PEK 8/20/2013

1.0 mL of 30 µg/mL w/ 20 µL ISTD ~~15795-S~~ 16001-S

MeCl2	PEK	exp.
0000045564	8/20/2013	12/20/2013

8270 Tune Mix

NOTEBOOK INSERT LABEL

16003-S

EPA 8270 GC/MS Tuning Solution 4-7387 opened 8/28/13

Lot: LB91084 EXP: MAR/2015 STORAGE: REFRIGERATE 1 x 1ml

DATE RECEIVED: 7/29/13

SUPELCO Solutions within. 595 North Harrison Road • Bellefonte, PA 16823-0048 USA • Phone 814-359-3441

Pyridine Stock

16004-R

RESTEK 110 Benner Circle Bellefonte, PA 16823 Made in USA

Catalog # 30409

Pyridine Standard

2000 ug/mL each in R&T Methanol

Lot# A089859 Exp. Date: 04/2016 Store: 0°C or colder

Rec'd 7.29.13 open

8/28/13

Continued on Page

Read and Understood By

Signed	Date	Signed	Date
	8/28/13	PEK	9/11/2013

16137-S Semi Volatile Base Neutral Surrogate Spike Mix

NOTEBOOK INSERT LABEL

Semi-Volatile Base-Neutral Surrogate Spike Mix 4-8935
Lot: LC01909 EXP: JUL/2016 STORAGE: REFRIGERATE 1 x 1ml
DATE RECEIVED: 9/25/2013
SUPELCO Solutions within.
595 North Harrison Road • Bellefonte, PA 16823-0048 USA • Phone 814-359-3441

Opened 11/21/2013

PEK
11/21/2013

16138-S 8270 ISTD

SUPELCO Analytical
595 North Harrison Road • Bellefonte, PA 16823-0048 USA • Phone 814-359-3441

Recieved 7/12/2012
Opened 11/21/2013

48902 LB84817
Semivolatile Internal Standard Mix
2000ug/ml each in CH2Cl2

PEK
11/21/2013

exp.
05/2014

16139-R

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog # 31011
This product is photosensitive.
SV Calibration Mix #5
2000 ug/mL each in Methylene Chloride
Lot# A079674 Exp. Date: 03/2018 Store: 25°C nominal

Recieved 4/16/2012
Opened 11/22/2013

PEK
11/22/2013

16140-S

NOTEBOOK INSERT LABEL

Semi-Volatile Acids Surrogate Spike Mix 4-8939
Lot: LB80515 EXP: DEC/2013 STORAGE: REFRIGERATE 1 x 1ml
DATE RECEIVED: 10/9/2012
SUPELCO Analytical
595 North Harrison Road • Bellefonte, PA 16823-0048 USA • Phone 814-359-3441

Opened 11/22/2013

PEK
11/22/2013

Continued on Page

Read and Understood By

Signed	Date	Signed	Date
PEK	11/22/2013	JO	11/27/13

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ISO Guide 34 Accredited Reference Material Producer Certificate #3222.01

ISO/IEC 17025 Accredited Testing Laboratory Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31615 **Lot No.:** A092905

Description : GC/MS Tuning Mixture

GC/MS Tuning Mixture 1000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 2016 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Pentachlorophenol CAS # 87-86-5 Purity 99%	1,000.0 µg/mL	+/- 5.8275 +/- 35.2615 +/- 60.8566	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
2	DFTPP (Decafluorotriphenylphosphine) CAS # 5074-71-5 Purity 99%	1,000.0 µg/mL	+/- 5.8275 +/- 35.2615 +/- 60.8566	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
3	Benzidine CAS # 92-87-5 Purity 99%	1,000.0 µg/mL	+/- 5.8275 +/- 35.2615 +/- 60.8566	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
4	4,4'-DDT CAS # 50-29-3 Purity 99%	1,000.0 µg/mL	+/- 5.8275 +/- 35.2615 +/- 60.8566	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.Restek.com

ACCREDITED
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31007 **Lot No.:** A086821

Description : SV Calibration Mix #1

Calibration Std #1 2000ug/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : February 2015 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Benzyl alcohol	2,000.0 ug/mL	+/- 11.7371	ug/mL	Gravimetric
	CAS # 100-51-6		+/- 43.8488	ug/mL	Unstressed
	Purity 99%		+/- 43.8488	ug/mL	Stressed
2	4-Chloroaniline	2,000.0 ug/mL	+/- 11.7371	ug/mL	Gravimetric
	CAS # 106-47-8		+/- 43.8488	ug/mL	Unstressed
	Purity 99%		+/- 43.8488	ug/mL	Stressed
3	2-Nitroaniline	2,000.0 ug/mL	+/- 11.7371	ug/mL	Gravimetric
	CAS # 88-74-4		+/- 43.8488	ug/mL	Unstressed
	Purity 99%		+/- 43.8488	ug/mL	Stressed
4	3-Nitroaniline	2,000.1 ug/mL	+/- 11.7379	ug/mL	Gravimetric
	CAS # 99-09-2		+/- 43.8519	ug/mL	Unstressed
	Purity 97%		+/- 43.8519	ug/mL	Stressed
5	4-Nitroaniline	2,000.0 ug/mL	+/- 11.7371	ug/mL	Gravimetric
	CAS # 100-01-6		+/- 43.8488	ug/mL	Unstressed
	Purity 99%		+/- 43.8488	ug/mL	Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

Certificate of Analysis

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

Catalog No. : 31008 Lot No.: A066336
Description : SV Calibration Mix #2
Expiration Date[1]: March 2014 Storage: Refrigerate

Elution Order	Compound	CAS #	Percent Purity [2]	Concentration [3] (weight/volume)	% Uncertainty [4] (95% C.L.; K=2)
1	Phenol	108-95-2	99%	2,000.000 ug/ml	+/-0.63 %
2	2-Chlorophenol	95-57-8	99%	2,000.000 ug/ml	+/-0.63 %
3	2-Methylphenol (o-cresol)	95-48-7	99%	2,000.000 ug/ml	+/-0.63 %
4	4-Methylphenol (p-cresol)	106-44-5	99%	2,000.000 ug/ml	+/-0.63 %
5	2-Nitrophenol	88-75-5	99%	2,000.000 ug/ml	+/-0.63 %
6	2,4-Dimethylphenol	105-67-9	99%	2,000.000 ug/ml	+/-0.63 %
7	2,4-Dichlorophenol	120-83-2	99%	2,000.000 ug/ml	+/-0.63 %
8	Benzoic acid	65-85-0	99%	2,000.000 ug/ml	+/-0.63 %
9	4-Chloro-3-methylphenol	59-50-7	99%	2,000.000 ug/ml	+/-0.63 %
10	2,4,6-Trichlorophenol	88-06-2	99%	2,000.000 ug/ml	+/-0.63 %
11	2,4,5-Trichlorophenol	95-95-4	99%	2,000.000 ug/ml	+/-0.63 %
12	2,4-Dinitrophenol	51-28-5	97%	1,999.946 ug/ml	+/-0.63 %
13	4-Nitrophenol	100-02-7	99%	2,000.000 ug/ml	+/-0.63 %
14	4,6-Dinitro-2-methylphenol	534-52-1	99%	2,000.000 ug/ml	+/-0.63 %
15	Pentachlorophenol	87-86-5	97%	1,999.946 ug/ml	+/-0.63 %
Solvent:	Methylene Chloride	75-09-2	99%		

Column:
30m x .25mm x .5um
Rtx-5 (cat.#10238)

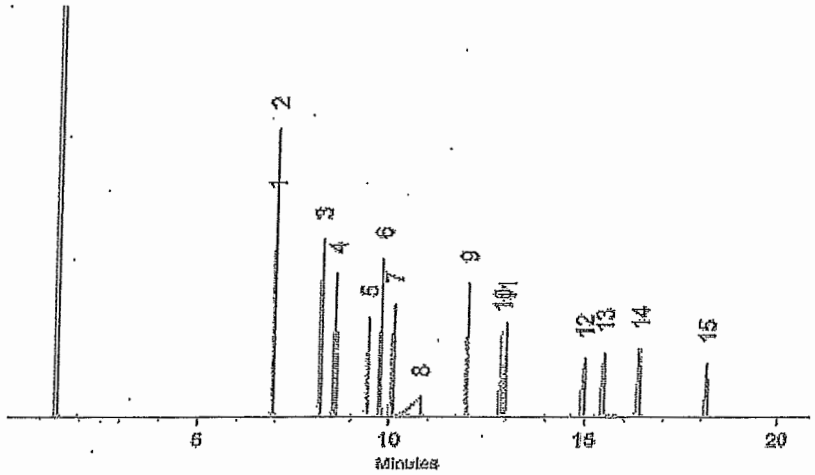
Carrier Gas:
hydrogen @ 40cm/sec.

Temp. Program:
40°C (hold 4 min.) to 200°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:
250°C

Det. Temp:
250°C

Det. Type:
FID



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.Restek.com

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

Catalog No. : 31009 **Lot No.:** A083302

Description : SV Calibration Mix #3

SV Mix, CLP Method, Calibration Std #3, 2,000µg/ml; CH2Cl2, 1ml/ampule

Container Size : [5] 2 mL **Pkg Amt:** [5] > 1 mL

Expiration Date : [1] October 2014 **Storage:** 10°C or colder

Handling: Sonicate prior to use.

Elution Order	Compound	CAS #	Percent Purity [2]	Grav. Conc. [3] (weight/volume)	Grav.Uncert. [4] (95% C.L.; K=2)
1	N-Nitrosodimethylamine	62-75-9	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
2	Bis(2-chloroethyl)ether	111-44-4	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
3	Bis(2-chloroisopropyl)ether	108-60-1	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
4	N-Nitroso-di-n-propylamine	621-64-7	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
5	Bis(2-chloroethoxy)methane	111-91-1	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
6	2-Chloronaphthalene	91-58-7	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
7	Dimethylphthalate	131-11-3	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
8	4-Chlorophenyl phenyl ether	7005-72-3	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
9	N-Nitrosodiphenylamine	86-30-6	97%	1,999.7 ug/mL	+/- 11.7351 ug/mL
10	4-Bromophenyl phenyl ether	101-55-3	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
11	Di-n-butylphthalate	84-74-2	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
12	Benzyl butyl phthalate	85-68-7	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
13	Bis(2-ethylhexyl)phthalate	117-81-7	99%	2,000.0 ug/mL	+/- 11.7371 ug/mL
14	Di-n-octyl phthalate	117-84-0	99%	2,001.0 ug/mL	+/- 11.743 ug/mL

RESTEK

Certificate of Analysis

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

Catalog No.: 31010 Lot No.: A078618

Description: SV Calibration Mix #4

SV Mix, CLP Method, Calibration Std #4, 2,000µg/ml, CH2Cl2, 1ml/ampule

Container Size: [5] 2 mL Pkg Amt: [5] > 1 mL

Expiration Date: [1] March 2014 Storage: 10°C or colder

Handling: Sonicate prior to use.

Elution Order	Compound	CAS #	Percent Purity [2]	Grav. Conc. (weight/volume) [3]	% Grav.Uncert. (95% C.L., K=2) [4]
1	Hexachloroethane	67-72-1	99%	2,000.0 ug/ml	+/-0.59 %
2	Nitrobenzene	98-95-3	99%	2,000.0 ug/ml	+/-0.59 %
3	Isophorone	78-59-1	99%	2,000.0 ug/ml	+/-0.59 %
4	1,2,4-Trichlorobenzene	120-82-1	97%	2,000.1 ug/ml	+/-0.59 %
5	Hexachlorobutadiene	87-68-3	98%	2,000.2 ug/ml	+/-0.59 %
6	2-Methylnaphthalene	91-57-6	97%	2,000.1 ug/ml	+/-0.59 %
7	Hexachlorocyclopentadiene	77-47-4	98%	2,000.2 ug/ml	+/-0.59 %
8	2,6-Dinitrotoluene	606-20-2	99%	2,000.0 ug/ml	+/-0.59 %
9	Dibenzofuran	132-64-9	99%	2,000.0 ug/ml	+/-0.59 %
10	2,4-Dinitrotoluene	121-14-2	99%	2,000.0 ug/ml	+/-0.59 %
11	Diethylphthalate	84-66-2	99%	2,000.0 ug/ml	+/-0.59 %
12	Hexachlorobenzene	118-74-1	99%	2,000.0 ug/ml	+/-0.59 %
13	Carbazole	86-74-8	98%	2,000.2 ug/ml	+/-0.59 %
Solvent:	Methylene Chloride	75-09-2	99%		

Column:
30m x .25mm x .25um
Rtx-5 (cat.#10223)

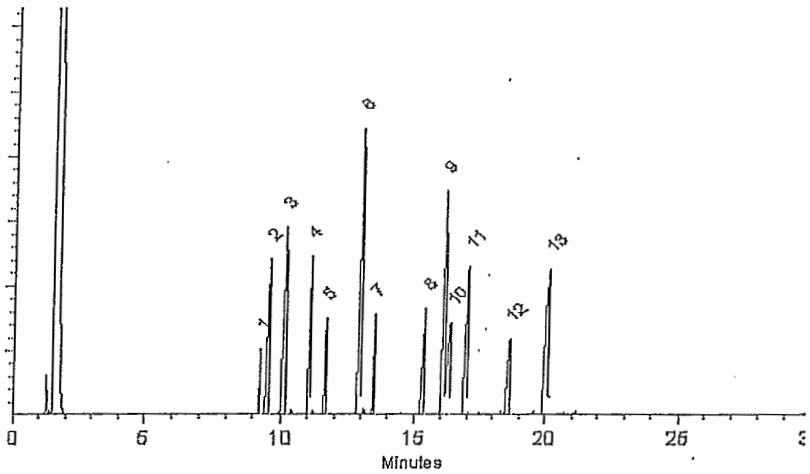
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.Restek.com

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

Catalog No. : 31011 **Lot No.:** A079674

Description : SV Calibration Mix #5

SV Mix, CLP Method, Calibration Std #5, 610 PAH Mixture 2,000µg/ml, CH2Cl2, 1ml/ampule

Container Size : [5] 2 mL **Pkg Amt:** [5] > 1 mL

Expiration Date : [1] March 2018 **Storage:** 25°C nominal

Handling: This product is photosensitive.

Elution Order	Compound	CAS #	Percent Purity [2]	Grav. Conc. (weight/volume) [3]	Grav.Uncert. (95% C.L.; K=2) [4]
1	Naphthalene	91-20-3	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
2	Acenaphthylene	208-96-8	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
3	Acenaphthene	83-32-9	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
4	Fluorene	86-73-7	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
5	Phenanthrene	85-01-8	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
6	Anthracene	120-12-7	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
7	Fluoranthene	206-44-0	98%	2,000.0 ug/mL	+/- 11.6275 ug/mL
8	Pyrene	129-00-0	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
9	Benz(a)anthracene	56-55-3	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
10	Chrysene	218-01-9	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
11	Benzo(b)fluoranthene	205-99-2	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
12	Benzo(k)fluoranthene	207-08-9	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
13	Benzo(a)pyrene	50-32-8	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
14	Indeno(1,2,3-cd)pyrene	193-39-5	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
15	Dibenz(a,h)anthracene	53-70-3	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL
16	Benzo(g,h,i)perylene	191-24-2	99%	2,000.0 ug/mL	+/- 11.6276 ug/mL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ISO Guide 34 Accredited Reference Material Producer Certificate #3222.01

ISO/IEC 17025 Accredited Testing Laboratory Certificate #2222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31030 **Lot No.:** A092934

Description : 605 Benzidines Calibration Mix

605 Benzidines Calibration Mix 2000µg/mL, Methanol, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : August 2017 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Benzidine	2,000.0 µg/mL	+/- 11.7371	µg/mL	Gravimetric
	CAS # 92-87-5		+/- 43.8488	µg/mL	Unstressed
	Purity 99%		+/- 43.8488	µg/mL	Stressed
2	3,3'-Dichlorobenzidine	2,000.0 µg/mL	+/- 11.7371	µg/mL	Gravimetric
	CAS # 91-94-1		+/- 43.8488	µg/mL	Unstressed
	Purity 99%		+/- 43.8488	µg/mL	Stressed

Solvent: Methanol
CAS # 67-56-1
Purity 99%

RESTEK

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.Restek.com

ACCREDITED
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31013 **Lot No.:** A086710

Description : SV Calibration Mix #7

Calibration Std #7 2000ug/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : February 2015 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1,3-Dichlorobenzene CAS # 541-73-1 Purity 99%	2,000.0 ug/mL	+/- 11.7371 +/- 24.1603 +/- 27.2485	ug/mL ug/mL ug/mL	Gravimetric Unstressed Stressed
2	1,4-Dichlorobenzene CAS # 106-46-7 Purity 99%	2,000.0 ug/mL	+/- 11.7371 +/- 24.1603 +/- 27.2485	ug/mL ug/mL ug/mL	Gravimetric Unstressed Stressed
3	1,2-Dichlorobenzene CAS # 95-50-1 Purity 99%	2,000.0 ug/mL	+/- 11.7371 +/- 24.1603 +/- 27.2485	ug/mL ug/mL ug/mL	Gravimetric Unstressed Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31063 **Lot No.:** A093841

Description : Acid Surrogate Standard Mix (4/89)

Acid Surrogate 4/89(SOW) 10, 000µg/mL, Methanol, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 2021 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Fluorophenol CAS # 367-12-4 Purity 99%	10,000.0 µg/mL	+/- 58.5522 µg/mL +/- 265.9894 µg/mL +/- 326.8797 µg/mL	Gravimetric Unstressed Stressed
2	Phenol-d6 CAS # 13127-88-3 Purity 99%	10,000.0 µg/mL	+/- 58.5522 µg/mL +/- 265.9894 µg/mL +/- 326.8797 µg/mL	Gravimetric Unstressed Stressed
3	2,4,6-Tribromophenol CAS # 118-79-6 Purity 99%	10,000.0 µg/mL	+/- 58.5522 µg/mL +/- 265.9894 µg/mL +/- 326.8797 µg/mL	Gravimetric Unstressed Stressed

Solvent: Methanol
CAS # 67-56-1
Purity 99%

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.Restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30409 **Lot No.:** A089859

Description : Pyridine Standard

Pyridine 2000µg/mL, P&T Methanol, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : April 2016 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Pyridine	2,000.0 µg/mL	+/- 11.7371	µg/mL	Gravimetric
	CAS # 110-86-1		+/- 87.4997	µg/mL	Unstressed
	Purity 99%		+/- 89.4134	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Certificate of Analysis

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

Catalog No. : 31496 **Lot No.:** A071936

Description : Azobenzene Standard

Expiration Date[1]: December 2014 **Storage:** Refrigerate

Elution Order	Compound	CAS #	Percent Purity 2	Concentration (weight/volume) 3	% Uncertainty (95% C.L.; K=2) 4
1	Azobenzene	103-33-3	95%	999.400 ug/ml	+/-0.59 %
Solvent:	Methylene Chloride	75-09-2	99%		

Column:
30m x .25mm x .25um
Rtx-5 (cat.#10223)

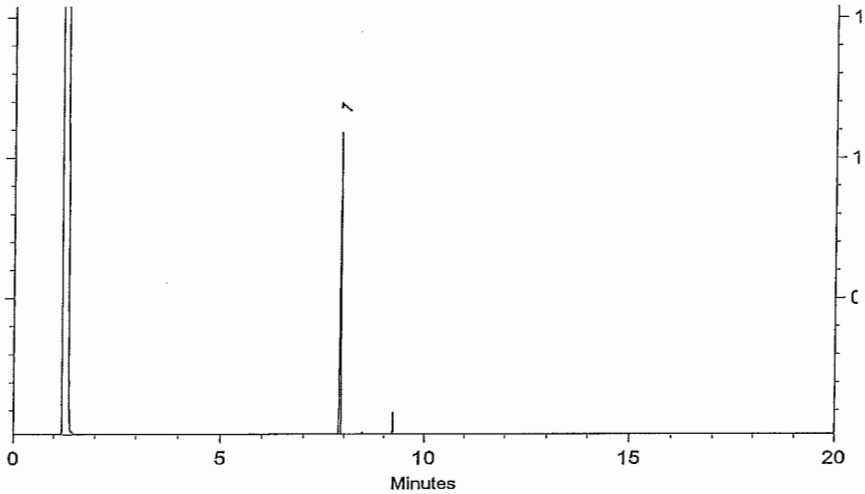
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 5 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



Adam Clark - QA Analyst

Date Passed: 12/19/2009 **Balance:** 1128342314

Manufactured under Restek's ISO 9001-2000
Registered Quality System
Certificate #FM80397

1 Expiration date of the unopened ampule stored at recommended temperature.

2A Purity was determined by one or more of the following techniques: GC/FID, HPLC, GC/ECD, GC/MS. Value rounded to the nearest whole number. In addition to detectors listed above, chemical identity and purity are confirmed using one or more of the following: MS, DSC, solid probe MS, GC/FPD, GC/NPD, GC/TC, FTIR, melting point, refractive index, and Karl Fisher. See data pack or contact Restek for further details.

2B Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities.

2C Compounds with a listed purity of less than 99% may be salts, derivatives, or hydrates. The listed purity is actually a correction factor that was used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound.

2D Purity of isomeric compounds is reported as the sum of the isomers. Value is rounded to the nearest whole number after summation.

3 Based upon gravimetric preparation with balance calibration verified using NIST traceable weights (seven mass levels).

4 Uncertainties determined using repeatability and reproducibility data for balances and glassware from measurement systems analysis methodology, balance and glassware tolerances, raw material purity, and, where applicable, eccentricity and linearity values from an accredited calibration laboratory.

Certificate of Analysis

DESCRIPTION: Semi-Volatile Base-Neutral Surrogate Spike Mix

CATALOG NO.: 48935 MFG DATE: Jul-2013

LOT NO.: LC01909 EXPIRATION DATE: Jul-2016

SOLVENT: METHYLENE CHLORIDE

ANALYTE (1)	CAS NUMBER	PERCENT PURITY(2)	WEIGHT(3) CONCENTRATION	ANALYTICAL(4) CONCENTRATION		STD DEV	SUPELCO LOT NO
NITROBENZENE-D5	4165-60-0	99.9	1002	1048	+/-	11.4	LB83753
P-TERPHENYL-D14	1718-51-0	99.9	1003	1020	+/-	5.3	LC01817
1,2-DICHLOROBENZENE-D4	2199-69-1	99.9	1003	1047	+/-	15.1	LB83146
2-FLUOROBIPHENYL	321-60-8	99.9	1001	1049	+/-	5.7	LB83498

(1) Listed in alphabetical order.
(2) Determined by capillary GC-FID, unless otherwise noted.
(3) NIST traceable weights are used to verify balance calibration with the preparation of each lot. Concentration of analyte in solution is ug/ml +/- 0.5%, uncertainty based upon balance and Class A volumetric glassware. Weights are corrected for analytes less than 98% pure.
(4) Determined by chromatographic analysis against an independently prepared reference lot. Mean of replicate injections.

Duane Funk

Duane Funk
Quality Manager

Supelco warrants that its products conform to the information contained in this publication. Purchaser must determine the suitability of the product for its particular use. Please see the latest catalog or order invoice and packing slip for additional terms and conditions of sale.

SUPELCO®
Solutions within.™
595 North Harrison Road
Bellefonte, PA 16823-0048 USA
Phone (814) 359-3441

TraceCERT®
Traceable Certified Reference Materials

SUPELCO
Solutions within.™
595 North Harrison Road · Bellefonte, PA
16823-0048 USA · Phone(814)359-3441

Certificate of Analysis

Description: Semivolatile Internal Std Mix, 2x1ml, 2000µg/ml in dichloromethane

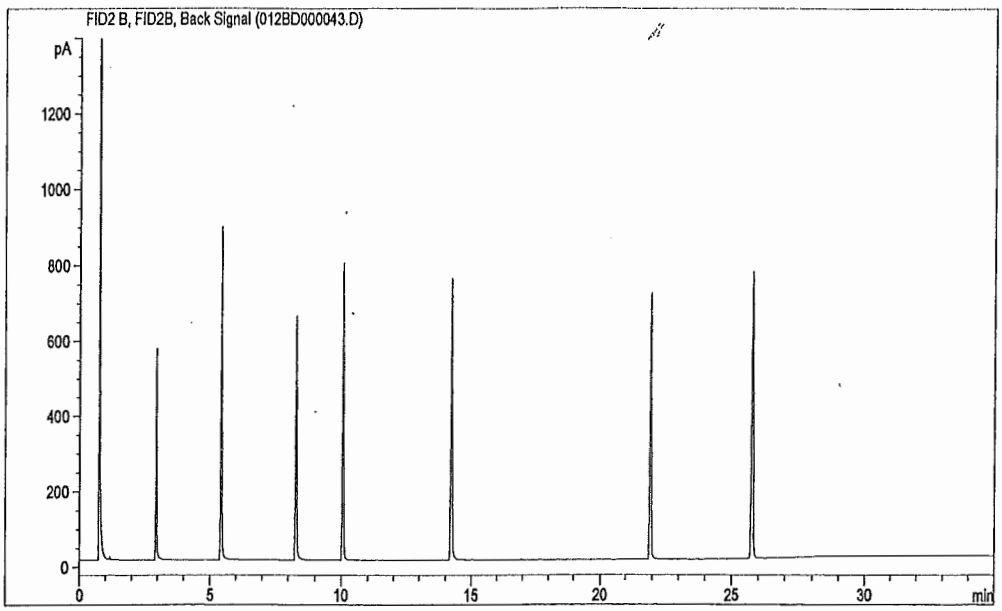
Part Number: CRM48902

Lot Number: LC03378V

Expiration Date: October 2016

Storage: Refrigerate

Analytical Method Parameters:
Column: SPB-5 30m x .53mm x 1.5um
100°C (2 min) to 310°C (8 min) @ 10°C/min
Detector: FID, 310°C
Injection Volume: 1.0ul



Elution	Analyte	Lot Number	CAS Number	Certified Purity %	Certified Gravimetric Conc. µg/ml	Expanded Uncertainty µg/ml	Analytical Conc. µg/ml
1.	1,4-Dichlorobenzene-D4, CRM	LB94999	3855-82-1	99.9	1998.5	±3.9	2009.6
2.	Naphthalene-D8, CRM	LB94261	1146-65-2	96.3	1999.6	±3.9	2090.2
	Internal Standard	N/A	N/A	N/A	N/A	N/A	N/A
4.	Acenaphthene-D10, CRM	LB93879	15067-26-2	99.9	1997.6	±1.7	2019.0
5.	Phenanthrene-D10, CRM	LB95000	1517-22-2	98.7	1974.5	±2.6	1975.5
6.	Chrysene-D12, CRM	LB93880	1719-03-5	98.8	1976.2	±8.0	1901.1
7.	Perylene-D12, CRM	LB95001	1520-96-3	99.7	1994.0	±7.9	2018.6

Notes:

ACLASS ACCREDITED TESTING Cert# AT-1607

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER Cert# AR-1606

Produced in double accredited laboratory fulfilling
ISO/IEC 17025 and
ISO Guide 34

SIGMA-ALDRICH®

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

ERS-077
ER111711-01
Revision 2
Page 1 of 5

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

Certificate of Analysis

8270 LCS Mix

Catalog Number:	ERS-077
Solution Lot:	ER111711-01
Expiration Date:	November 2016
Solvent:	Methanol::Methylene chloride::Benzene (70::25::5)
Volume per Ampule:	Not less than 5 mL
Storage:	Store in freezer.
Handling:	Sonicate for 5 minutes before use.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	Flammable, Carcinogen

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 5 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

REFERENCE MATERIAL PRODUCER

Lara Sparks, Quality Assurance Director

May 16, 2012
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
Acenaphthene	29697-41	83-32-9	$C_{12}H_{10}$	154.21	99.89%	200 µg/mL
Acenaphthylene	ER030707-01	208-96-8	$C_{12}H_8$	152.2	99.06%	200 µg/mL
Acetophenone	EB-1807	98-86-2	C_8H_8O	120.15	99.39%	200 µg/mL
Aniline	EB-1265	62-53-3	C_6H_7N	93.13	99.99%	200 µg/mL
Anthracene	ER061407-04	120-12-7	$C_{14}H_{10}$	178.23	99.24%	200 µg/mL
Azobenzene	P004534	103-33-3	$C_{12}H_{10}N_2$	182.22	98.97%	200 µg/mL
Benz(a)anthracene	ER121707-01	56-55-3	$C_{18}H_{12}$	228.29	99.12%	200 µg/mL
Benzidine[1]	PR081108-03	92-87-5	$C_{12}H_{12}N_2$	184.24	99.96%	200 µg/mL
Benzo(b)fluoranthene	ER022008-02	205-99-2	$C_{20}H_{12}$	252.32	99.95%	200 µg/mL
Benzo(k)fluoranthene	ER061608-02	207-08-9	$C_{20}H_{12}$	252.32	99.96%	200 µg/mL
Benzo(g,h,i)perylene	ER020708-08	191-24-2	$C_{22}H_{12}$	276.34	99.29%	200 µg/mL
Benzo(a)pyrene	ER071309-02	50-32-8	$C_{20}H_{12}$	252.32	99.55%	200 µg/mL
Benzoic acid	PR090308-01	65-85-0	$C_7H_6O_2$	122.12	99.99%	200 µg/mL
Benzyl alcohol	EB-1963	100-51-6	C_7H_8O	108.14	99.74%	200 µg/mL
Biphenyl	PER_053_97109	92-52-4	$C_{12}H_{10}$	154.21	99.70%	200 µg/mL
Bis(2-chloroethoxy)methane	P004590	111-91-1	$C_5H_{10}O_2Cl_2$	173.04	97.60%	200 µg/mL
Bis(2-chloroethyl)ether	PER_456_102708	111-44-4	$C_4H_8OCl_2$	143.01	99.79%	200 µg/mL
Bis(1-chloroisopropyl)ether	PR073110-01	108-60-1	$C_6H_{12}OCl_2$	171.07	99.37%	200 µg/mL
Bis(2-ethylhexyl) phthalate	P004582	117-81-7	$C_{24}H_{38}O_4$	390.56	99.17%	200 µg/mL
4-Bromophenyl phenyl ether	P004550	101-55-3	$C_{12}H_9OBr$	249.11	98.88%	200 µg/mL
Butyl benzyl phthalate	EB-2108	85-68-7	$C_{19}H_{20}O_4$	312.37	98.03%	200 µg/mL
Carbazole	P004638	86-74-8	$C_{12}H_9N$	167.21	95.37%	200 µg/mL
p-Chloroaniline	EB-1801	106-47-8	C_6H_6NCl	127.57	99.91%	200 µg/mL
4-Chloro-3-methylphenol	PR060807-01	59-50-7	C_7H_7OCl	142.58	99.26%	200 µg/mL
2-Chloronaphthalene	P004640	91-58-7	$C_{10}H_7Cl$	162.62	99.21%	200 µg/mL
2-Chlorophenol	PR060807-02	95-57-8	C_6H_5OCl	128.56	99.43%	200 µg/mL
4-Chlorophenyl phenyl ether	P004659	7005-72-3	$C_{12}H_9OCl$	204.66	98.13%	200 µg/mL
Chrysene	ER120810-02	218-01-9	$C_{18}H_{12}$	228.29	98.66%	200 µg/mL
Dibenz(a,h)anthracene	ER102009-05	53-70-3	$C_{22}H_{14}$	278.35	99.83%	200 µg/mL
Dibenzofuran	P004552	132-64-9	$C_{12}H_8O$	168.19	99.49%	200 µg/mL
Di-n-butyl Phthalate	P004541	84-74-2	$C_{16}H_{22}O_4$	278.35	99.72%	200 µg/mL
1,2-Dichlorobenzene	EB-2097	95-50-1	$C_6H_4Cl_2$	147	99.47%	200 µg/mL
1,3-Dichlorobenzene	EB-1908	541-73-1	$C_6H_4Cl_2$	147	99.63%	200 µg/mL
1,4-Dichlorobenzene	PER_226_104287	106-46-7	$C_6H_4Cl_2$	147	99.98%	200 µg/mL
3,3'-Dichlorobenzidine	ER083107-03	91-94-1	$C_{12}H_{10}Cl_2N_2$	253.13	99.67%	200 µg/mL
2,4-Dichlorophenol	P004712	120-83-2	$C_6H_4OCl_2$	163	99.07%	200 µg/mL
2,6-Dichlorophenol	P004533	87-65-0	$C_6H_4OCl_2$	163	99.99%	200 µg/mL
Diethyl Phthalate	PER_096_102706	84-66-2	$C_{12}H_{14}O_4$	222.24	99.96%	200 µg/mL
2,4-Dimethylphenol	P004557	105-667-9	$C_8H_{10}O$	122.17	99.62%	200 µg/mL
Dimethyl Phthalate	EB-1774	131-11-3	$C_{10}H_{10}O_4$	194.19	99.94%	200 µg/mL
2,4-Dinitrophenol	PR062607-03	51-28-5	$C_6H_4N_2O_5$	184.11	99.84%	200 µg/mL
2,4-Dinitrotoluene	EB-1379	121-14-2	$C_7H_6N_2O_4$	182.14	99.00%	200 µg/mL
2,6-Dinitrotoluene	PER_083_93401	606-20-2	$C_7H_6N_2O_4$	182.14	99.59%	200 µg/mL
Dinoseb	ER110209-01	88-85-7	$C_{10}H_{12}N_2O_5$	240.22	99.96%	200 µg/mL
Di-n-octyl Phthalate	PR092710-01	117-84-0	$C_{24}H_{38}O_4$	390.56	99.37%	200 µg/mL

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
Diphenyl ether	P004715	101-84-8	$C_{12}H_{10}O$	170.21	99.98%	200 µg/mL
1,4-Dioxane	PR052809-05	123-91-1	$C_4H_8O_2$	88.11	99.95%	200 µg/mL
2-Ethoxyethanol	PER_052_102546	110-80-5	$C_4H_{10}O_2$	90.12	99.96%	200 µg/mL
Fluoranthene	PN111910-02	206-44-0	$C_{16}H_{10}$	202.26	98.45%	200 µg/mL
Fluorene	35001-29	86-73-7	$C_{13}H_{10}$	166.22	98.95%	200 µg/mL
Hexachlorobenzene	P004546	118-74-1	C_6Cl_6	284.78	99.71%	200 µg/mL
Hexachloro-(1,3)-butadiene	P141819	87-68-3	C_4Cl_6	260.76	97.28%	200 µg/mL
Hexachlorocyclopentadiene	PR081210-01	77-47-4	C_5Cl_6	272.77	96.84%	200 µg/mL
Hexachloroethane	EB-2003	67-72-1	C_2Cl_6	236.74	99.57%	200 µg/mL
Hexachlorophene [1]	P004584	70-30-4	$C_{13}H_6O_2Cl_6$	406.91	94.70%	200 µg/mL
Hexachloropropene	EB-1977	1888-71-7	C_3Cl_6	248.75	96.66%	200 µg/mL
Indeno(1,2,3,-c,d)pyrene	ER082107-02	193-39-5	$C_{22}H_{12}$	276.34	99.42%	200 µg/mL
Isophorone	EB-1778	78-59-1	$C_9H_{14}O$	138.21	98.21%	200 µg/mL
2-Methyl-4,6-dinitrophenol	P004549	534-52-1	$C_7H_6N_2O_5$	198.14	99.77%	200 µg/mL
2-Methylnaphthalene	EB-1779	91-57-6	$C_{11}H_{10}$	142.20	97.52%	200 µg/mL
2-Methylphenol	PR061107-01	95-48-7	C_7H_8O	108.14	99.55%	200 µg/mL
4-Methylphenol	PER_016_99798	106-44-5	C_7H_8O	108.14	99.68%	200 µg/mL
Naphthalene	PR050410-01	91-20-3	$C_{10}H_8$	128.17	99.88%	200 µg/mL
2-Nitroaniline	P004682	88-74-4	$C_6H_6N_2O_2$	138.13	99.68%	200 µg/mL
3-Nitroaniline	P004543	99-09-2	$C_6H_6N_2O_2$	138.13	99.90%	200 µg/mL
4-Nitroaniline	EB-1796	100-01-6	$C_6H_6N_2O_2$	138.13	99.77%	200 µg/mL
Nitrobenzene	PR090310-01	98-95-3	$C_6H_5NO_2$	123.11	99.96%	200 µg/mL
2-Nitrophenol	PR060807-03	88-75-5	$C_6H_5NO_3$	139.11	99.84%	200 µg/mL
4-Nitrophenol	P004713	100-02-7	$C_6H_5NO_3$	139.11	99.93%	200 µg/mL
N-Nitrosodi-n-butylamine	P004561	924-16-3	$C_8H_{18}N_2O$	158.24	99.78%	200 µg/mL
N-Nitrosodiethylamine	P004558	55-18-5	$C_4H_{10}N_2O$	102.14	99.80%	200 µg/mL
N-Nitrosodimethylamine	P004569	62-75-9	$C_2H_6N_2O$	74.08	100.00%	200 µg/mL
N-Nitrosodi-n-propylamine	P004632	621-64-7	$C_6H_{14}N_2O$	130.19	99.95%	200 µg/mL
N-Nitrosodiphenylamine	PR102606-01	86-30-6	$C_{12}H_{10}N_2O$	198.22	96.79%	200 µg/mL
N-Nitrosomethylethylamine	PR073110-02	10595-95-6	$C_3H_8N_2O$	88.11	99.41%	200 µg/mL
N-Nitrosopiperidine	P004545	100-75-4	$C_5H_{10}N_2O$	114.15	99.45%	200 µg/mL
N-Nitrosopyrrolidine	P004551	930-55-2	$C_4H_8N_2O$	100.12	99.94%	200 µg/mL
Pentachlorobenzene	P004714	608-93-5	C_6HCl_5	250.34	99.56%	200 µg/mL
Pentachloroethane	EB-1954	76-01-7	C_2HCl_5	202.29	98.30%	200 µg/mL
Pentachlorophenol	P004716	87-86-5	C_6HCl_5O	266.34	98.76%	200 µg/mL
Phenanthrene	ER042805-02	85-01-8	$C_{14}H_{10}$	178.23	99.19%	200 µg/mL
Phenol	PR092309-03	108-95-2	C_6H_6O	94.11	99.97%	200 µg/mL
Pyrene	ER050305-03	129-00-0	$C_{16}H_{10}$	202.26	99.47%	200 µg/mL
Pyridine	PER_039_102530	110-86-1	C_5H_5N	79.10	99.95%	200 µg/mL
1,2,4,5-Tetrachlorobenzene	EB-1955	95-94-3	$C_6H_2Cl_4$	215.89	99.34%	200 µg/mL
2,3,4,6-Tetrachlorophenol	ER100206-01	58-90-2	$C_6H_2Cl_4O$	231.89	99.28%	200 µg/mL
1,2,4-Trichlorobenzene	EB-1677	120-82-1	$C_6H_3Cl_3$	181.45	99.73%	200 µg/mL
2,4,5-Trichlorophenol	PR040307-02	95-95-4	$C_6H_3Cl_3O$	197.45	98.20%	200 µg/mL
2,4,6-Trichlorophenol	P004555	88-06-2	$C_6H_3Cl_3O$	197.45	98.95%	200 µg/mL

[1] Due to stability problems, it is recommended not to use this analyte for quantitation.

