Analytical Resources, Incorporated
Analytical Chemists and Consultants

09 October 2019

Delaney Peterson
Anchor QEA, LLC
1201 3rd Ave, Suite 2600
Seattle, WA 98101

RE: Gasco PDI

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19I0422	N/A

Amanda Volgardsen
Digitally signed by Amanda Volgardsen
DN: c=US, st=Washington, l=Tukwila, o=Analytical Resources, Inc., cn=Amanda Volgardsen, email=amanda.volgardsen@arilabs.com
Date: 2019.10.09 14:33:50 -07'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

Amanda Volgardsen, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Cert# 100006-012

PJLA Testing
Accreditation # 66169

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

ANCHOR QEA
1201 3rd Avenue, Suite 2600, Seattle, WA 98101

19J0422

ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

POC: # Delaney Peterson (360-715-2707)
1605 Cornwall Avenue, Bellingham, WA 98225

Project: Gasco PDI
Client: NW Natural

COC ID: ARI-20190924-170421
Sample Custodian: BJ
Lab: Analytical Resources Inc.

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected Date	Collected Time	Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
001	PDI-103SG-00-01-190924	N	SE	09/24/2019	14:30	1	☐				
								TBT	SW8270DSIM	30	4°C
								Total solids (ARI)	SM2540G	30	4°C
002	PDI-104SG-00-01-190924	N	SE	09/24/2019	14:45	1	☐				
								TBT	SW8270DSIM	30	4°C
								Total solids (ARI)	SM2540G	30	4°C
003	PDI-105SG-00-0.99-190924	N	SE	09/24/2019	14:00	1	☐				
								TBT	SW8270DSIM	30	4°C
								Total solids (ARI)	SM2540G	30	4°C
004	PDI-106SG-00-01-190924	N	SE	09/24/2019	15:05	1	☐				
								TBT	SW8270DSIM	30	4°C
								Total solids (ARI)	SM2540G	30	4°C

Comment:

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Print Name D. Peterson	Print Name Jacobsalter	Print Name	Print Name	Print Name	Print Name
Company AQ	Company ARI	Company	Company	Company	Company
Date/Time 9.25.19 1000	Date/Time 09/26/19 1024	Date/Time	Date/Time	Date/Time	Date/Time

2 of 189

* Lab QC Requested for sample when box is checked ** TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 9/24/2019

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Archer CEA Project Name: Casco PDI

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 197042 Tracking No: 7763 3887 8336 NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	(YES)	NO
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1024 3.1°C

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D00 5306

Cooler Accepted by: JBw Date: 09/26/19 Time: 1024

Complete custody forms and attach all shipping documents

Log-In Phase:

JBw

Was a temperature blank included in the cooler?		(YES)	NO
What kind of packing material was used? ...	(Bubble Wrap) (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: Cardboard		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	(Individually)	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JBw Date: 09/26/19 Time: 1431 Labels checked by: JBw

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Anchor QEA, LLC	Project: Gasco PDI	
1201 3rd Ave, Suite 2600	Project Number: 000029-02.59	**Reported:**
Seattle WA, 98101	Project Manager: Delaney Peterson	09-Oct-2019 14:20

Case Narrative

Sample receipt

Samples as listed on the preceding page were received September 26, 2019 under ARI work order 19I0422. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Butyl Tin(s) - EPA Method SW8270D-SIM

The samples were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

A matrix spike and matrix spike duplicate were prepared in conjunction with sample PDI-103SG-00-01-190924. The matrix spike/matrix spike duplicate percent recoveries and RPD were within QC limits.

Anchor QEA, LLC	Project: Gasco PDI	
1201 3rd Ave, Suite 2600	Project Number: 000029-02.59	**Reported:**
Seattle, WA 98101	Project Manager: Delaney Peterson	10/09/2019 14:20

ANALYTICAL REPORT FOR SAMPLES

Laboratory ID	Sample ID	Matrix	Date Sampled	Date Received
19I0422-01	PDI-103SG-00-01-190924	Solid	09/24/19 14:30	09/26/19 10:24
19I0422-02	PDI-104SG-00-01-190924	Solid	09/24/19 14:45	09/26/19 10:24
19I0422-03	PDI-105SG-00-0.99-190924	Solid	09/24/19 14:00	09/26/19 10:24
19I0422-04	PDI-106SG-00-01-190924	Solid	09/24/19 15:05	09/26/19 10:24

QUALIFIERS AND NOTES

Qualifier	Definition
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
J	Estimated concentration value detected below the reporting limit.
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

PDI-103SG-00-01-190924

Form I
ORGANIC ANALYSIS DATA SHEET
EPA 8270D-SIM
Butyl Tins

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-01 A	SDG:	19I0422
Sampled:	09/24/19 14:30	Prepared:	10/03/19 14:05	File ID:	NT1419100505.D
% Solids:	43.59	Preparation:	EPA 3546 (Microwave)	Analyzed:	10/05/19 14:33
Batch:	BHJ0094	Sequence:	SHJ0100	Initial/Final:	11.7 g Wet / 0.5 mL
Instrument:	NT14	Column:	ZB-5MS	Calibration:	CJ00005
Cleanups:	Silica Gel				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg dry)	Q	DL	RL
36643-28-4	Tributyltin Ion	1	1.25	J	0.441	3.78

SURROGATES	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
Tripentyltin	44.297	20.8	47.0	30 - 160	
Tripropyltin	42.893	22.9	53.4	30 - 160	

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100505.D

Date : 05-OCT-2019 14:33

Client ID:

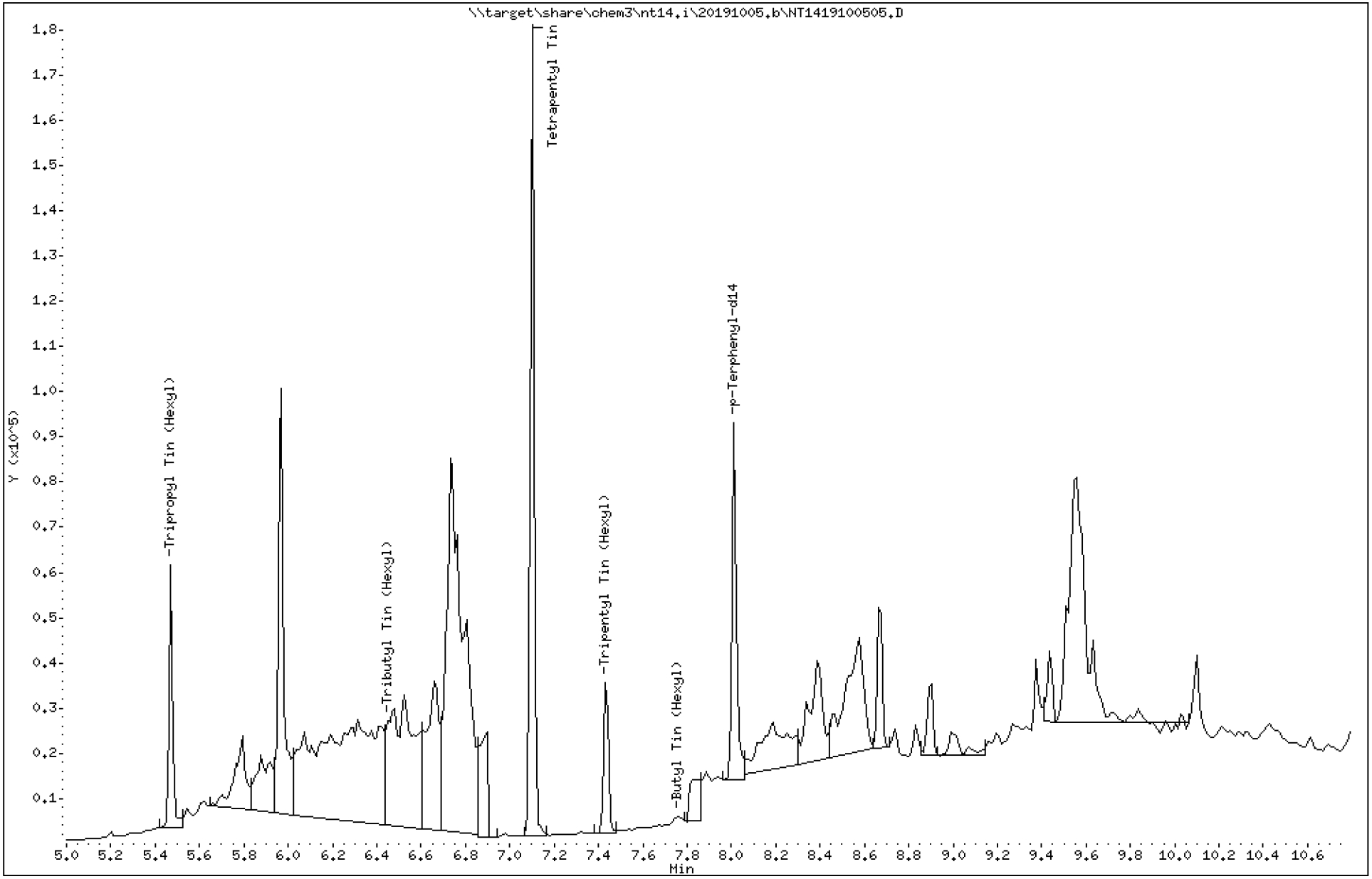
Sample Info: 19I0422-01

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100505.D

Date : 05-OCT-2019 14:33

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-01

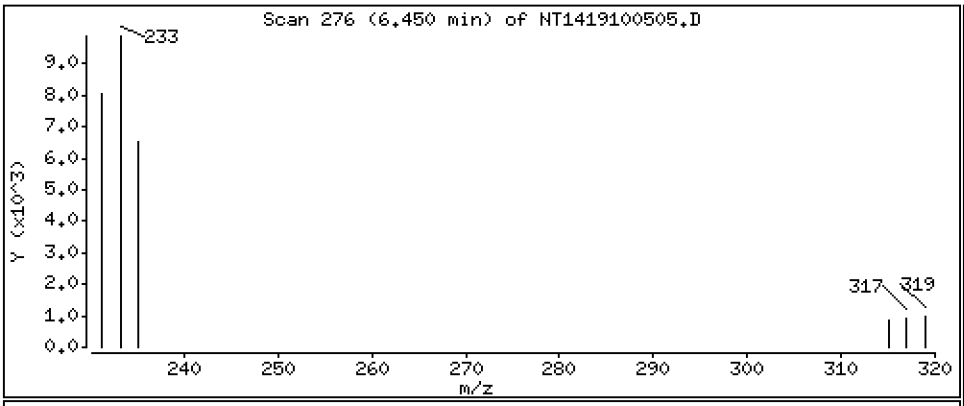
Operator: VTS

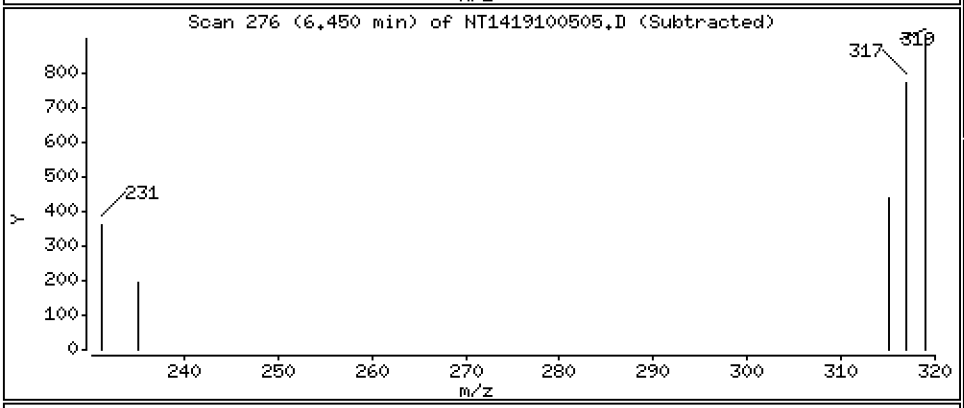
Column phase: ZB-5msi

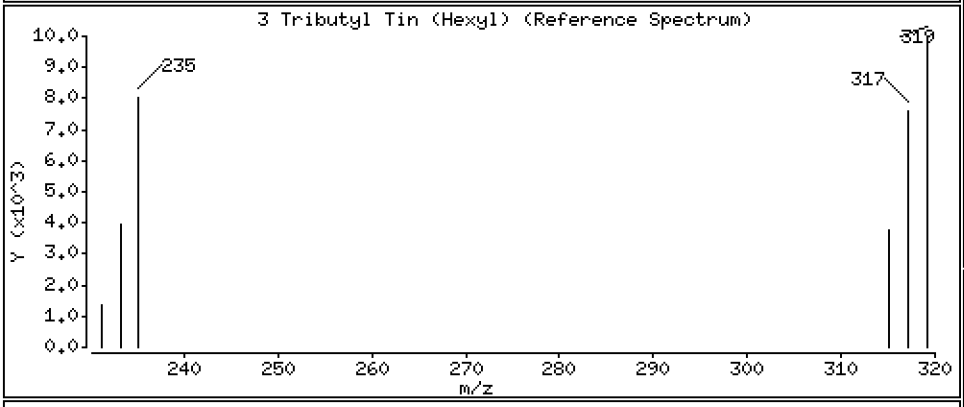
Column diameter: 0.25

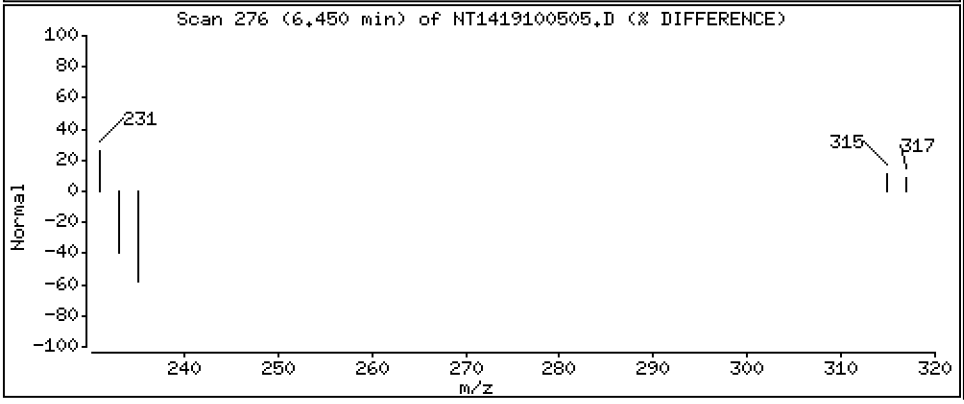
3 Tributyl Tin (Hexyl)