Standard Solution Assay Parameters

Analysis Method:	GC/MS
Column:	DB-5ms, 30 m x 0.25 mm ID, 0.25 µm film thickness
Temp Program:	40°C (hold 2 mins) to 300°C at 10°C/min (hold 7 mins)
Injector Temp:	Cool on-column
Detector Temp:	280°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	1

Solution Standard Verification and Homogeneity

Compound	Verified Concentration µg/mL	Acceptance Criteria	%RSD - Homogeneity %	Acceptance Criteria
Acenaphthene	190.7	± 10%	0.7	≤ 5%
Benzo(a)pyrene	190.4	± 10%	1.3	≤ 5%
Benzyl alcohol	190.0	± 10%	3.1	≤ 5%
Bis(2-ethylhexyl)phthalate	189.0	± 10%	3.6	≤ 5%
Carbazole	189.4	± 10%	3.9	≤ 5%
4-Chloroaniline	187.7	± 10%	4.1	≤ 5%
4-Chloro-3-methylphenol	189.4	± 10%	2.7	≤ 5%
Dibenzofuran	189.0	± 10%	1.1	≤ 5%
1,4-Dichlorobenzene	189.5	± 10%	1.2	≤ 5%
3,3'-Dichlorobenzidine	192.6	± 10%	2.4	≤ 5%
2,4-Dichlorophenol	189.3	± 10%	2.2	≤ 5%
2,4-Dinitrotoluene	189.4	± 10%	4.1	≤ 5%
Di-n-octyl-phthalate	191.7	± 10%	1.1	≤ 5%
Fluoranthene	190.8	± 10%	2.2	≤ 5%
Hexachloro-(1,3)-butadiene	188.7	± 10%	1.0	≤ 5%
Isophorone	191.5	± 10%	3.1	≤ 5%
2-Methylnaphthalene	189.8	± 10%	1.0	≤ 5%
3-Nitroaniline	188.1	± 10%	1.8	≤ 5%
2-Nitrophenol	186.8	± 10%	3.6	≤ 5%
Nitrobenzene	192.3	± 10%	1.6	≤ 5%
N-Nitrosodi-n-butylamine	189.8	± 10%	2.7	≤ 5%
N-Nitrosodiphenylamine	189.8	± 10%	2.4	≤ 5%
Pentachlorobenzene	188.1	± 10%	1.4	≤ 5%
Phenol	191.1	± 10%	1.4	≤ 5%
Pyridine	189.8	± 10%	2.6	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The %RSD of samples pulled from across the lot demonstrate homogeneity.
- This standard was prepared from six stocks that have been verified for accuracy and homogeneity. Verification of this standard was performed by monitoring 25 components listed in the table above, including Method 8270 Check Compounds (CCC) and at least one analyte from each stock.

COA Revision History

Revision No.	Date	Reason for Revision
00	12/21/2011	Initial version
01	4/11/2012	Missing footnote was added.
		Added statement that solution should be sonicated prior to use.
02	5/16/2012	Corrected "Bis(2-chloroisopropyl)ether" (CAS 108-60-1) to "Bis(1-chloroisopropyl)ether"

Absolute St[illegible]ards, Inc.
800-368-1131
www.absolutestandards.com

Certified R[illegible]rence Material CRM

ISO 90[illegible]S Registered
ISO 17025-34[illegible]-43 Accredited
Scopes: http://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

Part Number:	20006	**Solvent(s):**	Lot # 28951	Methylene chloride
Lot Number:	050613			
Description:	CLP Semi-Volatiles Base/Neutral Surrogate Standard			
	SOW July'91 GC/MS Calibration - 4 components			
Expiration Date:	050618			
Recommended Storage:	Refrigerate (4 °C)			
Nominal Concentration (µg/mL):	1000			

Gabriel Helland 050613
Formulated By: Gabriel Helland DATE

Pedro Rentas 050613
Reviewed By: Pedro L. Rentas DATE

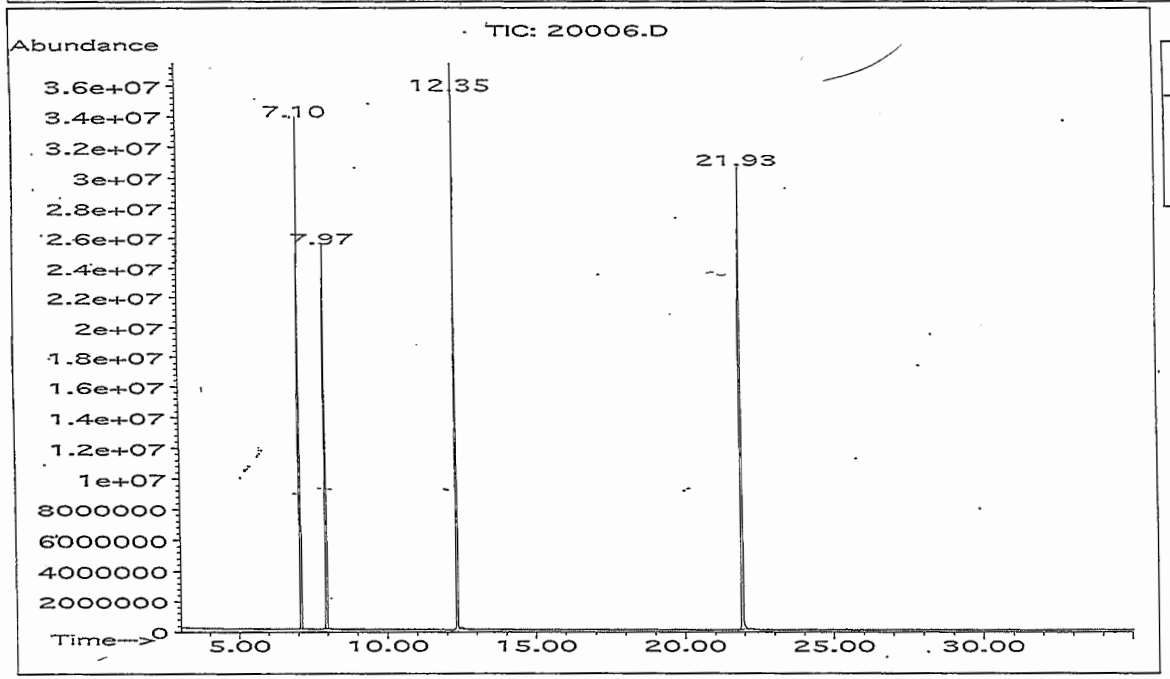
5E-05 Balance Uncertainty

Weight(s) shown below were combined and diluted to: 200.0 0.007 Flask Uncertainty

MSDS Information
(Solvent Safety Info. On Attached pg.)

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Expanded Uncertainty	CAS#	OSHA PEL (TWA)	LD50
1. 2-Fluorobiphenyl	187	MKAA3698	1000	96	0.2	0.20832	0.20852	1001.0	0.0042	00321-60-8	N/A	N/A
2. p-Terphenyl-d14	272	P-6109	1000	98	0.2	0.20407	0.20438	1001.5	0.0041	01718-51-0	1 ppm (CL)	orl-rbt 2400mg/kg
3. Nitrobenzene-d5	229	U538P20	1000	99.7	0.2	0.20059	0.20091	1001.6	0.0040	04165-60-0	1 ppm (5mg/m3/8H)(skin)	orl-rat 640mg/kg
4. 1,2-Dichlorobenzene-d4	128	PR-18653/12207DB2	1000	99	0.2	0.20201	0.20245	1002.2	0.0041	02199-69-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 200°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Melissa Stonier.



Peak No.	Name	MSD RT (min.)
1	1,2-Dichlorobenzene-d4	7.10
2	Nitrobenzene-d5	7.97
3	2-Fluorobiphenyl	12.35
4	p-Terphenyl-d14	21.93

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

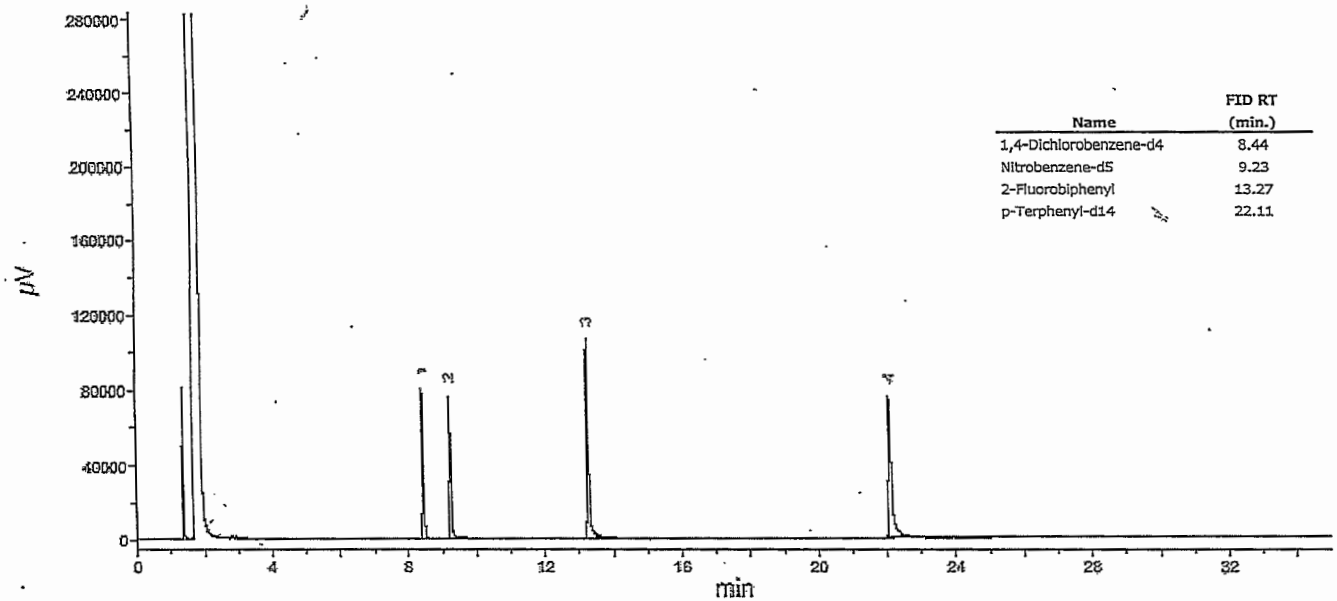
Certified Reference Material CRM

ISO 9001 QS Registered
ISO 17025-34-35-43 Accredited
Scopes: http://AbsoluteStandards.com

Run 59, "P20006 L050613 [1000µg/mL in MeCl2]"

Run Length: 35.00 min, 20998 points at 10 points/second.
Created: Thu, May 9, 2013 at 2:30:34 AM.
Sampled: Sequence "050713-GC9M1", Method "GC9-M1".
Analyzed using Method "GC9-M1".

Comments
GC9M1 Analysis by Candice Warren
SPB-5 30 meter x 0.53 µm x 1.5 df
Flow Rates; Total Flow = 300 mL/min, Helium (carrier)=6mL, Helium (makeup)=25mL,
Hydrogen (detector)=30, Air (detector)=360, Oven Temp 1 = 50 C (1 min)
Rate = 10 C/min, Oven Temp 2 = 300 (9 min), Total Run Time=35 min.
Injector Temp = 200 C, FID Temp = 300 C, FID Signal = Edaq Channel 1
Gas Chromatograph = HP5890, Standard Injection = 0.5 uL, Range =4



Name	FID RT (min.)
1,4-Dichlorobenzene-d4	8.44
Nitrobenzene-d5	9.23
2-Fluorobiphenyl	13.27
p-Terphenyl-d14	22.11

16355: 8270 Tune
50 µL 16102-R (1000 µg/mL exp. 01/2016)
950 µL MeCl2 (0000063223)
1.0 mL 50 PPM 8270 Tune
PEK exp
3/27/2014 4/3/2014

16356: 30 PPM 8270 STD
150 µL 9002782 (200 PPM exp. 11/2016)
30 µL B/N Surr 16291-S (1000 µg/mL exp 07/2016)
820 µL MeCl2 (0000063223)
1.0 mL 30 PPM STD w/ 20 µL IS STD 16286-S (2000 µg/mL exp 07/2016)
PEK exp
3/27/2014 4/3/2014

16357-R:
RESTEK 110 Benner Circle Bellefonte, PA 16823 Made in USA
Catalog# 31001
SV Tuning Compound Standard
2500 ug/mL each in Methylene Chloride
Lot# A097996 Exp. Date: 09/2016 Store: 10°C or colder
Opened 3/31/2014
Received 1/16/2014
PEK
3/31/2014

16358: 50 PPM PNA Tune
20 µL 16357-R (2,500 µg/mL exp 09/2016)
980 µL MeCl2 (0000068488)
1.0 mL 50 PPM PNA Tune
PEK exp
3/31/2014 4/7/2014

16359 NDMA (UM81) CCV
~~5 µL of~~ 3/31/14
10 µL of 16276-R (5.0 µg/mL) Std exp 9/5/14
10 µL of 16355 (5.0 µg/mL) Surr exp 2/21/14
1.00 mL VF in MeCl2 (68488)
50 µg/L STD + 10 µL ISTD # 16325
3/31/14 exp 4/7/14

Continued on Page

Read and Understood By
Signed 3/31/14 Date PEK Signed 4/2/2015 Date

Continued From Page

PROJECT

9002781 8015M - Diesel Spike 9/16/13
Diluted 500ul of stnd. # 51006 (20,000 ug/mL, lot #041912, exp: 04/19/17) from Absolute Exp: 12/16/13
into 10mL of Acetone (JTBaker # 000005140 3). Final conc. = 1000 ppm SMW

9002782 BNA Matrix Spike Mix opened: 9/17/13 9/17/13
Cerilliant 8270 LCS Mix, cat. # ERS-077, lot # ER111711-01, 200 ug/mL, exp: 11/2016 SMW

9002783 Pest / PCB Surrogate 10/8/13
Diluted 125ul of stnd. # 20023 (lot # 020212, 200 ug/mL, exp: 02/02/17) from Absolute into Exp: 1/8/14
25mL of Acetone (JTBaker #51403). Final conc. = 1 ppm SMW

9002784 8015M - Surrogate soln 10/9/13
Diluted 1mL of stnd. # 71225 (lot # 112912, 1000 ug/mL, exp: 11/29/17) from Absolute Exp: 1/9/14
into 5mL of Acetone (JTBaker # 51403). Final conc. = 200 ppm SMW

9002785 PNA/SIM Surrogate soln 10/11/13
Diluted 250ul of stnd. # 20006 (lot # 050613, 1000 ug/mL, exp: 05/06/18) from Absolute Exp: 1/11/14
into 5mL of MeOH (Mallinckrodt # K03E03). Final conc. = 50 ppm SMW

10/23/13 SMW

Continued on Page

Read and Understood By

Steve Munzon 10/23/13 Signed Date

[illegible] 10/23/13 Signed Date

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

ERS-077
ER111711-01
Revision 2
Page 1 of 5

Certificate of Analysis

ISO GUIDE 34
ISO/IEC 17025
ISO 13485
ISO 9001
GMP/GLP

8270 LCS Mix

Catalog Number:	ERS-077
Solution Lot:	ER111711-01
Expiration Date:	November 2016
Solvent:	Methanol::Methylene chloride::Benzene (70::25::5)
Volume per Ampule:	Not less than 5 mL
Storage:	Store in freezer.
Handling:	Sonicate for 5 minutes before use.
Intended Use:	For laboratory use only. Not suitable for human or animal consumption.
Safety:	Flammable, Carcinogen

- Expiration Date has been established through real time stability studies.
- Ampules are overfilled to ensure a minimum 5 mL volume. We advise laboratories to use measured volumes of this standard solution before diluting to the desired concentration.

Traceability

- Gravimetrically prepared using qualified balances calibrated semi-annually by Mettler Toledo using NIST traceable weights. Calibration verification performed weekly and prior to each use utilizing NIST traceable weights. Each balance has been assigned a minimum weighing by Mettler Toledo taking into consideration the balance and installed environmental conditions to ensure weighing complies with USP tolerances of no more than 0.1% relative error.
- Concentration is verified against an independently prepared calibration solution gravimetrically prepared using balances calibrated to NIST.

Cerilliant certifies that this standard meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiration/retest date when stored unopened as recommended. Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

Lara Sparks, Quality Assurance Director

May 16, 2012
Date

Cerilliant Corporation 811 Paloma Drive, Suite A, Round Rock, TX 78665 800-848-7837 / 512-238-9974

ERS-077
ER111711-01
Revision 2
Page 2 of 5

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
Acenaphthene	29697-41	83-32-9	$C_{12}H_{10}$	154.21	99.89%	200 µg/mL
Acenaphthylene	ER030707-01	208-96-8	$C_{12}H_8$	152.2	99.06%	200 µg/mL
Acetophenone	EB-1807	98-86-2	C_8H_8O	120.15	99.39%	200 µg/mL
Aniline	EB-1265	62-53-3	C_6H_7N	93.13	99.99%	200 µg/mL
Anthracene	ER061407-04	120-12-7	$C_{14}H_{10}$	178.23	99.24%	200 µg/mL
Azobenzene	P004534	103-33-3	$C_{12}H_{10}N_2$	182.22	98.97%	200 µg/mL
Benz(a)anthracene	ER121707-01	56-55-3	$C_{18}H_{12}$	228.29	99.12%	200 µg/mL
Benzidine	PR081108-03	92-87-5	$C_{12}H_{12}N_2$	184.24	99.96%	200 µg/mL
Benzo(b)fluoranthene	ER022008-02	205-99-2	$C_{20}H_{12}$	252.32	99.95%	200 µg/mL
Benzo(k)fluoranthene	ER061608-02	207-08-9	$C_{20}H_{12}$	252.32	99.96%	200 µg/mL
Benzo(g,h,i)perylene	ER020708-08	191-24-2	$C_{22}H_{12}$	276.34	99.29%	200 µg/mL
Benzo(a)pyrene	ER071309-02	50-32-8	$C_{20}H_{12}$	252.32	99.55%	200 µg/mL
Benzoic acid	PR090308-01	65-85-0	$C_7H_6O_2$	122.12	99.99%	200 µg/mL
Benzyl alcohol	EB-1963	100-51-6	C_7H_8O	108.14	99.74%	200 µg/mL
Biphenyl	PER_053_97109	92-52-4	$C_{12}H_{10}$	154.21	99.70%	200 µg/mL
Bis(2-chloroethoxy)methane	P004590	111-91-1	$C_5H_{10}O_2Cl_2$	173.04	97.60%	200 µg/mL
Bis(2-chloroethyl)ether	PER_456_102708	111-44-4	$C_4H_8OCl_2$	143.01	99.79%	200 µg/mL
Bis(1-chloroisopropyl)ether	PR073110-01	108-60-1	$C_6H_{12}OCl_2$	171.07	99.37%	200 µg/mL
Bis(2-ethylhexyl) phthalate	P004582	117-81-7	$C_{24}H_{38}O_4$	390.56	99.17%	200 µg/mL
4-Bromophenyl phenyl ether	P004550	101-55-3	$C_{12}H_9OBr$	249.11	99.88%	200 µg/mL
Butyl benzyl phthalate	EB-2108	85-68-7	$C_{19}H_{20}O_4$	312.37	98.03%	200 µg/mL
Carbazole	P004638	86-74-8	$C_{12}H_9N$	167.21	95.37%	200 µg/mL
p-Chloroaniline	EB-1801	106-47-8	C_6H_6NCl	127.57	99.91%	200 µg/mL
4-Chloro-3-methylphenol	PR060807-01	59-50-7	C_7H_7OCl	142.58	99.96%	200 µg/mL
2-Chloronaphthalene	P004640	91-58-7	$C_{10}H_7Cl$	162.62	99.21%	200 µg/mL
2-Chlorophenol	PR060807-02	95-57-8	C_6H_5OCl	128.56	99.43%	200 µg/mL
4-Chlorophenyl phenyl ether	P004659	7005-72-3	$C_{12}H_9OCl$	204.66	98.13%	200 µg/mL
Chrysene	ER120810-02	218-01-9	$C_{18}H_{12}$	228.29	98.66%	200 µg/mL
Dibenz(a,h)anthracene	ER102009-03	53-70-3	$C_{22}H_{14}$	278.35	99.83%	200 µg/mL
Dibenzofuran	P004552	132-64-9	$C_{12}H_8O$	168.19	99.49%	200 µg/mL
Di-n-butyl Phthalate	P004541	84-74-2	$C_{16}H_{22}O_4$	278.35	99.72%	200 µg/mL
1,2-Dichlorobenzene	EB-2097	95-50-1	$C_6H_4Cl_2$	147	99.47%	200 µg/mL
1,3-Dichlorobenzene	EB-1908	541-73-1	$C_6H_4Cl_2$	147	99.63%	200 µg/mL
1,4-Dichlorobenzene	PER_226_104287	106-46-7	$C_6H_4Cl_2$	147	99.98%	200 µg/mL
3,3'-Dichlorobenzidine	ER083107-03	91-94-1	$C_{12}H_{10}Cl_2N_2$	253.13	99.67%	200 µg/mL
2,4-Dichlorophenol	P004712	120-83-2	$C_6H_4OCl_3$	163	99.07%	200 µg/mL
2,6-Dichlorophenol	P004533	87-65-0	$C_6H_4OCl_2$	163	99.99%	200 µg/mL
Diethyl Phthalate	PER_096_102706	84-66-2	$C_{12}H_{14}O_4$	222.24	99.96%	200 µg/mL
2,4-Dimethylphenol	P004557	105-67-9	$C_8H_{10}O$	122.17	99.62%	200 µg/mL
Dimethyl Phthalate	EB-1774	131-11-3	$C_{10}H_{10}O_4$	194.19	99.94%	200 µg/mL
2,4-Dinitrophenol	PR062607-03	51-28-5	$C_6H_4N_2O_5$	184.11	99.84%	200 µg/mL
2,4-Dinitrotoluene	EB-1379	121-14-2	$C_7H_6N_2O_4$	182.14	99.00%	200 µg/mL
2,6-Dinitrotoluene	PER_083_93401	606-20-2	$C_7H_6N_2O_4$	182.14	99.59%	200 µg/mL
Dinoseb	ER110209-01	88-85-7	$C_{10}H_{12}N_2O_5$	240.22	99.96%	200 µg/mL
Di-n-octyl Phthalate	PR092710-01	117-84-0	$C_{24}H_{38}O_4$	390.56	99.37%	200 µg/mL

Component	Lot Number	CAS Number	Chemical Formula	Molecular Weight	Chromatographic Purity	Concentration
Diphenyl ether	P004715	101-84-8	$C_{12}H_{10}O$	170.21	99.98%	200 µg/mL
1,4-Dioxane	PR052809-05	123-91-1	$C_4H_8O_2$	88.11	99.95%	200 µg/mL
2-Ethoxyethanol	PER_052_102546	110-80-5	$C_4H_{10}O_2$	90.12	99.96%	200 µg/mL
Fluoranthene	PN111910-02	206-44-0	$C_{16}H_{10}$	202.26	98.45%	200 µg/mL
Fluorene	35001-29	86-73-7	$C_{13}H_{10}$	166.22	98.95%	200 µg/mL
Hexachlorobenzene	P004546	118-74-1	C_6Cl_6	284.78	99.71%	200 µg/mL
Hexachloro-(1,3)-butadiene	P141819	87-68-3	C_4Cl_6	260.76	97.28%	200 µg/mL
Hexachlorocyclopentadiene	PR081210-01	77-47-4	C_5Cl_6	272.77	96.84%	200 µg/mL
Hexachloroethane	EB-2003	67-72-1	C_2Cl_6	236.74	99.57%	200 µg/mL
Hexachlorophene [1]	P004584	70-30-4	$C_{13}H_6O_2Cl_6$	406.91	94.70%	200 µg/mL
Hexachloropropene	EB-1977	1888-71-7	C_3Cl_6	248.75	96.66%	200 µg/mL
Indeno(1,2,3-c,d)pyrene	ER082107-02	193-39-5	$C_{22}H_{12}$	276.34	99.42%	200 µg/mL
Isophorone	EB-1778	78-59-1	$C_9H_{14}O$	138.21	98.21%	200 µg/mL
2-Methyl-4,6-dinitrophenol	P004549	534-52-1	$C_7H_6N_2O_5$	198.14	99.77%	200 µg/mL
2-Methylnaphthalene	EB-1779	91-57-6	$C_{11}H_{10}$	142.20	97.52%	200 µg/mL
2-Methylphenol	PR061107-01	95-48-7	C_7H_8O	108.14	99.55%	200 µg/mL
4-Methylphenol	PER_016_99798	106-44-5	C_7H_8O	108.14	99.68%	200 µg/mL
Naphthalene	PR050410-01	91-20-3	$C_{10}H_8$	128.17	99.88%	200 µg/mL
2-Nitroaniline	P004682	88-74-4	$C_6H_6N_2O_2$	138.13	99.68%	200 µg/mL
3-Nitroaniline	P004543	99-09-2	$C_6H_6N_2O_2$	138.13	99.90%	200 µg/mL
4-Nitroaniline	EB-1796	100-01-6	$C_6H_6N_2O_2$	138.13	99.77%	200 µg/mL
Nitrobenzene	PR090310-01	98-95-3	$C_6H_5NO_2$	123.11	99.96%	200 µg/mL
2-Nitrophenol	PR060807-03	88-75-5	$C_6H_5NO_3$	139.11	99.84%	200 µg/mL
4-Nitrophenol	P004713	100-02-7	$C_6H_5NO_3$	139.11	99.93%	200 µg/mL
N-Nitrosodi-n-butylamine	P004561	924-16-3	$C_8H_{18}N_2O$	158.24	99.78%	200 µg/mL
N-Nitrosodiethylamine	P004558	55-18-5	$C_4H_{10}N_2O$	102.14	99.80%	200 µg/mL
N-Nitrosodimethylamine	P004569	62-75-9	$C_2H_6N_2O$	74.08	100.00%	200 µg/mL
N-Nitrosodi-n-propylamine	P004652	621-64-7	$C_6H_{14}N_2O$	130.19	99.95%	200 µg/mL
N-Nitrosodiphenylamine	PR102606-01	86-30-6	$C_{12}H_{10}N_2O$	198.22	96.79%	200 µg/mL
N-Nitrosomethylethylamine	PR073110-02	10595-95-6	$C_3H_8N_2O$	88.11	99.41%	200 µg/mL
N-Nitrosopiperidine	P004545	100-75-4	$C_5H_{10}N_2O$	114.15	99.45%	200 µg/mL
N-Nitrosopyrrolidine	P004551	930-55-2	$C_4H_8N_2O$	100.12	99.94%	200 µg/mL
Pentachlorobenzene	P004714	608-93-5	C_6HCl_5	250.34	99.56%	200 µg/mL
Pentachloroethane	EB-1954	76-01-7	C_2HCl_5	202.29	98.30%	200 µg/mL
Pentachlorophenol	P004716	87-86-5	C_6HCl_5O	266.34	98.76%	200 µg/mL
Phenanthrene	ER042805-02	85-01-8	$C_{14}H_{10}$	178.23	99.19%	200 µg/mL
Phenol	PR092309-03	108-95-2	C_6H_6O	94.11	99.97%	200 µg/mL
Pyrene	ER050305-03	129-00-0	$C_{16}H_{10}$	202.26	99.47%	200 µg/mL
Pyridine	PER_039_102530	110-86-1	C_5H_5N	79.10	99.95%	200 µg/mL
1,2,4,5-Tetrachlorobenzene	EB-1955	95-94-3	$C_6H_2Cl_4$	215.89	99.34%	200 µg/mL
2,3,4,6-Tetrachlorophenol	ER100206-01	58-90-2	$C_6H_2Cl_4O$	231.89	99.28%	200 µg/mL
1,2,4-Trichlorobenzene	EB-1677	120-82-1	$C_6H_3Cl_3$	181.45	99.73%	200 µg/mL
2,4,5-Trichlorophenol	PR040307-02	95-95-4	$C_6H_3Cl_3O$	197.45	98.20%	200 µg/mL
2,4,6-Trichlorophenol	P004555	88-06-2	$C_6H_3Cl_3O$	197.45	98.95%	200 µg/mL

[1] Due to stability problems, it is recommended not to use this analyte for quantitation.

Standard Solution Assay Parameters

Analysis Method:	GC/MS
Column:	DB-5ms, 30 m x 0.25 mm ID, 0.25 µm film thickness
Temp Program:	40°C (hold 2 mins) to 300°C at 10°C/min (hold 7 mins)
Injector Temp:	Cool on-column
Detector Temp:	280°C

Calibration Curve

Calibration Curve:	Linear Regression
Number of Points:	1

Solution Standard Verification and Homogeneity

Compound	Verified Concentration µg/mL	Acceptance Criteria	%RSD - Homogeneity %	Acceptance Criteria
Acenaphthene	190.7	± 10%	0.7	≤ 5%
Benzo(a)pyrene	190.4	± 10%	1.3	≤ 5%
Benzyl alcohol	190.0	± 10%	3.1	≤ 5%
Bis(2-ethylhexyl)phthalate	189.0	± 10%	3.6	≤ 5%
Carbazole	189.4	± 10%	3.9	≤ 5%
4-Chloroaniline	187.7	± 10%	4.1	≤ 5%
4-Chloro-3-methylphenol	189.4	± 10%	2.7	≤ 5%
Dibenzofuran	189.0	± 10%	1.1	≤ 5%
1,4-Dichlorobenzene	189.5	± 10%	1.2	≤ 5%
3,3'-Dichlorobenzidine	192.6	± 10%	2.4	≤ 5%
2,4-Dichlorophenol	189.3	± 10%	2.2	≤ 5%
2,4-Dinitrotoluene	189.4	± 10%	4.1	≤ 5%
Di-n-octyl-phthalate	191.7	± 10%	1.1	≤ 5%
Fluoranthene	190.8	± 10%	2.2	≤ 5%
Hexachloro-(1,3)-butadiene	188.7	± 10%	1.0	≤ 5%
Isophorone	191.5	± 10%	3.1	≤ 5%
2-Methylnaphthalene	189.8	± 10%	1.0	≤ 5%
3-Nitroaniline	188.1	± 10%	1.8	≤ 5%
2-Nitrophenol	186.8	± 10%	3.6	≤ 5%
Nitrobenzene	192.3	± 10%	1.6	≤ 5%
N-Nitrosodi-n-butylamine	189.8	± 10%	2.7	≤ 5%
N-Nitrosodiphenylamine	189.8	± 10%	2.4	≤ 5%
Pentachlorobenzene	188.1	± 10%	1.4	≤ 5%
Phenol	191.1	± 10%	1.4	≤ 5%
Pyridine	189.8	± 10%	2.6	≤ 5%

- Concentration is verified through multiple analyses and is calculated as the average of multiple analyses compared to an independently prepared calibration solution.
- Homogeneity is ensured through rigorous production process controls statistically analyzed to evaluate risk and verified by analysis. The %RSD of samples pulled from across the lot demonstrate homogeneity.
- This standard was prepared from six stocks that have been verified for accuracy and homogeneity. Verification of this standard was performed by monitoring 25 components listed in the table above, including Method 8270 Check Compounds (CCC) and at least one analyte from each stock.

COA Revision History

Revision No.	Date	Reason for Revision
00	12/21/2011	Initial version
01	4/11/2012	Missing footnote was added.
		Added statement that solution should be sonicated prior to use.
02	5/16/2012	Corrected "Bis(2-chloroisopropyl)ether" (CAS 108-60-1) to "Bis(1-chloroisopropyl)ether"

Analytical Run Number _____

Calibration Information

Tune Data (If applicable)

Initial Calibration (If different than Initial Calibration in Run 1)
- Calibration Factor Summary
- Chromatogram
- Quant Report (If applicable)

Continuing Calibration
- Calibration Response Check
- Chromatogram
- Quant Report (If applicable)

Instrument Logs/Analysis Notebook Pages

Blank / Field Sample / QC Data

Sample Results
Chromatogram
Quant Report (If applicable)
Confirmation Analysis Quant Report / Chromatogram (If applicable)
Tentatively Identified Compounds (If required)

Rev. 1.1

Calibration Information

Tune Data (If applicable)

Initial Calibration (If different than Initial Calibration in Run 1)
- Calibration Factor Summary
- Chromatogram
- Quant Report (If applicable)

Continuing Calibration
- Calibration Response Check
- Chromatogram
- Quant Report (If applicable)

Rev. 1.1

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: 006611 SAS No.: --- SDG No.: ---

Lab File ID: E0307403 DFTPP Injection Date: 03/07/14

Instrument ID: AG5 DFTPP Injection Time: 14:55

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30 - 80% of mass 198	36.3
68	Less than 2.0% of mass 69	0.0 (1)
69	(reference only)	34.1
70	Less than 2.0% of mass 69	0.4 (1)
127	25 - 75% of mass 198	48.9
197	Less than 1% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5 - 9% of mass 198	6.8
275	10 - 30% of mass 198	24.1
365	Greater than 1% of mass 198	3.0
441	0 - 100% of mass 443	89.3
442	40 - 110% of mass 198	92.7
443	15 - 24% of mass 442	19.5 (2)

(1)-Value is % mass 69 (2)-Value is % mass 442

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

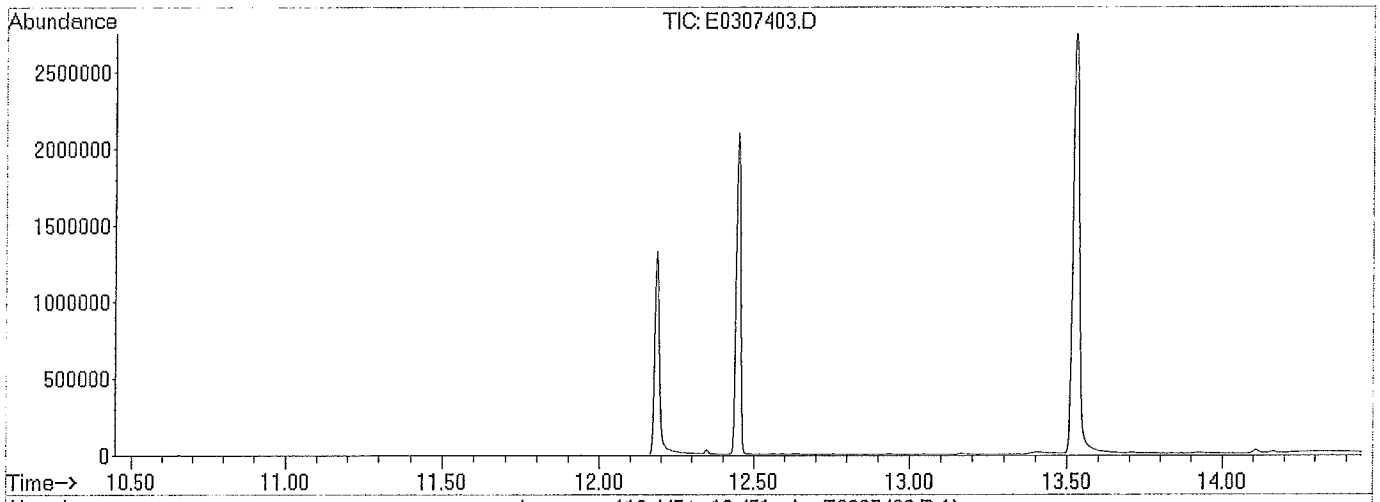
	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	BLANK STD	000 PPM STD	E0307404	03/07/14	15:21
2	BNA STD	005 PPM STD	E0307405	03/07/14	16:03
3	BNA STD	010 PPM STD	E0307406	03/07/14	16:45
4	BNA STD	020 PPM STD	E0307407	03/07/14	17:27
5	BNA STD	030 PPM STD	E0307408	03/07/14	18:08
6	BNA STD	040 PPM STD	E0307409	03/07/14	18:49
7	BNA STD	060 PPM STD	E0307410	03/07/14	19:30
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

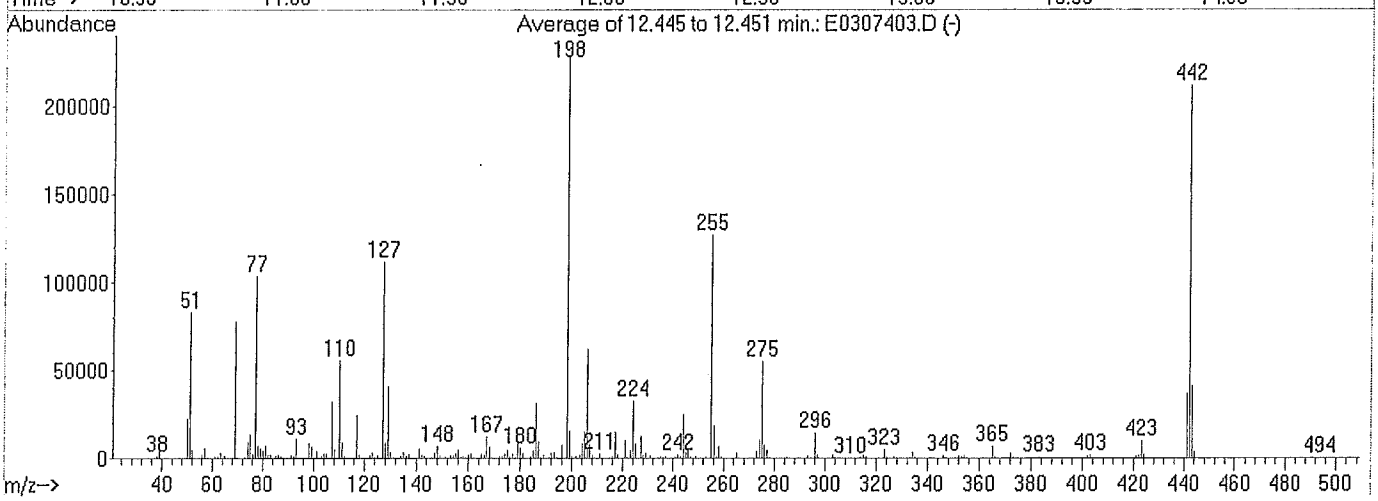
DFTPP

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307403.D
Acq On : 7 Mar 2014 14:55
Operator : PEK
Sample : 50 PPM TUNE 16289
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Integration File: FRED.P

Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Title : 8270 TUNE METHOD
Last Update : Wed Aug 28 11:55:28 2013





AutoFind: Scans 1185, 1186, 1187; Background Corrected with Scan 1173

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	80	36.3	83080	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.01	100	34.1	77865	PASS
70	69	0.00	2	0.4	297	PASS
127	198	25	75	48.9	111704	PASS
197	198	0.00	1	0.0	0	PASS
198	198	100	100	100.0	228586	PASS
199	198	5	9	6.8	15613	PASS
275	198	10	30	24.1	55090	PASS
365	198	0.75	100	3.0	6798	PASS
441	443	0.01	100	89.3	36890	PASS
442	198	40	110	92.7	211797	PASS
443	442	15	24	19.5	41325	PASS

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.05	85	50.20	22530	62.10	1229	75.10	13299
37.05	316	51.20	83080	63.15	3164	76.20	2292
38.15	1216	52.10	4971	64.05	559	77.20	103544
39.15	5920	53.05	61	65.05	1547	78.15	7156
40.10	189	54.10	48	66.05	255	79.05	5712
41.10	144	55.10	114	67.10	149	80.10	4593
42.10	52	56.10	2209	69.10	77865	81.10	6846
45.15	154	57.10	5761	70.05	297	82.10	1812
46.95	151	58.05	359	71.90	28	83.10	1744
47.90	34	58.95	14	73.10	694	84.05	138
48.20	66	61.00	847	74.15	9494	85.10	1540

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
86.10	1956	99.10	6555	111.10	8959	123.05	3244
87.10	1035	100.10	692	112.15	1163	124.00	619
88.05	464	101.05	3860	113.00	302	124.15	960
89.15	211	101.95	198	113.85	109	125.10	1380
91.10	1586	102.40	110	115.00	100	127.10	111704
92.15	1413	103.05	1476	117.10	24469	128.15	8875
93.05	10898	104.10	2572	118.10	1987	129.10	41080
94.05	698	105.10	2492	119.05	248	130.10	3609
95.05	326	107.10	32115	120.05	503	131.05	762
96.05	237	108.10	5211	121.15	95	132.00	342
98.10	8555	110.10	55570	122.10	1989	133.10	108

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
134.05	1369	143.90	102	154.10	1628	163.90	161
135.10	3369	144.15	241	155.10	2995	164.20	149
136.10	1530	145.05	397	156.10	4814	165.10	2387
137.10	2143	146.05	820	157.10	870	166.10	2055
137.90	199	147.10	3166	158.00	1096	167.05	12151
138.10	165	148.10	6699	159.05	815	168.10	6299
139.00	316	149.10	1512	160.10	1955	169.10	986
139.95	386	150.10	428	161.10	2756	170.00	412
141.10	5427	151.15	858	162.10	808	171.05	522
142.15	2005	151.70	473	162.85	63	172.05	1024
143.10	1196	153.10	1656	163.20	77	173.10	1273

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
174.10	2795	184.05	902	193.10	3376	207.10	7808
175.10	4633	185.15	4584	194.05	829	208.10	1857
176.05	1207	186.10	31288	196.10	7480	208.95	701
177.05	2321	187.10	9448	198.10	228586	210.20	417
178.15	777	188.00	689	199.10	15613	211.05	2465
179.10	8166	188.20	410	200.05	1440	211.90	434
180.10	5804	189.10	1879	201.60	1183	213.00	196
181.10	2954	190.05	492	203.05	1956	215.05	754
182.05	487	191.10	773	204.10	8556	216.05	1013
182.60	112	191.30	319	205.10	15184	217.10	14976
183.15	348	192.10	3141	206.05	61883	218.05	2228

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
218.90	65	228.05	1813	239.05	572	250.05	252
219.15	290	229.10	2874	239.95	504	250.95	349
219.60	68	230.00	540	241.05	832	252.00	416
221.10	9999	231.05	1409	242.05	1972	252.40	193
221.80	892	232.05	298	243.05	1372	253.20	924
222.10	725	233.00	227	244.10	24880	255.10	126909
223.15	4362	234.05	754	245.10	3415	256.10	18608
224.10	32552	235.05	1040	246.05	4612	257.05	1483
225.10	8362	236.00	683	247.00	988	258.00	6693
226.10	400	237.00	1068	248.10	285	259.00	1187
227.10	12650	238.10	244	249.05	1080	259.80	129

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289

Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
260.00	161	271.95	340	281.80	33	290.80	45
260.30	102	273.10	4005	281.95	77	291.10	54
260.95	130	274.10	10314	283.05	453	291.85	196
261.20	101	275.10	55090	284.10	388	293.05	1237
262.10	38	276.05	7404	285.05	764	294.25	280
265.05	2926	277.05	4584	286.00	257	296.10	14483
266.05	469	278.05	626	286.80	33	297.05	2086
268.20	80	279.10	32	288.00	88	298.05	90
269.25	117	280.00	33	289.05	163	299.00	29
269.95	316	280.95	91	289.90	114	300.10	51
270.95	524	281.30	33	290.10	72	300.95	68

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
301.95	246	313.05	190	324.05	910	335.05	906
303.10	1823	314.10	765	325.05	136	336.00	110
304.05	594	315.05	1697	325.95	141	339.00	38
305.00	39	316.05	1114	327.00	979	339.80	62
306.90	34	317.00	138	328.05	483	340.10	64
307.50	28	317.90	60	329.15	115	341.00	575
307.95	171	319.40	43	330.40	29	342.05	218
309.00	86	320.00	36	331.00	57	344.20	27
309.20	39	321.00	556	332.00	296	346.05	1452
310.05	168	322.05	194	333.05	513	347.00	287
311.90	60	323.10	4891	334.05	3310	347.90	47

Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
348.40	28	360.80	52	372.05	2885	395.60	40
350.10	29	363.20	50	373.05	708	397.00	59
351.05	88	365.00	6798	374.00	88	398.10	30
352.05	1233	365.95	1121	383.00	798	401.05	251
353.05	1041	366.80	27	384.00	279	402.05	1233
354.05	1546	367.05	83	384.90	78	403.05	1819
355.05	407	367.90	38	390.05	330	404.05	571
356.00	69	370.05	114	390.95	302	405.10	60
358.20	30	370.50	101	391.90	138	408.20	40
359.05	174	370.95	335	392.10	54	410.10	38
359.60	29	371.20	159	394.60	35	410.30	45

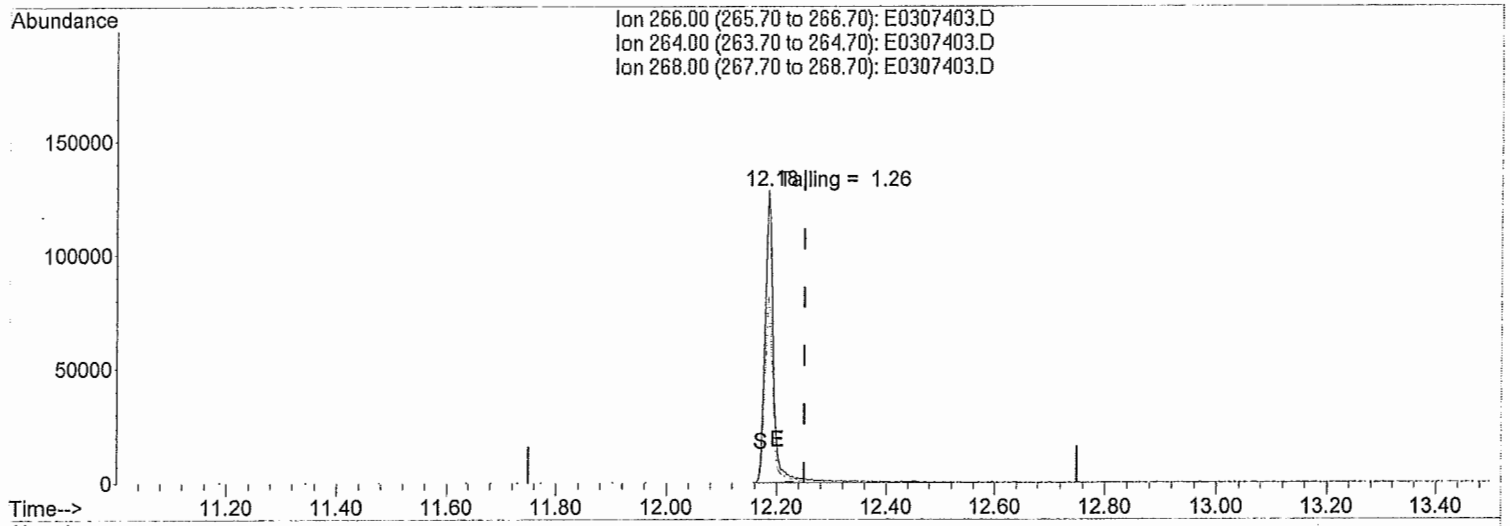
Average of 12.445 to 12.451 min.: E0307403.D
50 PPM TUNE 16289
Modified:subtracted

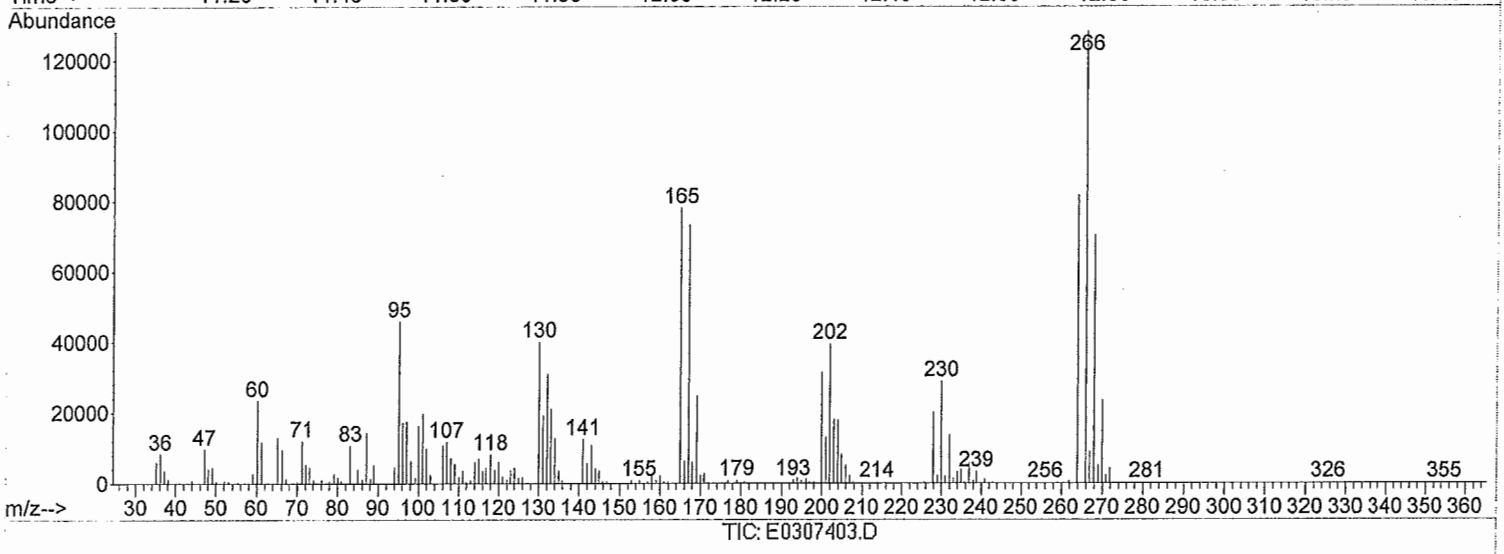
m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
414.90	170	427.55	105	432.20	67	436.85	113
416.10	30	428.10	81	432.60	85	437.40	47
417.10	33	428.50	69	433.10	81	438.15	209
418.00	28	428.70	86	433.50	45	439.05	86
421.05	1431	429.10	74	434.20	37	441.10	36890
422.05	1626	429.60	60	434.55	114	442.05	211797
423.10	9872	429.90	35	434.95	70	443.10	41325
424.05	2113	430.30	44	435.30	58	444.05	3846
425.15	242	430.90	114	435.75	98	445.10	139
425.80	52	431.50	56	436.00	45	493.80	28
426.80	174	431.95	163	436.50	64		

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307403.D
Acq On : 7 Mar 2014 14:55
Operator : PEK
Sample : 50 PPM TUNE 16289
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 07 15:13:37 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(1) Pentachlorophenol (TMC)

12.184min (-0.066) 12.29ug/L

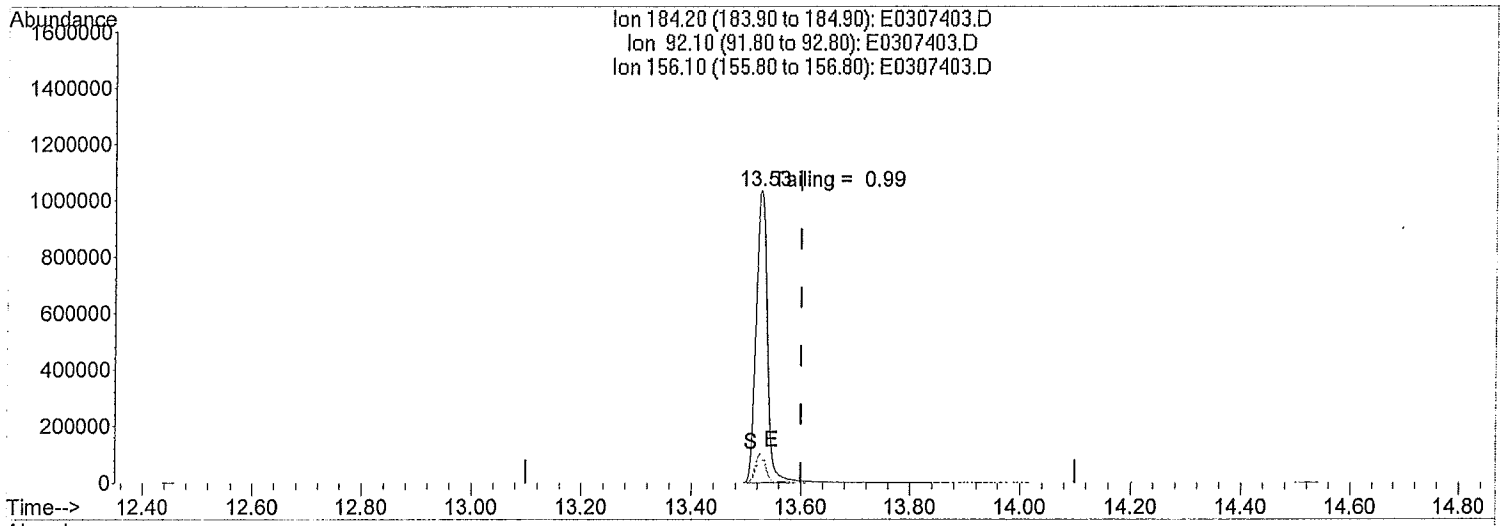
response 131019

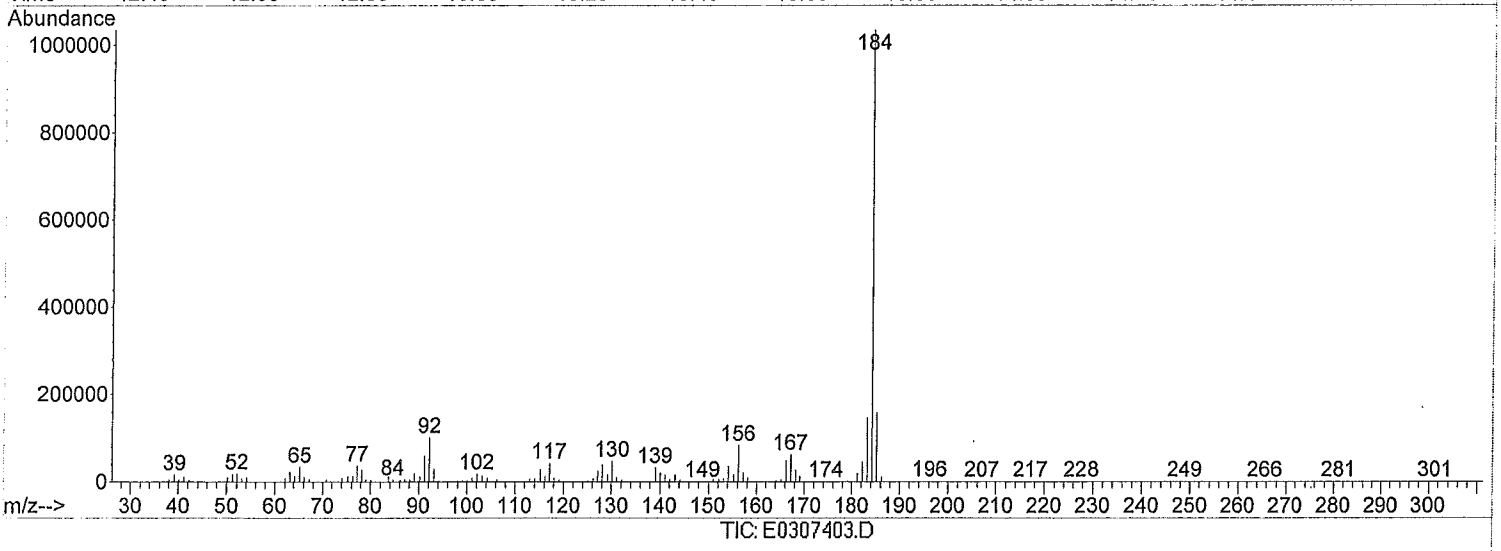
Ion	Exp%	Act%
266.00	100	100
264.00	63.80	64.53
268.00	63.80	58.87
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307403.D
Acq On : 7 Mar 2014 14:55
Operator : PEK
Sample : 50 PPM TUNE 16289
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 07 15:13:37 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(3) Benzidine (T)

13.527min (-0.073) 28.93ug/L

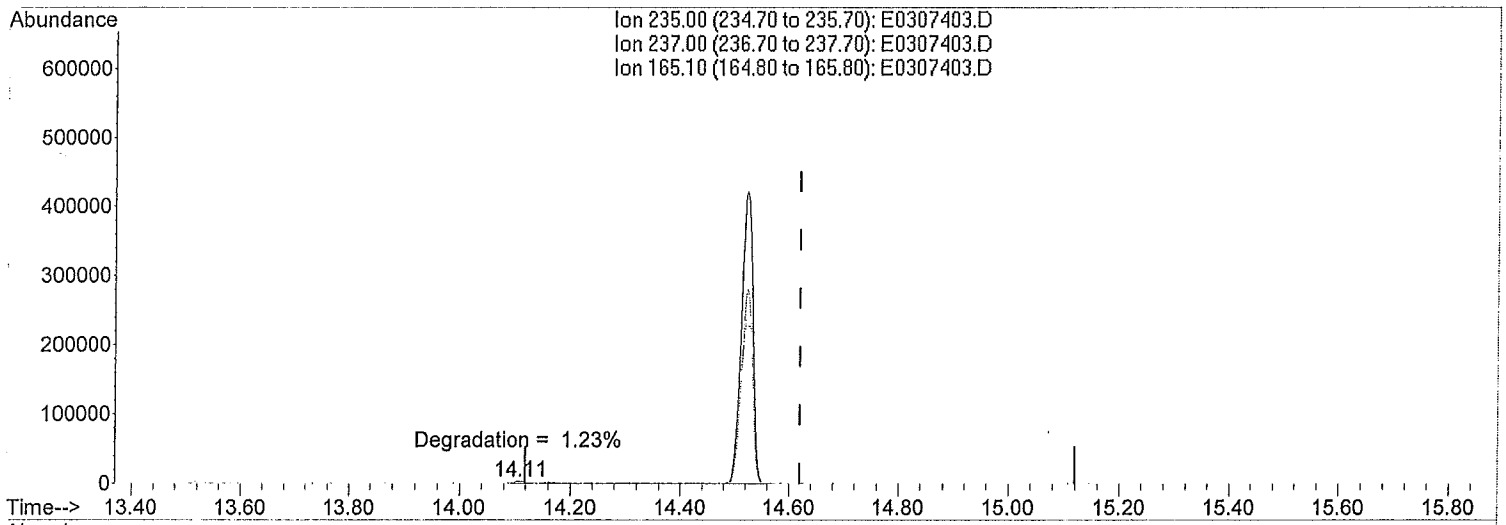
response 1491811

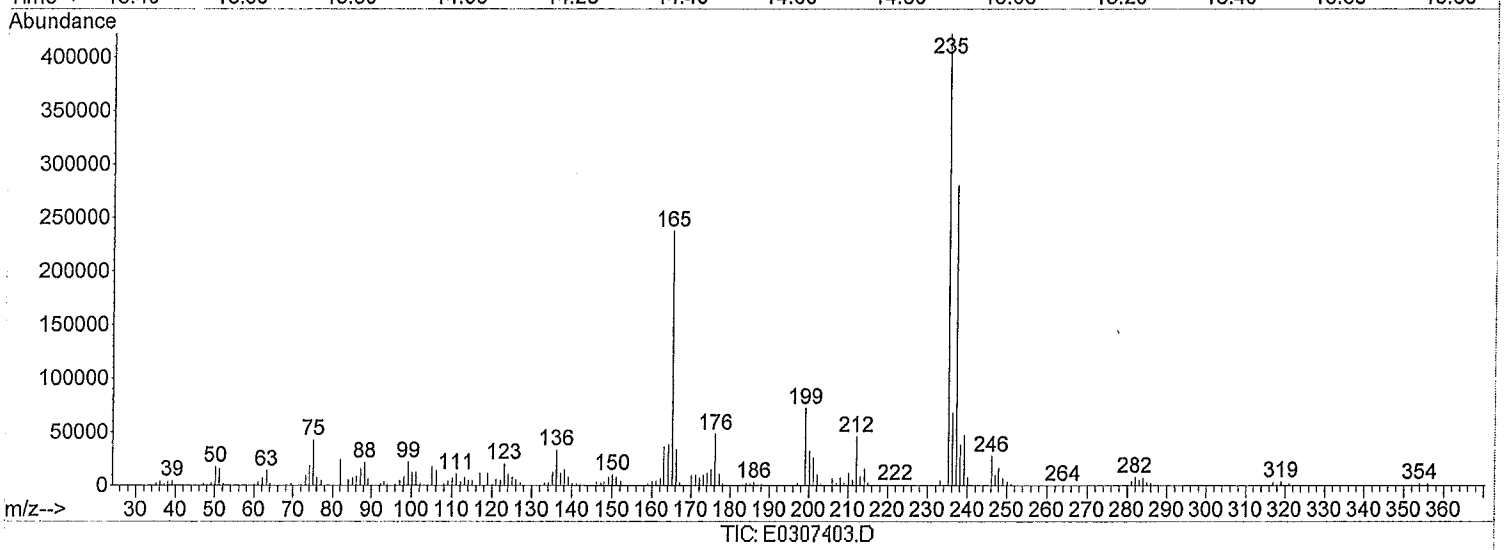
Ion	Exp%	Act%
184.20	100	100
92.10	13.70	10.04#
156.10	8.60	7.65
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307403.D
Acq On : 7 Mar 2014 14:55
Operator : PEK
Sample : 50 PPM TUNE 16289
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 07 15:13:37 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(4) DDT

14.523min (-0.097) 23.88ug/L

response 620045

Ion	Exp%	Act%
235.00	100	100
237.00	64.80	65.28
165.10	59.00	59.69
0.00	0.00	0.00

Response Factor Report AG5

Method Path : C:\MSDCHEM\1\CALFILES\8270CALS\
Method File : E8270321HW.M
Title : 8270 BNA Calibration
Last Update : Sat Mar 08 08:58:38 2014
Response Via : Initial Calibration

Calibration Files
10 =E0307406.D 20 =E0307407.D 30 =E0307408.D
40 =E0307409.D 5 =E0307405.D 60 =E0307410.D

		Compound	10	20	30	40	5	60	Avg	%RSD
1)	I	1,4-Dichlorobenzene-d	----------ISTD----------							
2)	I	Naphthalene-d8	----------ISTD----------							
3)	S	Nitrobenzene-d5	0.359	0.345	0.331	0.327	0.353	0.306	0.337	5.81
4)	I	Acenaphthene-d10	----------ISTD----------							
5)	S	2-Fluorobiphenyl	1.414	1.281	1.185	1.106	1.466	1.008	1.243	14.28
6)	T	Dimethylphthalate	1.780	1.628	1.539	1.460	1.867	1.365	1.607	11.91
7)	T	Diethylphthalate	1.833	1.647	1.538	1.448	1.924	1.316	1.618	14.29
8)	I	Phenanthrene-d10	----------ISTD----------							
9)	T	Di-n-butylphthala	1.801	1.642	1.516	1.412	1.888	1.236	1.582	15.44
10)	I	Chrysene-d12	----------ISTD----------							
11)	TM	Pyrene	1.482	1.320	1.246	1.196	1.532	1.089	1.311	13.00
12)	S	Terphenyl-d14	0.736	0.680	0.652	0.626	0.755	0.588	0.673	9.52
13)	T	bis(2-Ethylhexyl)	1.023	1.008	0.996	0.987	1.007	0.920	0.990	3.69
14)	TC	Di-n-octylphthala	1.699	1.725	1.688	1.680	1.600	1.558	1.658	3.89#
15)	I	Perylene-d12	----------ISTD----------							

(#) = Out of Range ### Number of calibration levels exceeded format ###

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307404.D
Acq On : 7 Mar 2014 15:21
Operator : PEK
Sample : BLK 16293 PEK 3/10/2014
Misc : AG-5 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 07 15:57:20 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3016416	40.00 ug/L	-0.05
2) Naphthalene-d8	9.37	136	11577249	40.00 ug/L	-0.05
4) Acenaphthene-d10	12.29	164	6384824	40.00 ug/L	-0.05
8) Phenanthrene-d10	14.85	188	10542665	40.00 ug/L	-0.06
10) Chrysene-d12	20.47	240	12708761	40.00 ug/L	-0.12
15) Perylene-d12	25.42	264	12353785	40.00 ug/L	-0.07

System Monitoring Compounds					
3) Nitrobenzene-d5	0.00	82	0	0.00 ug/L	
Spiked Amount 50.000			Recovery	= 0.00%	
5) 2-Fluorobiphenyl	11.23	172	4857	0.02 ug/L	0.04
Spiked Amount 50.000			Recovery	= 0.04%	
12) Terphenyl-d14	0.00	244	0	0.00 ug/L	
Spiked Amount 50.000			Recovery	= 0.00%	

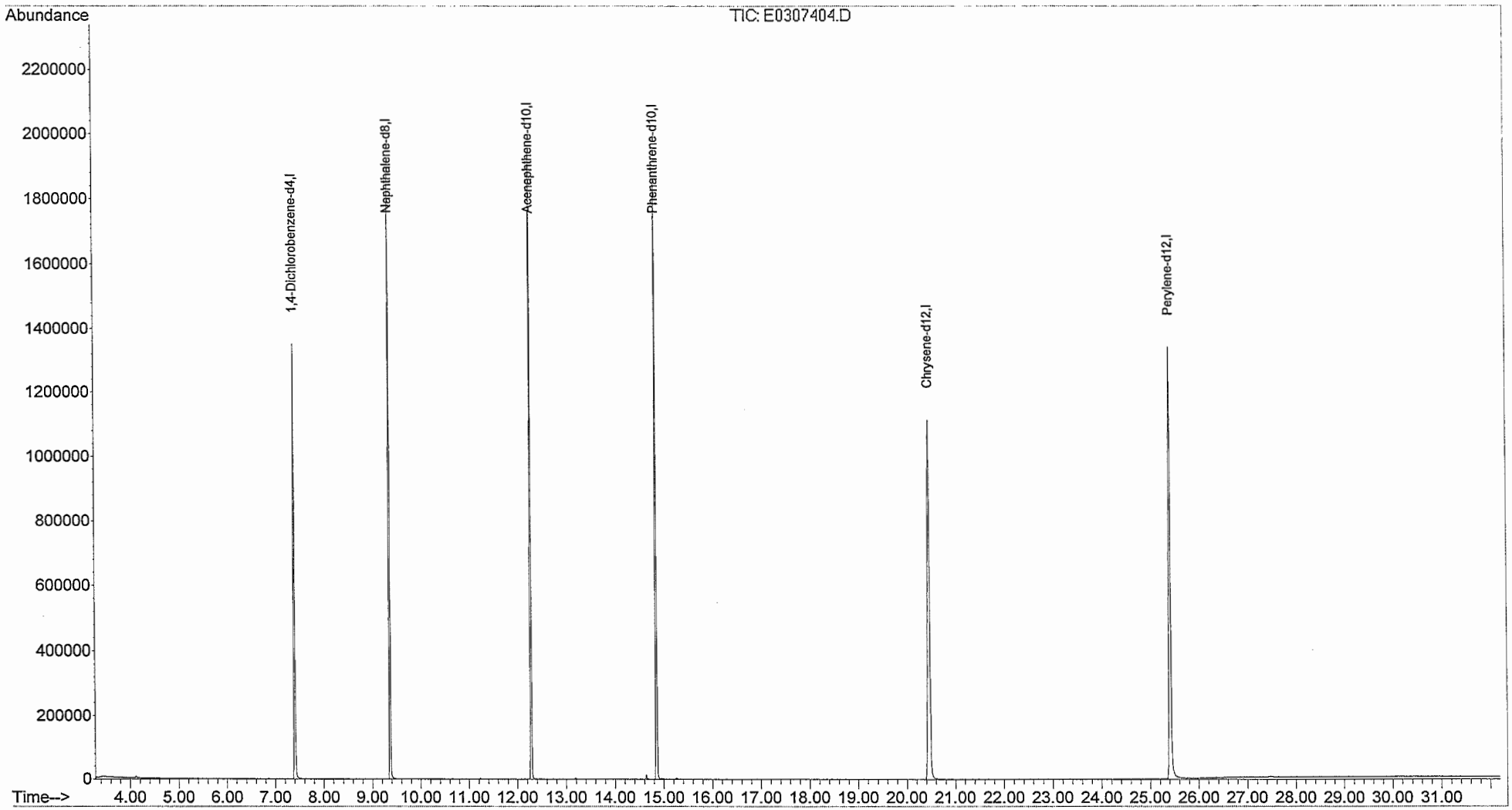
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307404.D
Acq On : 7 Mar 2014 15:21
Operator : PEK
Sample : BLK
Misc : AG-5 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 07 15:57:20 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307405.D
Acq On : 7 Mar 2014 16:03
Operator : PEK
Sample : 5 PPM STD 16294 PEK
Misc : AG-5 8270 3/10/2014
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Mar 07 16:36:44 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration

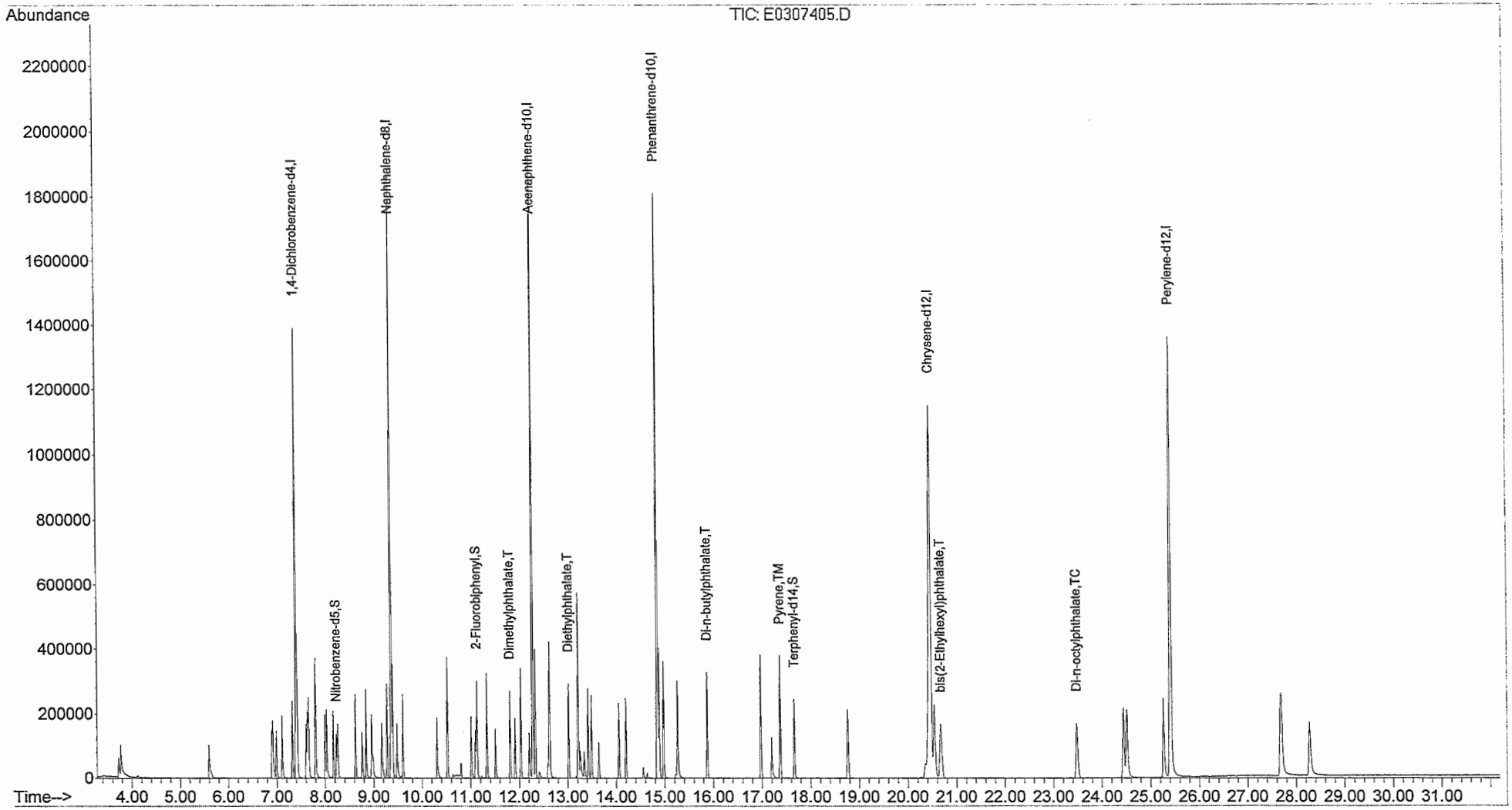
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3005778	40.00 ug/L	-0.05
2) Naphthalene-d8	9.37	136	11504533	40.00 ug/L	-0.05
4) Acenaphthene-d10	12.29	164	6343400	40.00 ug/L	-0.05
8) Phenanthrene-d10	14.85	188	10461861	40.00 ug/L	-0.06
10) Chrysene-d12	20.47	240	12702454	40.00 ug/L	-0.12
15) Perylene-d12	25.42	264	12390870	40.00 ug/L	-0.07
System Monitoring Compounds					
3) Nitrobenzene-d5	8.23	82	507446	4.90 ug/L	-0.05
Spiked Amount 50.000			Recovery	= 9.80%	
5) 2-Fluorobiphenyl	11.13	172	1162679	5.36 ug/L	-0.06
Spiked Amount 50.000			Recovery	= 10.72%	
12) Terphenyl-d14	17.66	244	1198911	4.86 ug/L	-0.07
Spiked Amount 50.000			Recovery	= 9.72%	
Target Compounds					Qvalue
6) Dimethylphthalate	11.81	163	1480654	6.35 ug/L #	78
7) Diethylphthalate	13.02	149	1525803	6.79 ug/L	99
9) Di-n-butylphthalate	15.87	149	2468767	6.72 ug/L	94
11) Pyrene	17.37	202	2433310	6.37 ug/L	81
13) bis(2-Ethylhexyl)phthalate	20.68	149	1599370	6.62 ug/L	99
14) Di-n-octylphthalate	23.48	149	2539910	6.01 ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307405.D
Acq On : 7 Mar 2014 16:03
Operator : PEK
Sample : 5 PPM STD
Misc : AG-5 8270
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Mar 07 16:36:44 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307406.D
Acq On : 7 Mar 2014 16:45
Operator : PEK
Sample : 10 PPM STD 16295 PEK
Misc : AG-5 8270 3/10/2014
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 08 08:54:02 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration