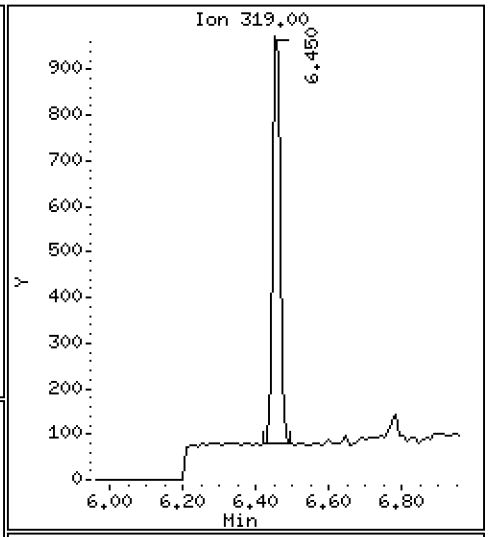
Concentration: 0.01645 ug/mL

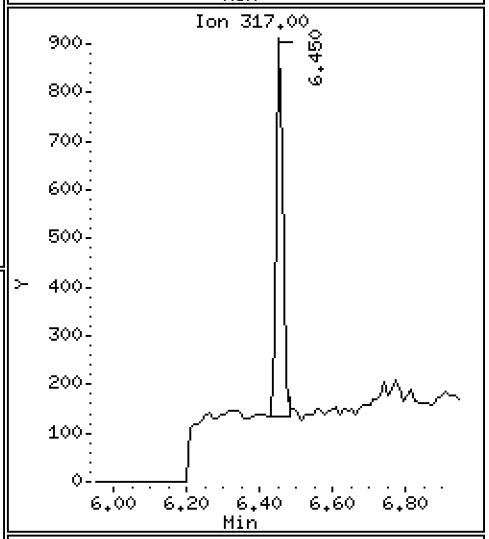


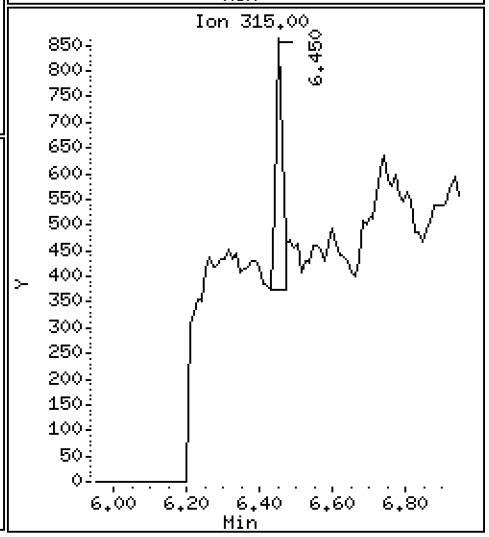












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100505.D

Date : 05-OCT-2019 14:33

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-01

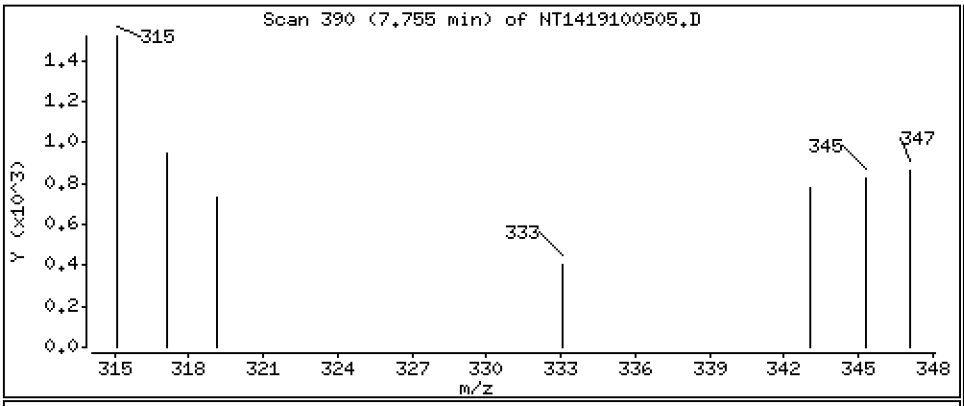
Operator: VTS

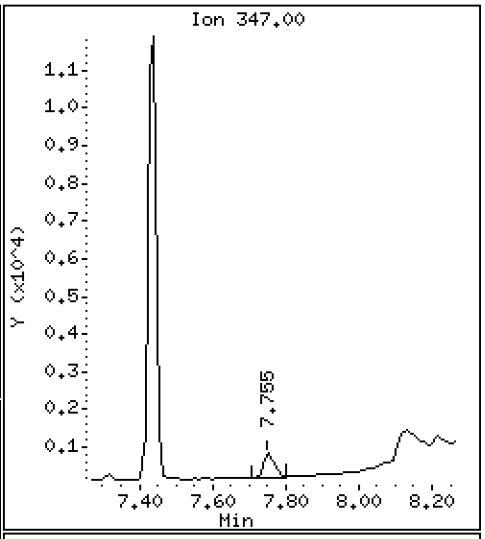
Column phase: ZB-5msi

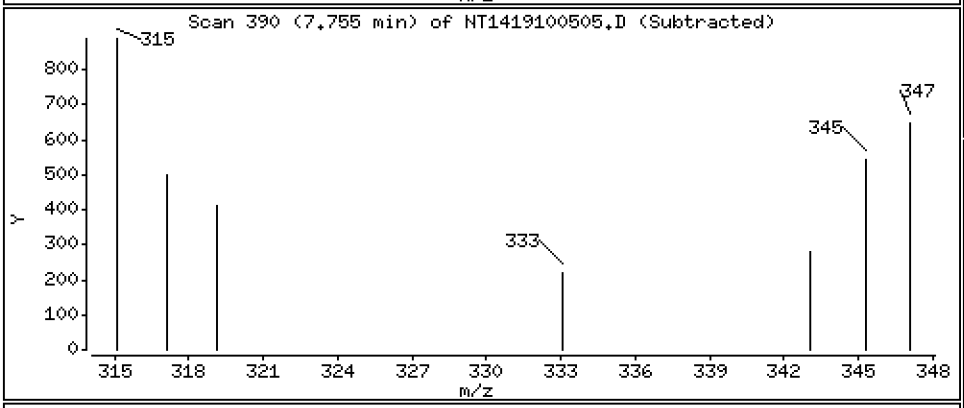
Column diameter: 0.25

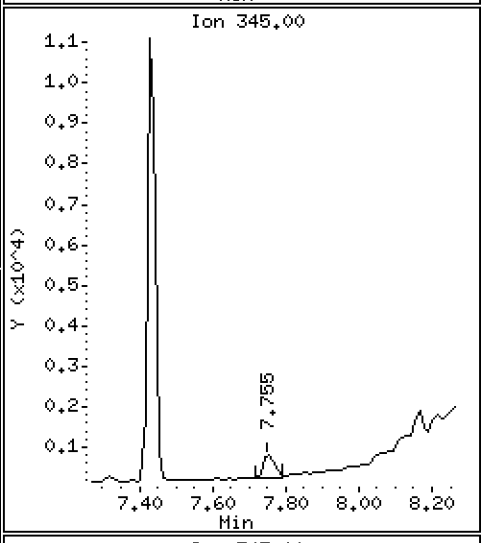
7 Butyl Tin (Hexyl)

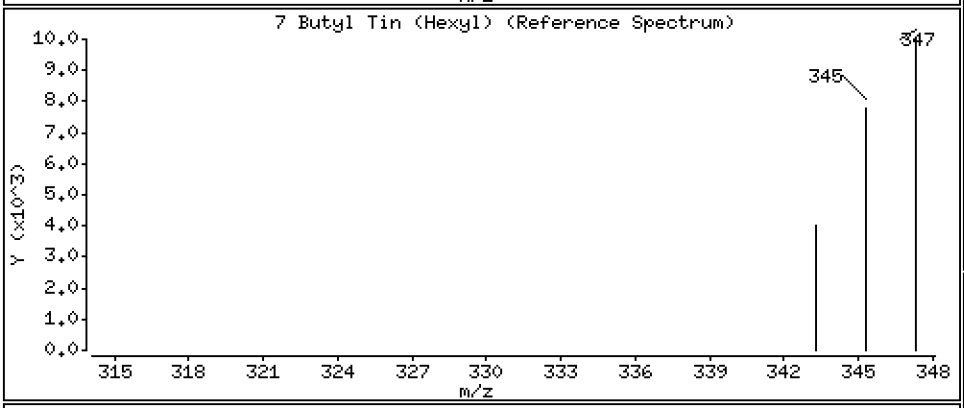
Concentration: 0.02048 ug/mL

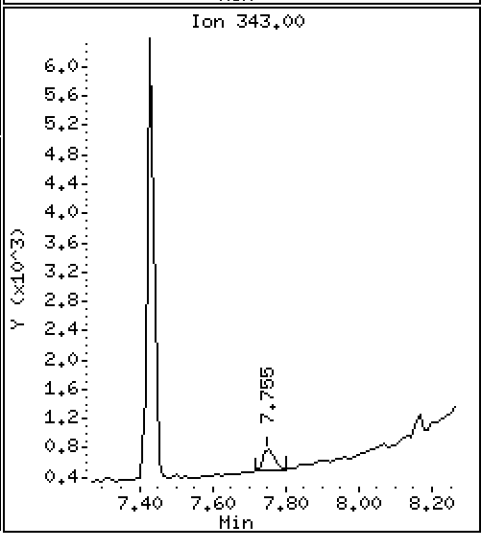


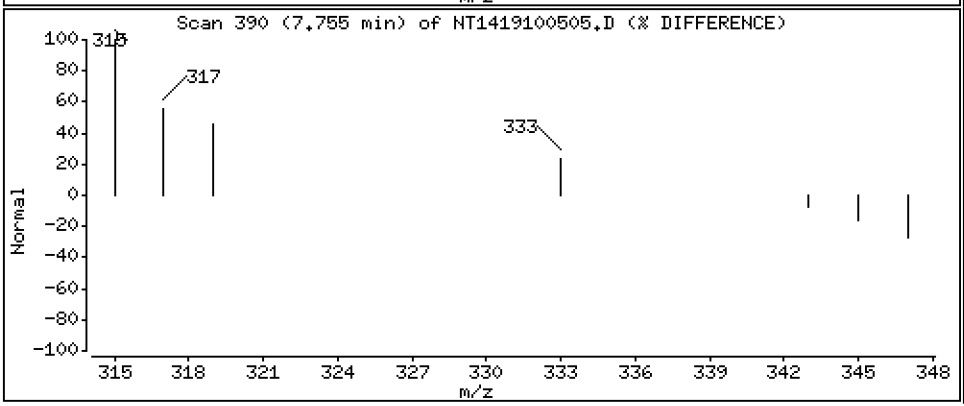












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100505.D
Lab Smp Id: 19I0422-01
Inj Date : 05-OCT-2019 14:33 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : 19I0422-01
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	27425	0.31361	0.3136
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	6.450	6.460	(0.908)	1269	0.01645	0.01645
*	4 Tetrapentyl Tin	333	7.101	7.101	(1.000)	215992	2.00000	
	5 Dibutyl Tin (Hexyl)	347	Compound Not Detected.					
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	18132	0.26703	0.2670
	7 Butyl Tin (Hexyl)	347	7.754	7.766	(0.968)	1527	0.02048	0.02048
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	103277	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100505.D
Lab Smp Id: 19I0422-01
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	215992	4.70
8 p-Terphenyl-d14	96182	48091	192364	103277	7.38

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100505.D

Lab ID: 19I0422-01
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 14:33

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100502.D

On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

PDI-104SG-00-01-190924

Form I
ORGANIC ANALYSIS DATA SHEET
EPA 8270D-SIM
Butyl Tins

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-02 A	SDG:	19I0422
Sampled:	09/24/19 14:45	Prepared:	10/03/19 14:05	File ID:	NT1419100508.D
% Solids:	39.26	Preparation:	EPA 3546 (Microwave)	Analyzed:	10/05/19 15:13
Batch:	BHJ0094	Sequence:	SHJ0100	Initial/Final:	12.97 g Wet / 0.5 mL
Instrument:	NT14	Column:	ZB-5MS	Calibration:	CJ00005
Cleanups:	Silica Gel				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg dry)	Q	DL	RL
36643-28-4	Tributyltin Ion	1	2.01	J	0.442	3.79

SURROGATES	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
Tripentyltin	44.367	22.4	50.5	30 - 160	
Tripropyltin	42.961	26.9	62.7	30 - 160	

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100508.D

Date : 05-OCT-2019 15:13

Client ID:

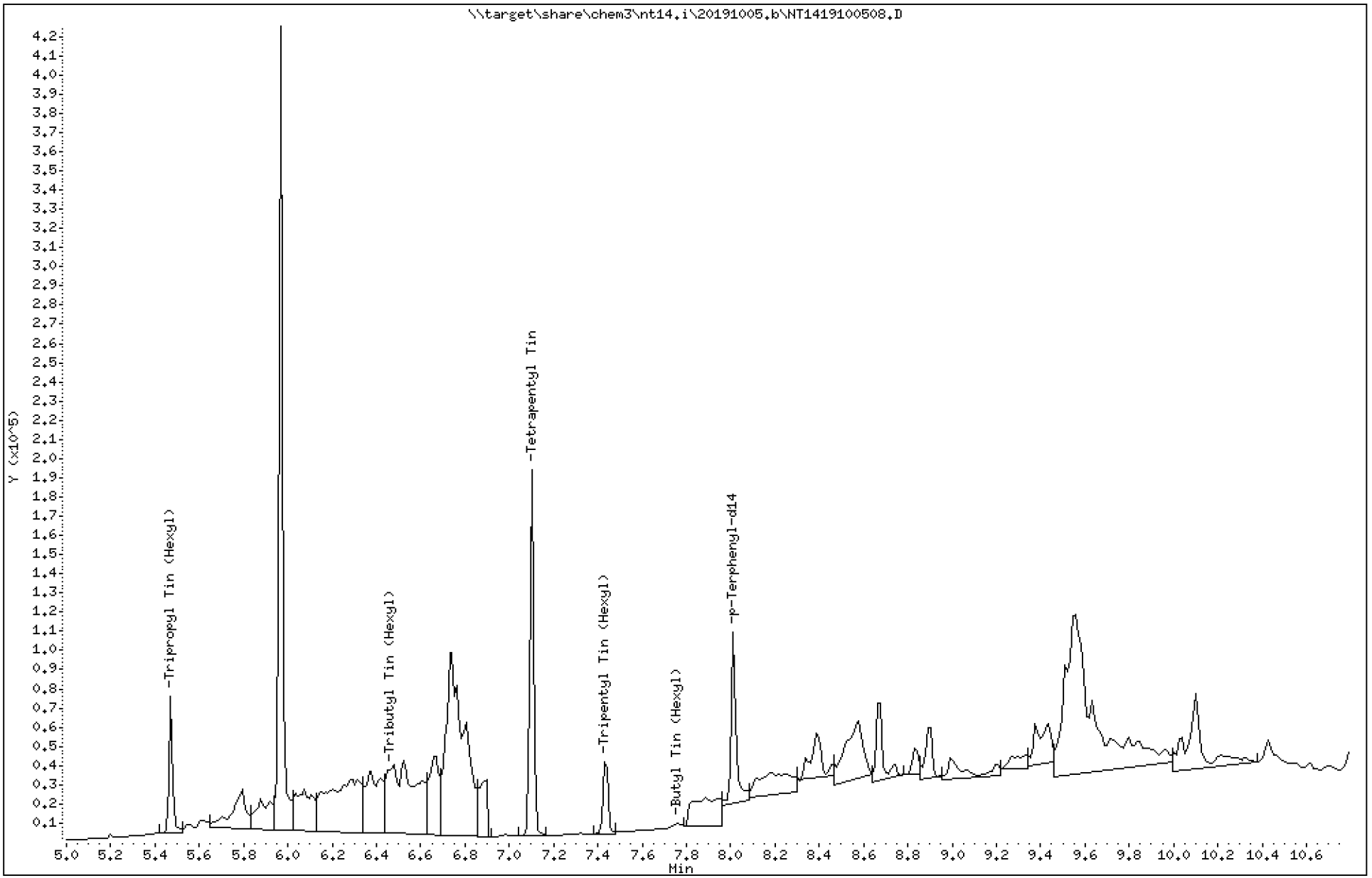
Sample Info: 19I0422-02

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100508.D

Date : 05-OCT-2019 15:13

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-02

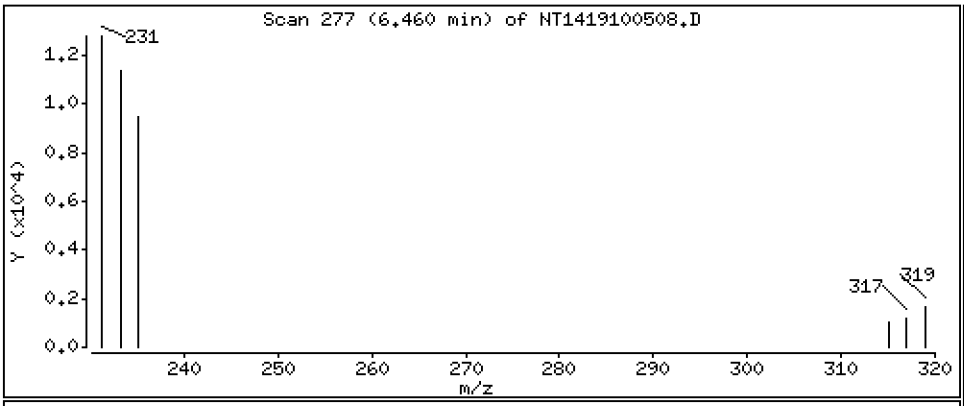
Operator: VTS

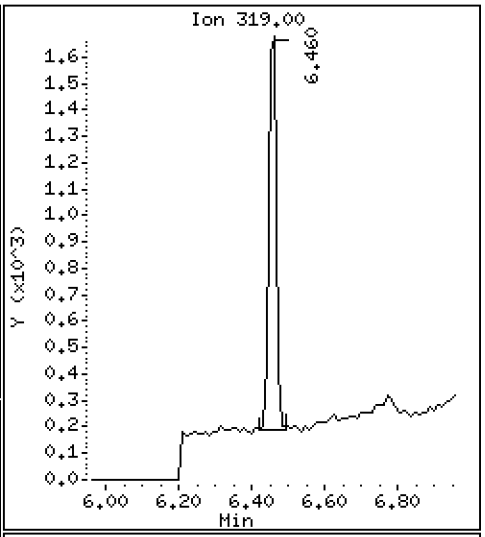
Column phase: ZB-5msi

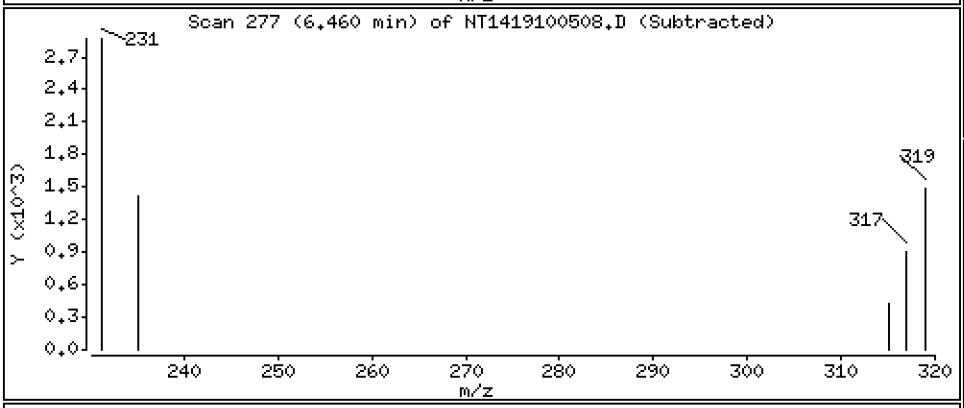
Column diameter: 0.25

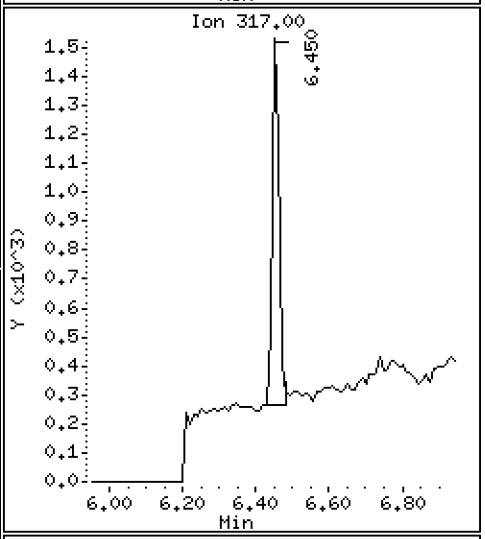
3 Tributyl Tin (Hexyl)

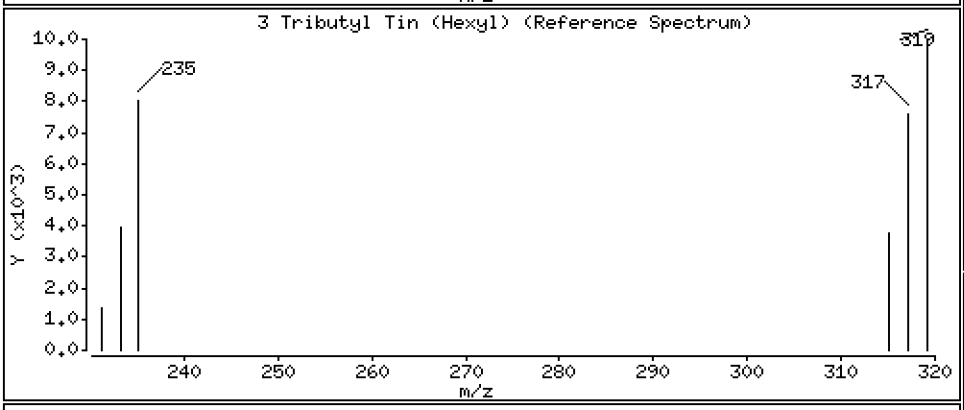
Concentration: 0.02653 ug/mL

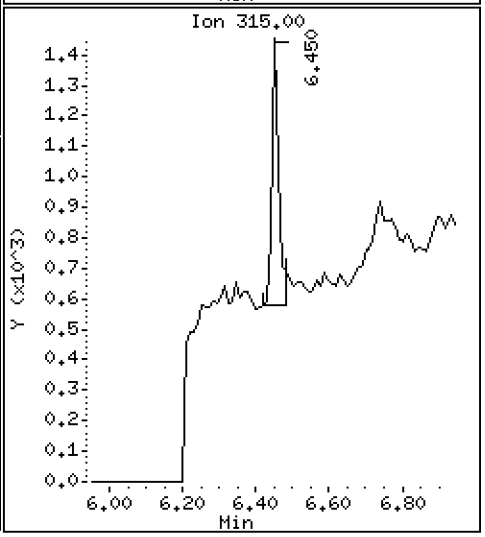


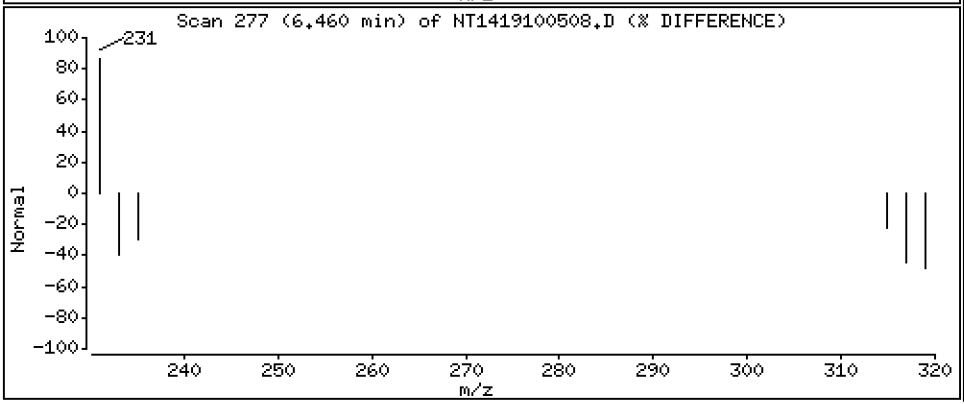












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100508.D

Date : 05-OCT-2019 15:13

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-02

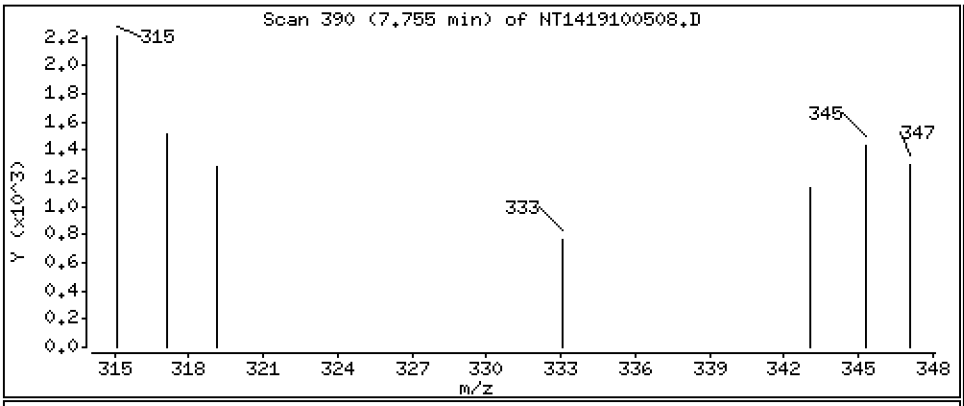
Operator: VTS

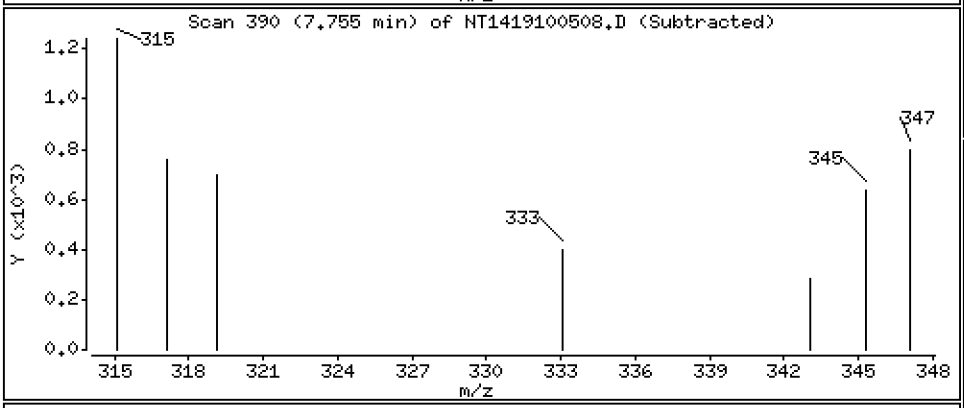
Column phase: ZB-5msi

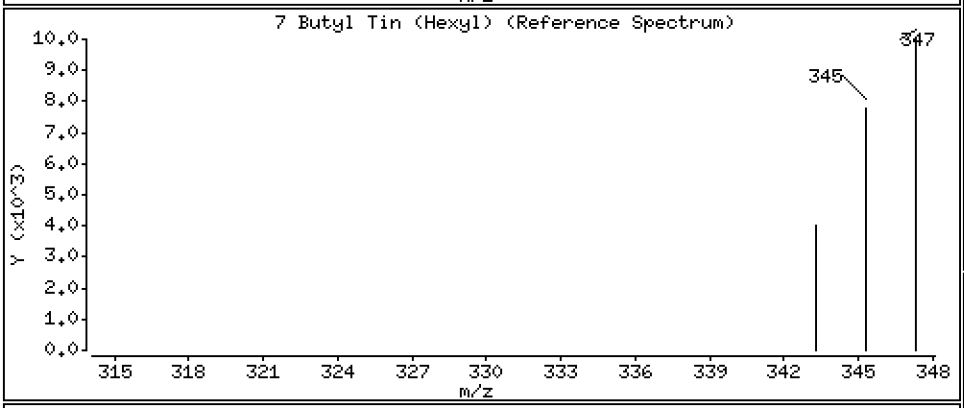
Column diameter: 0.25

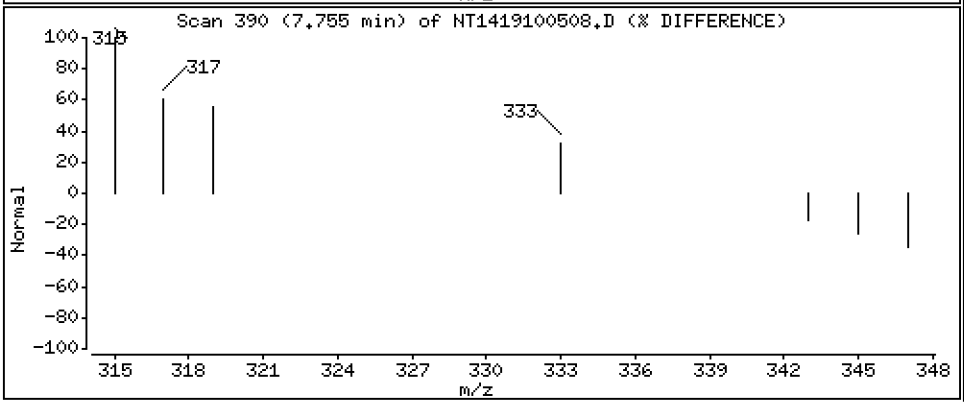
7 Butyl Tin (Hexyl)

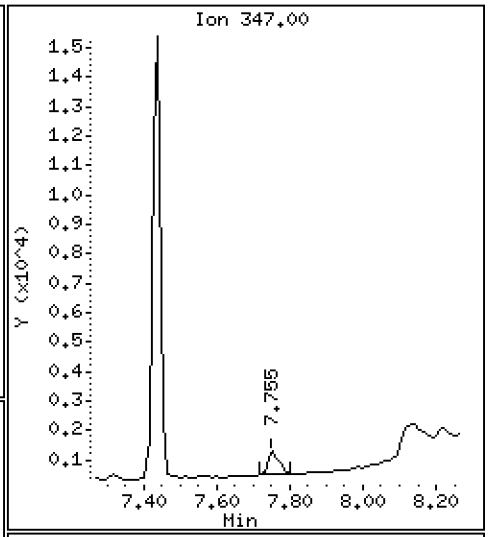
Concentration: 0.02154 ug/mL

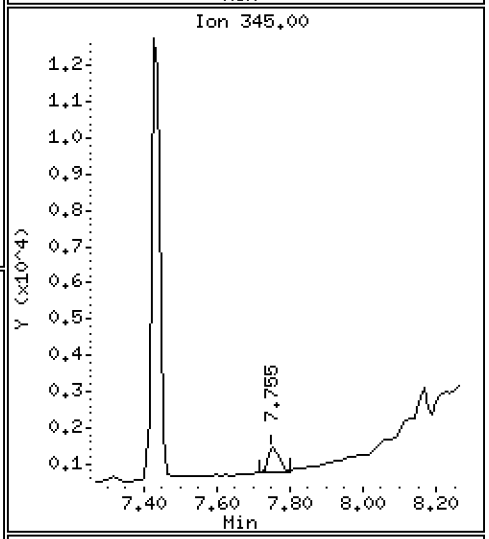


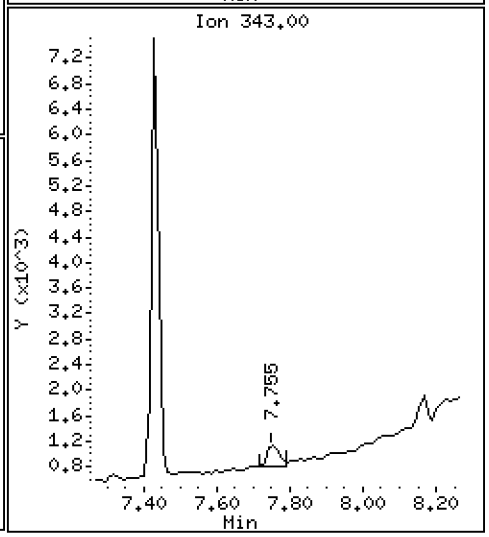












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100508.D
Lab Smp Id: 19I0422-02
Inj Date : 05-OCT-2019 15:13 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : 19I0422-02
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	CONCENTRATIONS FINAL (ug/mL)	
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	33757	0.36865	0.3686	
	2 Tetrabutyl Tin	289	Compound Not Detected.						
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	2143	0.02653	0.02653	
*	4 Tetrapentyl Tin	333	7.101	7.101	(1.000)	226169	2.00000		
	5 Dibutyl Tin (Hexyl)	347	Compound Not Detected.						
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	21746	0.28685	0.2868	
	7 Butyl Tin (Hexyl)	347	7.754	7.766	(0.968)	1793	0.02154	0.02154	
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	115306	0.20000		(M)