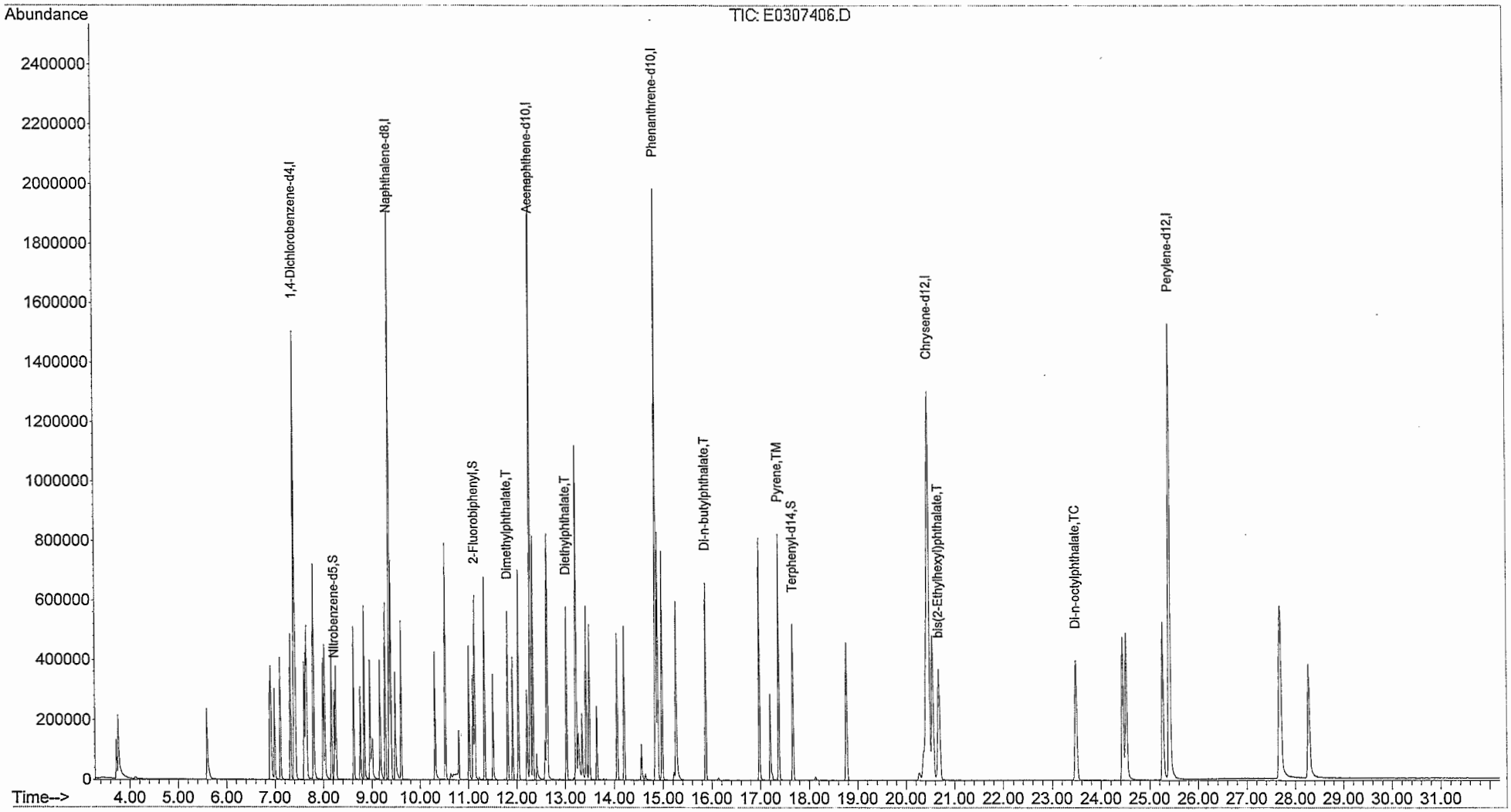
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3289182	40.00	ug/L	-0.05
2) Naphthalene-d8	9.37	136	12500007	40.00	ug/L	-0.05
4) Acenaphthene-d10	12.29	164	7052371	40.00	ug/L	-0.05
8) Phenanthrene-d10	14.85	188	11723584	40.00	ug/L	-0.06
10) Chrysene-d12	20.47	240	14147007	40.00	ug/L	-0.12
15) Perylene-d12	25.42	264	14124326	40.00	ug/L	-0.07
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	1121626	9.96	ug/L	-0.05
Spiked Amount 50.000			Recovery	=	19.92%	
5) 2-Fluorobiphenyl	11.13	172	2492405	10.33	ug/L	-0.06
Spiked Amount 50.000			Recovery	=	20.66%	
12) Terphenyl-d14	17.67	244	2601323	9.47	ug/L	-0.07
Spiked Amount 50.000			Recovery	=	18.94%	
Target Compounds						Qvalue
6) Dimethylphthalate	11.81	163	3138823	12.10	ug/L	99
7) Diethylphthalate	13.03	149	3231403	12.93	ug/L	99
9) Di-n-butylphthalate	15.87	149	5278901	12.83	ug/L	95
11) Pyrene	17.37	202	5242163	12.32	ug/L	80
13) bis(2-Ethylhexyl)phthalate	20.68	149	3617981	13.46	ug/L	99
14) Di-n-octylphthalate	23.49	149	6007286	12.76	ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307406.D
Acq On : 7 Mar 2014 16:45
Operator : PEK
Sample : 10 PPM STD
Misc : AG-5 8270
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 08 08:54:02 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307407.D
Acq On : 7 Mar 2014 17:27
Operator : PEK
Sample : 20 PPM STD 16296 PEK 3/10/2014
Misc : AG-5 8270
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 08 08:54:19 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration

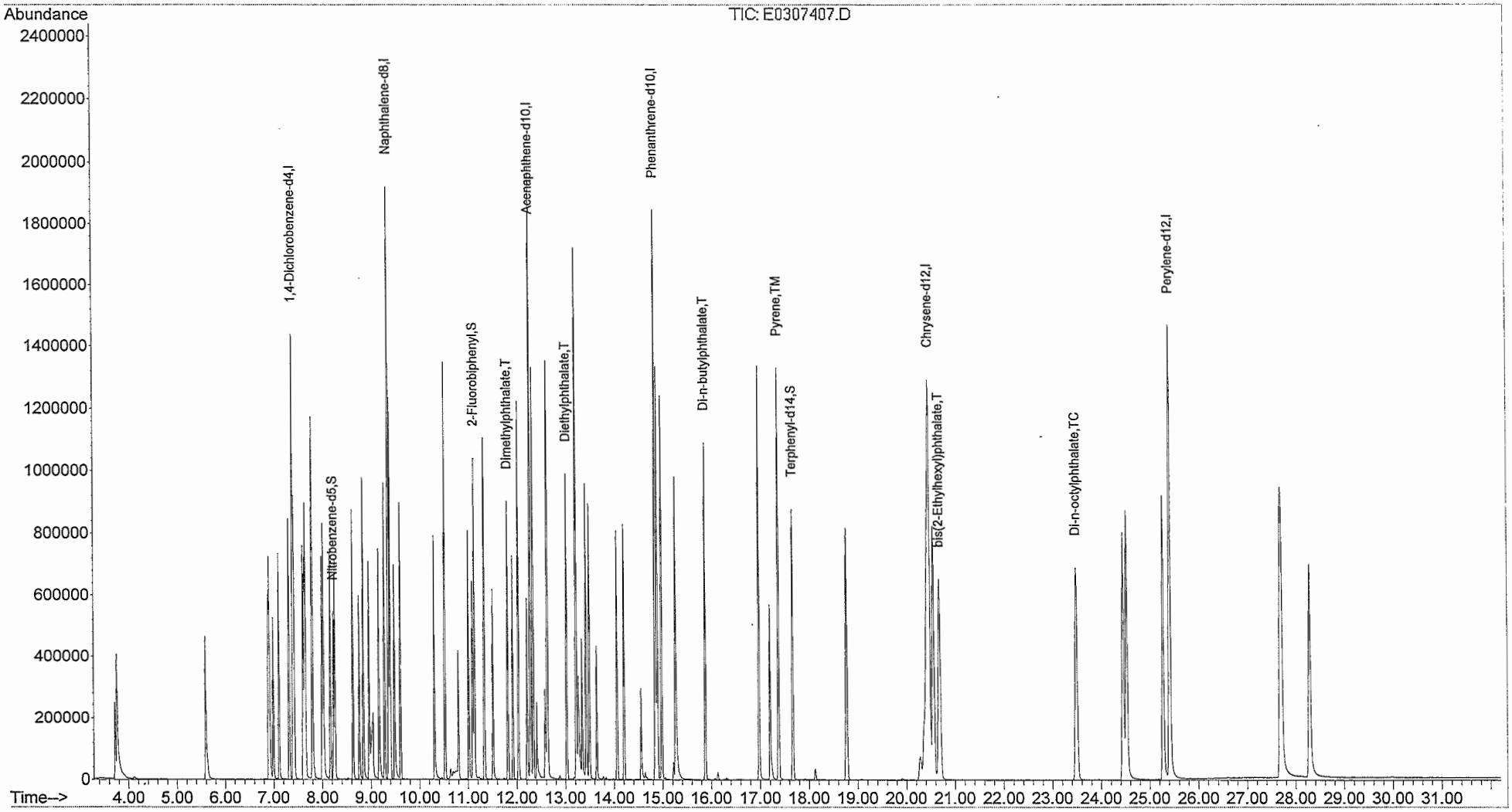
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3100490	40.00 ug/L	-0.05
2) Naphthalene-d8	9.37	136	11986828	40.00 ug/L	-0.05
4) Acenaphthene-d10	12.29	164	6642402	40.00 ug/L	-0.05
8) Phenanthrene-d10	14.86	188	11071448	40.00 ug/L	-0.05
10) Chrysene-d12	20.48	240	13167564	40.00 ug/L	-0.10
15) Perylene-d12	25.42	264	13320043	40.00 ug/L	-0.07
System Monitoring Compounds					
3) Nitrobenzene-d5	8.23	82	2067138	19.14 ug/L	-0.05
Spiked Amount 50.000			Recovery =	38.28%	
5) 2-Fluorobiphenyl	11.13	172	4254957	18.72 ug/L	-0.06
Spiked Amount 50.000			Recovery =	37.44%	
12) Terphenyl-d14	17.67	244	4478168	17.51 ug/L	-0.06
Spiked Amount 50.000			Recovery =	35.02%	
Target Compounds					Qvalue
6) Dimethylphthalate	11.82	163	5407515	22.13 ug/L	100
7) Diethylphthalate	13.03	149	5469415	23.24 ug/L	99
9) Di-n-butylphthalate	15.88	149	9090377	23.40 ug/L	95
11) Pyrene	17.38	202	8688764	21.94 ug/L	81
13) bis(2-Ethylhexyl)phthalate	20.68	149	6636306	26.52 ug/L	98
14) Di-n-octylphthalate	23.49	149	11354226	25.92 ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307407.D
Acq On : 7 Mar 2014 17:27
Operator : PEK
Sample : 20 PPM STD
Misc : AG-5 8270
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 08 08:54:19 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307408.D
Acq On : 7 Mar 2014 18:08
Operator : PEK
Sample : 30 PPM STD 16297 PEK 3/10/2014
Misc : AG-5 8270
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 08 08:54:34 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration

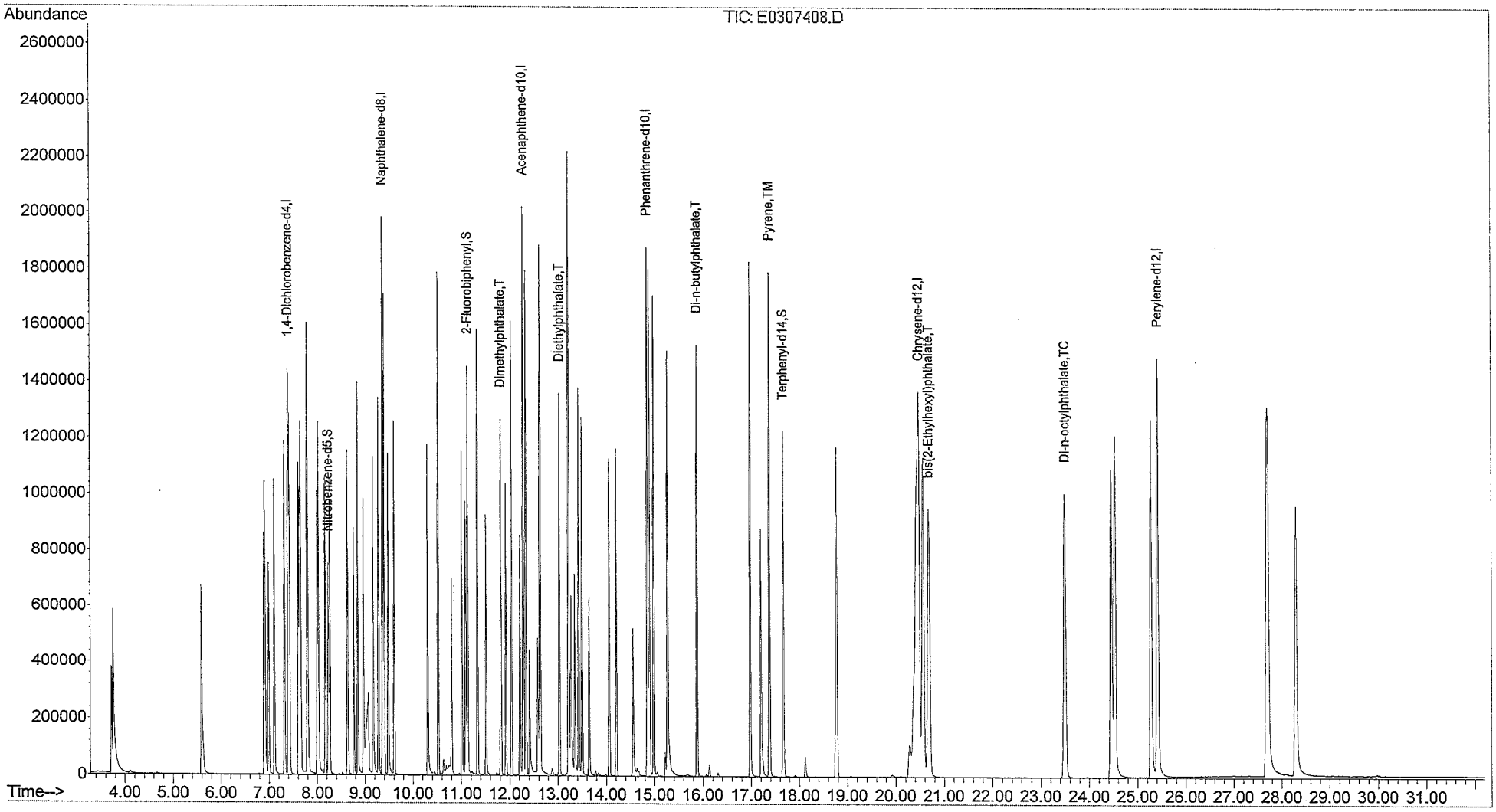
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3210755	40.00	ug/L	-0.05
2) Naphthalene-d8	9.37	136	12445918	40.00	ug/L	-0.05
4) Acenaphthene-d10	12.29	164	6929396	40.00	ug/L	-0.05
8) Phenanthrene-d10	14.86	188	11541208	40.00	ug/L	-0.05
10) Chrysene-d12	20.48	240	13396136	40.00	ug/L	-0.10
15) Perylene-d12	25.43	264	13707138	40.00	ug/L	-0.06
System Monitoring Compounds						
3) Nitrobenzene-d5	8.24	82	3089200	27.55	ug/L	-0.05
Spiked Amount 50.000			Recovery = 55.10%			
5) 2-Fluorobiphenyl	11.14	172	6160830	25.99	ug/L	-0.05
Spiked Amount 50.000			Recovery = 51.98%			
12) Terphenyl-d14	17.67	244	6548402	25.17	ug/L	-0.06
Spiked Amount 50.000			Recovery = 50.34%			
Target Compounds						Qvalue
6) Dimethylphthalate	11.82	163	7996310	31.37	ug/L	99
7) Diethylphthalate	13.03	149	7990957	32.55	ug/L	100
9) Di-n-butylphthalate	15.88	149	13119386	32.39	ug/L	95
11) Pyrene	17.39	202	12515972	31.07	ug/L	81
13) bis(2-Ethylhexyl)phthalate	20.69	149	10008791	39.31	ug/L	99
14) Di-n-octylphthalate	23.50	149	16955270	38.04	ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307408.D
Acq On : 7 Mar 2014 18:08
Operator : PEK
Sample : 30 PPM STD
Misc : AG-5 8270
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 08 08:54:34 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307409.D
Acq On : 7 Mar 2014 18:49
Operator : PEK
Sample : 40 PPM STD 16298 PEK 3/10/2014
Misc : AG-5 8270
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 08 08:54:44 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration

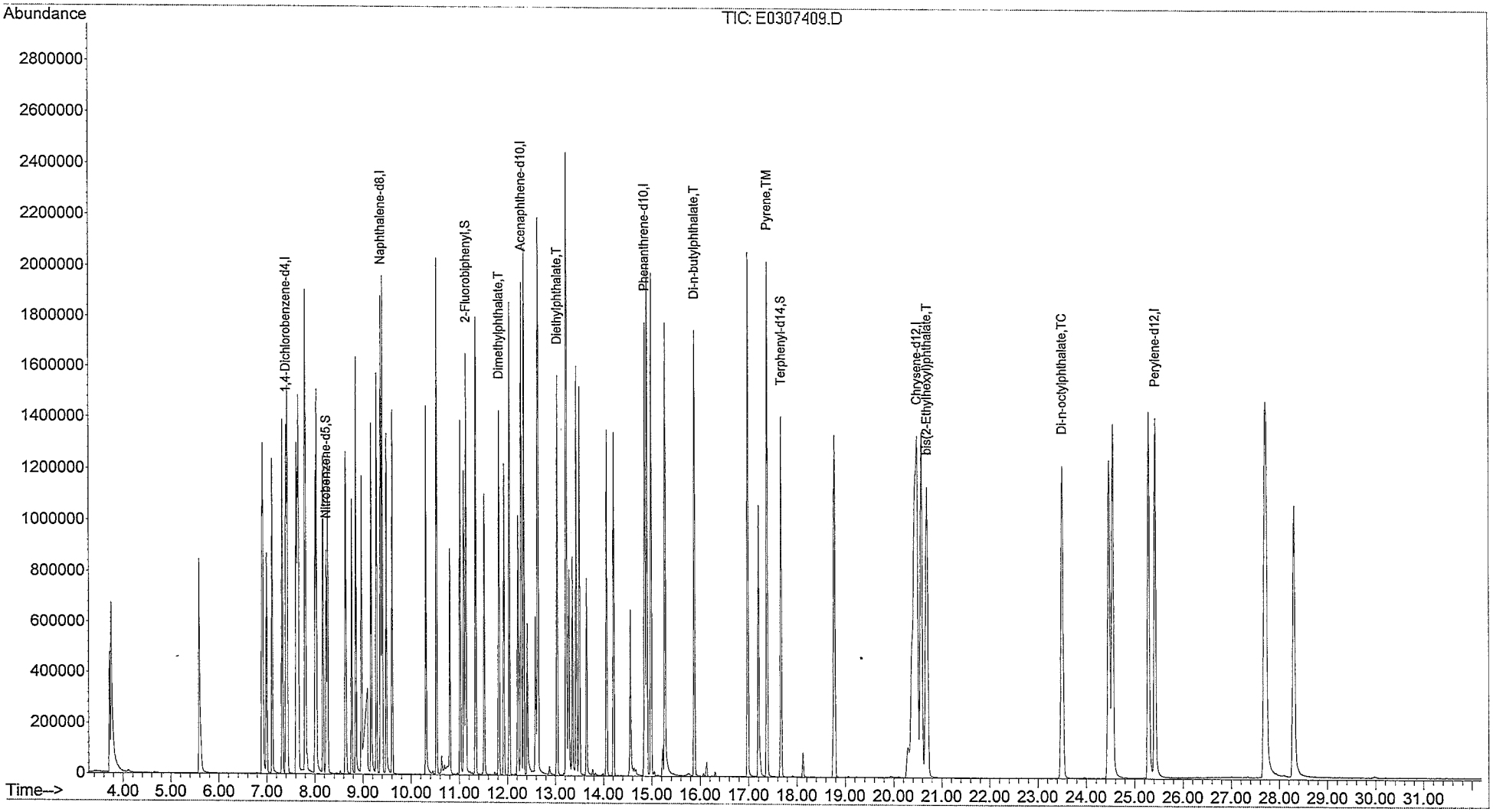
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3040368	40.00	ug/L	-0.05
2) Naphthalene-d8	9.37	136	11851287	40.00	ug/L	-0.05
4) Acenaphthene-d10	12.29	164	6602329	40.00	ug/L	-0.05
8) Phenanthrene-d10	14.86	188	10989052	40.00	ug/L	-0.05
10) Chrysene-d12	20.49	240	12309589	40.00	ug/L	-0.10
15) Perylene-d12	25.43	264	12773069	40.00	ug/L	-0.06
System Monitoring Compounds						
3) Nitrobenzene-d5	8.24	82	3875322	36.29	ug/L	-0.05
Spiked Amount 50.000			Recovery = 72.58%			
5) 2-Fluorobiphenyl	11.14	172	7304508	32.34	ug/L	-0.05
Spiked Amount 50.000			Recovery = 64.68%			
12) Terphenyl-d14	17.67	244	7708154	32.24	ug/L	-0.06
Spiked Amount 50.000			Recovery = 64.48%			
Target Compounds						Qvalue
6) Dimethylphthalate	11.82	163	9637972	39.69	ug/L	99
7) Diethylphthalate	13.04	149	9559829	40.87	ug/L	100
9) Di-n-butylphthalate	15.88	149	15512672	40.23	ug/L	95
11) Pyrene	17.39	202	14725061	39.78	ug/L	82
13) bis(2-Ethylhexyl)phthalate	20.69	149	12145153	51.91	ug/L	99
14) Di-n-octylphthalate	23.50	149	20679050	50.49	ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307409.D
Acq On : 7 Mar 2014 18:49
Operator : PEK
Sample : 40 PPM STD
Misc : AG-5 8270
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 08 08:54:44 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307410.D
Acq On : 7 Mar 2014 19:30
Operator : PEK
Sample : 60 PPM STD 16299 PEK 3/10/2014
Misc : AG-5 8270
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 08 08:54:58 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration

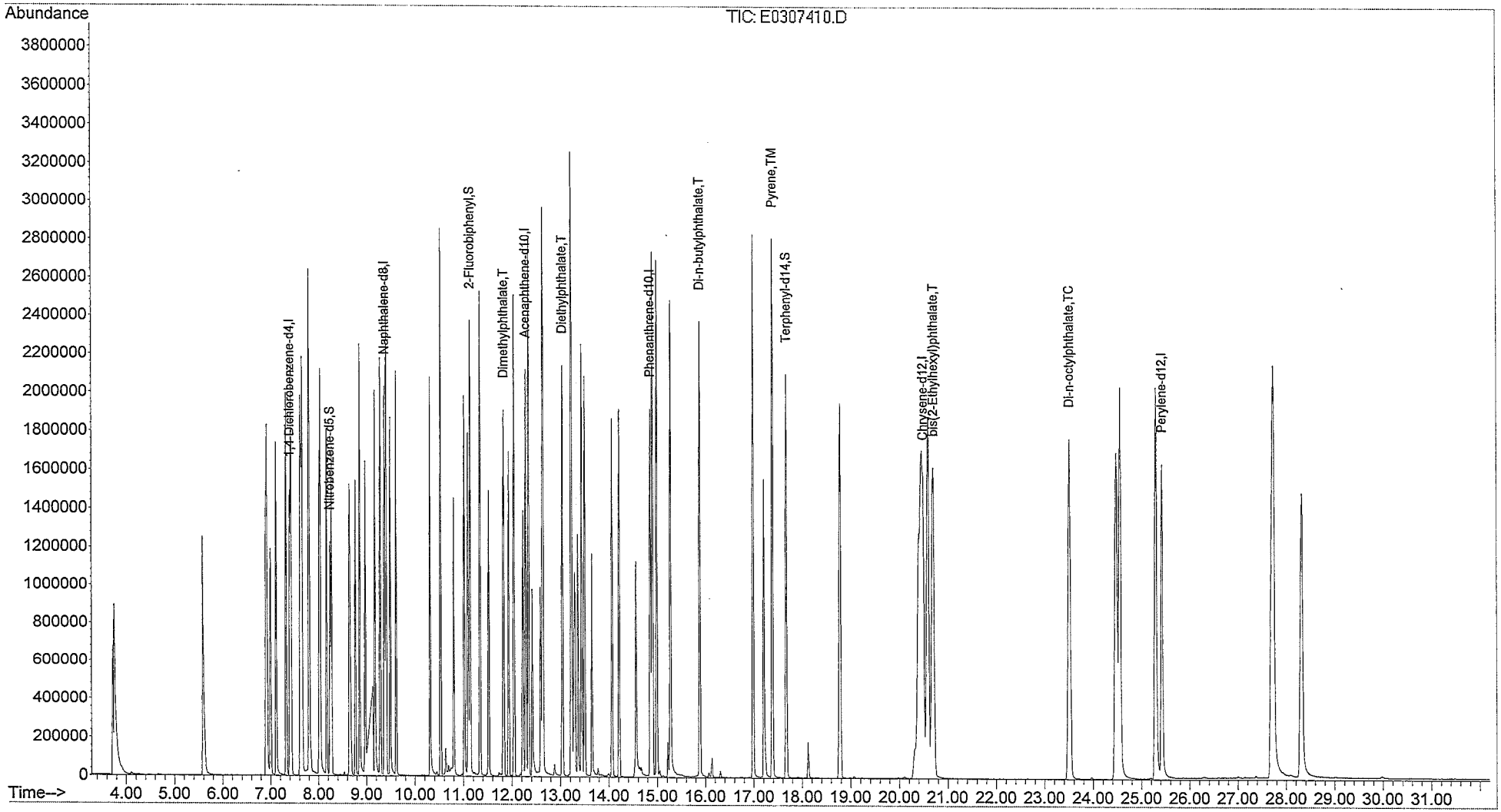
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3360499	40.00	ug/L	-0.05
2) Naphthalene-d8	9.37	136	13202374	40.00	ug/L	-0.04
4) Acenaphthene-d10	12.29	164	7360844	40.00	ug/L	-0.05
8) Phenanthrene-d10	14.86	188	12536217	40.00	ug/L	-0.05
10) Chrysene-d12	20.50	240	13811359	40.00	ug/L	-0.09
15) Perylene-d12	25.43	264	14645192	40.00	ug/L	-0.06
System Monitoring Compounds						
3) Nitrobenzene-d5	8.24	82	6054015	50.89	ug/L	-0.04
Spiked Amount 50.000			Recovery = 101.78%			
5) 2-Fluorobiphenyl	11.14	172	11129079	44.20	ug/L	-0.05
Spiked Amount 50.000			Recovery = 88.40%			
12) Terphenyl-d14	17.68	244	12187806	45.44	ug/L	-0.06
Spiked Amount 50.000			Recovery = 90.88%			
Target Compounds						Qvalue
6) Dimethylphthalate	11.83	163	15074889	55.68	ug/L	100
7) Diethylphthalate	13.05	149	14533607	55.74	ug/L	99
9) Di-n-butylphthalate	15.89	149	23240172	52.83	ug/L	95
11) Pyrene	17.39	202	22556726	54.31	ug/L	81
13) bis(2-Ethylhexyl)phthalate	20.71	149	19054690	72.59	ug/L	98
14) Di-n-octylphthalate	23.52	149	32275683	70.24	ug/L	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030714\
Data File : E0307410.D
Acq On : 7 Mar 2014 19:30
Operator : PEK
Sample : 60 PPM STD
Misc : AG-5 8270
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 08 08:54:58 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Wed Nov 27 09:24:47 2013
Response via : Initial Calibration



5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: 006611 SAS No.: --- SDG No.: ---

Lab File ID: E0308401 DFTPP Injection Date: 03/08/14

Instrument ID: AG5 DFTPP Injection Time: 09:25

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30 - 80% of mass 198	34.3
68	Less than 2.0% of mass 69	0.0 (1)
69	(reference only)	31.7
70	Less than 2.0% of mass 69	0.3 (1)
127	25 - 75% of mass 198	46.4
197	Less than 1% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5 - 9% of mass 198	6.7
275	10 - 30% of mass 198	24.4
365	Greater than 1% of mass 198	2.9
441	0 - 100% of mass 443	89.1
442	40 - 110% of mass 198	99.5
443	15 - 24% of mass 442	19.4 (2)

(1)-Value is % mass 69 (2)-Value is % mass 442

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

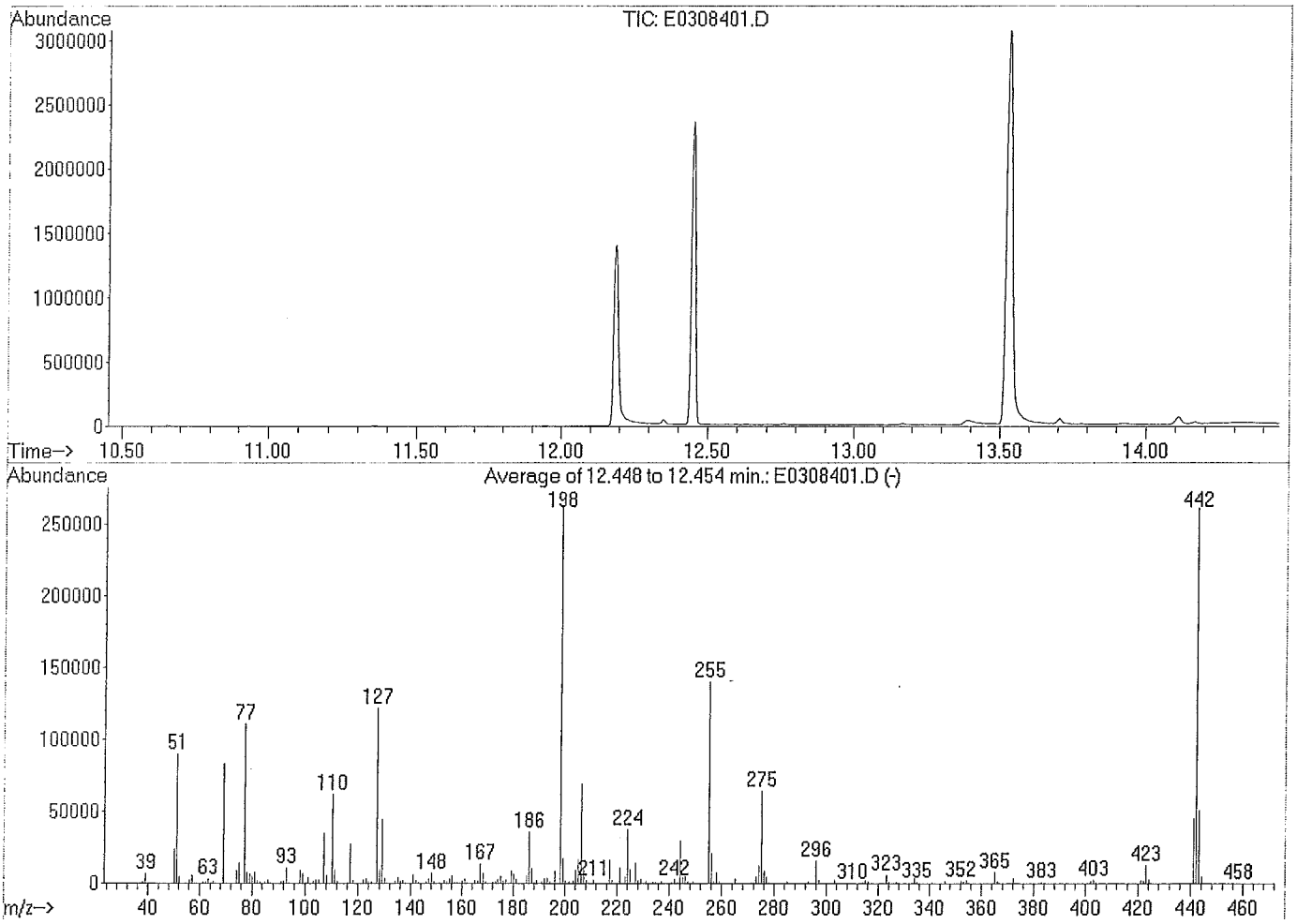
	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	ICV	030 PPM STD	E0308402	03/08/14	09:58
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

DFTPP

Data Path : C:\MSDCHEM\1\DATA\030814\
Data File : E0308401.D
Acq On : 8 Mar 2014 9:25
Operator : PEK
Sample : 50 PPM TUNE 16289 PEK 3/10/2014
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Integration File: FRED.P

Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Title : 8270 TUNE METHOD
Last Update : Wed Aug 28 11:55:28 2013



AutoFind: Scans 1186, 1187, 1188; Background Corrected with Scan 1174

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	80	34.3	90008	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.01	100	31.7	83244	PASS
70	69	0.00	2	0.3	235	PASS
127	198	25	75	46.4	121636	PASS
197	198	0.00	1	0.0	0	PASS
198	198	100	100	100.0	262314	PASS
199	198	5	9	6.7	17536	PASS
275	198	10	30	24.4	64024	PASS
365	198	0.75	100	2.9	7651	PASS
441	443	0.01	100	89.1	45154	PASS
442	198	40	110	99.5	260928	PASS
443	442	15	24	19.4	50682	PASS

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
37.10	409	55.10	10	66.05	229	81.10	7684
38.15	1214	56.10	2557	69.05	83244	82.10	1932
39.15	6809	57.10	5557	70.05	235	83.10	1339
40.10	343	58.00	346	71.90	31	84.10	14
41.05	85	59.00	132	73.10	374	85.00	1311
42.10	72	60.10	40	74.15	9251	86.05	2231
44.95	42	61.10	1301	75.10	14400	87.05	916
50.15	24370	62.10	1312	77.15	110782	87.95	265
51.15	90008	63.10	3183	78.15	7664	89.05	307
52.15	4832	64.10	589	79.10	6522	90.00	40
53.05	76	65.10	1535	80.10	5115	91.10	1556

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
92.05	1799	105.10	2532	114.70	43	124.95	471
93.05	10915	107.10	34922	115.10	78	125.15	1141
94.10	764	108.10	5736	116.05	818	127.10	121636
96.05	425	110.10	61901	117.05	27647	128.15	9818
98.10	9088	111.05	9618	118.05	2097	129.10	44816
99.10	6964	112.15	1285	119.10	202	130.05	3831
100.10	751	113.05	274	120.10	502	131.05	875
101.05	4247	113.30	90	121.05	182	132.05	397
102.05	171	113.90	91	122.05	2215	132.90	6
103.05	1610	114.20	51	123.10	3112	133.30	166
104.10	2507	114.50	28	124.00	1525	134.10	1418

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
135.10	4253	147.10	3333	157.05	1098	168.05	7198
136.10	1653	148.10	7052	158.10	1068	169.10	1181
137.10	2113	149.05	1495	159.10	842	170.10	377
138.05	593	150.05	487	160.10	1924	170.95	450
138.95	297	151.15	569	161.10	3243	172.05	1136
141.00	6032	151.60	273	162.05	829	173.15	1500
142.05	2060	151.95	221	163.10	216	174.05	2660
143.05	1155	153.05	1885	164.05	260	175.10	5056
144.05	466	154.10	1563	165.05	1995	176.10	1805
145.10	378	155.10	3434	166.10	1909	177.05	2597
146.05	1144	156.10	5357	167.05	13670	178.00	175

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
179.10	8869	189.10	2021	203.15	1958	214.00	157
180.05	6625	190.00	434	204.10	9535	215.05	725
181.05	2973	191.10	1303	205.05	16750	216.10	578
182.05	529	192.10	3411	206.10	69037	217.05	16242
183.05	371	193.15	3837	207.05	9194	218.10	2276
184.00	318	194.15	1012	208.05	2074	219.10	311
184.25	666	196.10	8486	209.05	834	221.10	10948
185.15	5368	198.10	262314	210.10	696	223.10	4859
186.10	35757	199.05	17536	211.05	2406	224.10	37346
187.10	10549	200.10	1589	212.00	172	225.10	9796
188.10	1104	201.55	1371	213.05	318	227.10	14038

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
228.05	2150	238.10	140	249.10	1196	257.05	1507
229.10	2932	239.05	749	250.05	209	258.05	7339
229.95	531	240.05	549	250.80	128	259.05	1490
231.10	1412	241.05	865	251.00	135	260.00	333
231.90	230	242.05	2649	251.20	93	260.70	32
232.10	68	243.10	871	251.60	107	260.95	179
232.90	315	244.10	29482	252.00	116	262.90	44
234.00	1027	245.10	4372	252.25	335	263.10	46
235.05	1097	246.05	4939	253.10	334	265.05	3133
236.05	734	247.05	1264	255.10	139938	265.95	690
237.00	1267	247.95	179	256.10	20933	268.10	76

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE

Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
268.85	17	280.80	110	288.00	28	294.00	441
269.95	141	281.05	66	288.50	38	296.05	15617
271.15	648	281.90	106	288.90	40	297.05	2407
272.05	762	282.10	153	289.00	124	298.00	120
273.05	4604	283.10	617	289.70	65	300.90	223
274.10	12646	284.00	439	290.15	186	301.10	81
275.10	64024	285.05	983	290.50	115	302.05	365
276.10	8573	285.80	41	290.70	34	303.05	2313
277.05	4809	286.05	165	291.00	200	304.05	504
278.05	792	286.70	35	291.95	344	305.05	112
279.10	239	287.00	49	293.00	1339	307.10	30

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
307.95	322	319.50	49	328.05	613	343.05	73
308.90	140	320.00	133	329.05	95	344.60	40
309.30	116	320.50	108	330.00	28	346.00	1517
310.05	234	321.10	521	332.05	500	346.90	252
310.50	29	322.00	137	333.05	591	348.60	27
310.90	52	323.10	6173	334.05	3605	349.90	27
312.10	66	324.05	1040	335.05	1162	350.95	143
314.10	931	325.00	43	335.90	49	352.05	1726
315.05	1874	325.40	33	339.00	111	353.00	1254
316.05	1184	326.00	68	340.95	675	354.10	2005
317.00	111	326.95	1074	342.00	175	355.05	418

Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
356.85	108	369.95	160	389.00	57	404.85	74
358.10	32	371.05	625	390.00	376	405.90	49
358.95	213	372.10	3488	391.05	410	409.10	37
361.05	75	373.05	768	391.90	291	411.70	38
362.40	31	373.80	45	392.80	69	412.10	37
363.10	31	374.15	109	396.60	47	415.05	94
363.65	92	376.90	29	398.00	36	416.60	28
365.00	7651	383.00	884	401.05	205	417.60	28
365.95	1326	384.05	370	402.05	1661	418.00	31
366.85	117	385.00	87	403.05	2374	418.50	63
368.60	32	388.10	28	404.00	794	421.05	2167

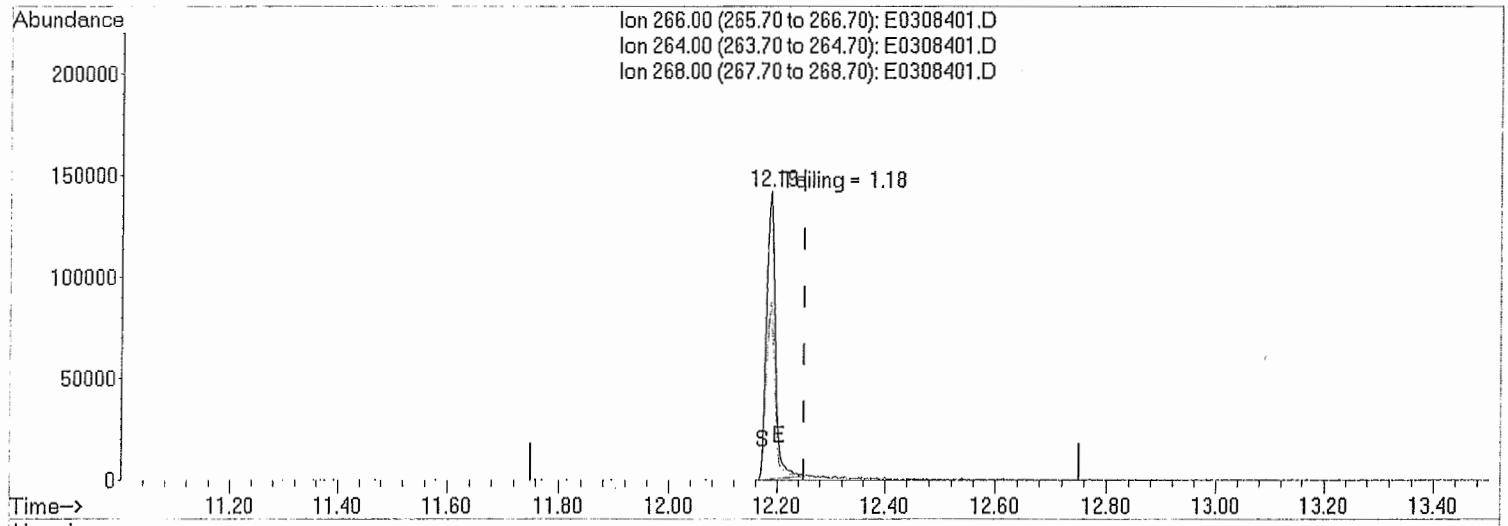
Average of 12.448 to 12.454 min.: E0308401.D
50 PPM TUNE
Modified:subtracted

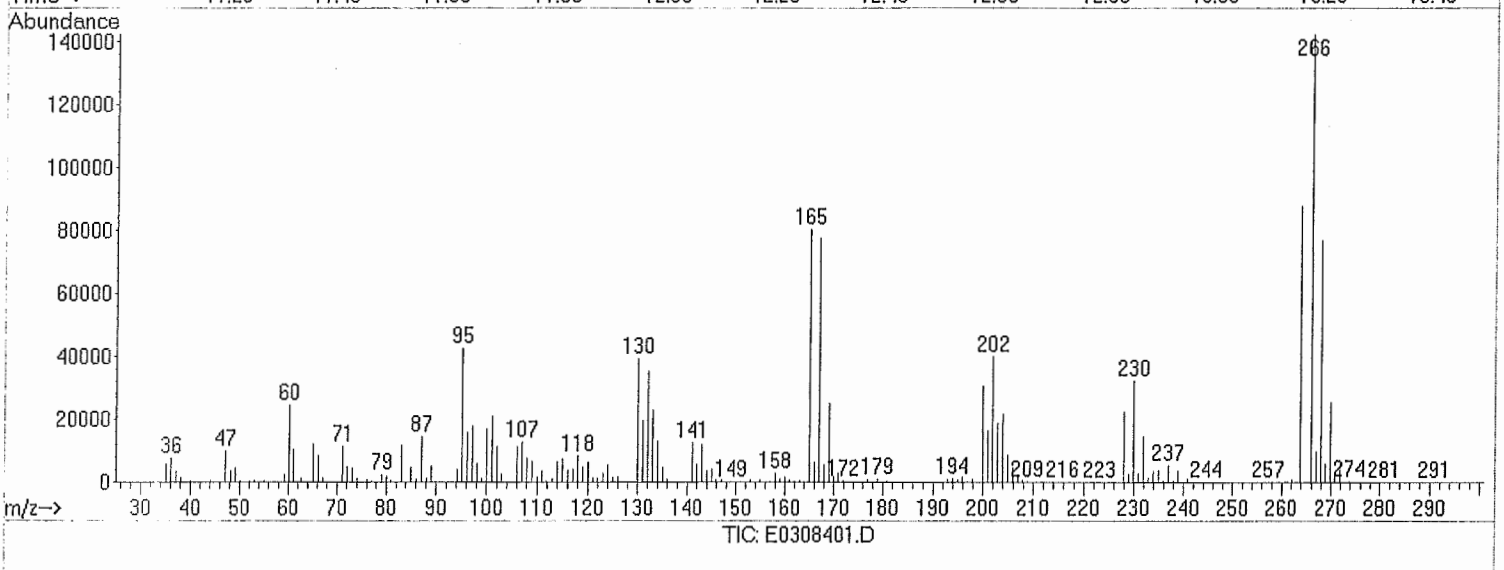
m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
422.10	1795	429.70	84	434.70	72	442.05	260928
423.05	12618	430.00	69	435.05	157	443.05	50682
424.10	2769	430.70	64	435.85	136	444.10	4863
424.95	299	430.90	58	436.40	136	445.00	85
425.65	105	431.20	56	437.05	119	458.15	60
426.40	49	431.60	46	437.30	56		
426.70	113	432.30	126	437.70	46		
426.90	80	432.50	36	438.00	96		
427.60	66	433.00	69	438.35	129		
428.30	143	433.30	161	439.00	180		
429.10	100	433.85	138	441.10	45154		

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\030814\
Data File : E0308401.D
Acq On : 8 Mar 2014 9:25
Operator : PEK
Sample : 50 PPM TUNE
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 08 09:44:02 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(1) Pentachlorophenol (TMC)

12.187min (-0.063) 14.93ug/L

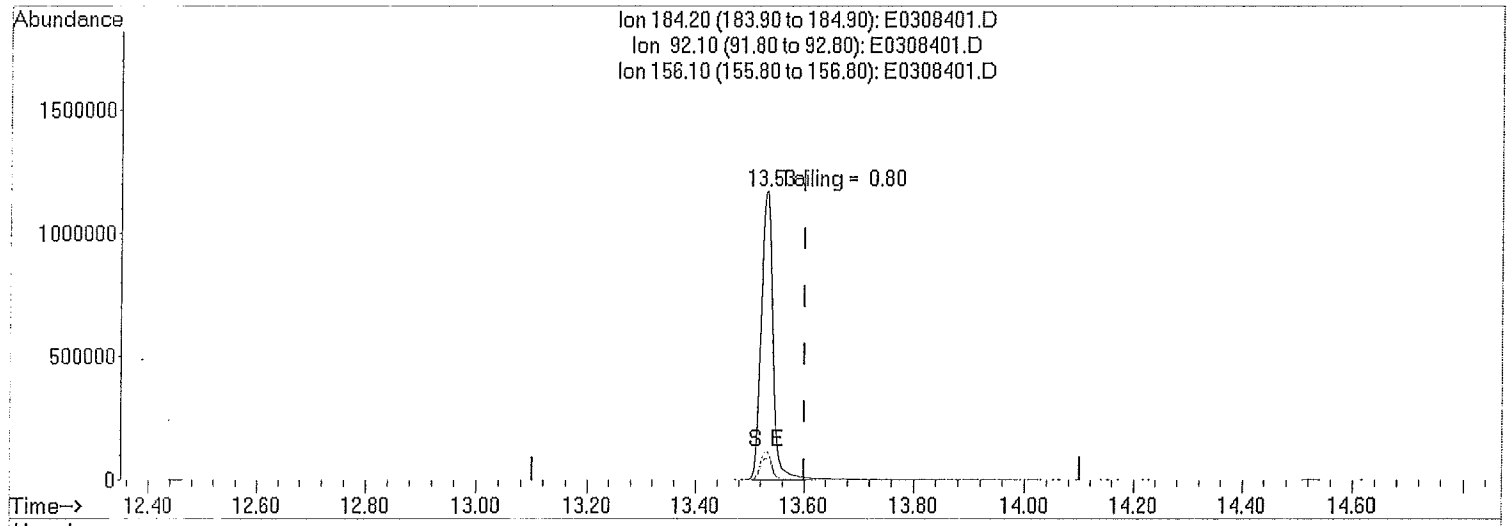
response 159162

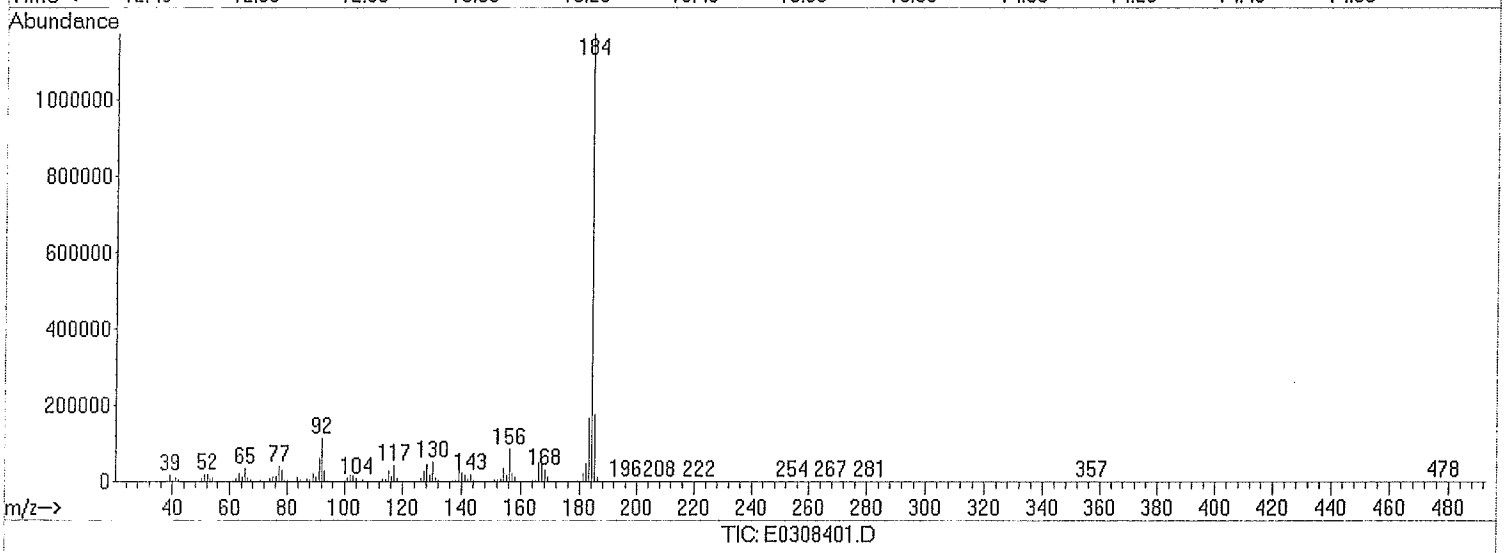
Ion	Exp%	Act%
266.00	100	100
264.00	63.80	60.30
268.00	63.80	56.71
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\030814\
Data File : E0308401.D
Acq On : 8 Mar 2014 9:25
Operator : PEK
Sample : 50 PPM TUNE
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 08 09:44:02 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(3) Benzidine (T)

13.533min (-0.067) 33.72ug/L

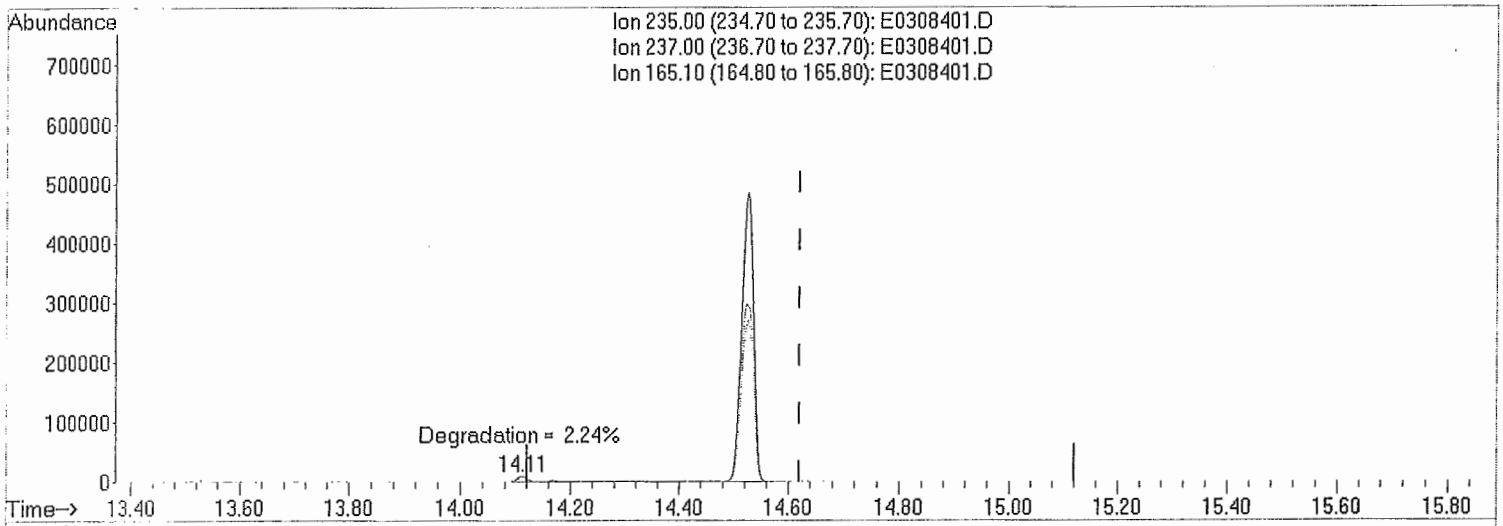
response 1738997

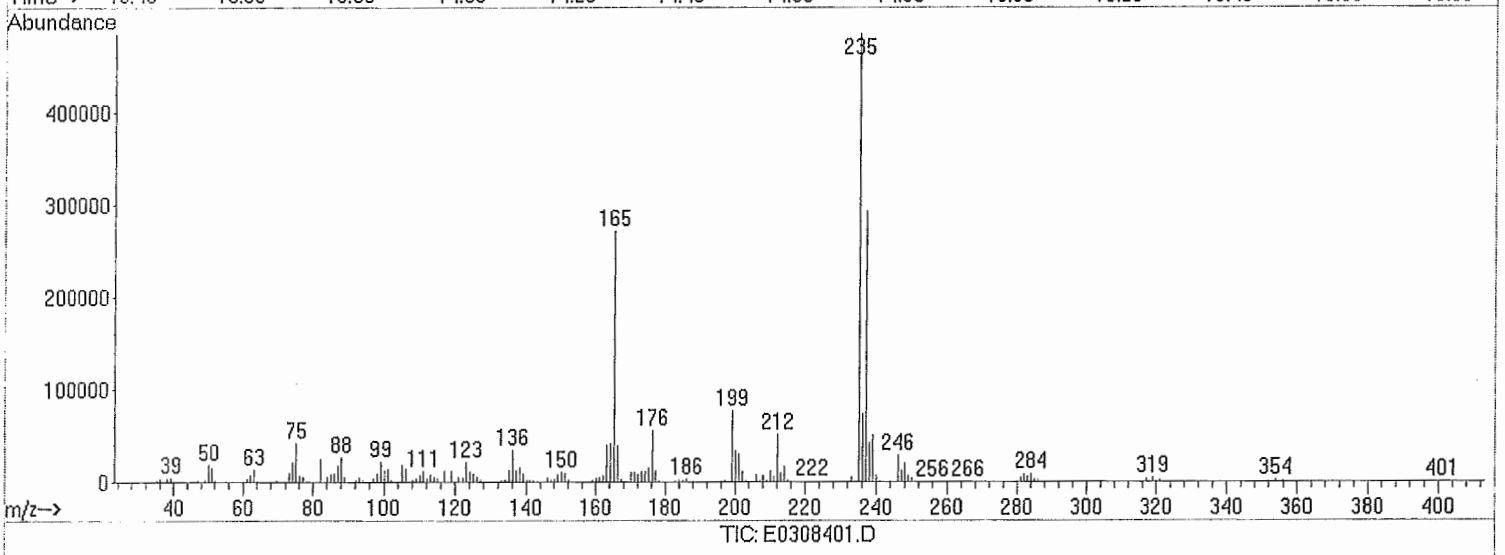
Ion	Exp%	Act%
184.20	100	100
92.10	13.70	9.99#
156.10	8.60	7.52
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\030814\
Data File : E0308401.D
Acq On : 8 Mar 2014 9:25
Operator : PEK
Sample : 50 PPM TUNE
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 08 09:44:02 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(4) DDT

14.526min (-0.094) 27.36ug/L

response 710184

Ion	Exp%	Act%
235.00	100	100
237.00	64.80	65.85
165.10	59.00	59.48
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030814\
Data File : E0308402.D
Acq On : 8 Mar 2014 9:58
Operator : PEK
Sample : 30 PPM ICV 16300 PEK
Misc : AG-5 8270 3/10/2014
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 08 10:32:33 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 08:58:38 2014
Response via : Initial Calibration

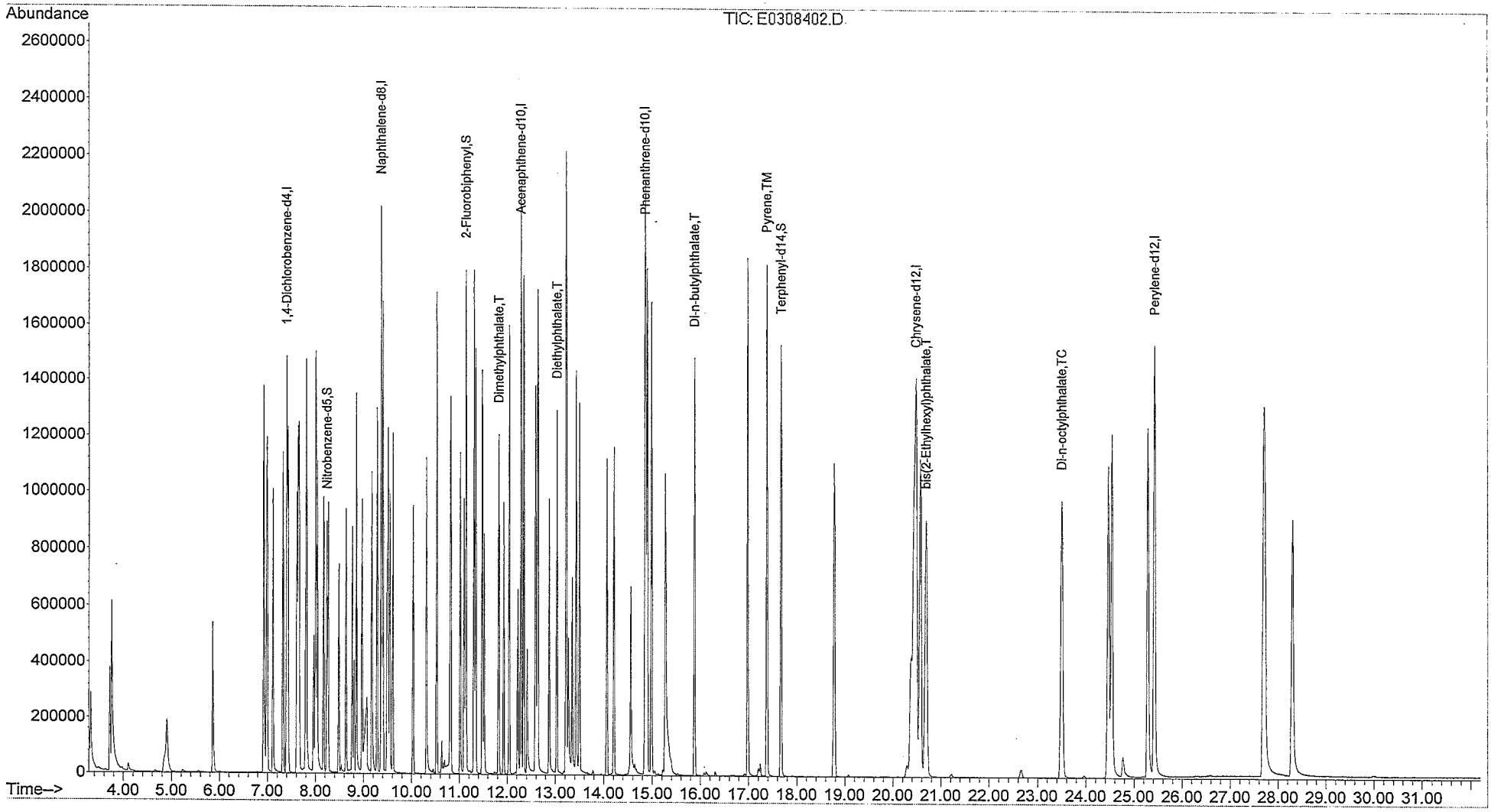
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3330276	40.00 ug/L	-0.05
2) Naphthalene-d8	9.37	136	12817581	40.00 ug/L	-0.05
4) Acenaphthene-d10	12.29	164	7199658	40.00 ug/L	-0.05
8) Phenanthrene-d10	14.86	188	11547852	40.00 ug/L	-0.05
10) Chrysene-d12	20.49	240	14067764	40.00 ug/L	-0.09
15) Perylene-d12	25.43	264	14220031	40.00 ug/L	-0.06
System Monitoring Compounds					
3) Nitrobenzene-d5	8.24	82	3818982	35.39 ug/L	-0.04
Spiked Amount 50.000			Recovery =	70.78%	
5) 2-Fluorobiphenyl	11.14	172	7836277	35.01 ug/L	-0.05
Spiked Amount 50.000			Recovery =	70.02%	
12) Terphenyl-d14	17.67	244	8388324	35.45 ug/L	-0.06
Spiked Amount 50.000			Recovery =	70.90%	
Target Compounds					Qvalue
6) Dimethylphthalate	11.82	163	7791961	26.95 ug/L	99
7) Diethylphthalate	13.03	149	7561776	25.97 ug/L	100
9) Di-n-butylphthalate	15.88	149	12758159	27.93 ug/L	95
11) Pyrene	17.39	202	12476579	27.06 ug/L	81
13) bis(2-Ethylhexyl)phthalate	20.69	149	9579502	27.51 ug/L	99
14) Di-n-octylphthalate	23.51	149	16352337	28.04 ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\030814\
Data File : E0308402.D
Acq On : 8 Mar 2014 9:58
Operator : PEK
Sample : 30 PPM ICV
Misc : AG-5 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 08 10:32:33 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 08:58:38 2014
Response via : Initial Calibration



Continuing Calibration Report AG5

Method Path : C:\MSDCHEM\1\CALFILES\8270CALS\
Method File : E8270321HW.M
Title : 8270 BNA Calibration
Last Update : Sat Mar 08 10:32:57 2014
Response Via : Initial Calibration

CC Data File: E0308402.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	104
2	I	Naphthalene-d8	1.000	1.000	0.0	103
3	S	Nitrobenzene-d5	0.337	0.397	-18.0	124
4	I	Acenaphthene-d10	1.000	1.000	0.0	104
5	S	2-Fluorobiphenyl	1.243	1.451	-16.7	127
6	T	Dimethylphthalate	1.607	1.443	10.2	97
7	T	Diethylphthalate	1.618	1.400	13.4	95
8	I	Phenanthrene-d10	1.000	1.000	0.0	100
9	T	Di-n-butylphthalate	1.582	1.473	6.9	97
10	I	Chrysene-d12	1.000	1.000	0.0	105
11	TM	Pyrene	1.311	1.183	9.8	100
12	S	Terphenyl-d14	0.673	0.795	-18.2	128
13	T	bis(2-Ethylhexyl)phthalate	0.990	0.908	8.3	96
14	TC	Di-n-octylphthalate	1.658	1.550	6.5#	96
15	I	Perylene-d12	1.000	1.000	0.0	104

(#) = Out of Range SPCC's out = 0 CCC's out = 1

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: --- SAS No.: --- SDG No.: ---

Lab File ID: E0403401 DFTPP Injection Date: 04/03/14

Instrument ID: AG5 DFTPP Injection Time: 08:30

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30 - 80% of mass 198	33.1
68	Less than 2.0% of mass 69	0.0 (1)
69	(reference only)	31.4
70	Less than 2.0% of mass 69	0.6 (1)
127	25 - 75% of mass 198	45.8
197	Less than 1% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5 - 9% of mass 198	6.8
275	10 - 30% of mass 198	24.8
365	Greater than 1% of mass 198	2.9
441	0 - 100% of mass 443	91.6
442	40 - 110% of mass 198	105.3
443	15 - 24% of mass 442	20.0 (2)

(1)-Value is % mass 69 (2)-Value is % mass 442

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

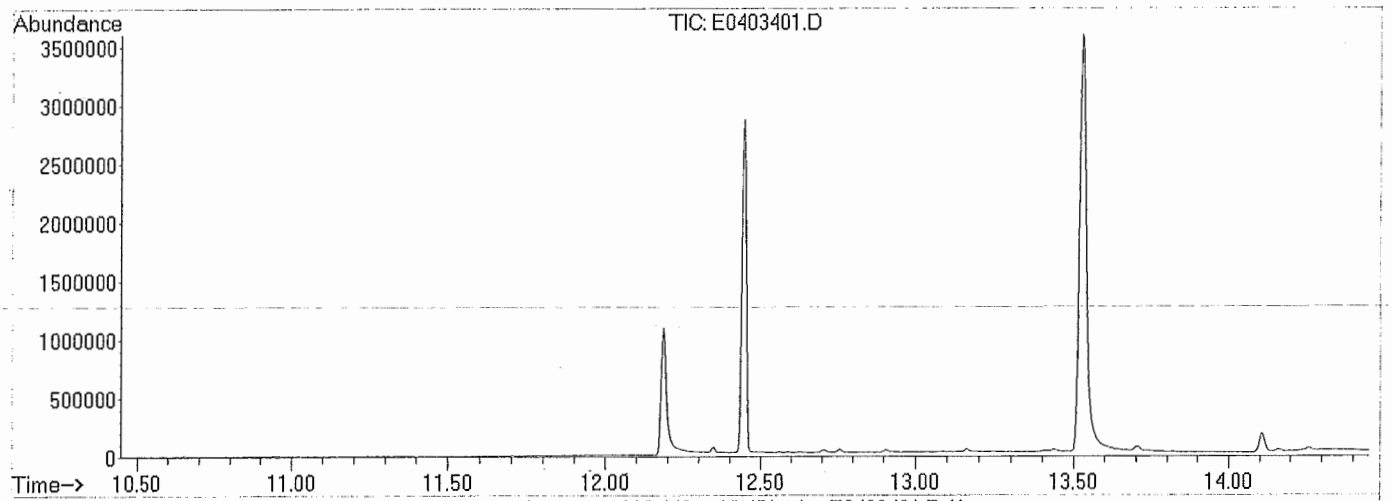
	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	BNA STD	030 PPM STD	E0403402	04/03/14	08:57
2	BLANK B10179	006616-04B1	E0403403	04/03/14	09:45
3	SPBK B10179	006616-04K1	E0403404	04/03/14	10:27
4	MAK120L	006616-01	E0403405	04/03/14	11:09
5	MAK121L	006616-02	E0403406	04/03/14	11:52
6	MAK122L	006616-03	E0403407	04/03/14	12:35
7	MAK123L	006616-04	E0403408	04/03/14	13:17
8	MAK123LMS	006616-04MS	E0403409	04/03/14	14:00
9	MAK123LMSD	006616-04MD	E0403410	04/03/14	14:43
10	MAK124L	006616-05	E0403411	04/03/14	15:26
11	MAK126L	006616-06	E0403412	04/03/14	16:08
12	MAK127L	006616-07	E0403413	04/03/14	16:51
13	MAK128L	006616-08	E0403414	04/03/14	17:34
14	MAK116L	006617-01	E0403415	04/03/14	18:17
15	MAK117L	006617-02	E0403416	04/03/14	18:59
16	MAK118L	006617-03	E0403417	04/03/14	19:42
17					
18					
19					
20					
21					
22					

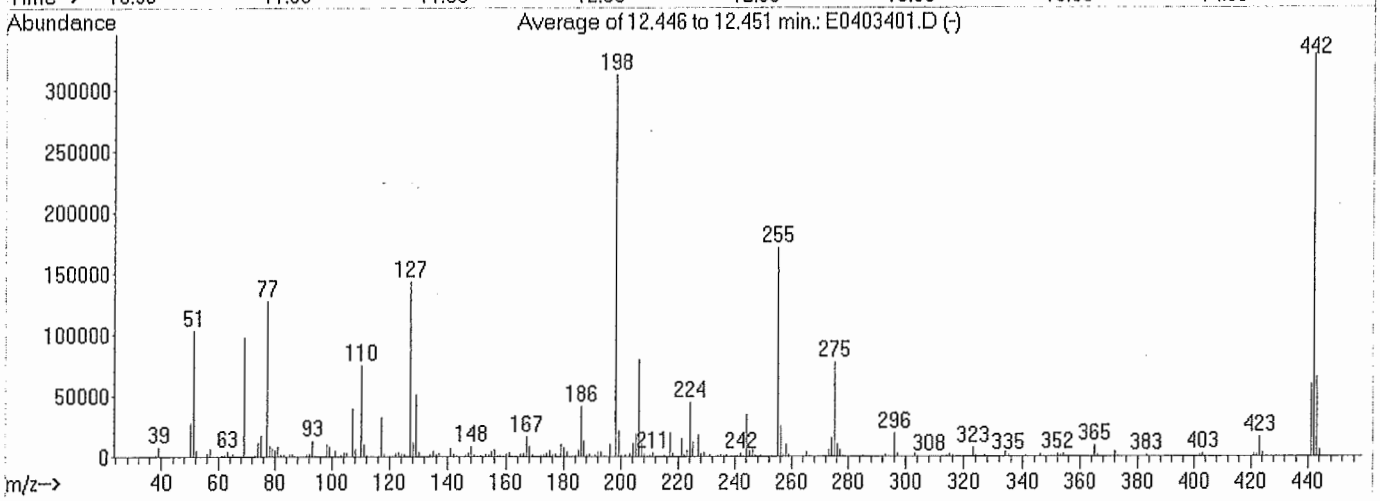
DFTPP

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403401.D
Acq On : 3 Apr 2014 8:30
Operator : PEK
Sample : 50 PPM TUNE 16355
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Integration File: FRED.P

Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Title : 8270 TUNE METHOD
Last Update : Wed Aug 28 11:55:28 2013





AutoFind: Scans 1185, 1186, 1187; Background Corrected with Scan 1173

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	80	33.1	103357	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.01	100	31.4	98169	PASS
70	69	0.00	2	0.6	626	PASS
127	198	25	75	45.8	143198	PASS
197	198	0.00	1	0.0	0	PASS
198	198	100	100	100.0	312512	PASS
199	198	5	9	6.8	21280	PASS
275	198	10	30	24.8	77448	PASS
365	198	0.75	100	2.9	9124	PASS
441	443	0.01	100	91.6	60146	PASS
442	198	40	110	105.3	329173	PASS
443	442	15	24	20.0	65672	PASS

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
37.10	454	56.10	2434	66.20	225	80.10	5511
38.15	1368	57.10	6410	67.05	9	81.10	8362
39.15	7634	58.05	335	69.10	98169	82.05	1978
40.10	161	58.85	7	70.10	626	83.15	1590
45.00	183	59.20	91	72.00	52	84.05	442
48.10	28	60.05	12	73.10	1226	85.10	2091
50.20	27850	61.05	1343	74.10	11459	86.10	2316
51.20	103357	62.05	1457	75.05	17326	87.05	1104
52.15	5342	63.15	4180	77.15	127797	88.05	624
53.00	25	64.10	666	78.15	8770	88.90	125
55.10	268	65.10	2058	79.10	7041	89.80	44

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
90.30	90	103.00	1464	115.20	101	127.10	143198
91.10	1777	104.10	3369	116.20	784	128.15	11483
92.10	2314	105.10	3071	117.10	32173	129.05	51280
93.10	12940	107.10	39714	118.05	2061	130.05	3988
94.10	1139	108.10	6433	119.10	227	131.00	632
96.05	624	110.05	74861	120.10	285	132.05	691
98.05	9924	111.05	10022	121.05	212	133.00	29
99.10	8247	112.10	1367	122.10	2578	134.00	1745
100.10	646	113.15	468	123.10	3440	135.10	4520
101.05	4618	114.00	51	124.05	2009	136.05	1894
102.10	219	114.15	160	125.10	2004	137.05	2530

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
138.15	482	148.05	8533	157.95	1331	169.05	1479
138.90	134	149.05	1791	159.00	885	169.90	148
139.20	242	150.10	450	160.05	2491	171.05	874
140.10	635	151.15	1112	161.10	3507	172.05	1381
141.05	6833	151.80	631	162.00	954	173.10	1896
142.05	2480	152.10	234	163.15	404	174.10	3028
143.00	1443	153.05	2068	163.90	146	175.10	5383
144.05	609	154.15	1728	165.00	2165	176.10	1848
145.10	375	155.10	4407	166.15	2758	177.00	2298
146.15	1469	156.05	6037	167.05	16483	178.00	617
147.10	3538	157.10	1172	168.10	8793	179.05	10292

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
180.05	7632	191.10	1388	203.10	2543	214.20	54
181.10	4063	192.05	4024	204.05	11014	215.10	1021
182.00	534	193.10	3901	205.05	19173	217.05	19649
183.05	421	194.00	417	206.10	79717	218.05	2661
184.10	1299	194.20	454	207.05	11016	219.15	370
185.15	5940	194.60	245	208.00	2403	221.10	14895
186.10	41410	196.10	10208	209.05	746	222.00	1694
187.10	12822	198.05	312512	210.10	1201	223.15	4958
188.10	1519	199.10	21280	211.05	3066	224.05	44738
189.05	2192	200.05	1853	212.10	141	225.10	12067
190.00	466	201.55	1635	213.05	256	227.10	17860

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
228.05	2920	238.05	204	250.00	220	259.00	1613
229.05	3481	239.05	844	250.15	263	259.95	178
229.95	841	240.00	603	250.90	192	260.20	129
231.10	1612	241.00	1212	251.10	87	261.05	285
232.00	129	242.10	2535	252.00	215	262.00	52
232.30	128	244.10	34613	252.20	442	262.30	51
232.95	381	245.05	4907	253.05	792	263.00	46
234.05	1408	246.05	6257	255.10	171136	264.00	648
235.05	1505	247.05	1407	256.10	25133	265.05	4059
236.00	1077	248.00	342	257.10	1976	266.05	981
237.05	1423	249.05	1363	258.05	10009	267.00	113

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355

Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
267.60	106	279.00	274	289.95	276	301.05	271
269.85	89	279.90	35	291.05	197	302.00	453
270.85	279	281.90	69	291.90	84	303.10	2647
271.25	282	282.15	177	292.10	223	304.05	831
272.05	763	282.95	661	293.05	1717	305.00	51
273.00	5441	284.05	766	294.00	701	306.30	27
274.10	15401	285.05	1141	296.05	19026	307.30	32
275.10	77448	286.05	304	297.05	3012	308.05	351
276.10	10218	286.90	37	297.90	142	308.90	194
277.05	5914	288.05	110	299.05	64	309.95	340
278.05	1151	288.95	481	299.90	36	310.90	28