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100508.D
Lab Smp Id: 19I0422-02
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	226169	9.63
8 p-Terphenyl-d14	96182	48091	192364	115306	19.88

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100508.D

Lab ID: 19I0422-02
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 15:13

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

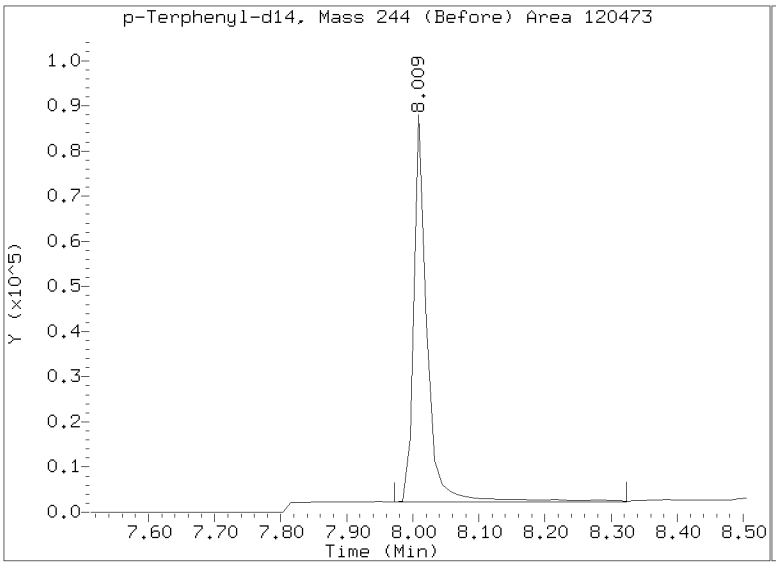
RRT check based on Ccal File: NT1419100502.D

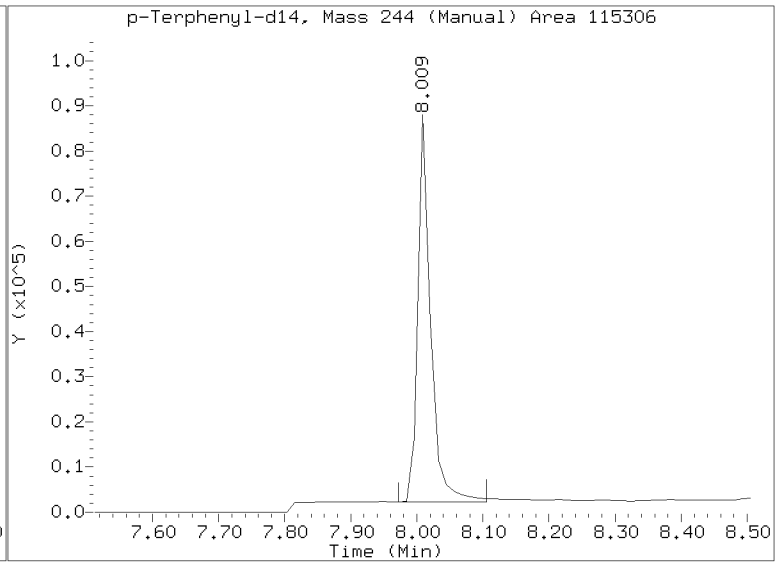
On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt14.i/20191005.b/NT1419100508.D
Injection Date: 05-OCT-2019 15:13
Lab ID:19I0422-02 Client ID:
Report Date: 10/08/2019 08:23





PDI-105SG-00-0.99-190924

Form I
ORGANIC ANALYSIS DATA SHEET
EPA 8270D-SIM
Butyl Tins

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-03 A	SDG:	19I0422
Sampled:	09/24/19 14:00	Prepared:	10/03/19 14:05	File ID:	NT1419100509.D
% Solids:	44.08	Preparation:	EPA 3546 (Microwave)	Analyzed:	10/05/19 15:27
Batch:	BHJ0094	Sequence:	SHJ0100	Initial/Final:	11.43 g Wet / 0.5 mL
Instrument:	NT14	Column:	ZB-5MS	Calibration:	CJ00005
Cleanups:	Silica Gel				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg dry)	Q	DL	RL
36643-28-4	Tributyltin Ion	1	1.79	J	0.447	3.83

SURROGATES	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
Tripentyltin	44.833	22.7	50.6	30 - 160	
Tripropyltin	43.412	26.9	62.0	30 - 160	

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100509.D

Date : 05-OCT-2019 15:27

Client ID:

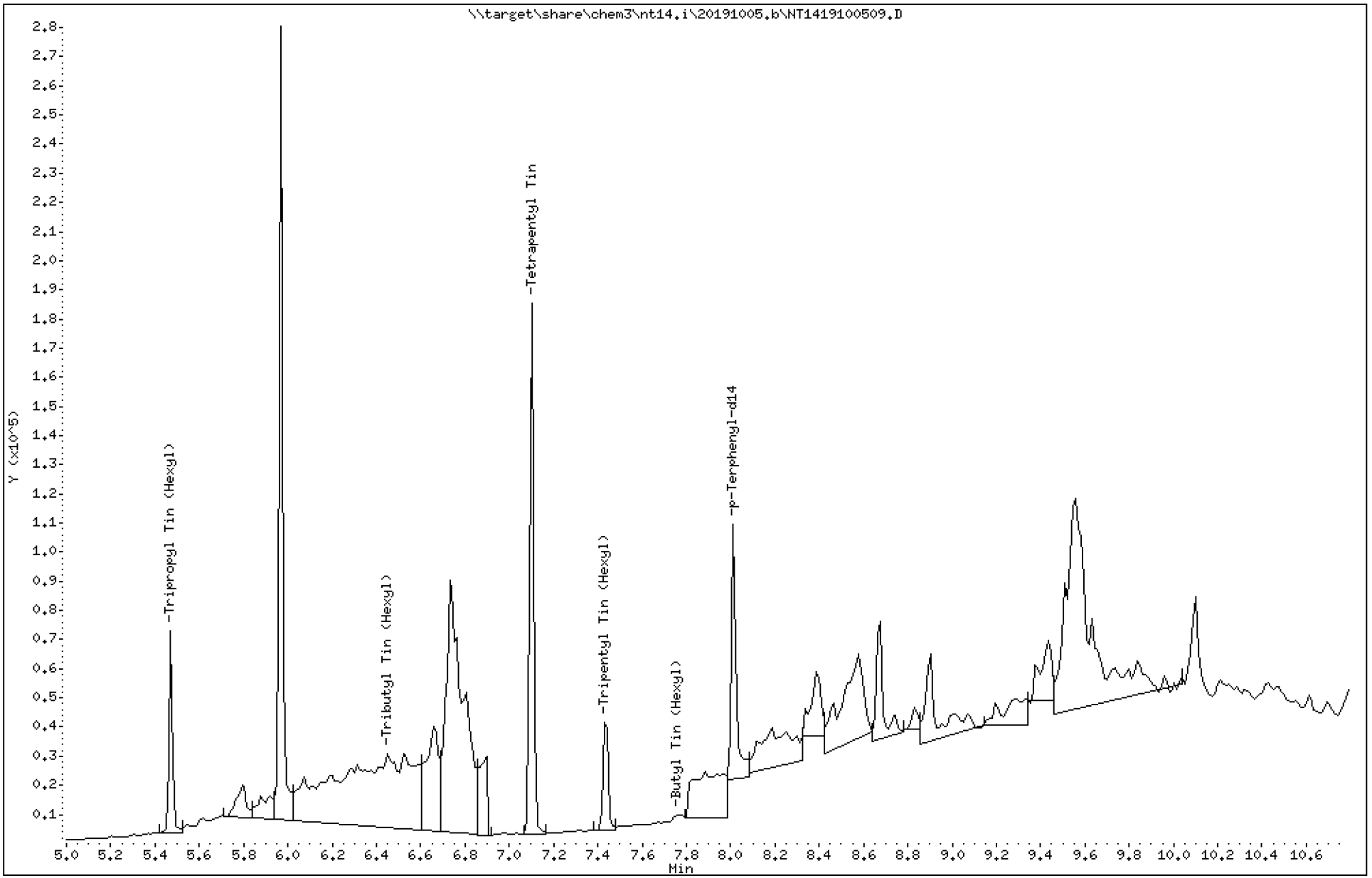
Sample Info: 19I0422-03

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100509.D

Date : 05-OCT-2019 15:27

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-03

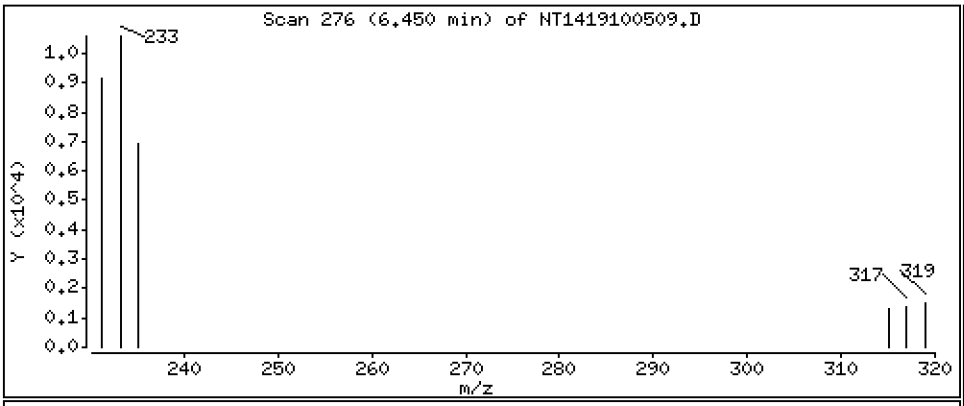
Operator: VTS

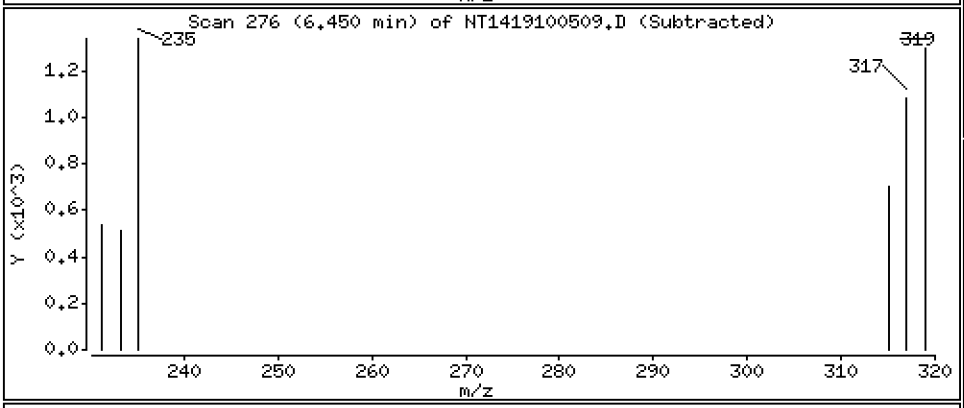
Column phase: ZB-5msi

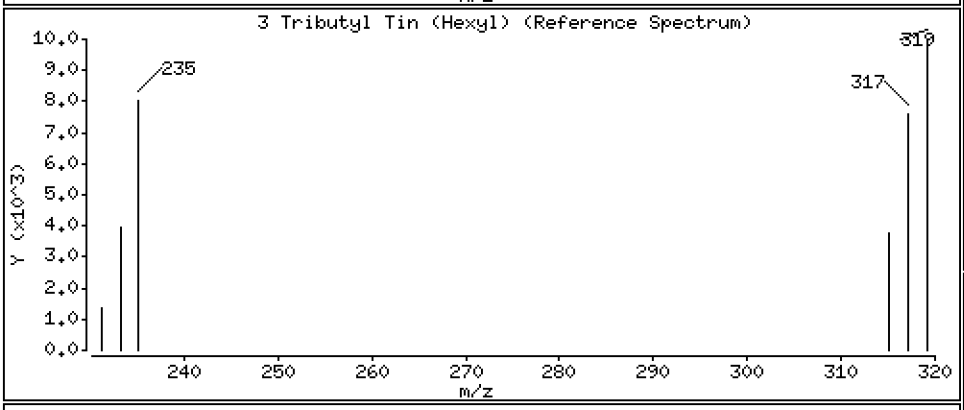
Column diameter: 0.25

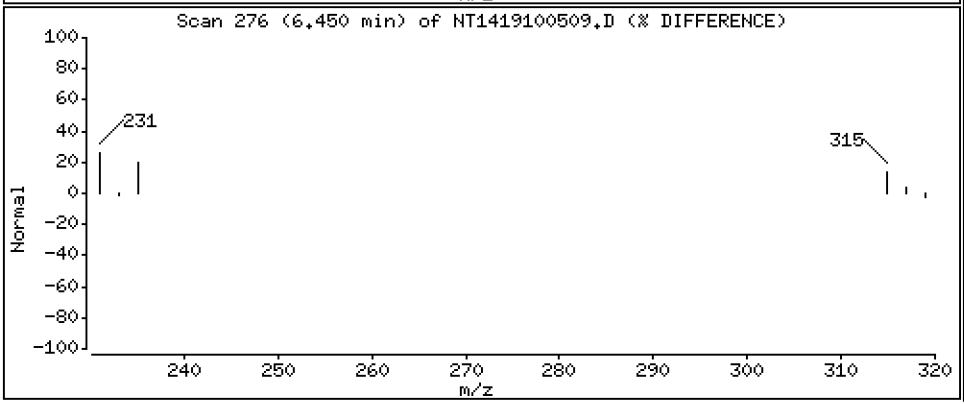
3 Tributyl Tin (Hexyl)

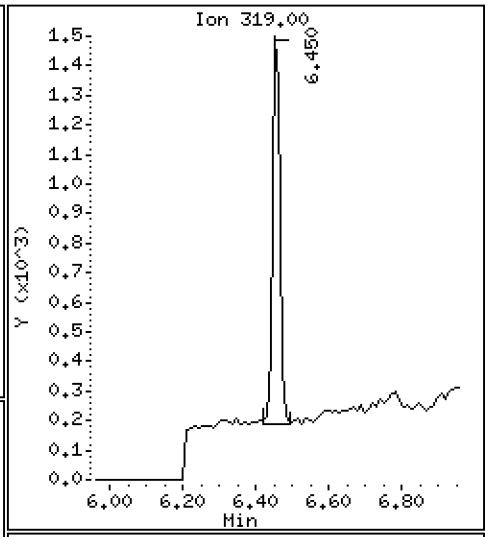
Concentration: 0.02327 ug/mL

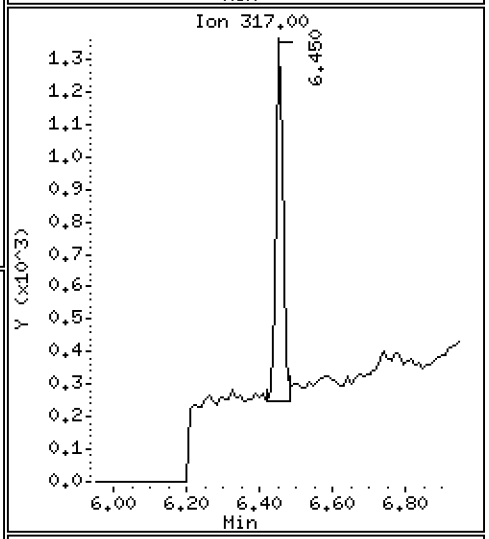


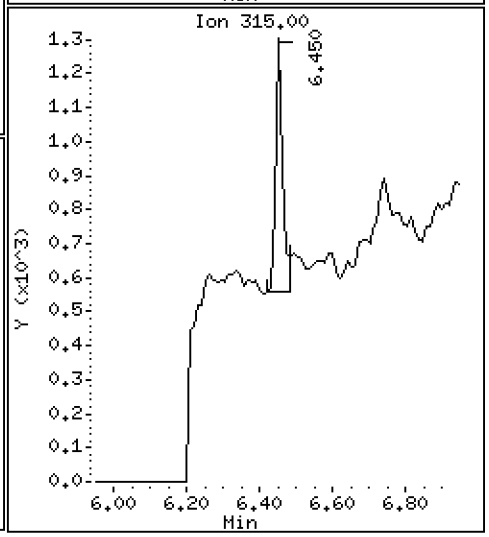












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100509.D

Date : 05-OCT-2019 15:27

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-03

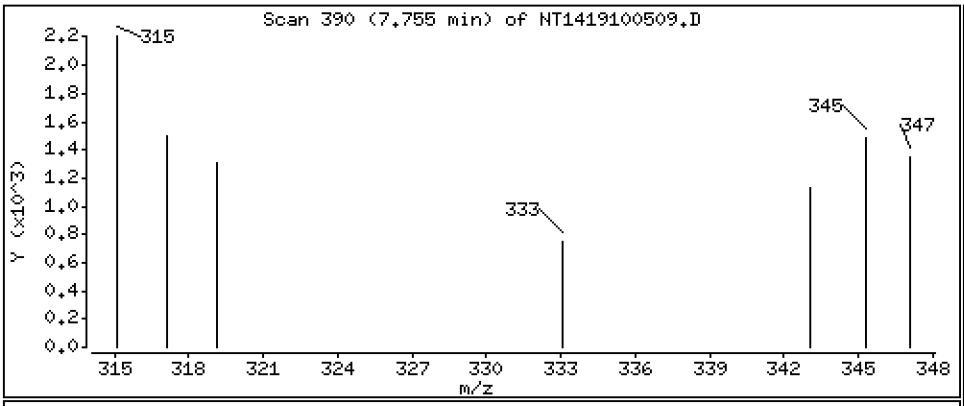
Operator: VTS

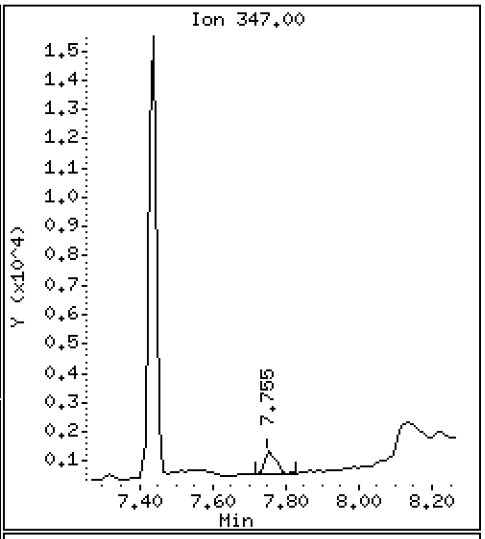
Column phase: ZB-5msi

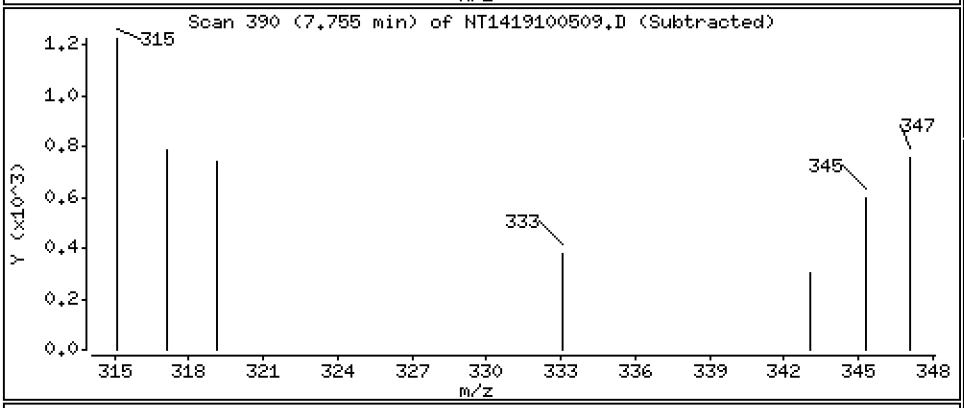
Column diameter: 0.25

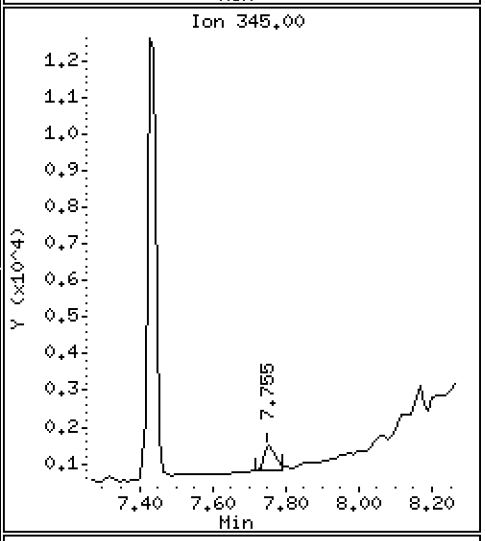
7 Butyl Tin (Hexyl)

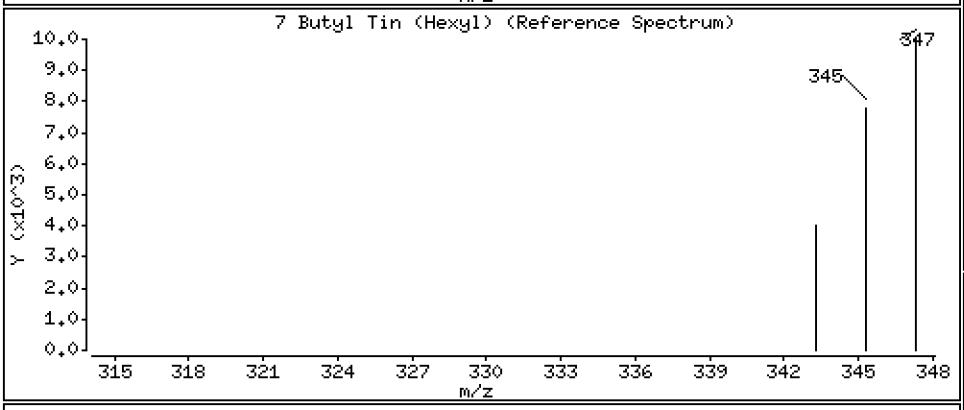
Concentration: 0.01971 ug/mL

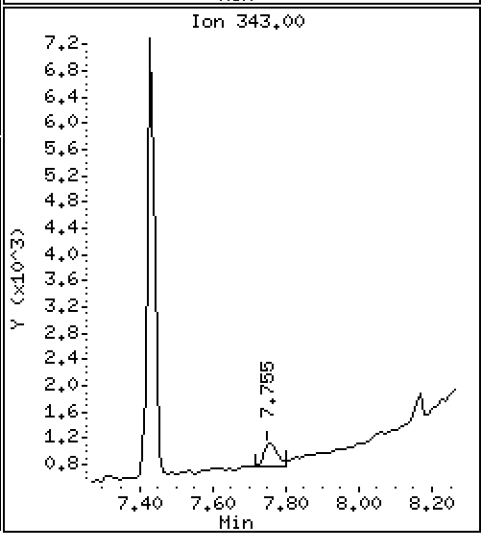


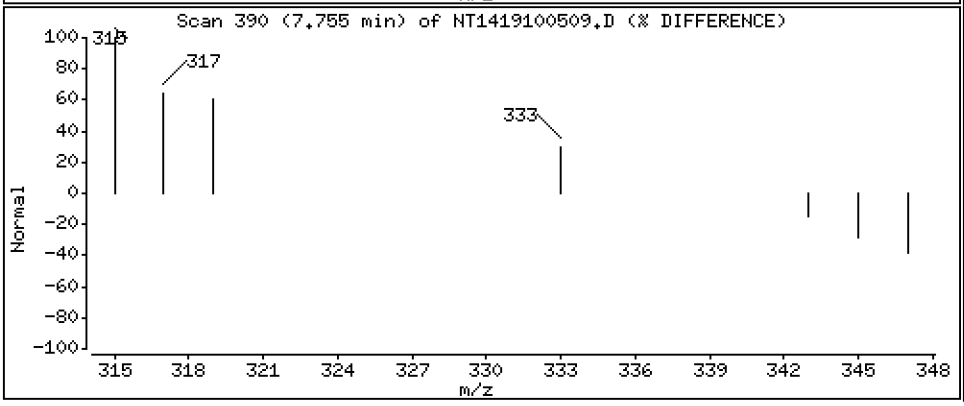












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100509.D
Lab Smp Id: 19I0422-03
Inj Date : 05-OCT-2019 15:27 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : 19I0422-03
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	32693	0.36467	0.3647
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	6.450	6.460	(0.908)	1840	0.02327	0.02327
*	4 Tetrapentyl Tin	333	7.102	7.101	(1.000)	221430	2.00000	
	5 Dibutyl Tin (Hexyl)	347	Compound Not Detected.					
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	21690	0.28726	0.2873
	7 Butyl Tin (Hexyl)	347	7.754	7.766	(0.968)	1634	0.01971	0.01971
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	114842	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100509.D
Lab Smp Id: 19I0422-03
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	221430	7.34
8 p-Terphenyl-d14	96182	48091	192364	114842	19.40

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100509.D

Lab ID: 19I0422-03
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 15:27

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100502.D

On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

PDI-106SG-00-01-190924

Form I
ORGANIC ANALYSIS DATA SHEET
EPA 8270D-SIM
Butyl Tins

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-04 A	SDG:	19I0422
Sampled:	09/24/19 15:05	Prepared:	10/03/19 14:05	File ID:	NT1419100510.D
% Solids:	39.95	Preparation:	EPA 3546 (Microwave)	Analyzed:	10/05/19 15:40
Batch:	BHJ0094	Sequence:	SHJ0100	Initial/Final:	12.7 g Wet / 0.5 mL
Instrument:	NT14	Column:	ZB-5MS	Calibration:	CJ00005
Cleanups:	Silica Gel				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg dry)	Q	DL	RL
36643-28-4	Tributyltin Ion	1	1.85	J	0.443	3.80

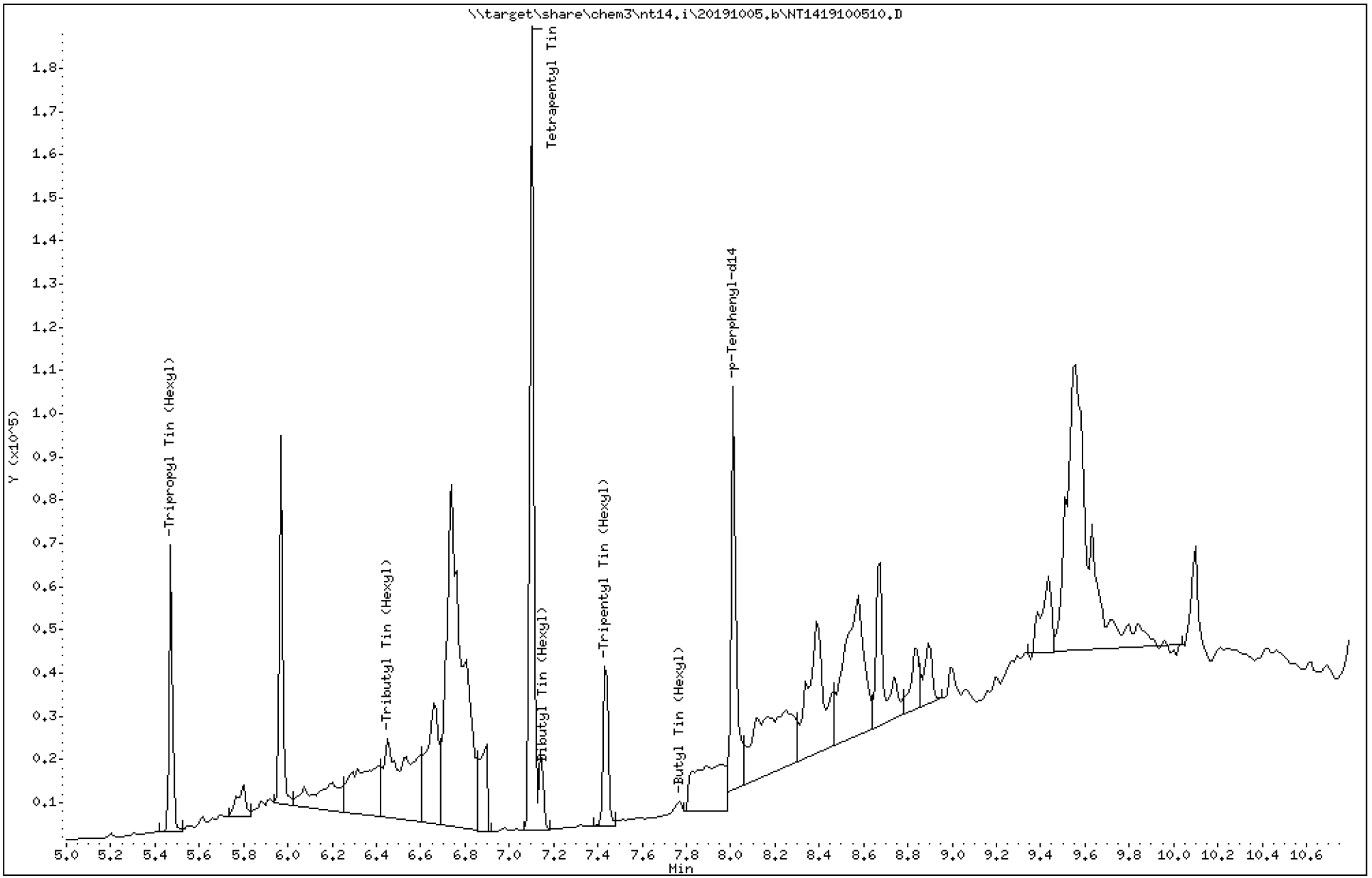
SURROGATES	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
Tripentyltin	44.520	22.2	49.8	30 - 160	
Tripropyltin	43.109	25.3	58.7	30 - 160	

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100510.D
Date : 05-OCT-2019 15:40
Client ID:
Sample Info: 19I0422-04

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS
Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100510.D