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
312.10	45	323.10	7294	334.05	4236	346.00	1794
312.95	212	324.05	1242	335.05	1437	346.80	261
314.10	1436	325.10	211	336.15	175	348.60	42
315.05	2176	325.95	106	339.00	218	349.00	30
316.05	1287	327.00	1383	340.10	123	349.50	30
317.10	247	328.05	569	341.00	952	349.90	124
319.10	38	328.95	123	341.70	47	350.20	114
319.30	65	330.40	27	341.95	88	350.85	79
319.70	60	330.80	38	343.20	85	351.10	95
320.20	55	332.10	603	344.00	34	352.10	2228
321.05	639	333.05	717	345.00	27	353.10	1771

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
354.10	2447	365.00	9124	374.00	83	391.85	132
355.00	595	366.00	1591	374.90	38	392.10	122
356.00	115	366.80	69	375.10	32	394.40	27
357.80	57	367.10	31	376.95	78	397.20	44
358.85	61	367.60	37	381.80	58	401.00	153
359.10	105	368.10	39	383.00	1208	402.00	1788
360.60	64	369.95	187	384.00	348	403.05	2502
360.90	72	370.20	103	384.80	77	404.10	879
361.50	68	371.05	639	385.20	112	404.95	169
362.25	82	372.10	4174	390.05	658	405.70	32
362.75	113	373.10	1091	391.00	357	407.60	32

Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
408.45	58	419.50	38	427.90	40	433.70	100
410.00	103	419.80	42	428.30	151	433.90	81
413.10	68	421.00	2429	429.35	234	434.40	57
414.40	49	422.05	2410	429.80	69	435.00	83
414.90	52	423.10	16247	430.15	227	435.30	42
415.20	64	424.10	3177	431.45	161	435.50	48
416.10	46	425.15	294	431.70	110	435.90	40
417.30	40	426.00	124	432.25	202	436.70	102
417.80	43	427.20	30	432.60	81	437.00	50
418.30	37	427.40	76	432.80	66	437.80	74
419.00	38	427.70	38	433.10	80	438.05	286

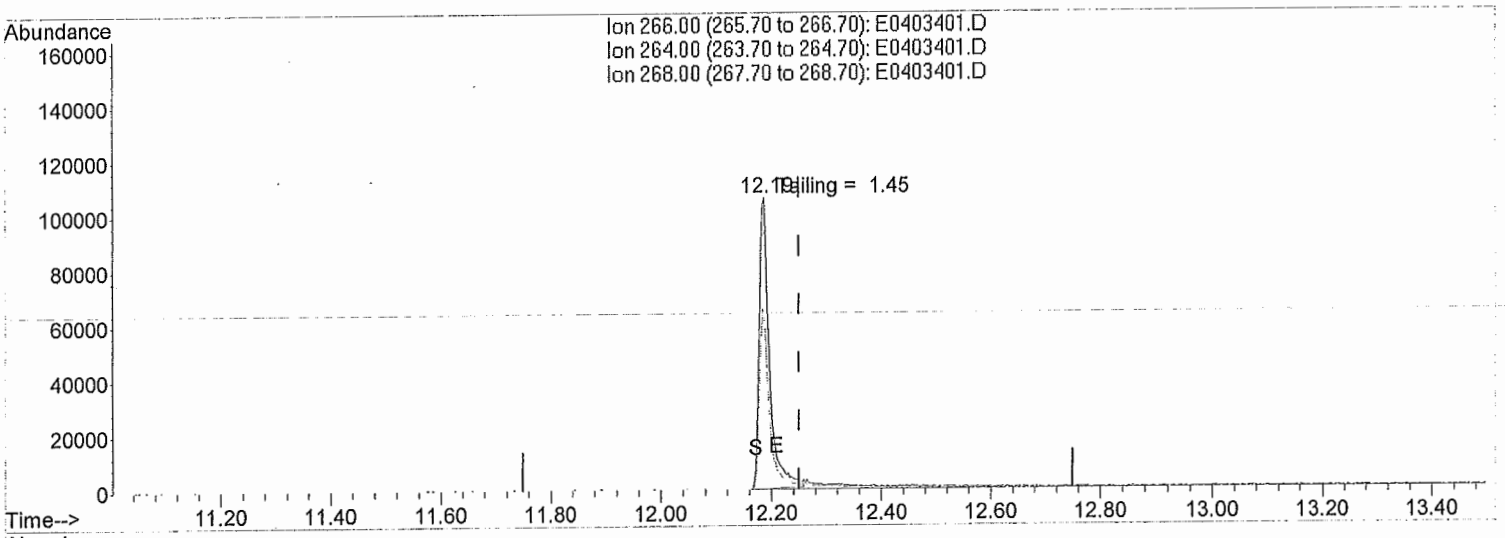
Average of 12.446 to 12.451 min.: E0403401.D
50 PPM TUNE 16355
Modified:subtracted

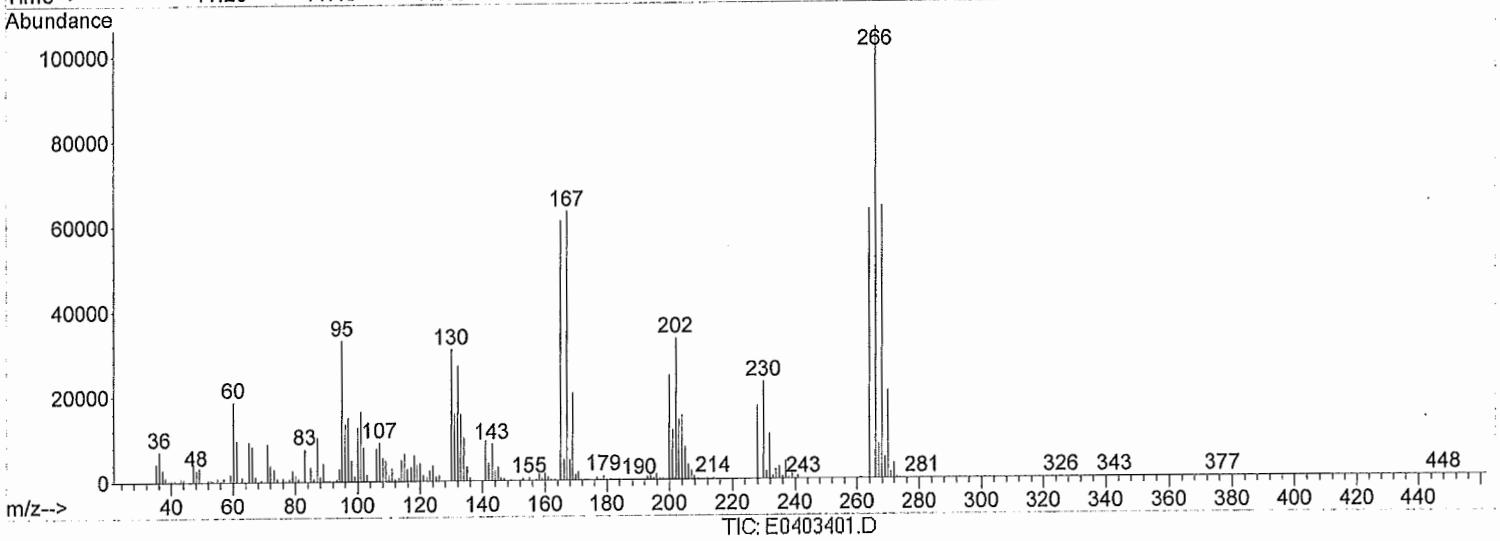
m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
438.80	38						
439.10	39						
441.10	60146						
442.10	329173						
443.10	65672						
444.10	5854						
445.05	202						

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403401.D
Acq On : 3 Apr 2014 8:30
Operator : PEK
Sample : 50 PPM TUNE 16355
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Apr 03 08:49:54 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(1) Pentachlorophenol (TMC)

12.187min (-0.063) 12.86ug/L

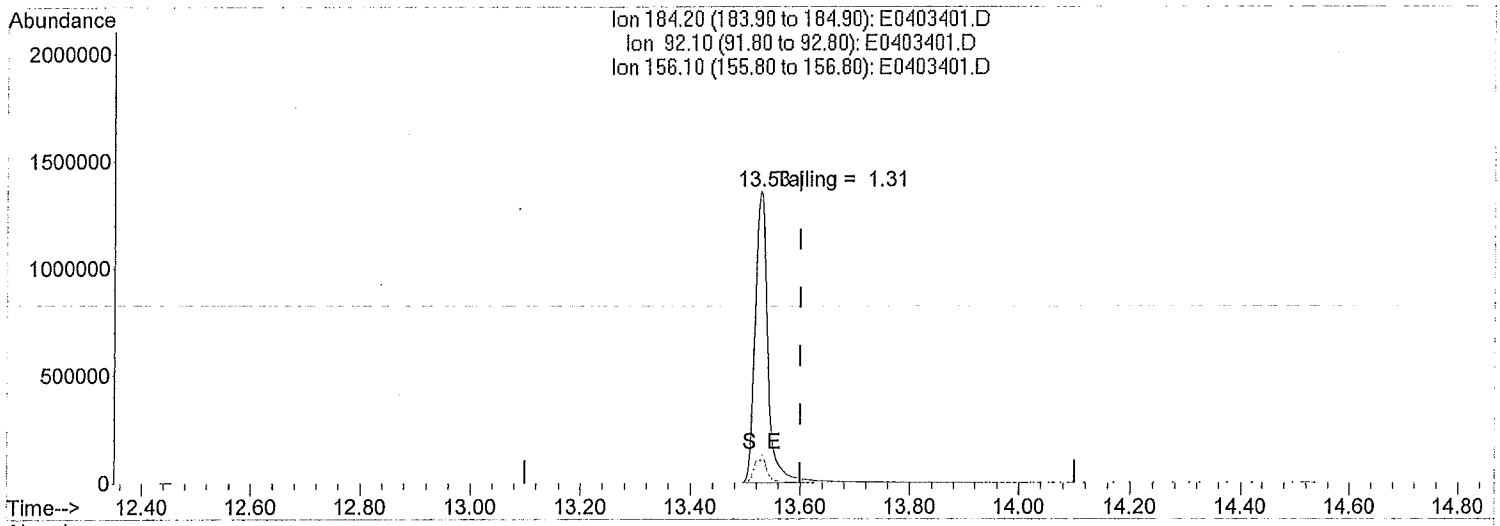
response 137109

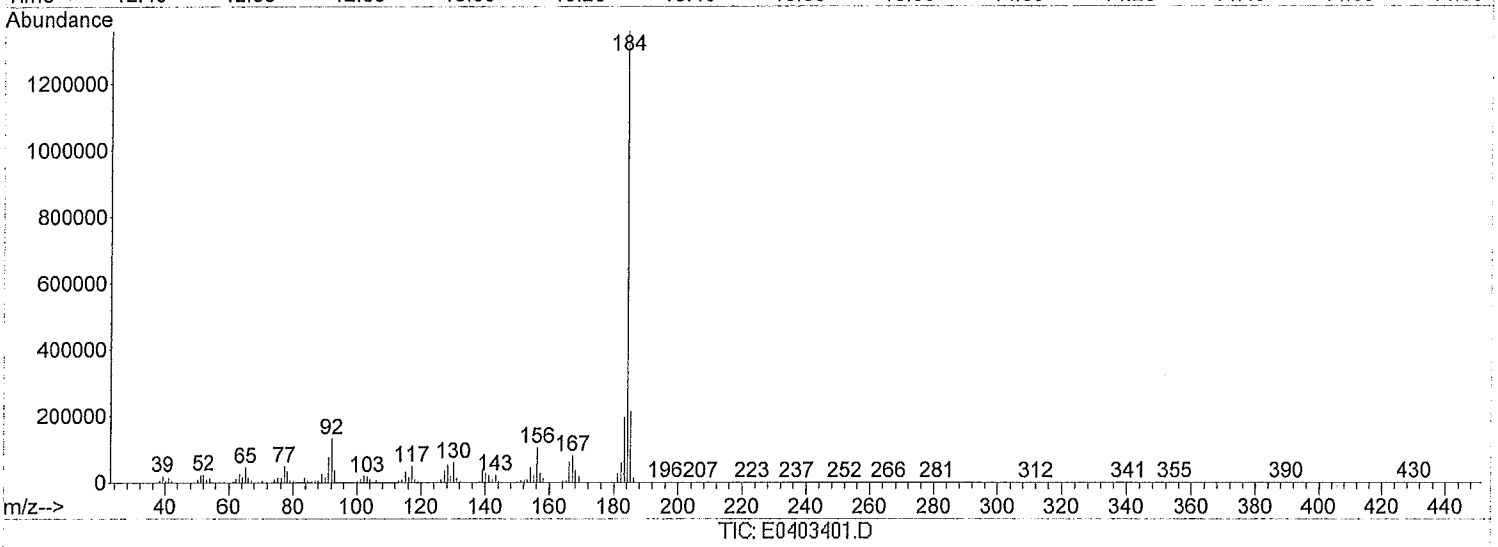
Ion	Exp%	Act%
266.00	100	100
264.00	63.80	62.57
268.00	63.80	58.15
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403401.D
Acq On : 3 Apr 2014 8:30
Operator : PEK
Sample : 50 PPM TUNE 16355
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Apr 03 08:49:54 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(3) Benzidine (T)

13.527min (-0.073) 42.63ug/L

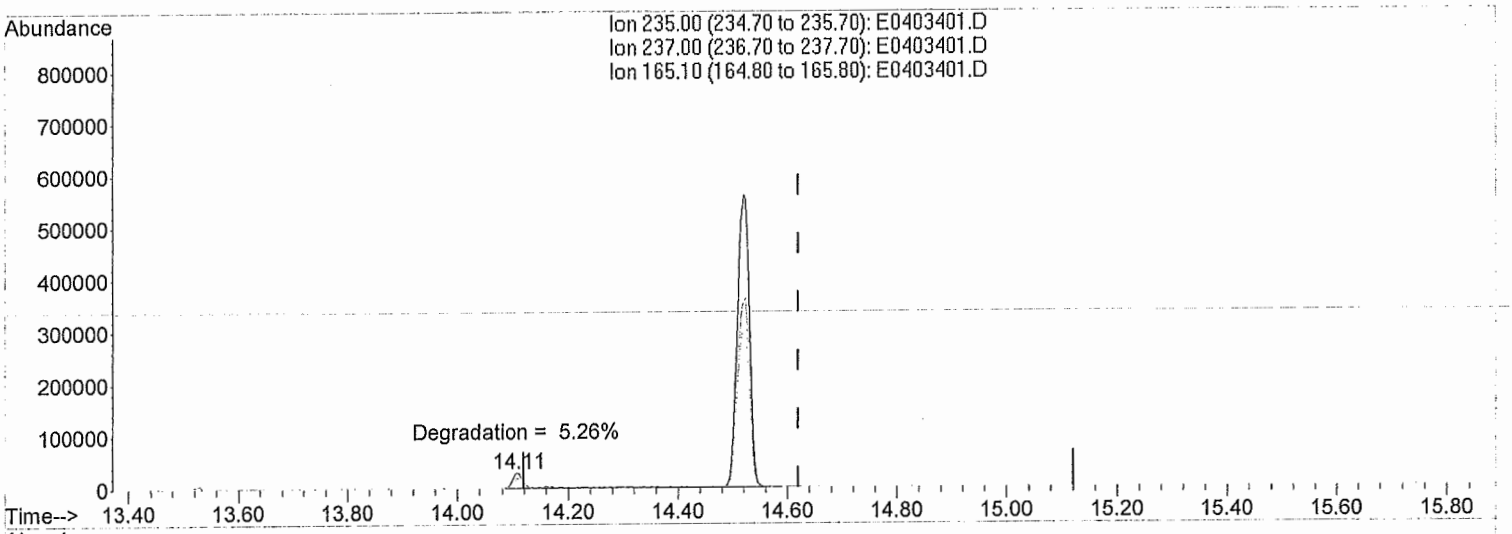
response 2198445

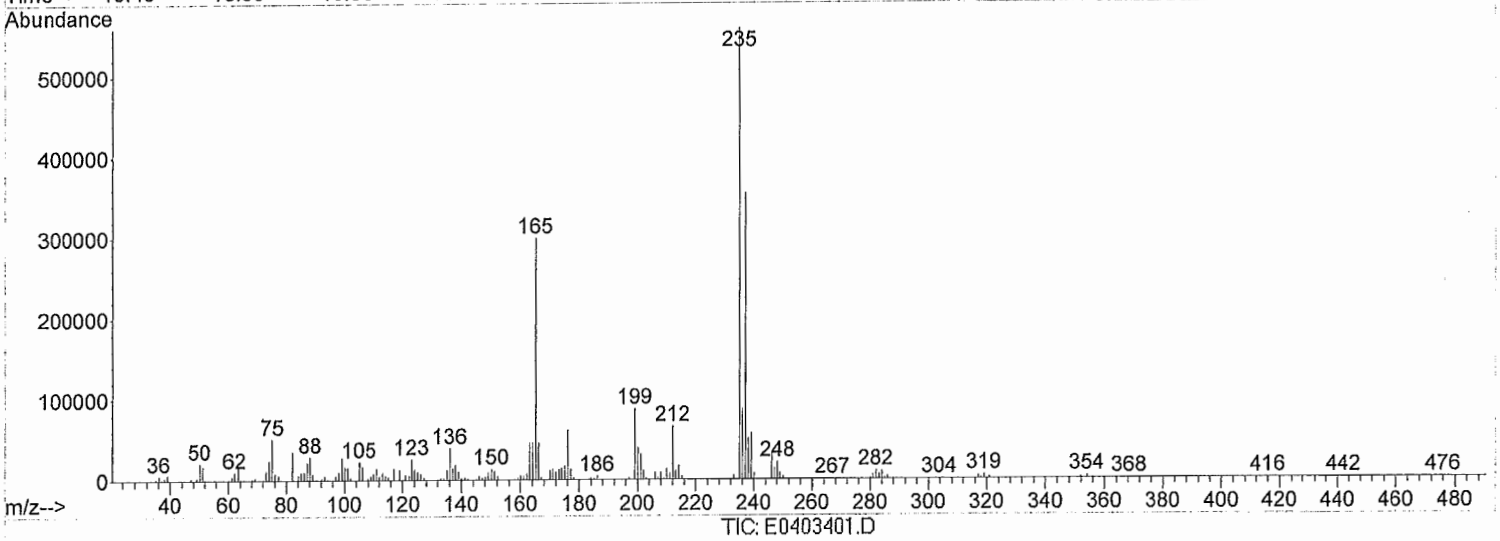
Ion	Exp%	Act%
184.20	100	100
92.10	13.70	9.68#
156.10	8.60	7.44
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403401.D
Acq On : 3 Apr 2014 8:30
Operator : PEK
Sample : 50 PPM TUNE 16355
Misc : AG-5 8270
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Apr 03 08:49:54 2014
Quant Method : C:\MSDCHEM\1\METHODS\8270TUNPULSE.M
Quant Title : 8270 TUNE METHOD
QLast Update : Wed Aug 28 11:55:28 2013
Response via : Initial Calibration





(4) DDT

14.520min (-0.100) 32.66ug/L

response 847736

Ion	Exp%	Act%
235.00	100	100
237.00	64.80	64.95
165.10	59.00	57.37
0.00	0.00	0.00

Continuing Calibration Report AG5

Method Path : C:\MSDCHEM\1\CALFILES\8270CALS\
Method File : E8270321HW.M
Title : 8270 BNA Calibration
Last Update : Thu Apr 03 09:30:57 2014
Response Via : Initial Calibration

CC Data File: E0403402.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	120
2	I	Naphthalene-d8	1.000	1.000	0.0	119
3	S	Nitrobenzene-d5	0.337	0.375	-11.4	135
4	I	Acenaphthene-d10	1.000	1.000	0.0	119
5	S	2-Fluorobiphenyl	1.243	1.283	-3.2	129
6	T	Dimethylphthalate	1.607	1.371	14.7	106
7	T	Diethylphthalate	1.618	1.326	18.0	103
8	I	Phenanthrene-d10	1.000	1.000	0.0	113
9	T	Di-n-butylphthalate	1.582	1.412	10.8	105
10	I	Chrysene-d12	1.000	1.000	0.0	117
11	TM	Pyrene	1.311	1.147	12.5	108
12	S	Terphenyl-d14	0.673	0.712	-5.8	128
13	T	bis(2-Ethylhexyl)phthalate	0.990	0.881	11.0	103
14	TC	Di-n-octylphthalate	1.658	1.501	9.5#	104
15	I	Perylene-d12	1.000	1.000	0.0	115

(#) = Out of Range SPCC's out = 0 CCC's out = 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403402.D
Acq On : 3 Apr 2014 8:57
Operator : PEK
Sample : 30 PPM STD 16356
Misc : AG-5 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Apr 03 09:30:31 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 08:58:38 2014
Response via : Initial Calibration

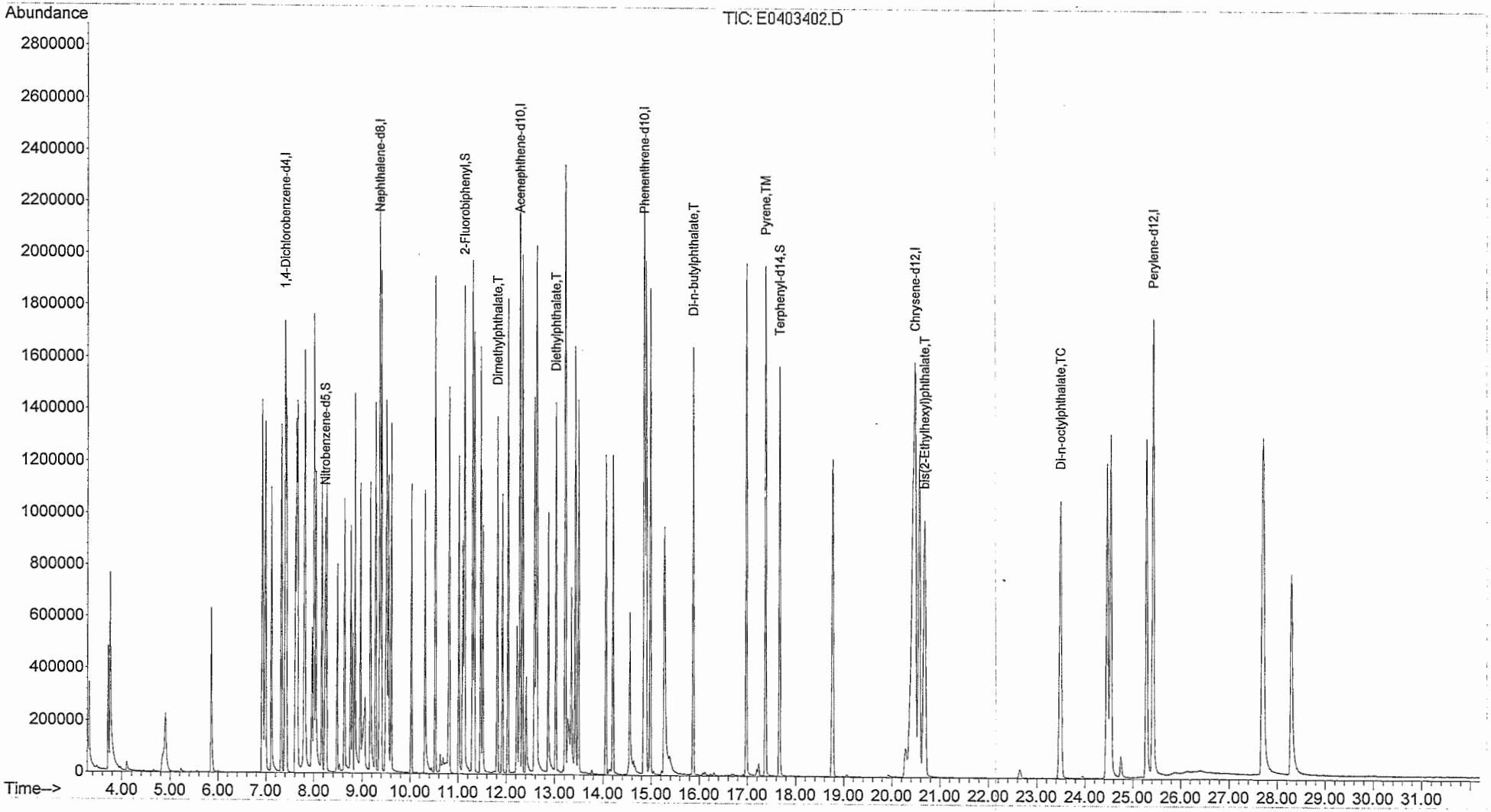
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.39	152	3859454	40.00 ug/L	-0.06
2) Naphthalene-d8	9.37	136	14779765	40.00 ug/L	-0.05
4) Acenaphthene-d10	12.28	164	8246575	40.00 ug/L	-0.06
8) Phenanthrene-d10	14.85	188	13052496	40.00 ug/L	-0.06
10) Chrysene-d12	20.48	240	15665869	40.00 ug/L	-0.10
15) Perylene-d12	25.43	264	15818552	40.00 ug/L	-0.06
System Monitoring Compounds					
3) Nitrobenzene-d5	8.23	82	4158864	33.43 ug/L	-0.05
Spiked Amount 50.000			Recovery	= 66.86%	
5) 2-Fluorobiphenyl	11.13	172	7936169	30.96 ug/L	-0.06
Spiked Amount 50.000			Recovery	= 61.92%	
12) Terphenyl-d14	17.67	244	8367208	31.75 ug/L	-0.07
Spiked Amount 50.000			Recovery	= 63.50%	
Target Compounds					Qvalue
6) Dimethylphthalate	11.82	163	8476899	25.59 ug/L	100
7) Diethylphthalate	13.03	149	8201133	24.59 ug/L	100
9) Di-n-butylphthalate	15.87	149	13823619	26.77 ug/L	95
11) Pyrene	17.38	202	13475977	26.25 ug/L	81
13) bis(2-Ethylhexyl)phthalate	20.67	149	10352070	26.70 ug/L	99
14) Di-n-octylphthalate	23.49	149	17637389	27.16 ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403402.D
Acq On : 3 Apr 2014 8:57
Operator : PEK
Sample : 30 PPM STD 16356
Misc : AG-5 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Apr 03 09:30:31 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HW.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 08:58:38 2014
Response via : Initial Calibration



Instrument Logs/
Analysis Notebook Pages

Rev. 1.1

PROJECT 3/7/2014 8270

Notebook No. 3323 7

Continued from Page

Injection Log

Directory: C:\MSDCHEM\1\DATA\030714

Line	Vial	FileName	Multiplier	SampleName		Misc Info
1	1	E0307401.d	1.	50 PPM TUNE 16289	Tailing + Degradation ↑.	AG-5 8270
2	1	E0307402.d	1.	50 PPM TUNE 16289	Changed Liner + Trimmed Column	AG-5 8270
3	1	E0307403.d	1.	50 PPM TUNE 16289	Pass	AG-5 8270
4	2	E0307404.d	1.	BLK 16293	Pass	AG-5 8270
5	3	E0307405.d	1.	5 PPM STD 16294		AG-5 8270
6	4	E0307406.d	1.	10 PPM STD 16295		AG-5 8270
7	5	E0307407.d	1.	20 PPM STD 16296		AG-5 8270
8	6	E0307408.d	1.	30 PPM STD 16297		AG-5 8270
9	7	E0307409.d	1.	40 PPM STD 16298		AG-5 8270
10	8	E0307410.d	1.	60 PPM STD 16299	Pass	AG-5 8270

Valid Curve Saved as E8270321HW.M

PEK 3/8/2014

Continued on Page

Read and Understood By

PEK — Signed — 3/8/2014 — Date

Signed — 3/11/14 — Date

8
PROJECT 3/8/2014 8270

Notebook No. 3323
Continued from Page

Injection Log

Directory: C:\MSDCHEM\1\DATA\030814

Line	Vial	FileName	Multiplier	SampleName		Misc Info
1	1	E0308401.d	1.	50 PPM TUNE 16289	Pass	AG-5 8270
2	2	E0308402.d	1.	30 PPM ICV 16300	Pass	AG-5 8270
3	3	E0308403.d	1.	006611-04B1	Pass	B10161 AG-5 8270
4	4	E0308404.d	1.	006611-04K1		B10161 AG-5 8270
5	5	E0308405.d	1.	006611-01		B10161 AG-5 8270
6	6	E0308406.d	1.	006611-02		B10161 AG-5 8270
7	7	E0308407.d	1.	006611-03		B10161 AG-5 8270
8	8	E0308408.d	1.	006611-04		B10161 AG-5 8270
9	9	E0308409.d	1.	006611-04MS		B10161 AG-5 8270
10	10	E0308410.d	1.	006611-04MD		B10161 AG-5 8270
11	11	E0308411.d	1.	006611-05		B10161 AG-5 8270
12	12	E0308412.d	1.	006611-06		B10161 AG-5 8270
13	13	E0308413.d	1.	006611-07		B10161 AG-5 8270
14	14	E0308414.d	1.	006611-08	Pass	B10161 AG-5 8270

PEK 3/10/2014

Continued on Page

Read and Understood By

PEK — Signed
3/10/2014 — Date
GD — Signed
3/11/14 — Date

Injection Log

Directory: C:\MSDCHEM\1\DATA\040314

Line	Vial	FileName	Multiplier	SampleName	Misc Info
1	1	E0403401.d	1.	50 PPM TUNE 16355 Pass	AG-5 8270
2	2	E0403402.d	1.	30 PPM STD 16356 Pass	AG-5 8270
3	3	E0403403.d	1.	006616-04B1 Pass	B10179 AG-5 8270
4	4	E0403404.d	1.	006616-04K1	B10179 AG-5 8270
5	5	E0403405.d	1.	006616-01	B10179 AG-5 8270
6	6	E0403406.d	1.	006616-02	B10179 AG-5 8270
7	7	E0403407.d	1.	006616-03	B10179 AG-5 8270
8	8	E0403408.d	1.	006616-04 Pass	B10179 AG-5 8270
9	9	E0403409.d	1.	Report 006616-04MS See Below	B10179 AG-5 8270
10	10	E0403410.d	1.	006616-04MD	B10179 AG-5 8270
11	11	E0403411.d	1.	006616-05 Pass	B10179 AG-5 8270
12	12	E0403412.d	1.	006616-06	B10179 AG-5 8270
13	13	E0403413.d	1.	006616-07	B10179 AG-5 8270
14	14	E0403414.d	1.	006616-08	B10179 AG-5 8270
15	15	E0403415.d	1.	006617-01	B10179 AG-5 8270
16	16	E0403416.d	1.	006617-02	B10179 AG-5 8270
17	17	E0403417.d	1.	006617-03 Pass	B10179 AG-5 8270

Diethylphthalate recovery was outside limits (57-112%) in Sample 6616-4MS at 37% and Sample 6616-4MD at 28%. Diethylphthalate recovery was at 82% in the LCS. Internal standard and surrogate recoveries were with in method limits for all samples. Therefore, the low Diethylphthalate recovery in the MS + MSD is attributed to matrix interference.

PEK
4/4/2014

Continued on Page

Read and Understood By

PEK — Signed — 4/4/2014 Date — Signed — 4/8/14 Date

Blank / Field Sample / QC Data

Sample Results

Chromatogram

Quant Report (If applicable)

Confirmation Analysis Quant Report / Chromatogram (If applicable)

Tentatively Identified Compounds (If required)

Rev. 1.1

METHOD BLANK REPORT
ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	NA	ARDL Lab No.:	006616-04B1
Desc/Location:	NA	Lab Filename:	E0403403
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	04/01/2014
Matrix:	QC Material	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	NA	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units
Dimethylphthalate	200	1000	ND		UG/KG
Diethylphthalate	200	1000	ND		UG/KG
Di-n-butylphthalate	200	1000	ND		UG/KG
Pyrene	200	1000	ND		UG/KG
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG
Di-n-octylphthalate	200	1000	ND		UG/KG

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	94%
2-Fluorobiphenyl	30-130	101%
Terphenyl-d14	30-130	101%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Blank for Run B6705, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403403.D
Acq On : 3 Apr 2014 9:45
Operator : PEK
Sample : 006616-04B1
Misc : B10179 AG-5 8270
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 03 10:26:53 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.39	152	3915488	8000.00 ug/Kg	0.00
2) Naphthalene-d8	9.36	136	14827642	8000.00 ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8112546	8000.00 ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	13654809	8000.00 ug/Kg	0.00
10) Chrysene-d12	20.47	240	16331919	8000.00 ug/Kg	-0.03
15) Perylene-d12	25.42	264	15525394	8000.00 ug/Kg	0.00
System Monitoring Compounds					
3) Nitrobenzene-d5	8.23	82	2942880	4715.40 ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 94.31%		
5) 2-Fluorobiphenyl	11.13	172	6377030	5057.23 ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 101.14%		
12) Terphenyl-d14	17.67	244	6948531	5058.66 ug/Kg	0.00
Spiked Amount 5000.000			Recovery = 101.17%		

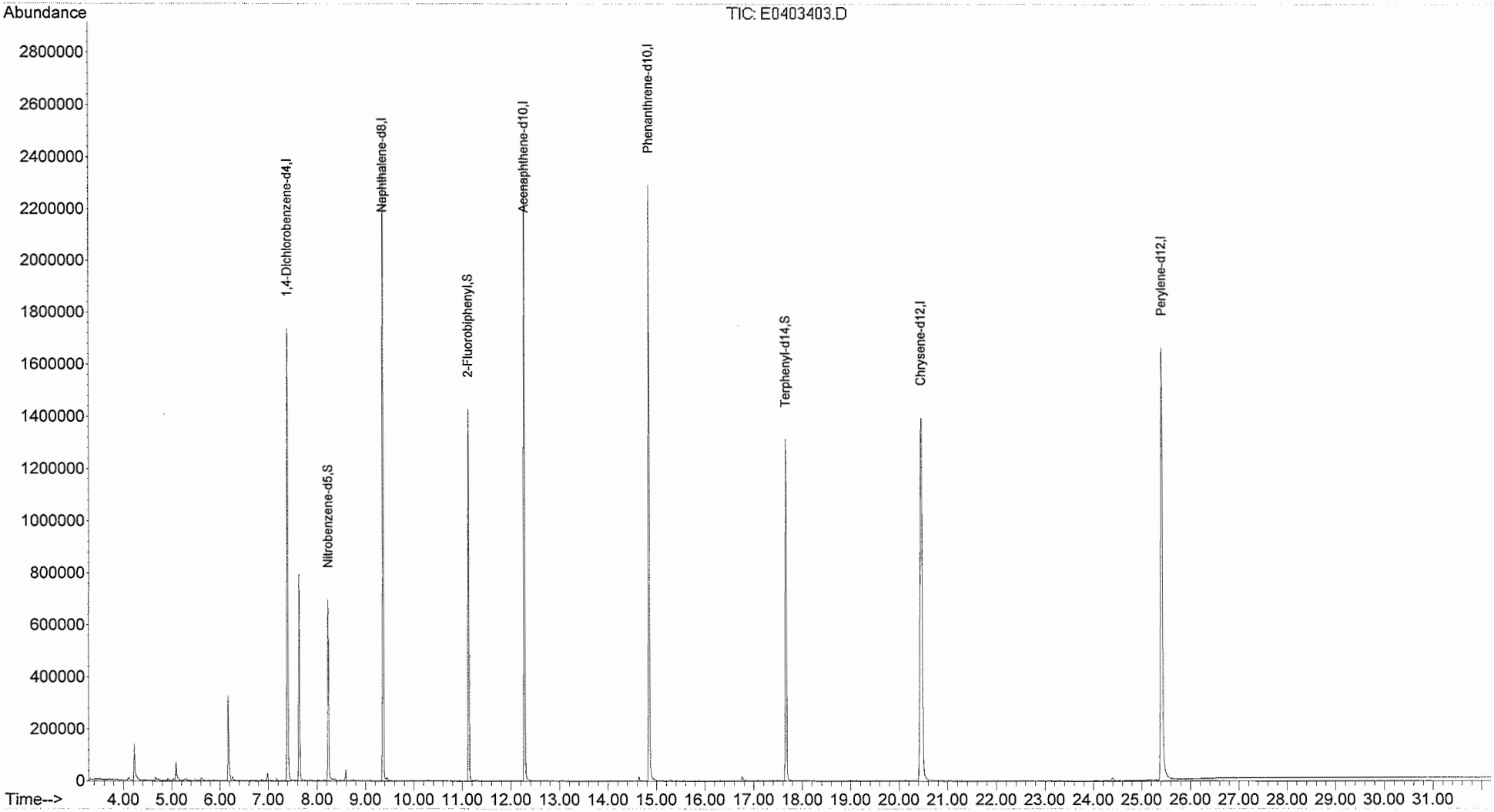
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403403.D
Acq On : 3 Apr 2014 9:45
Operator : PEK
Sample : 006616-04B1
Misc : B10179 AG-5 8270
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 03 10:26:53 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	NA	ARDL Lab No.:	006616-04K1
Desc/Location:	NA	Lab Filename:	E0403404
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	04/01/2014
Matrix:	QC Material	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	NA	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units
Dimethylphthalate	200	1000	4120		UG/KG
Diethylphthalate	200	1000	4110		UG/KG
Di-n-butylphthalate	200	1000	4260		UG/KG
Pyrene	200	1000	4300		UG/KG
bis(2-Ethylhexyl)phthalate	200	1000	4040		UG/KG
Di-n-octylphthalate	200	1000	4120		UG/KG