Date : 05-OCT-2019 15:40

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-04

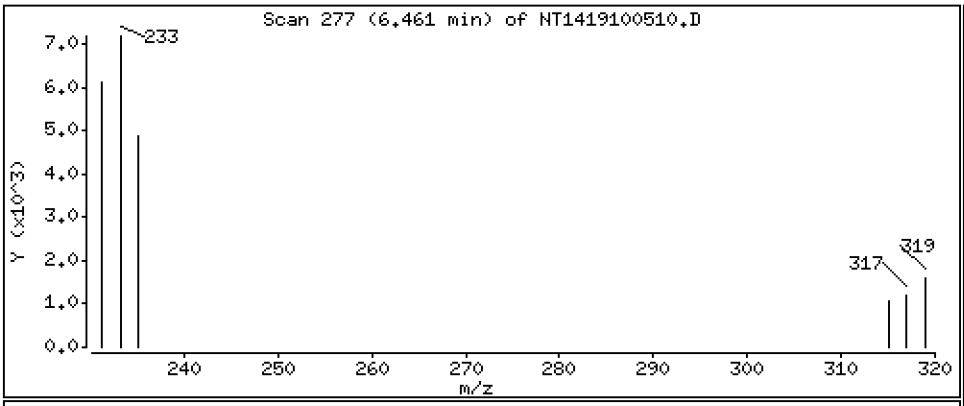
Operator: VTS

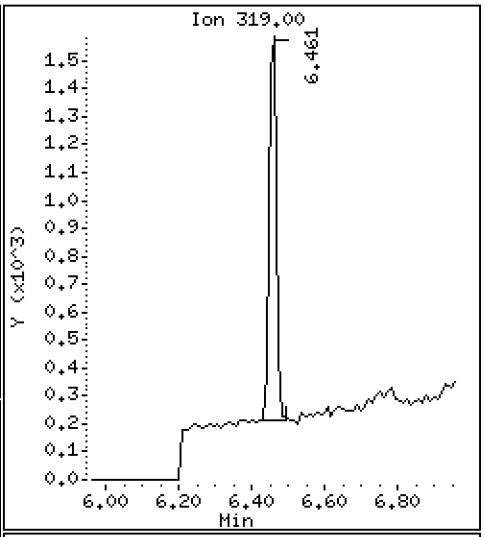
Column phase: ZB-5msi

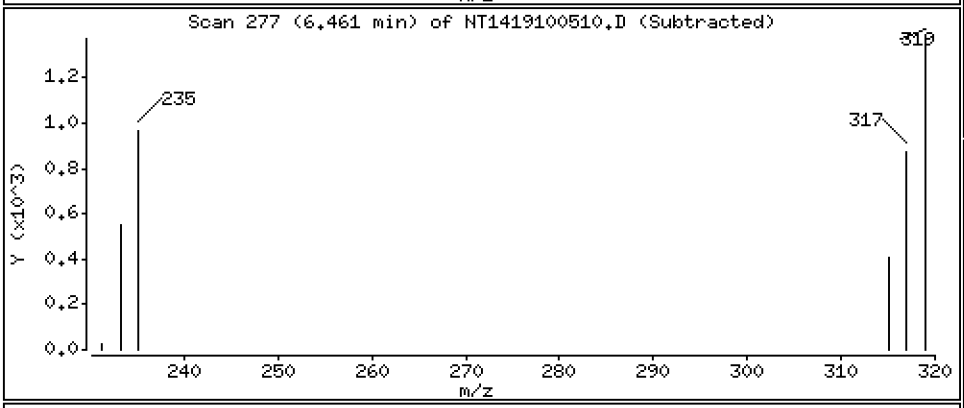
Column diameter: 0.25

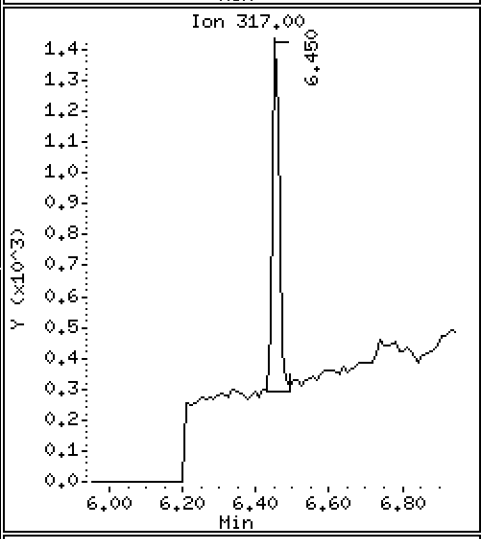
3 Tributyl Tin (Hexyl)

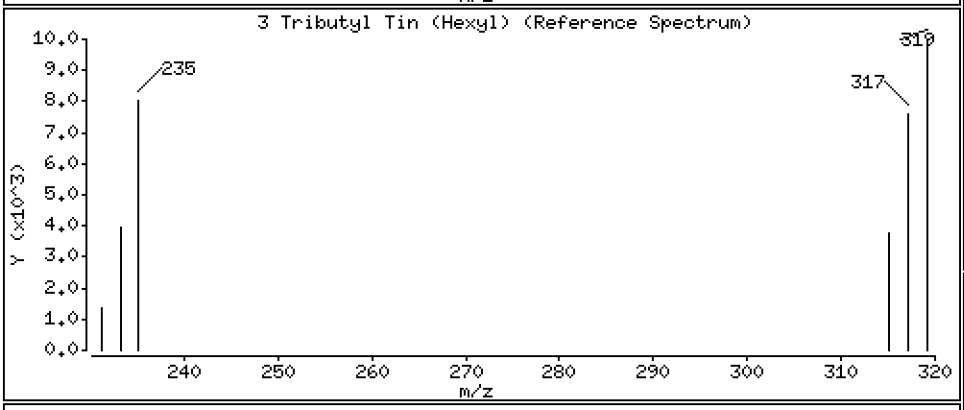
Concentration: 0.02425 ug/mL

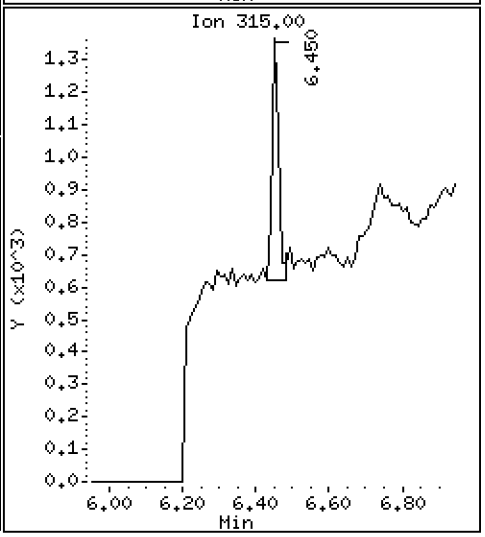


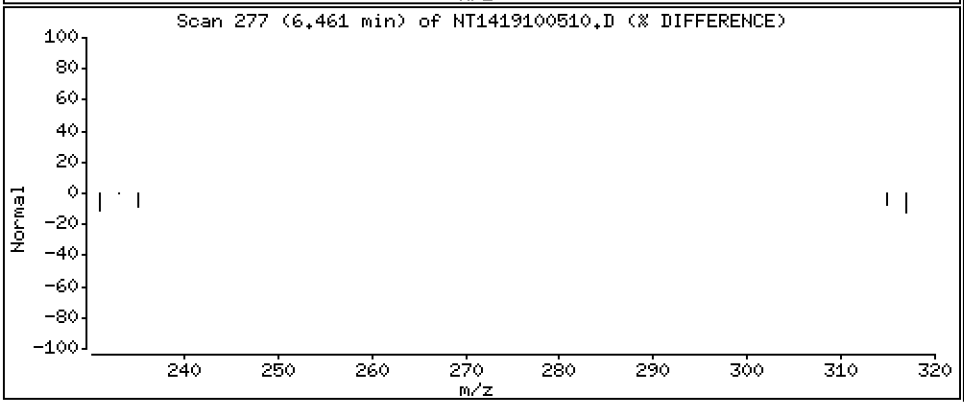












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100510.D

Date : 05-OCT-2019 15:40

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-04

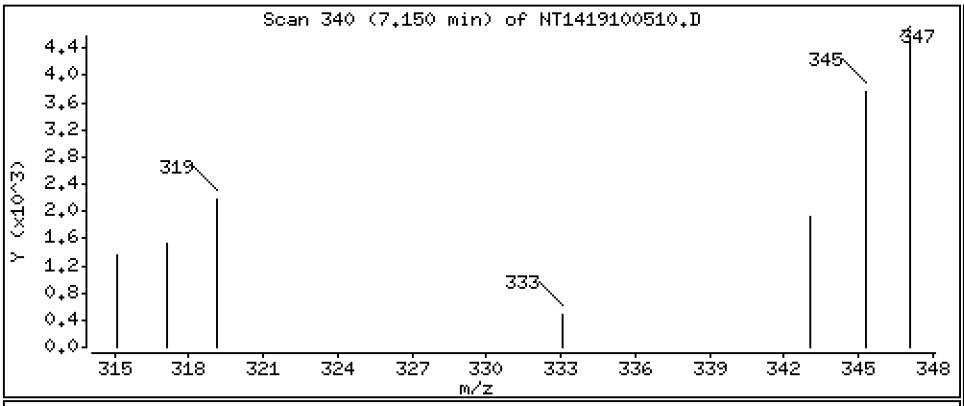
Operator: VTS

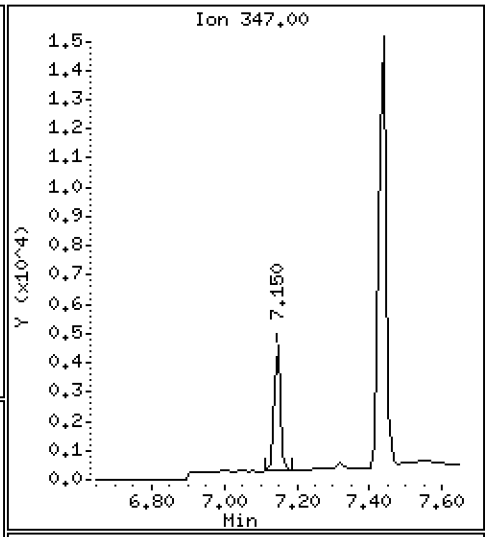
Column phase: ZB-5msi

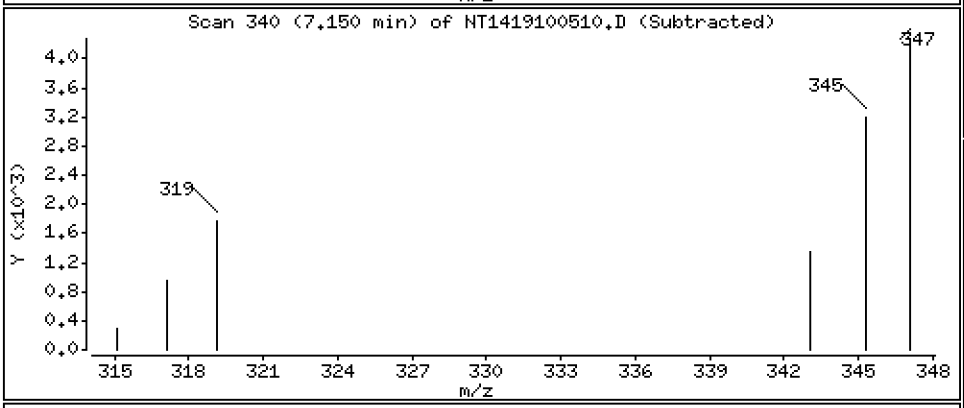
Column diameter: 0.25

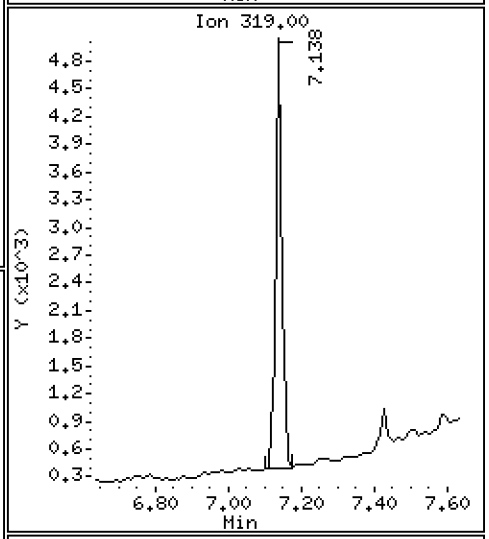
5 Dibutyl Tin (Hexyl)

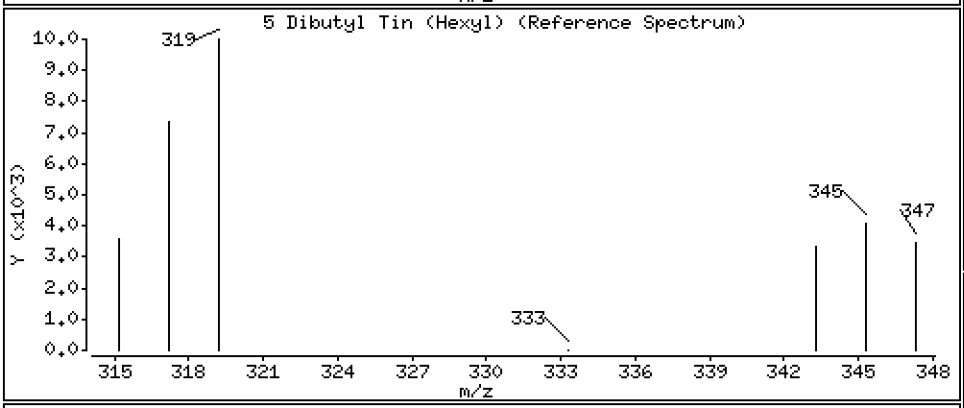
Concentration: 0.1074 ug/mL

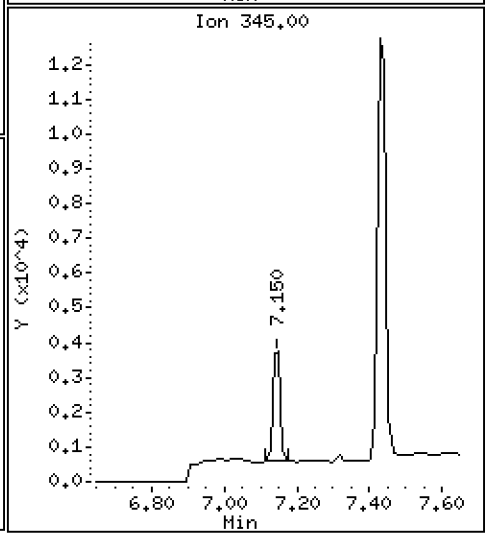


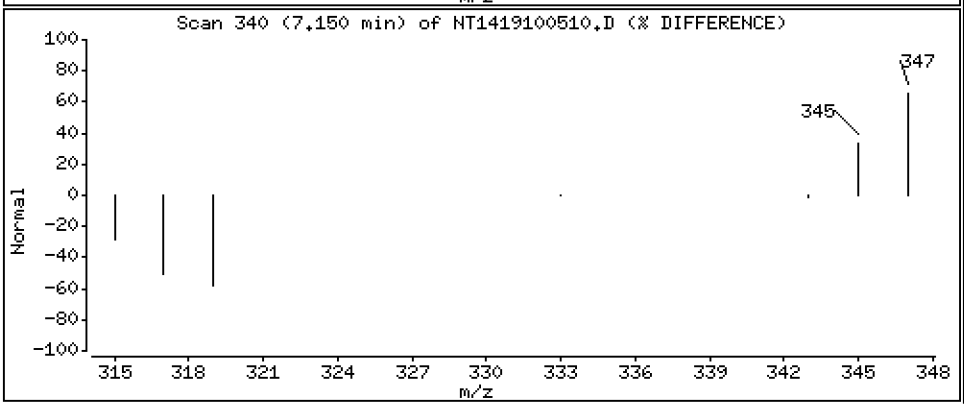












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100510.D

Date : 05-OCT-2019 15:40

Client ID:

Instrument: nt14.i

Sample Info: 19I0422-04

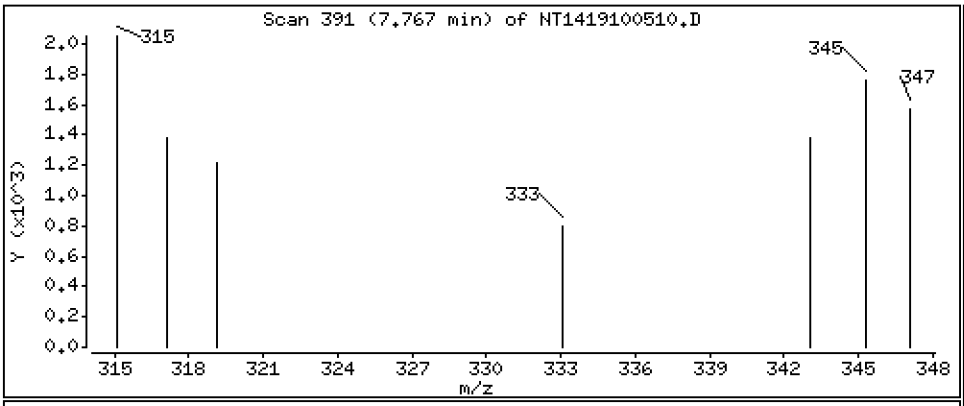
Operator: VTS

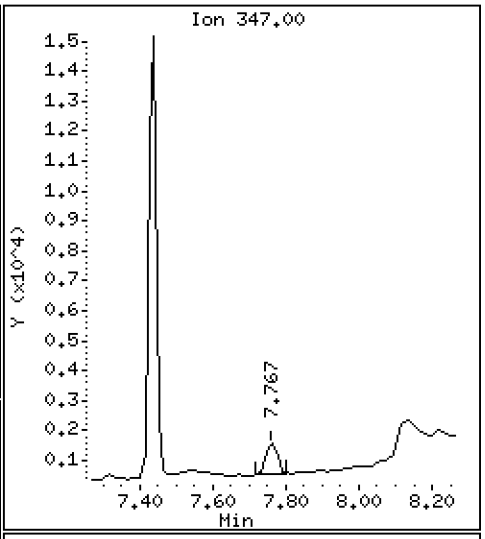
Column phase: ZB-5msi

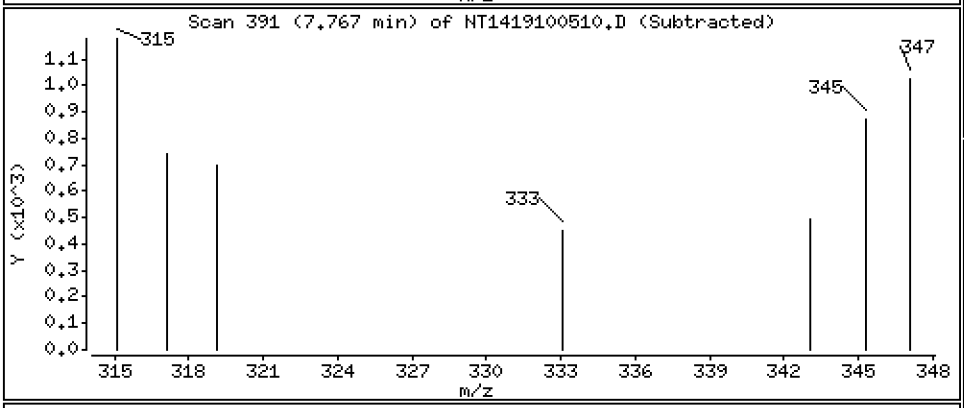
Column diameter: 0.25

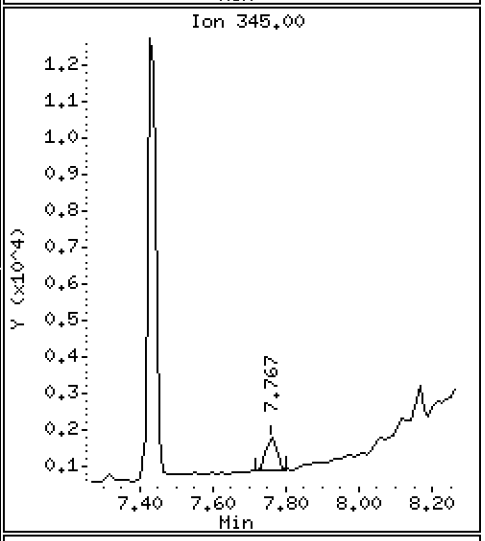
7 Butyl Tin (Hexyl)

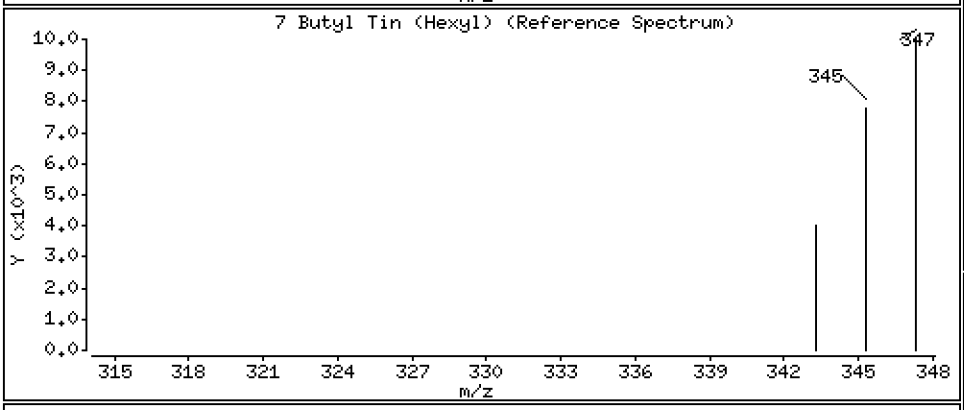
Concentration: 0.02833 ug/mL

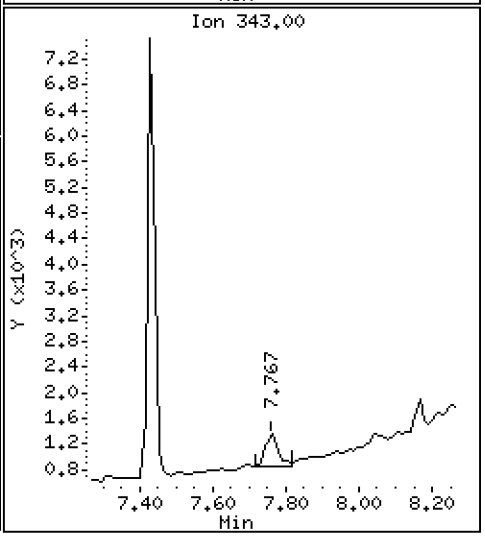


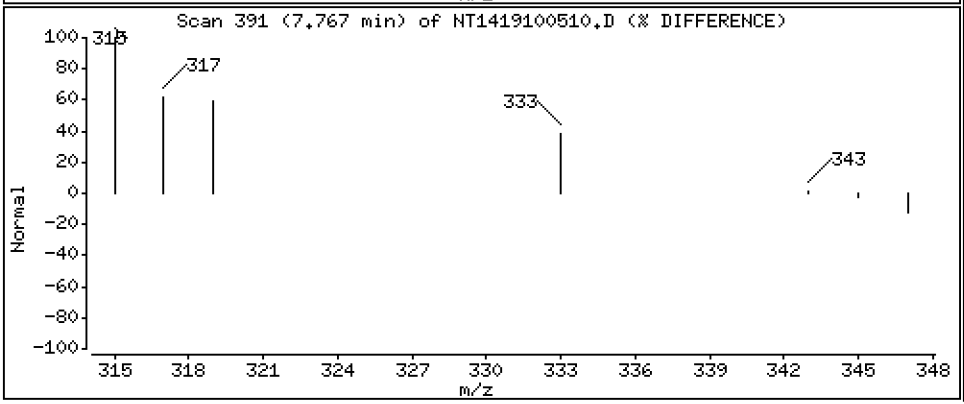












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100510.D
Lab Smp Id: 19I0422-04
Inj Date : 05-OCT-2019 15:40 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : 19I0422-04
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	30833	0.34516	0.3452
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	1911	0.02425	0.02425
*	4 Tetrapentyl Tin	333	7.101	7.101	(1.000)	220637	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	5807	0.10741	0.1074
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	21058	0.28259	0.2826
	7 Butyl Tin (Hexyl)	347	7.766	7.766	(0.970)	2318	0.02833	0.02833
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	113338	0.20000	(M)

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100510.D
Lab Smp Id: 19I0422-04
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	220637	6.95
8 p-Terphenyl-d14	96182	48091	192364	113338	17.84

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100510.D

Lab ID: 19I0422-04
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 15:40

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

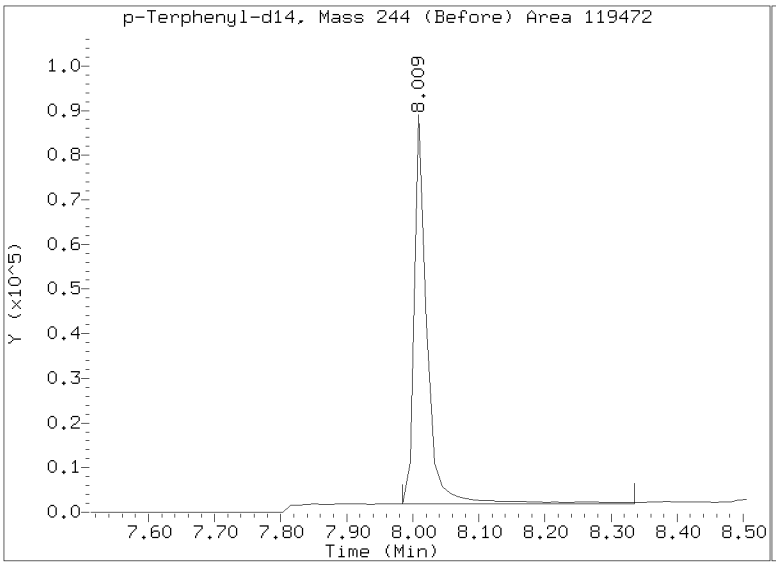
RRT check based on Ccal File: NT1419100502.D

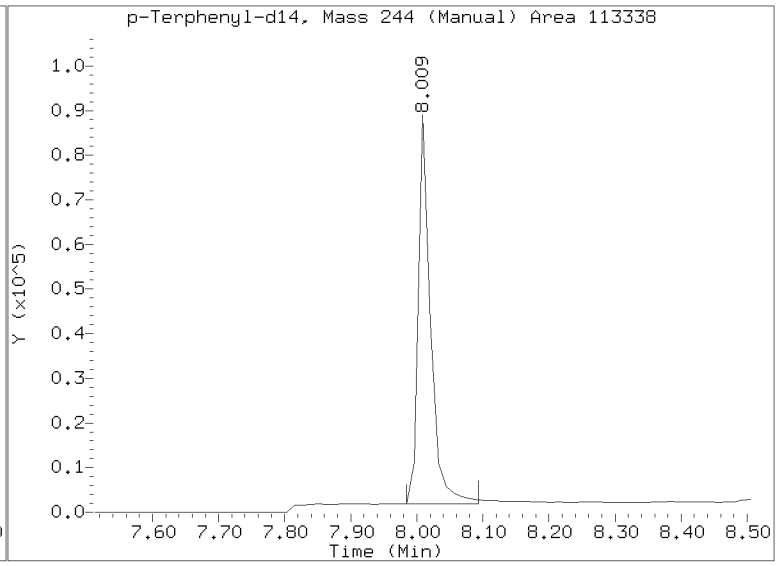
On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt14.i/20191005.b/NT1419100510.D
Injection Date: 05-OCT-2019 15:40
Lab ID:19I0422-04 Client ID:
Report Date: 10/08/2019 08:24





PREPARATION BATCH SUMMARY

EPA 8270D-SIM

Laboratory: Analytical Resources, Inc. SDG: 19I0422

Client: Anchor QEA, LLC Project: Gasco PDI

Batch: BHJ0094 Batch Matrix: Solid Preparation: EPA 3546 (Microwave)

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
PDI-103SG-00-01-190924	19I0422-01	NT1419100505.D	10/03/19 14:05	
PDI-104SG-00-01-190924	19I0422-02	NT1419100508.D	10/03/19 14:05	
PDI-105SG-00-0.99-190924	19I0422-03	NT1419100509.D	10/03/19 14:05	
PDI-106SG-00-01-190924	19I0422-04	NT1419100510.D	10/03/19 14:05	
Blank	BHJ0094-BLK1	NT1419100503.D	10/03/19 14:05	
LCS	BHJ0094-BS1	NT1419100504.D	10/03/19 14:05	
PDI-103SG-00-01-190924	BHJ0094-MS1	NT1419100506.D	10/03/19 14:05	
PDI-103SG-00-01-190924	BHJ0094-MSD1	NT1419100507.D	10/03/19 14:05	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ORGANICS PREPARATION BENCH SHEET

Batch: BHJ0094

Prepared using: EPA 3546 (Microwave)

8270D-SIM Butyl Tins in Solid (Version:TBT Only)

Matrix: Solid **Date Prepared:** 10-3-19 **Balance ID:** B139298002 **Set Up By:** RcsM 10/03/19

The following standards may be missing from this batch!

Designator	Description
QLS 3	QLS Spike

Analysis: 8270D-SIM Butyl Tins

Lab Number & Container	% Solids	Initial (g) Target Dry: 5 (Wet) Actual	Actual Wet Wt (g)	Final Effective Vol (mL)	Vol (mL) to Lab	Extraction Comments
19I0422-01 A	43.6	(11.47)	11.70	0.5	0.5	
19I0422-02 A	39.3	(12.74)	12.97	0.5	0.5	
19I0422-03 A	44.1	(11.34)	11.43	0.5	0.5	
19I0422-04 A	40.0	(12.52)	12.70	0.5	0.5	

Batch QC

Lab Number	% Solids	Initial (g) Target Dry: 5 (Wet) Actual	Actual Wet Wt (g)	Final Effective Vol (mL)	Vol (mL) to Lab	Extraction Comments
BHJ0094-BLK1	100.0	(5.00)	5.00	0.5	0.5	
BHJ0094-BS1	100.0	(5.00)	5.00	0.5	0.5	
BHJ0094-MS1	43.6	(11.47)	11.53	0.5	0.5	Use 19I0422-01
BHJ0094-MSD1	43.6	(11.47)	11.72	0.5	0.5	Use 19I0422-01

DM 10-3-19
Client ID verified By Date

QS 10/4/19
Preparation Reviewed By Date

10/3/19 14:05
Extraction Date and Time

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ORGANICS PREPARATION BENCH SHEET

Batch: BHJ0094

Prepared using: EPA 3546 (Microwave)

8270D-SIM Butyl Tins in Solid (Version:TBT Only)

Prep Steps

Microwave
1 (2) 3
10-3-19
DM Analyst/Date

TurboVap Hexane Exchange (15 mL)
1 2 3 (4) 5
CLS 10/3/19
Analyst/Date

HexMgBr Addition Vortex 45min + Sit Overnight
1 2 3
CLS 10/3/19
Analyst/Date

(REQ) Hydrolisys (4mL) Vortex
1 2 3
CLS 10/4/19
Analyst/Date

(REQ) SPE (1mL)
CLS 10/4/19
Analyst/Date

TurboVap Post SPE
1 2 (3) 4 5
CLS 10/4/19
Analyst/Date

Vialing
CLS 10/4/19
Analyst/Date

Reagents Used

Station/Reagent	Standard ID
Microwave Analyst: DM Date: 10-3-19	
Anhydrous Sodium Sulfate	H008948
0.10% Tropolone in Methylene Chloride	H008965
Neutral Glass Wool	H007969
Hexane	H007064
Vialing/HexMgBr Addition Analyst: CLS Date: 10/3/19	
(Turbovap exchange): Hexane:	H005342
HexylMagnesiumBromide	H006681
Hydrolysis/Silica/Final Vialing Analyst: CLS Date: 10/4/19	
1:1 HCL/DI H2O	H008264
Anhydrous Sodium Sulfate	H006182
Silica Gel (SPE) Dart (EPH)	H007520
(Final Vialing):Hexane	H005342

Surrogates & Spike Standards Used

Type	Vial ID / Standard ID	Vol uL	Analyst	Witness
Surrogate 2.5µg/mL	L (H005056) Exp: 12/08/2019	100µL	DM	MW
Spike 2.5µg/mL	8 (G011499) Exp: 12/08/2019	100µL	DM	MW

(V) indicates a virtual standard combining two or more physical standards. In these cases the Standard ID refers to the virtual standard, not the parent standards.