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	80%
2-Fluorobiphenyl	30-130	102%
Terphenyl-d14	30-130	105%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Spike Blank for Run B6705, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403404.D
Acq On : 3 Apr 2014 10:27
Operator : PEK
Sample : 006616-04K1
Misc : B10179 AG-5 8270
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 03 11:02:56 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

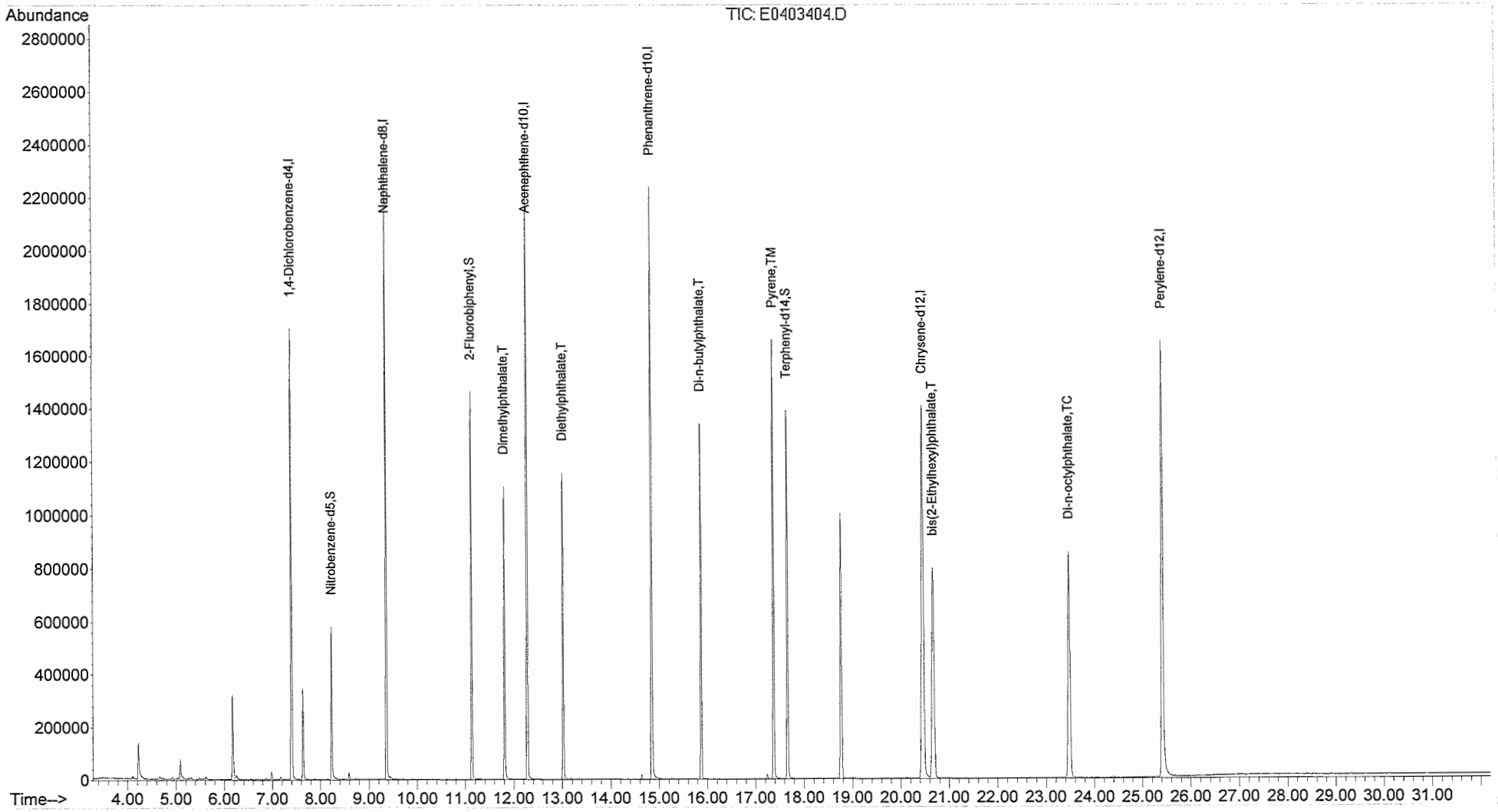
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.39	152	3851713	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.36	136	14706576	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8058564	8000.00	ug/Kg	-0.01
8) Phenanthrene-d10	14.85	188	13401313	8000.00	ug/Kg	-0.01
10) Chrysene-d12	20.46	240	16149565	8000.00	ug/Kg	-0.03
15) Perylene-d12	25.42	264	15434311	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2484136	4013.12	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 80.26%			
5) 2-Fluorobiphenyl	11.13	172	6365042	5081.54	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 101.63%			
12) Terphenyl-d14	17.66	244	7142569	5258.64	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 105.17%			
Target Compounds						Qvalue
6) Dimethylphthalate	11.81	163	6662281	4116.71	ug/Kg	99
7) Diethylphthalate	13.02	149	6701944	4112.97	ug/Kg	99
9) Di-n-butylphthalate	15.87	149	11304427	4264.62	ug/Kg	95
11) Pyrene	17.38	202	11367382	4295.69	ug/Kg	81
13) bis(2-Ethylhexyl)phthalate	20.67	149	8081700	4043.31	ug/Kg	99
14) Di-n-octylphthalate	23.48	149	13781580	4117.53	ug/Kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403404.D
Acq On : 3 Apr 2014 10:27
Operator : PEK
Sample : 006616-04K1
Misc : B10179 AG-5 8270
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 03 11:02:56 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK120L	ARDL Lab No.:	006616-01
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403405
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1040	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	88%
2-Fluorobiphenyl	30-130	93%
Terphenyl-d14	30-130	100%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-01, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403405.D
Acq On : 3 Apr 2014 11:09
Operator : PEK
Sample : 006616-01
Misc : B10179 AG-5 8270
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Apr 03 11:46:00 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3885267	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.36	136	14608258	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8020065	8000.00	ug/Kg	-0.01
8) Phenanthrene-d10	14.85	188	13468215	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17058908	8000.00	ug/Kg	-0.03
15) Perylene-d12	25.42	264	13615928	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2716241	4417.62	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	88.35%		
5) 2-Fluorobiphenyl	11.13	172	5788903	4643.76	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	92.88%		
12) Terphenyl-d14	17.67	244	7165831	4994.53	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	99.89%		

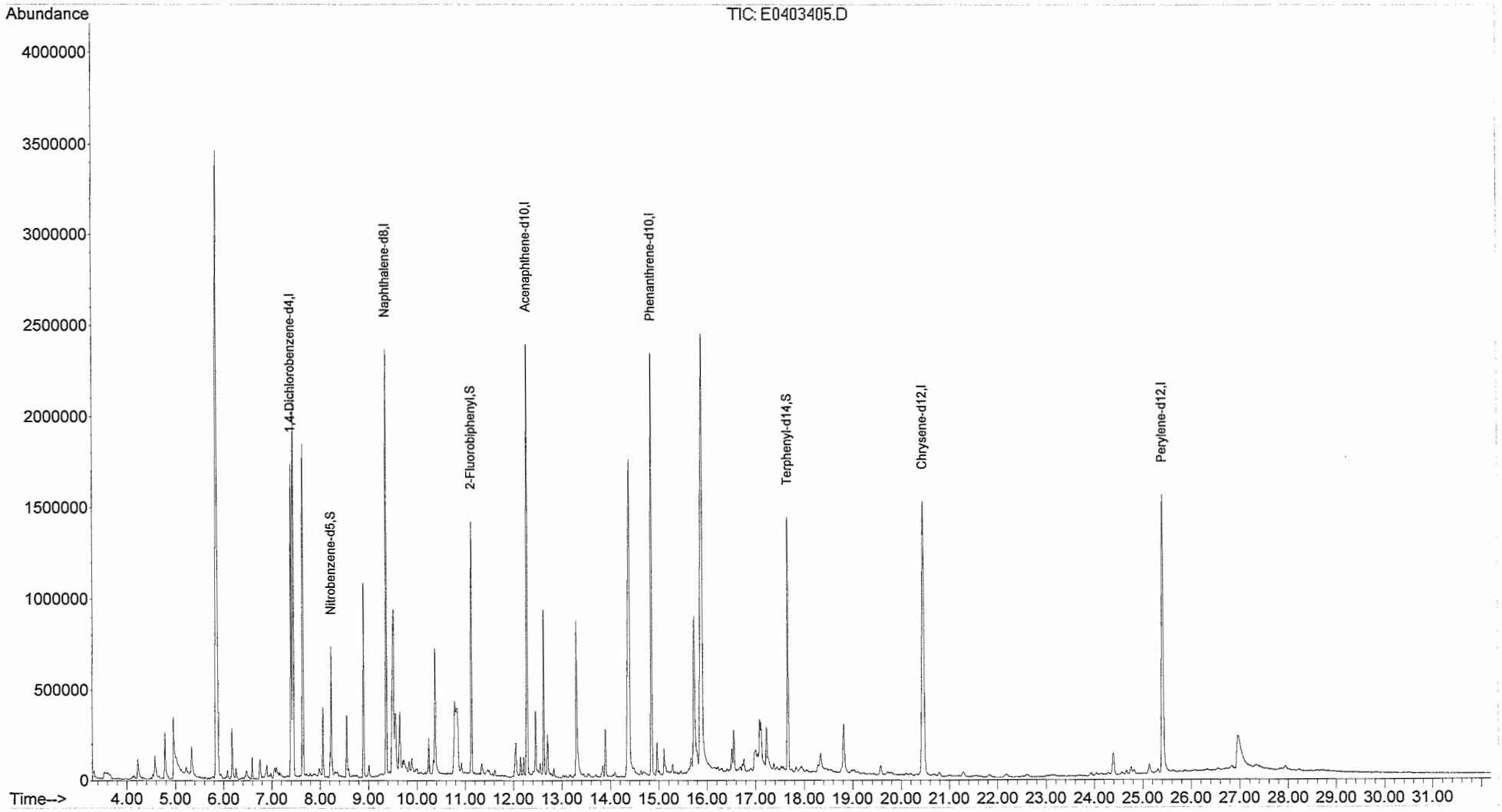
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403405.D
Acq On : 3 Apr 2014 11:09
Operator : PEK
Sample : 006616-01
Misc : B10179 AG-5 8270
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Apr 03 11:46:00 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK121L	ARDL Lab No.:	006616-02
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403406
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1130	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	87%
2-Fluorobiphenyl	30-130	86%
Terphenyl-d14	30-130	102%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-02, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403406.D
Acq On : 3 Apr 2014 11:52
Operator : PEK
Sample : 006616-02
Misc : B10179 AG-5 8270
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Apr 03 12:55:31 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3846295	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.37	136	13993419	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	7609751	8000.00	ug/Kg	-0.01
8) Phenanthrene-d10	14.85	188	12847568	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.46	240	16162361	8000.00	ug/Kg	-0.03
15) Perylene-d12	25.41	264	11321390	8000.00	ug/Kg	-0.02
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2554983	4337.93	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 86.76%			
5) 2-Fluorobiphenyl	11.13	172	5088194	4301.74	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 86.03%			
12) Terphenyl-d14	17.67	244	6942521	5107.31	ug/Kg	0.00
Spiked Amount 5000.000			Recovery = 102.15%			

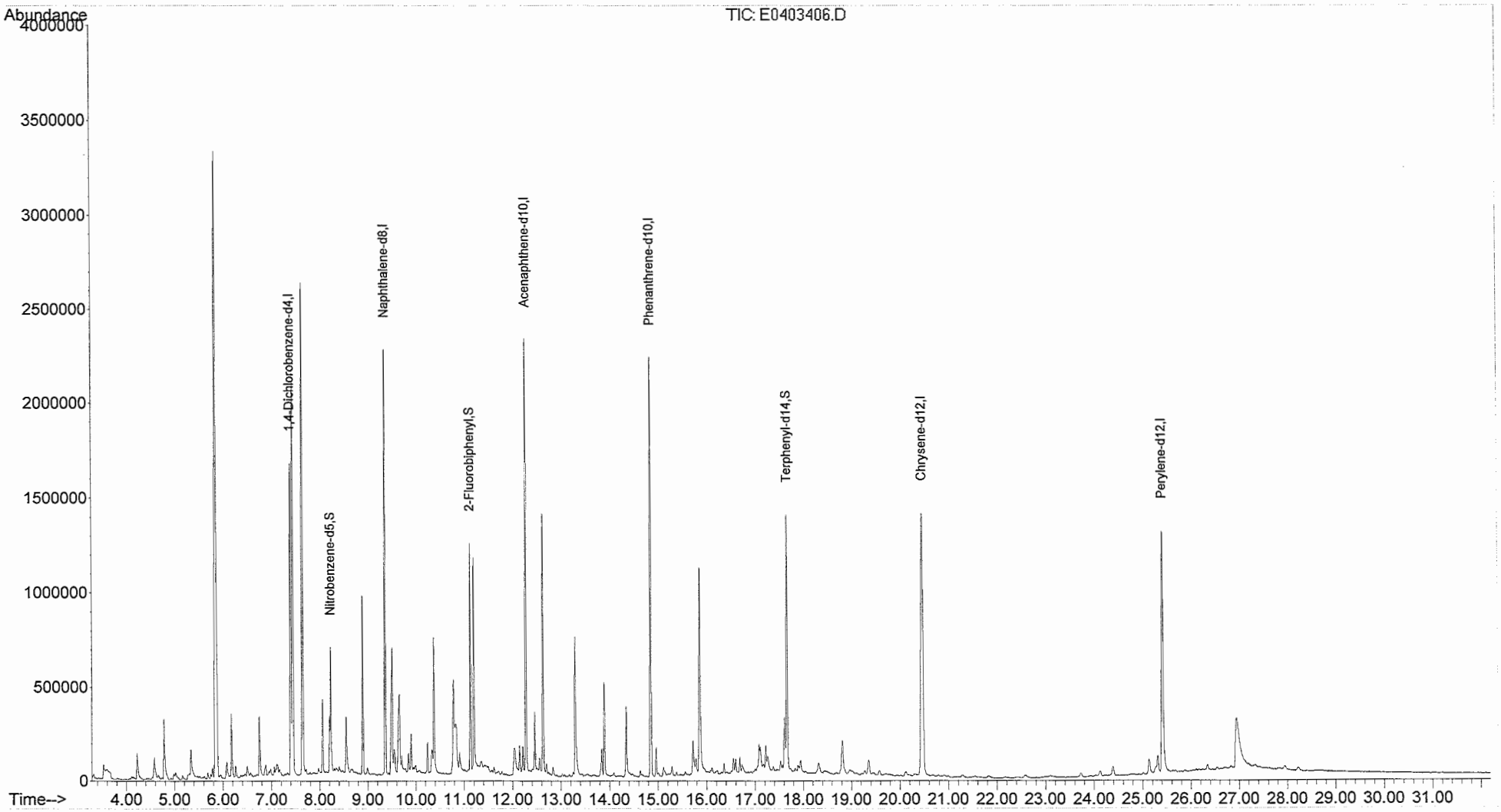
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403406.D
Acq On : 3 Apr 2014 11:52
Operator : PEK
Sample : 006616-02
Misc : B10179 AG-5 8270
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Apr 03 12:55:31 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK122L	ARDL Lab No.:	006616-03
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403407
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1405	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	90%
2-Fluorobiphenyl	30-130	93%
Terphenyl-d14	30-130	101%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-03, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403407.D
Acq On : 3 Apr 2014 12:35
Operator : PEK
Sample : 006616-03
Misc : B10179 AG-5 8270
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Apr 03 13:08:49 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4008941	8000.00 ug/Kg	0.00
2) Naphthalene-d8	9.36	136	14379950	8000.00 ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	7718936	8000.00 ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	13270267	8000.00 ug/Kg	0.00
10) Chrysene-d12	20.47	240	16592017	8000.00 ug/Kg	-0.03
15) Perylene-d12	25.42	264	12163047	8000.00 ug/Kg	-0.01
System Monitoring Compounds					
3) Nitrobenzene-d5	8.23	82	2732933	4515.33 ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	90.31%	
5) 2-Fluorobiphenyl	11.13	172	5581286	4651.88 ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	93.04%	
12) Terphenyl-d14	17.67	244	7036881	5042.67 ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	100.85%	

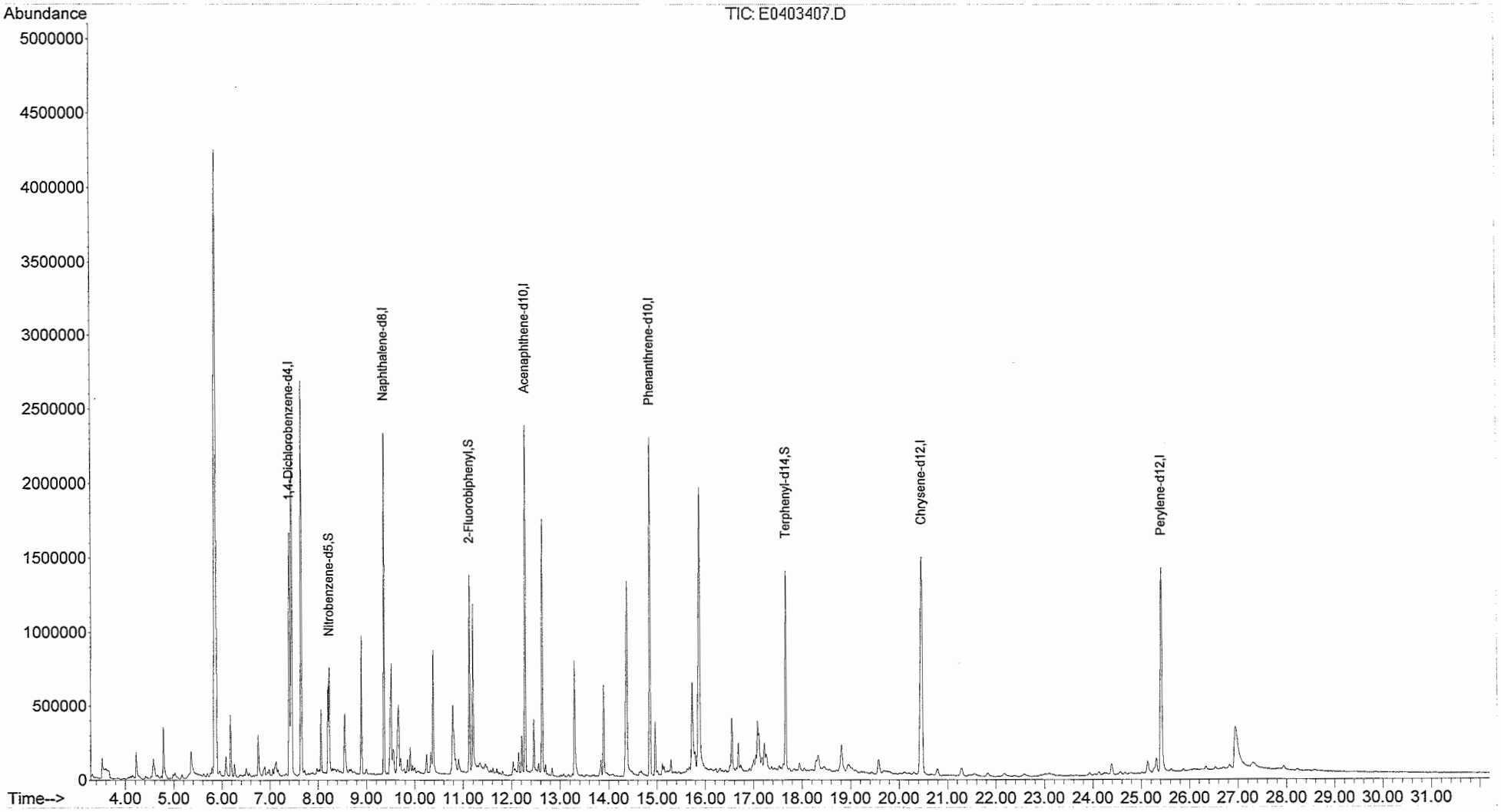
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403407.D
Acq On : 3 Apr 2014 12:35
Operator : PEK
Sample : 006616-03
Misc : B10179 AG-5 8270
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Apr 03 13:08:49 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK123L	ARDL Lab No.:	006616-04
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403408
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1455	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	1520		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	78%
2-Fluorobiphenyl	30-130	78%
Terphenyl-d14	30-130	96%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-04, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403408.D
Acq On : 3 Apr 2014 13:17
Operator : PEK
Sample : 006616-04
Misc : B10179 AG-5 8270
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Apr 03 14:37:27 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

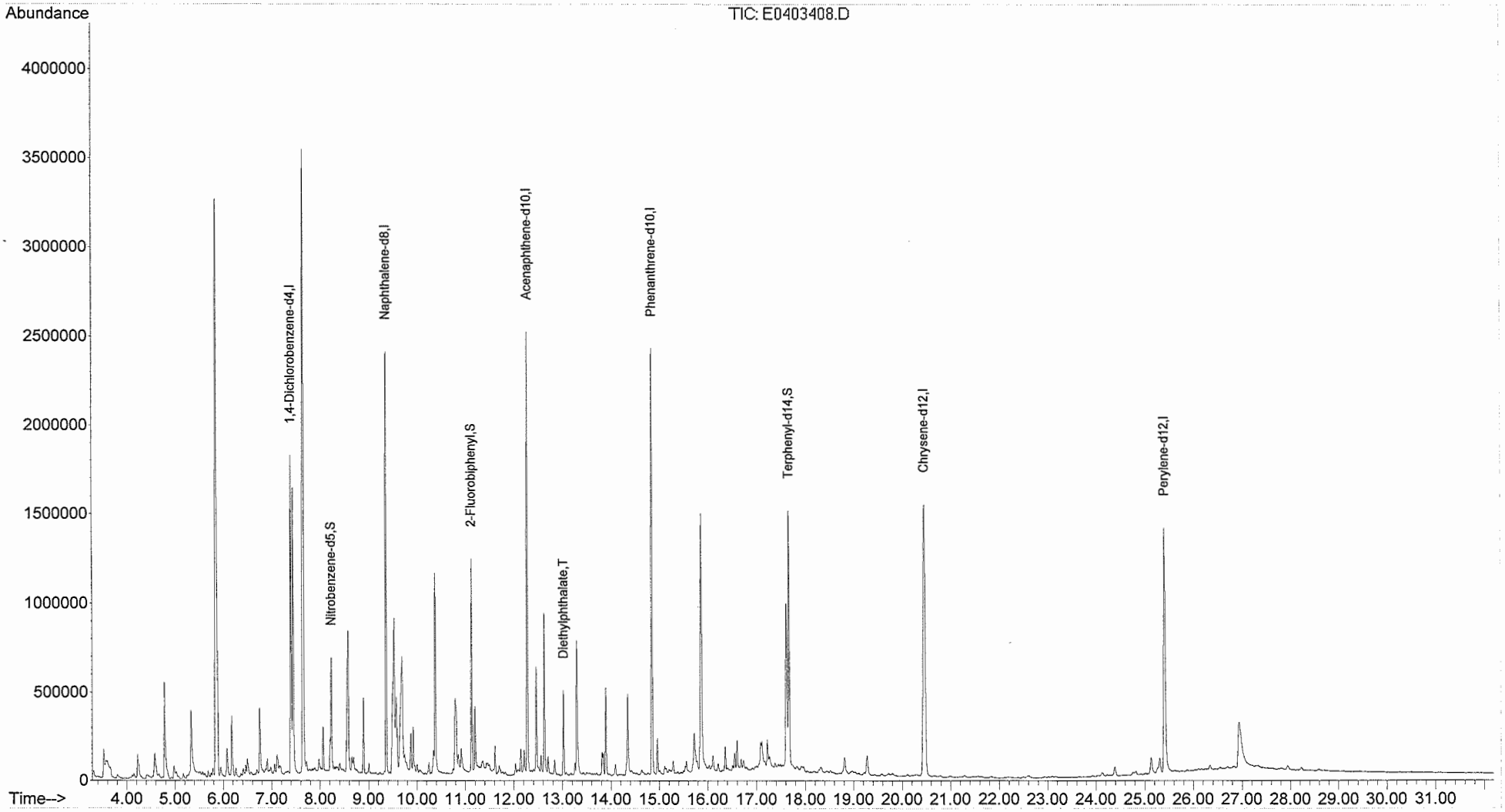
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4251303	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.37	136	15079305	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8214395	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	14011618	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17746187	8000.00	ug/Kg	-0.03
15) Perylene-d12	25.42	264	12259251	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2472956	3896.31	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	77.93%		
5) 2-Fluorobiphenyl	11.13	172	4968035	3890.99	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	77.82%		
12) Terphenyl-d14	17.67	244	7152680	4792.29	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	95.85%		
Target Compounds						Qvalue
7) Diethylphthalate	13.02	149	2531408	1524.05	ug/Kg	99

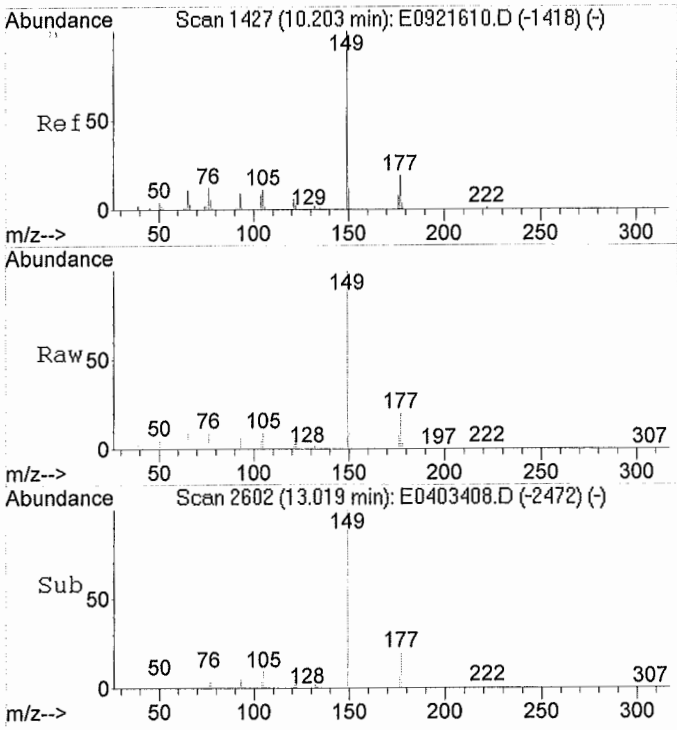
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403408.D
Acq On : 3 Apr 2014 13:17
Operator : PEK
Sample : 006616-04
Misc : B10179 AG-5 8270
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Apr 03 14:37:27 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

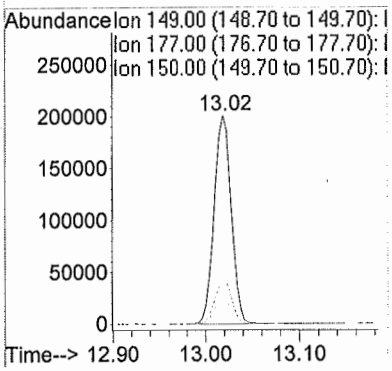




#7
Diethylphthalate
Concen: 1524.05 ug/Kg
RT: 13.02 min Scan# 2602
Delta R.T. -0.02 min
Lab File: E0403408.D
Acq: 3 Apr 2014 13:17

Tgt Ion:149 Resp: 2531408

Ion	Ratio	Lower	Upper
149	100		
177	20.5	0.8	40.8
150	12.1	0.0	32.3



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK123L	ARDL Lab No.:	006616-04MS
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403409
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1455	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	4030		UG/KG	1
Diethylphthalate	200	1000	3350		UG/KG	1
Di-n-butylphthalate	200	1000	2810		UG/KG	1
Pyrene	200	1000	3030		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	3870		UG/KG	1
Di-n-octylphthalate	200	1000	4050		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	88%
2-Fluorobiphenyl	30-130	78%
Terphenyl-d14	30-130	103%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Matrix Spike for 006616-04, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403409.D
Acq On : 3 Apr 2014 14:00
Operator : PEK
Sample : 006616-04MS
Misc : B10179 AG-5 8270
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Apr 03 14:37:41 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

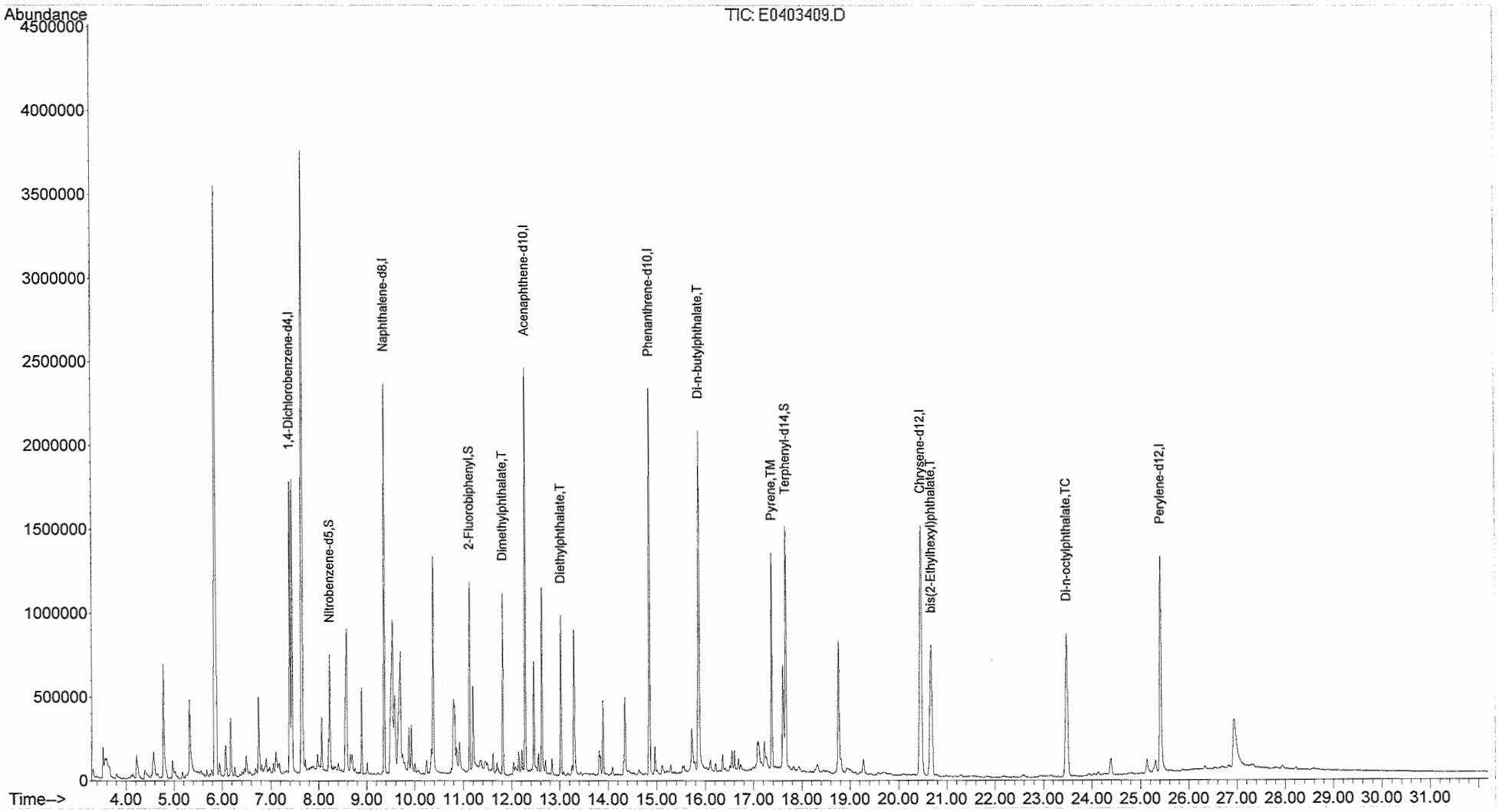
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4158721	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.37	136	14681114	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	7905903	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	13572309	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17071747	8000.00	ug/Kg	-0.03
15) Perylene-d12	25.42	264	11452061	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2706951	4380.66	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	87.61%		
5) 2-Fluorobiphenyl	11.13	172	4811699	3915.60	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	78.31%		
12) Terphenyl-d14	17.67	244	7380391	5140.21	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	102.80%		
Target Compounds						Qvalue
6) Dimethylphthalate	11.81	163	6398266	4029.91	ug/Kg	99
7) Diethylphthalate	13.02	149	5351321	3347.51	ug/Kg	99
9) Di-n-butylphthalate	15.87	149	7549004	2812.00	ug/Kg	95
11) Pyrene	17.38	202	8482709	3032.42	ug/Kg	81
13) bis(2-Ethylhexyl)phthalate	20.68	149	8184760	3873.67	ug/Kg	99
14) Di-n-octylphthalate	23.48	149	14345165	4054.39	ug/Kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403409.D
Acq On : 3 Apr 2014 14:00
Operator : PEK
Sample : 006616-04MS
Misc : B10179 AG-5 8270
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Apr 03 14:37:41 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK123L	ARDL Lab No.:	006616-04MD
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403410
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1455	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	3750		UG/KG	1
Diethylphthalate	200	1000	2940		UG/KG	1
Di-n-butylphthalate	200	1000	2440		UG/KG	1
Pyrene	200	1000	2850		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	3790		UG/KG	1
Di-n-octylphthalate	200	1000	3950		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	84%
2-Fluorobiphenyl	30-130	73%
Terphenyl-d14	30-130	99%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Matrix Spike Duplicate for 006616-04, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403410.D
Acq On : 3 Apr 2014 14:43
Operator : PEK
Sample : 006616-04MD
Misc : B10179 AG-5 8270
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 03 15:16:15 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4059988	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.37	136	14321800	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	7764194	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	13333959	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	16660605	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.42	264	10087002	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2543749	4219.83	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	84.40%		
5) 2-Fluorobiphenyl	11.13	172	4425584	3667.12	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	73.34%		
12) Terphenyl-d14	17.67	244	6943534	4955.29	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	99.11%		

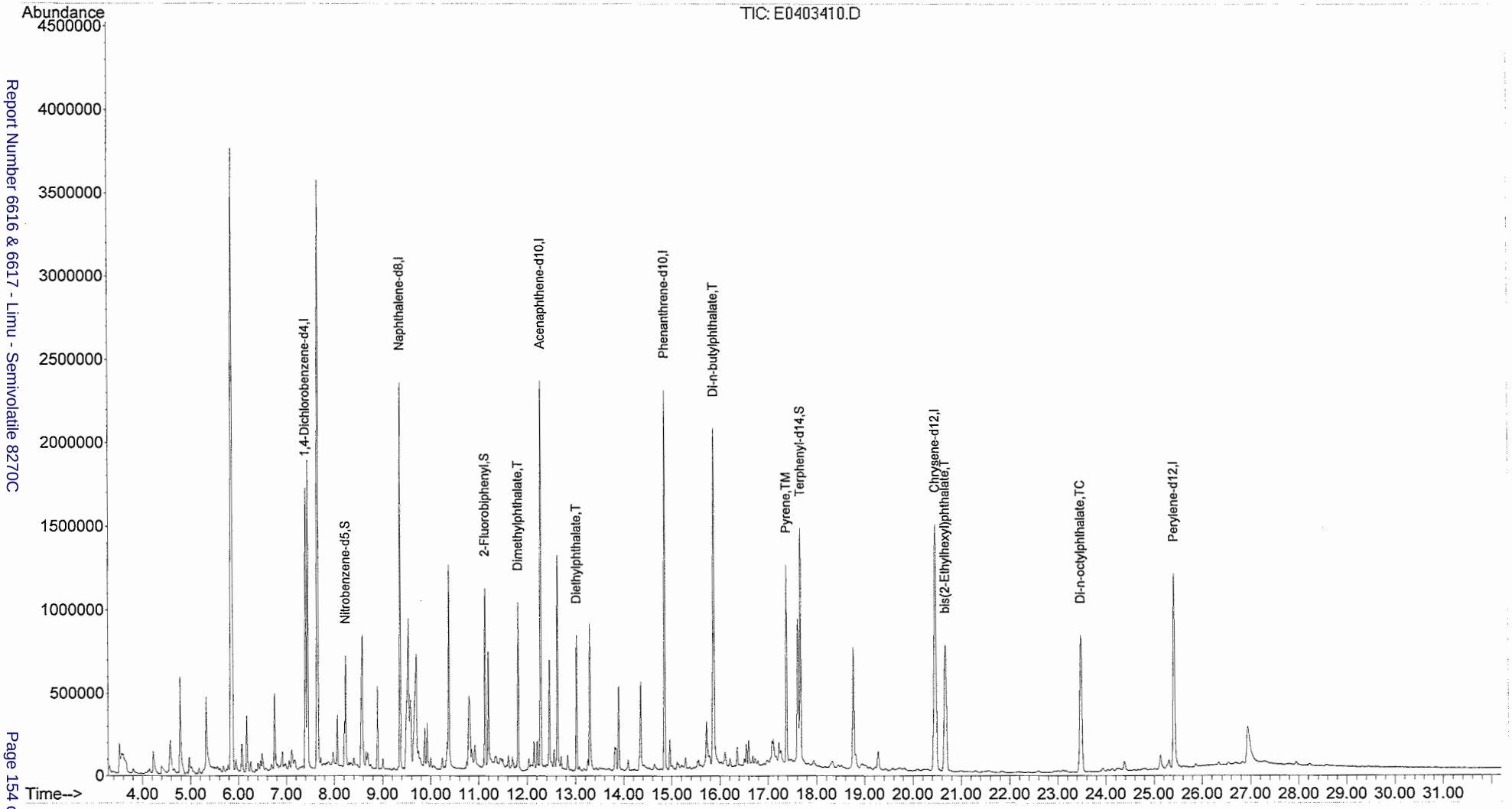
Target Compounds						Qvalue
6) Dimethylphthalate	11.81	163	5842594	3747.09	ug/Kg	99
7) Diethylphthalate	13.02	149	4618287	2941.69	ug/Kg	99
9) Di-n-butylphthalate	15.87	149	6442763	2442.83	ug/Kg	95
11) Pyrene	17.38	202	7771105	2846.59	ug/Kg	81
13) bis(2-Ethylhexyl)phthalate	20.67	149	7812156	3788.57	ug/Kg	99
14) Di-n-octylphthalate	23.48	149	13635401	3948.89	ug/Kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403410.D
Acq On : 3 Apr 2014 14:43
Operator : PEK
Sample : 006616-04MD
Misc : B10179 AG-5 8270
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 03 15:16:15 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK124L	ARDL Lab No.:	006616-05
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403411
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1540	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	79%
2-Fluorobiphenyl	30-130	79%
Terphenyl-d14	30-130	98%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-05, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403411.D
Acq On : 3 Apr 2014 15:26
Operator : PEK
Sample : 006616-05
Misc : B10179 AG-5 8270
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 03 16:37:09 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3885476	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.36	136	14724491	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8050976	8000.00	ug/Kg	-0.01
8) Phenanthrene-d10	14.85	188	13211329	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	16516926	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.42	264	12513693	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2433115	3925.91	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	78.52%		
5) 2-Fluorobiphenyl	11.13	172	4965229	3967.73	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	79.35%		
12) Terphenyl-d14	17.67	244	6778223	4879.40	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	97.59%		

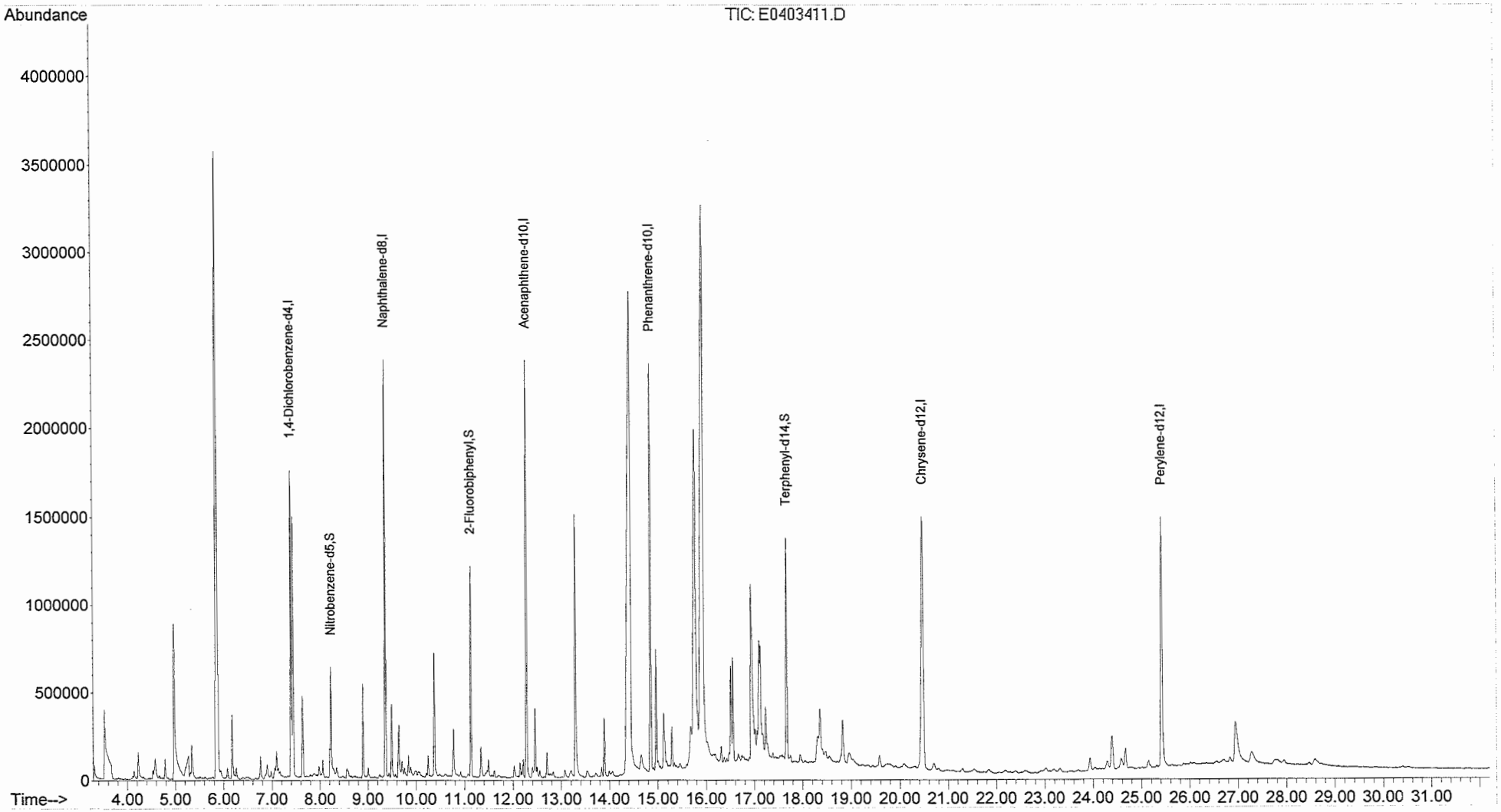
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403411.D
Acq On : 3 Apr 2014 15:26
Operator : PEK
Sample : 006616-05
Misc : B10179 AG-5 8270
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 03 16:37:09 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK126L	ARDL Lab No.:	006616-06
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403412
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	1615	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	87%
2-Fluorobiphenyl	30-130	91%
Terphenyl-d14	30-130	100%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-06, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403412.D
Acq On : 3 Apr 2014 16:08
Operator : PEK
Sample : 006616-06
Misc : B10179 AG-5 8270
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 03 16:46:25 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	3976518	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.36	136	15087167	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8263940	8000.00	ug/Kg	-0.01
8) Phenanthrene-d10	14.85	188	13560145	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17057359	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.42	264	12615473	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2751509	4332.93	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 86.66%			
5) 2-Fluorobiphenyl	11.13	172	5826624	4536.09	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 90.72%			
12) Terphenyl-d14	17.67	244	7202322	5020.42	ug/Kg	0.00
Spiked Amount 5000.000			Recovery = 100.41%			

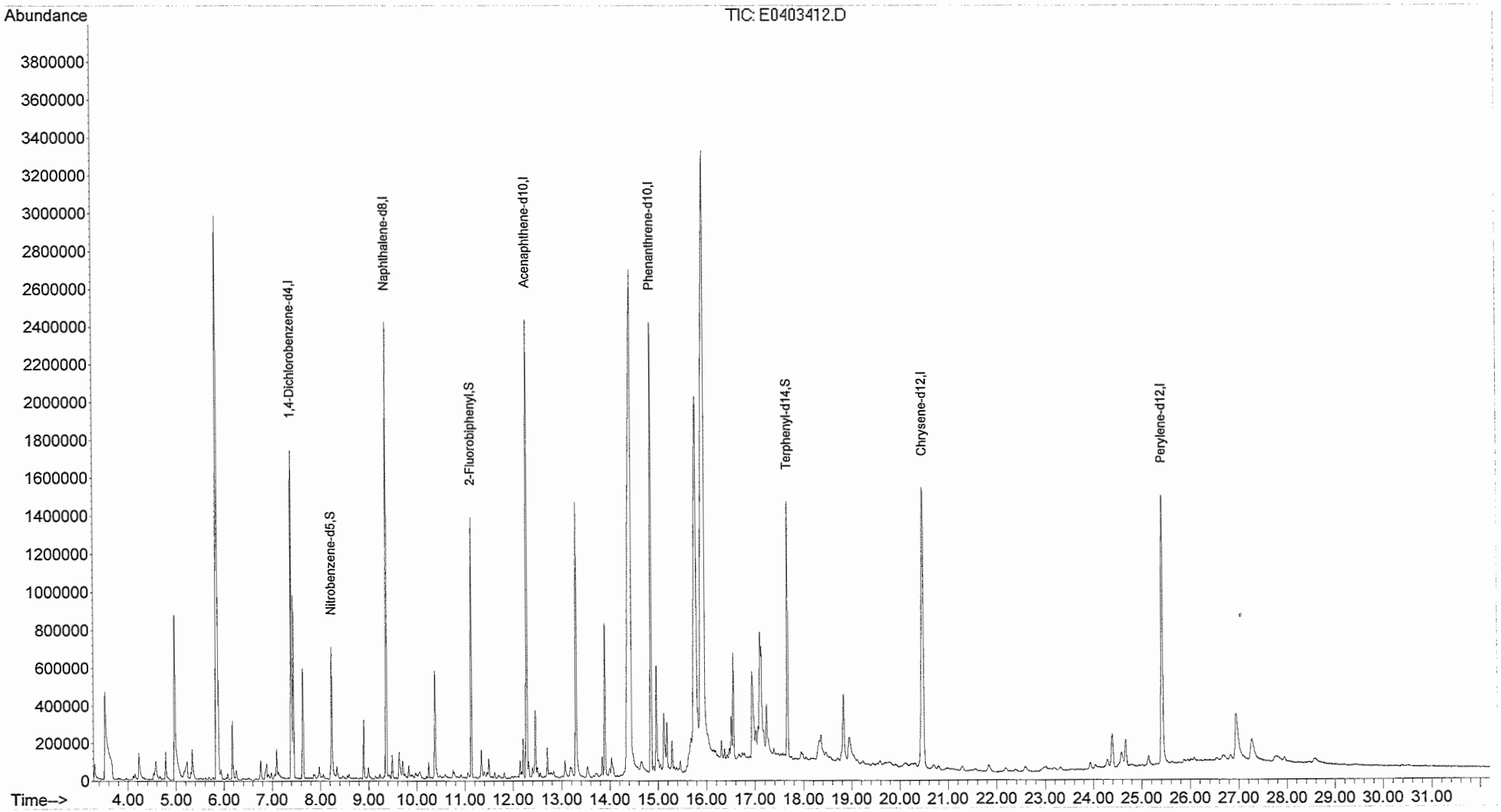
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403412.D
Acq On : 3 Apr 2014 16:08
Operator : PEK
Sample : 006616-06
Misc : B10179 AG-5 8270
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 03 16:46:25 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK127L	ARDL Lab No.:	006616-07
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403413
Sample Date:	02/11/2014	Received Date:	03/14/2014
Sample Time:	1304	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	77%
2-Fluorobiphenyl	30-130	60%
Terphenyl-d14	30-130	94%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-07, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403413.D
Acq On : 3 Apr 2014 16:51
Operator : PEK
Sample : 006616-07
Misc : B10179 AG-5 8270
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Apr 04 08:22:47 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4175868	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.37	136	15323880	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8406132	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	14099411	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17559865	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.42	264	10780435	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2483592	3850.61	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	77.01%		
5) 2-Fluorobiphenyl	11.13	172	3887643	2975.37	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	59.51%		
12) Terphenyl-d14	17.67	244	6963472	4715.03	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	94.30%		

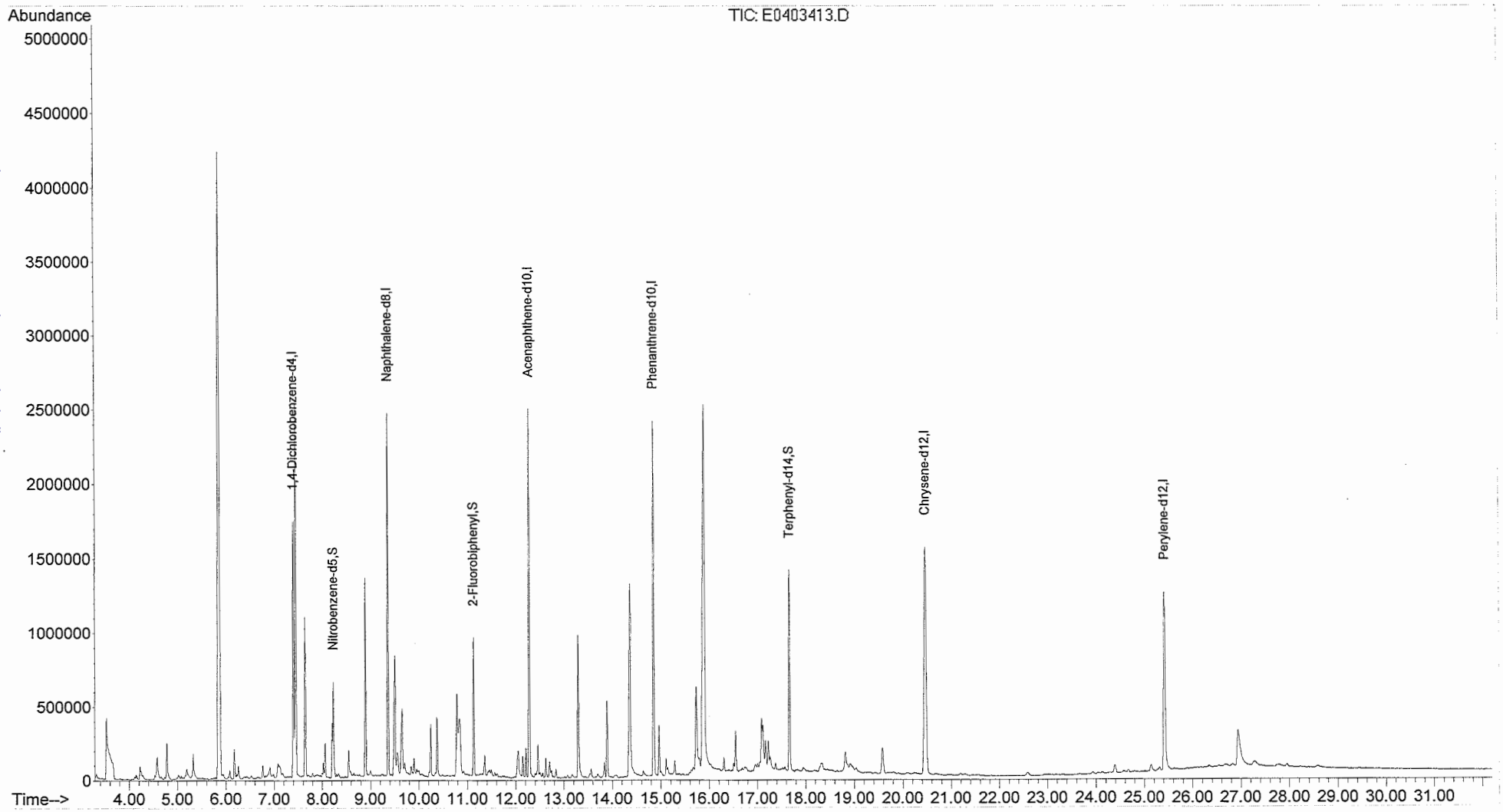
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403413.D
Acq On : 3 Apr 2014 16:51
Operator : PEK
Sample : 006616-07
Misc : B10179 AG-5 8270
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Apr 04 08:22:47 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006616 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK128L	ARDL Lab No.:	006616-08
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403414
Sample Date:	02/11/2014	Received Date:	03/14/2014
Sample Time:	1415	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	69%
2-Fluorobiphenyl	30-130	81%
Terphenyl-d14	30-130	94%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006616-08, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403414.D
Acq On : 3 Apr 2014 17:34
Operator : PEK
Sample : 006616-08
Misc : B10179 AG-5 8270
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Apr 04 08:23:02 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4097167	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.37	136	15066293	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8180668	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	14047301	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17433136	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.42	264	10372196	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2190746	3454.65	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	69.09%		
5) 2-Fluorobiphenyl	11.13	172	5135585	4038.80	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	80.78%		
12) Terphenyl-d14	17.67	244	6884868	4695.69	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	93.91%		

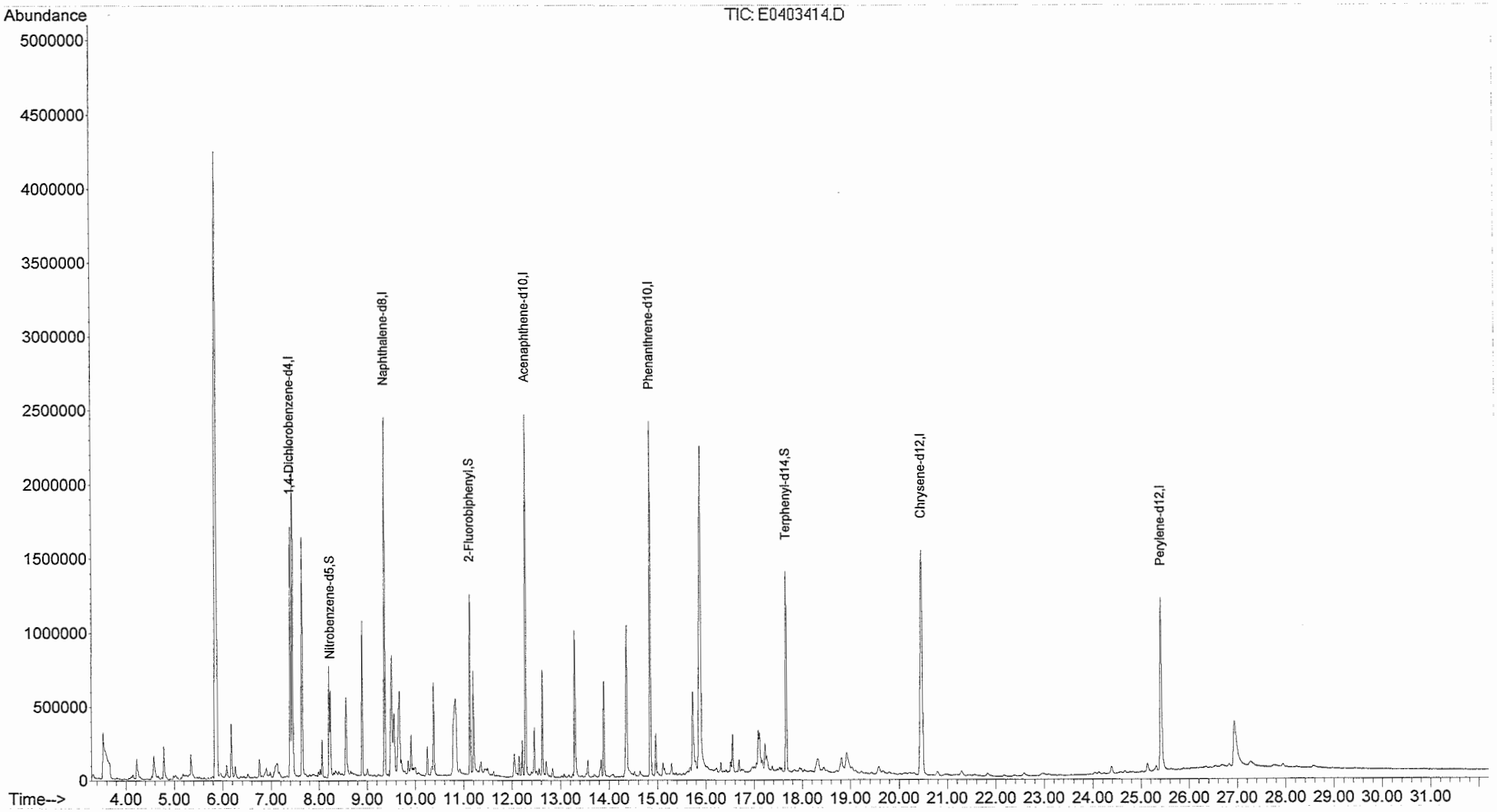
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403414.D
Acq On : 3 Apr 2014 17:34
Operator : PEK
Sample : 006616-08
Misc : B10179 AG-5 8270
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Apr 04 08:23:02 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006617 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK116L	ARDL Lab No.:	006617-01
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403415
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	0820	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	70%
2-Fluorobiphenyl	30-130	81%
Terphenyl-d14	30-130	100%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006617-01, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403415.D
Acq On : 3 Apr 2014 18:17
Operator : PEK
Sample : 006617-01
Misc : B10179 AG-5 8270
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 04 08:23:19 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4018979	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.37	136	14922715	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8078777	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	13771648	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	16870376	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.42	264	8611292	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2204501	3509.78	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 70.20%			
5) 2-Fluorobiphenyl	11.13	172	5113066	4071.81	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery = 81.44%			
12) Terphenyl-d14	17.67	244	7096944	5001.80	ug/Kg	0.00
Spiked Amount 5000.000			Recovery = 100.04%			

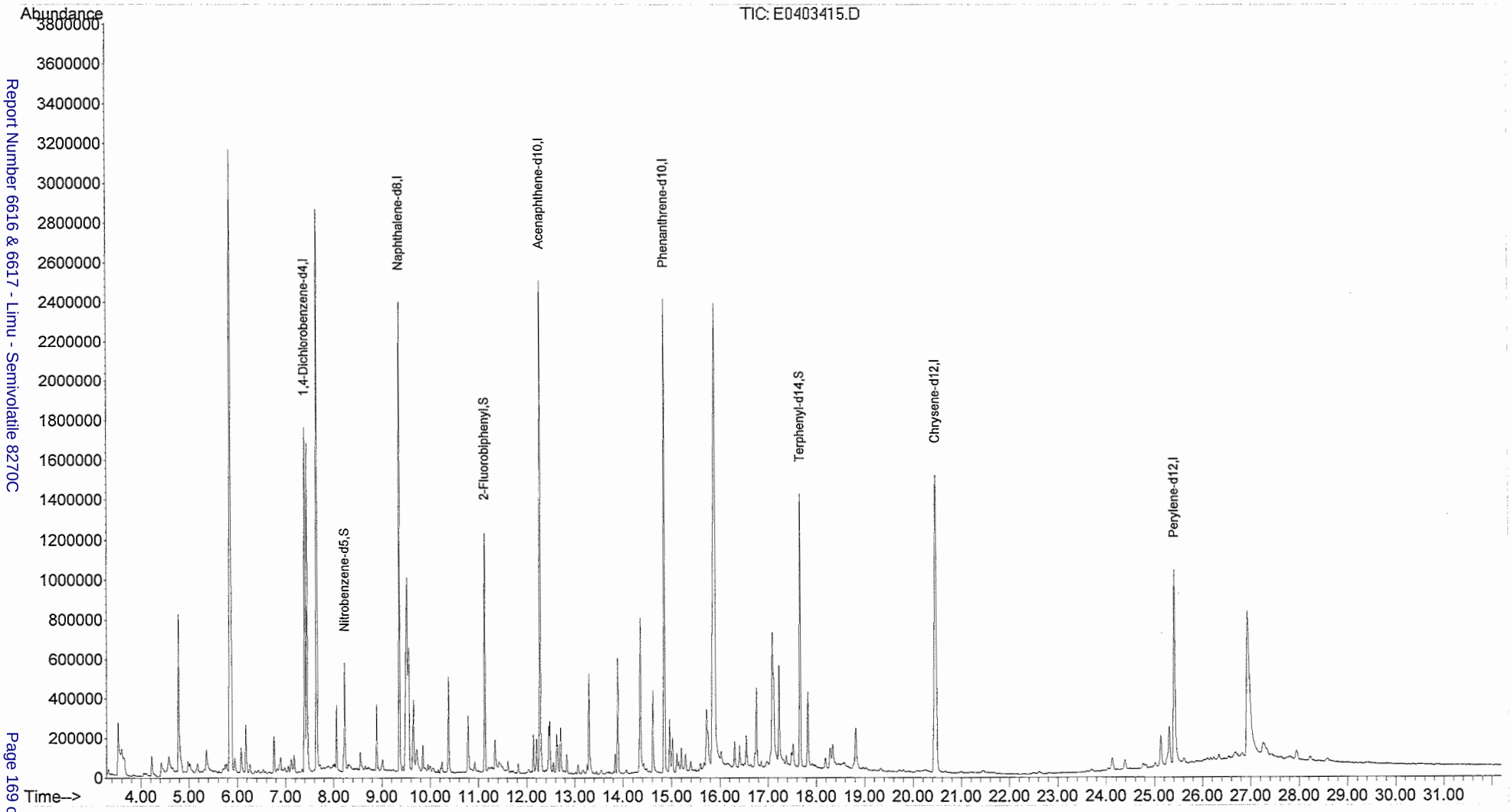
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403415.D
Acq On : 3 Apr 2014 18:17
Operator : PEK
Sample : 006617-01
Misc : B10179 AG-5 8270
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 04 08:23:19 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006617 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK117L	ARDL Lab No.:	006617-02
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403416
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	0835	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	73%
2-Fluorobiphenyl	30-130	68%
Terphenyl-d14	30-130	94%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006617-02, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403416.D
Acq On : 3 Apr 2014 18:59
Operator : PEK
Sample : 006617-02
Misc : B10179 AG-5 8270
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 04 08:23:29 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4062526	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.36	136	15189133	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8317217	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	14060750	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17370370	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.41	264	8827254	8000.00	ug/Kg	-0.02
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2320159	3629.13	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	72.58%		
5) 2-Fluorobiphenyl	11.13	172	4419319	3418.45	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	68.37%		
12) Terphenyl-d14	17.67	244	6834355	4678.08	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	93.56%		

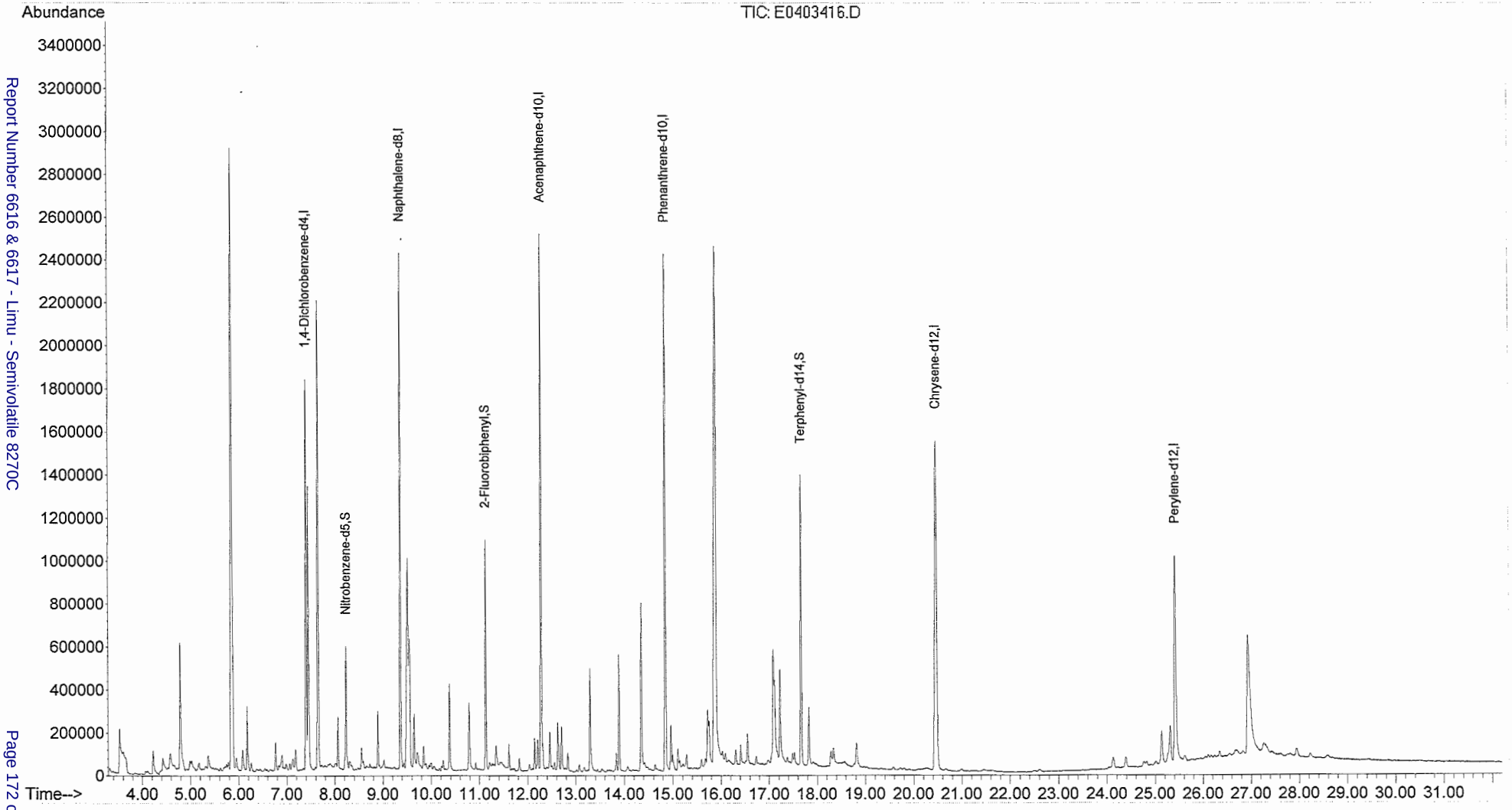
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403416.D
Acq On : 3 Apr 2014 18:59
Operator : PEK
Sample : 006617-02
Misc : B10179 AG-5 8270
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 04 08:23:29 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006617 Report Date: 04/07/2014

Project Name: MAKAU MILITARY RES O Analysis: BNA'S (METHOD 8270)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MAK118L	ARDL Lab No.:	006617-03
Desc/Location:	MAKAU MILITARY RES OAHU	Lab Filename:	E0403417
Sample Date:	01/31/2014	Received Date:	03/14/2014
Sample Time:	0910	Prep. Date:	04/01/2014
Matrix:	TISSUE	Analysis Date:	04/03/2014
Amount Used:	5 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B6705
% Moisture:	No Moisture Present	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Dimethylphthalate	200	1000	ND		UG/KG	1
Diethylphthalate	200	1000	ND		UG/KG	1
Di-n-butylphthalate	200	1000	ND		UG/KG	1
Pyrene	200	1000	ND		UG/KG	1
bis(2-Ethylhexyl)phthalate	200	1000	ND		UG/KG	1
Di-n-octylphthalate	200	1000	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Nitrobenzene-d5	30-130	77%
2-Fluorobiphenyl	30-130	58%
Terphenyl-d14	30-130	99%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006617-03, BNA'S (METHOD 8270) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403417.D
Acq On : 3 Apr 2014 19:42
Operator : PEK
Sample : 006617-03
Misc : B10179 AG-5 8270
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Apr 04 08:23:38 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.40	152	4262858	8000.00	ug/Kg	0.00
2) Naphthalene-d8	9.36	136	15613970	8000.00	ug/Kg	0.00
4) Acenaphthene-d10	12.28	164	8379172	8000.00	ug/Kg	0.00
8) Phenanthrene-d10	14.85	188	14317941	8000.00	ug/Kg	0.00
10) Chrysene-d12	20.47	240	17359393	8000.00	ug/Kg	-0.02
15) Perylene-d12	25.42	264	7521318	8000.00	ug/Kg	-0.01
System Monitoring Compounds						
3) Nitrobenzene-d5	8.23	82	2528361	3847.19	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	76.94%		
5) 2-Fluorobiphenyl	11.13	172	3772941	2896.88	ug/Kg	-0.01
Spiked Amount 5000.000			Recovery =	57.94%		
12) Terphenyl-d14	17.67	244	7230184	4952.16	ug/Kg	0.00
Spiked Amount 5000.000			Recovery =	99.04%		

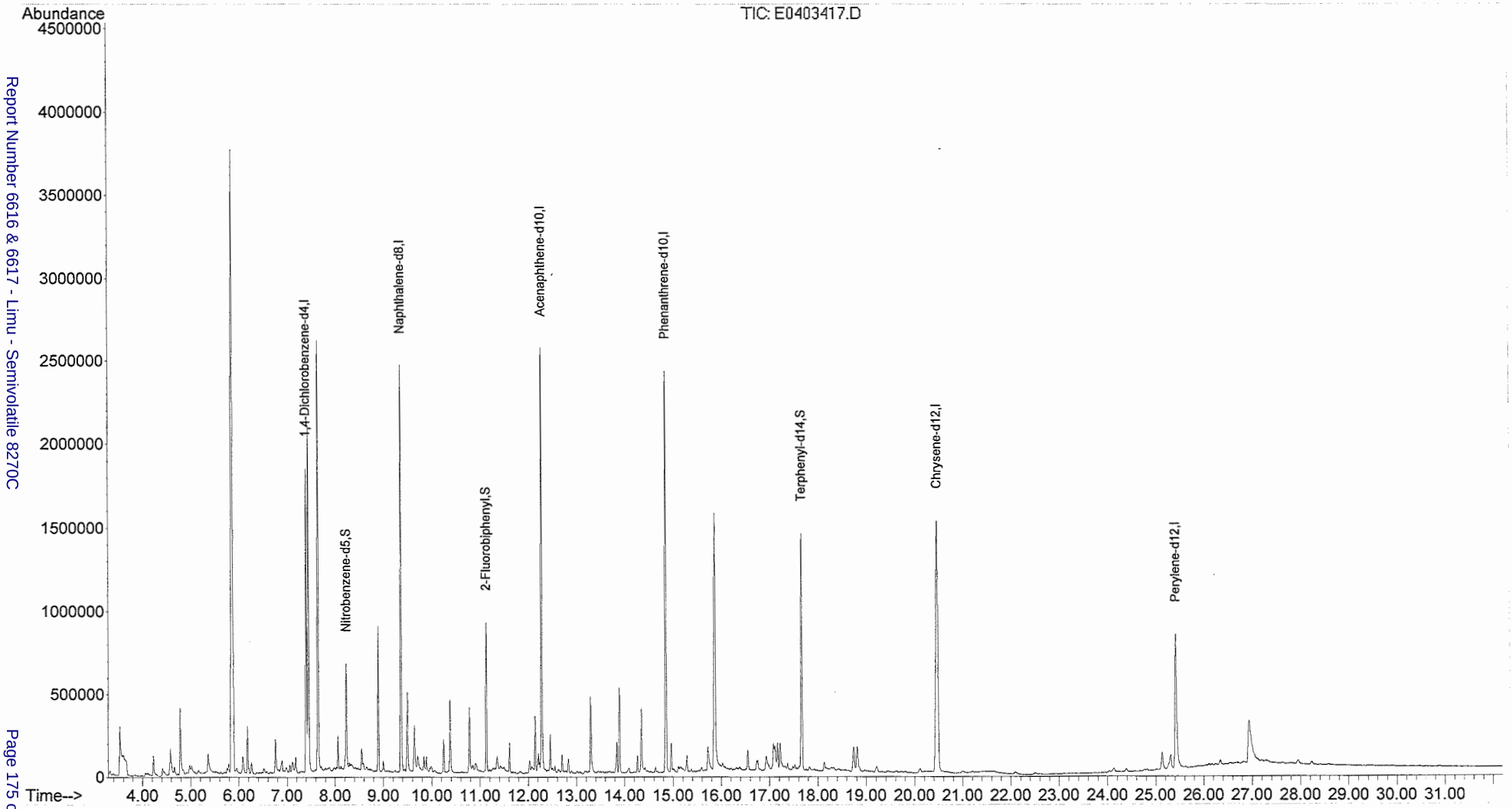
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\040314\
Data File : E0403417.D
Acq On : 3 Apr 2014 19:42
Operator : PEK
Sample : 006617-03
Misc : B10179 AG-5 8270
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Apr 04 08:23:38 2014
Quant Method : C:\MSDCHEM\1\CALFILES\8270CALS\E8270321HT.M
Quant Title : 8270 BNA Calibration
QLast Update : Sat Mar 08 11:42:09 2014
Response via : Initial Calibration



Example Calculation

Rev. 1.1

EXAMPLE CALCULATIONS
(BNA – General Use)

Response Factor Calculations

The data system tabulates the area response of the characteristic ions against the concentration for each compound and each internal standard. Response factors (RF) are calculated for each compound relative to the internal standard assignments. The RF is calculated as follows:

$$RF = (A_x C_{is}) / (A_{is} C_x)$$

Where:

A_x = Area of the characteristic ion for the compound being measured

A_{is} = Area of the characteristic ion for the specific internal standard.

C_{is} = Concentration of the specific internal standard.

C_x = Concentration of the compound being measured.

The RF is calculated for each standard concentration level in the initial calibration curve. The average RF is then calculated off these points.

Sample Calculations

Sample calculations are made by the instrument software and are performed as follows:

Water:

$$\text{Concentration (ug/L)} = \frac{(A_x)(Is)(V_t)}{(A_{is})(RF)(V_i)(V_o)}$$

Soil: (Low and Medium Level)

$$\text{Concentration (ug/Kg)} = \frac{(A_x)(Is)(V_t)}{(A_{is})(RF)(V_i)(W_s)}$$

Where:

A_x = Area of characteristic ion for the compound being measured.

Is = Amount of internal standard injected (ng).

A_{is} = Area of characteristic ion for the internal standard.

RF = Average response factor for the compound being measured.

V_i = Volume of extract injected (uL).

V_t = Volume of total extract (uL).

V_o = Volume of water extracted (mL).

W_s = Weight of sample extracted (g).

Example Sample Calculation

Sample No.: 6616-04 MS Compound: Dimethylphthalate Matrix: Tissue

$$\text{Concentration (ug/Kg)} = \frac{(6398266)*(40ng)*(1000\mu L)}{(7905903)*(1.607)*(1\mu L)*(5g)} = 4030$$

Example Calculations Performed By: PEK Date: 4/9/2014

Miscellaneous Additional Data

(If applicable)

☑ **None** DSS 4/14/14

Rev. 1.1