If a Standard ID is missing, but should be present, check the standard definition in Element LIMS to be sure Standard Info 6 has the correct letter or number designator matching the vial designator inthe Standard ID column. If it is correct, check the batch and bench sheet in Element LIMS to be sure the correct standards are selected for surrogate(s) and spike(s).

Prep Instructions	
SPECIAL INSTRUCTIONS: NOTE: TBT Extractions must be completed within 48 hours! 1. Blanks = Solvent Only (NO Sulfate). 2. Weigh samples into 100mL beakers-dry with Sodium Sulfate. 3. Pre-Rinse microwave vessel with 0.10% Tropolone in DCM. 4. Transfer soil to microwave vessel. 5. Add 0.10% Tropolone in DCM to vessel until solvent is 1" above soil layer after homogenization). 6. Add surr/spike. 7. Microwave on appropriate power setting determined by # of samples. 8. After microwave-Re-homogenize while hot then let cool 15 min. in cold water bath. Re-homogenize while cool. 9. Decant into 0.10% troplone rinsed turbo tube with small Funnel containing glass wool and 1" sodium sulfate. 10. Add (2) 10mL Hexane rinses to vessel and transfer to turbo tube. 11. TurboVap to 2mL and add 15mL Hexane (X1)-mix well. 12. TurboVap to 3mL-Transfer with Hexane to 40mL VOA vial. 13. Derivitize=1 pipet HexMgBr (Mix by hand) then Vortex. Let sit 45min (vortex every 10 min) Then let sit overnite. 14. Hydrolisys: Add (2) pipet 1:1 HCL. Vortex. Draw off/discard HCL. Add 1 pipet 1:1 HCL and 5mL DI H2O. Vortex. Draw off/discard H20. Add 5mL DI H2O. Vortex. Draw off/discard H2O. 15. Add sodium sulfate and Let sit 15min. 16. TurboVap to 1mL. 17. SPE Clean, EPH darts 18. TurboVap 19. Vial in hexane. 20. NOTE: DERIVITIZATIONS MUST BE DONE IN THE HOOD TO PROTECT FROM POTENTIAL CHEMICAL REACTIONS, ODORS AND FUMES. A. Need Total Solids Y (N) B. Archive/Freeze (Y) N	

Organic Extractions Laboratory Analyst Notes

Extraction Parameter: TBT Extraction Batch BHS0094

Total Solids Batch: N/A Work Order(s): 1910422

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☐ No Anomalies (standard soil/wet sediment/sand/gravel)=	
☒ Standing Water Decanted (Not shared)= Φ1, Φ2, Φ3, Φ4	DM 10-3-19
☐ Standing Water Homogenized (Shared samples)=	
☐ Clay/Clumps (Difficult to homogenize)=	
☐ Rocks (%+size)?	
☐ Organics (Leaves/sticks/grass)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ Previously Frozen =	
☐ Other (Details)=	
Aqueous:	
☐ No Anomalies	
☐ Turbid/Color=	
☐ Particulates(%)=(Note: >5%=Notify Supervisor/Lead)	
☐ Emulsions (%)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
☐ Received in 1.0L Bottle(s)=No Bottle Rinse=	
☐ Other Notes/Comments= (Note problems, concerns, corrective actions).	
All samples filtered pre-SPE due to particulates.	AR 10/4/19
☒ Share Samples Y / (N)	DM 10-3-19
☒ Multiple Jars Y / (N)	DM 10-3-19
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Cleanup Batch:	CHJ0044	Cleanup Type:	Silica Gel
Cleanup Method:	EPA 3630C Silica Gel Cleanup	Analysis:	EPA 8270D-SIM

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
PDI-103SG-00-01-190924	19I0422-01	NT1419100505.D	10/04/2019	
PDI-104SG-00-01-190924	19I0422-02	NT1419100508.D	10/04/2019	
PDI-105SG-00-0.99-190924	19I0422-03	NT1419100509.D	10/04/2019	
PDI-106SG-00-01-190924	19I0422-04	NT1419100510.D	10/04/2019	
Blank	BHJ0094-BLK1	NT1419100503.D	10/04/2019	
LCS	BHJ0094-BS1	NT1419100504.D	10/04/2019	
Matrix Spike	BHJ0094-MS1	NT1419100506.D	10/04/2019	
Matrix Spike Dup	BHJ0094-MSD1	NT1419100507.D	10/04/2019	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CHJ0044

Matrix: Solid **Cleanup using: Organics - EPA 3630C Silica Gel Cleanup** **Printed: 10/4/2019 7:40:41PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
19I0422-01	A	PDI-103SG-00-01-190924	A 01	0.5	0.5	8270D-SIM Butyl Tins	10/4/2019	CCT	
19I0422-02	A	PDI-104SG-00-01-190924	A 01	0.5	0.5	8270D-SIM Butyl Tins	10/4/2019	CCT	
19I0422-03	A	PDI-105SG-00-0.99-190924	A 01	0.5	0.5	8270D-SIM Butyl Tins	10/4/2019	CCT	
19I0422-04	A	PDI-106SG-00-01-190924	A 01	0.5	0.5	8270D-SIM Butyl Tins	10/4/2019	CCT	
BHJ0094-BLK1	-	Blank	-	0.5	0.5	-	10/4/2019	CCT	
BHJ0094-BS1	-	LCS	-	0.5	0.5	-	10/4/2019	CCT	
BHJ0094-MS1	-	Matrix Spike	-	0.5	0.5	-	10/4/2019	CCT	
BHJ0094-MSD1	-	Matrix Spike Dup	-	0.5	0.5	-	10/4/2019	CCT	

Form I

METHOD BLANK DATA SHEET

EPA 8270D-SIM

Blank

Laboratory:	Analytical Resources, Inc.			SDG:	19I0422
Client:	Anchor QEA, LLC			Project:	Gasco PDI
Matrix:	Solid	Laboratory ID:	BHJ0094-BLK1	File ID:	NT1419100503.D
Sampled:	N/A	Prepared:	10/03/19 14:05	Analyzed:	10/05/19 14:06
Solids:		Preparation:	EPA 3546 (Microwave)	Initial/Final:	5 g / 0.5 mL
Batch:	BHJ0094	Sequence:	SHJ0100	Calibration:	CJ00005
Instrument:	NT14	Column:	ZB-5MS	Cleanups:	Silica Gel

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg wet)	Q	DL	RL
36643-28-4	Tributyltin Ion	1	3.86	U	0.450	3.86

SURROGATES	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
Tripentyltin	45.178	25.9	57.4	30 - 160	
Tripropyltin	43.746	22.7	51.9	30 - 160	

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100503.D

Date : 05-OCT-2019 14:06

Client ID:

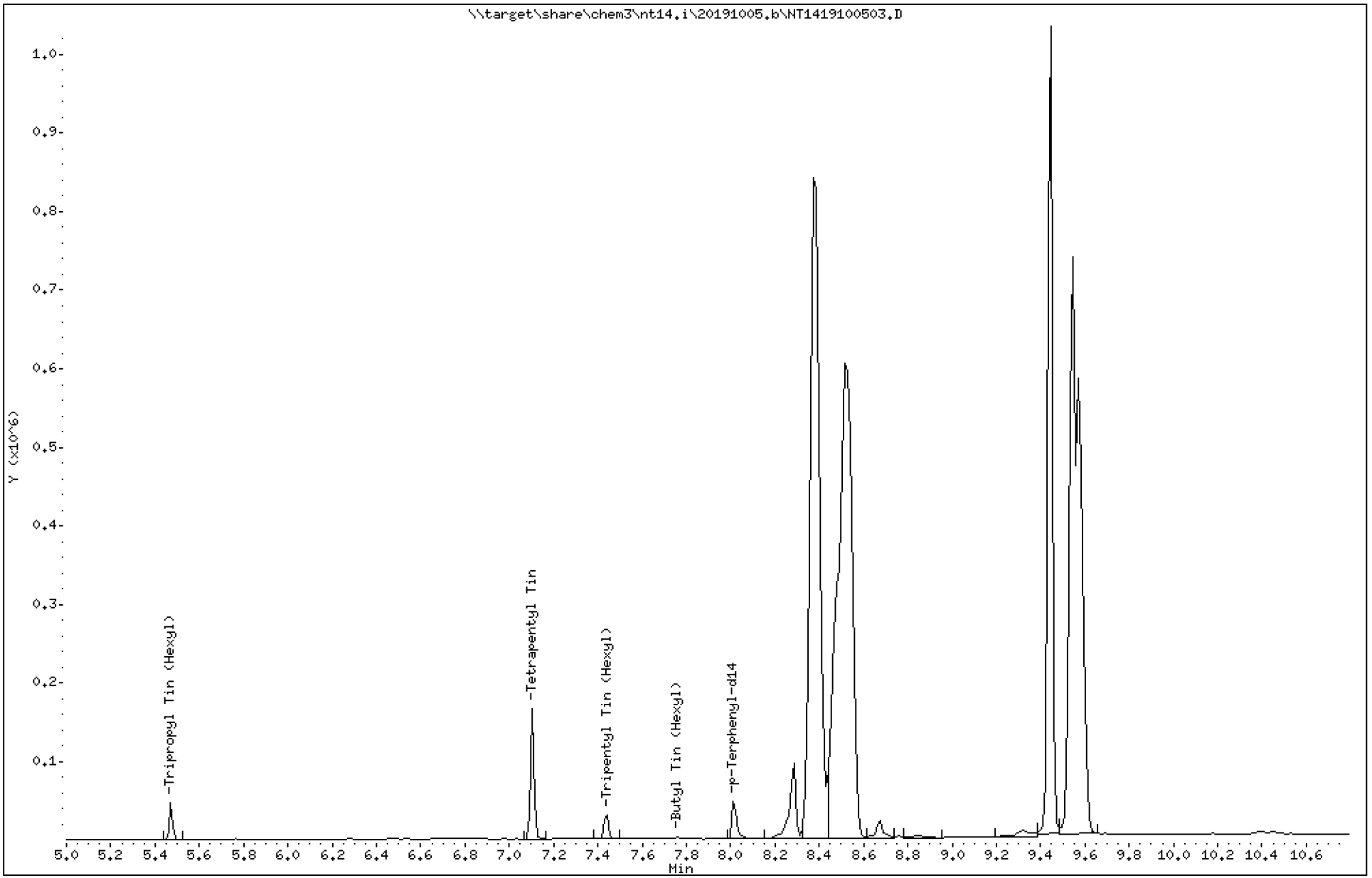
Sample Info: BHJ0094-BLK1

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100503.D

Date : 05-OCT-2019 14:06

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-BLK1

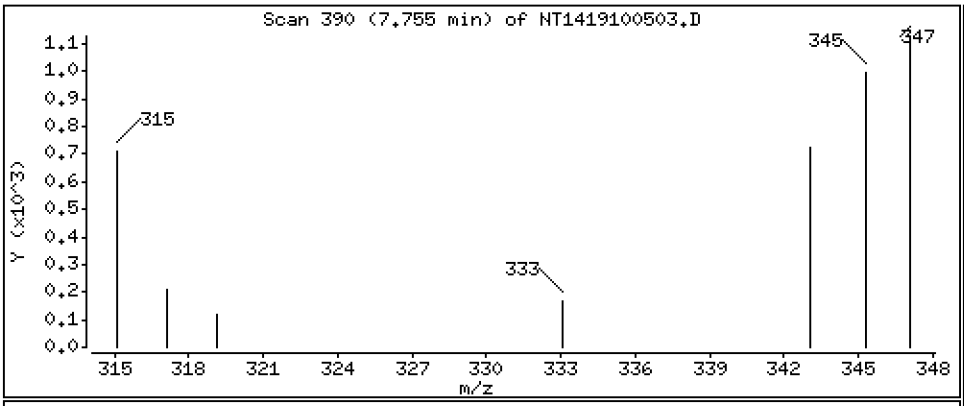
Operator: VTS

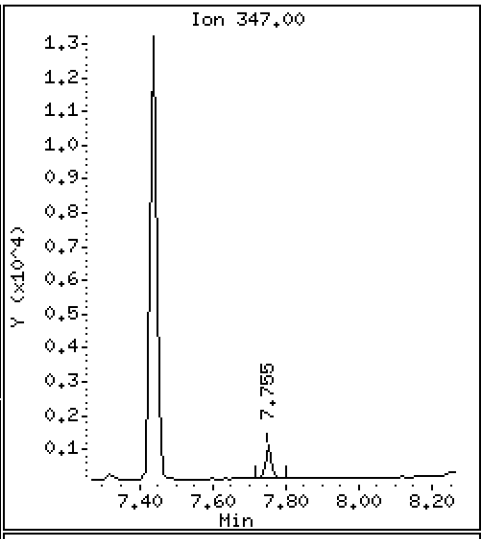
Column phase: ZB-5msi

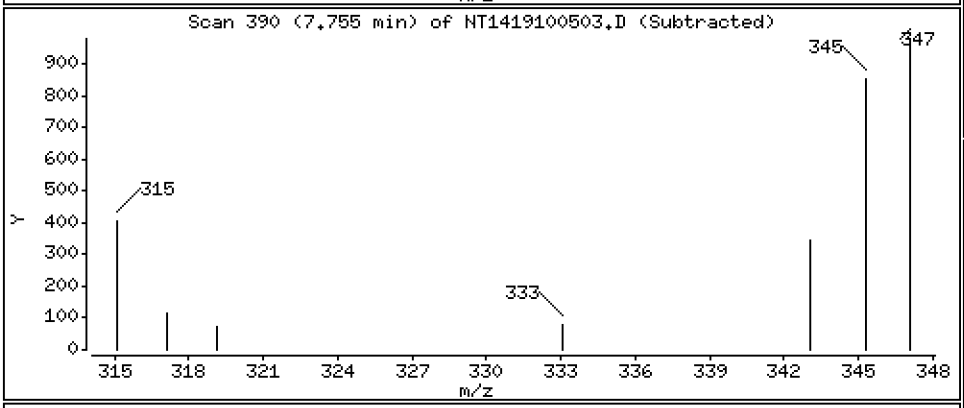
Column diameter: 0.25

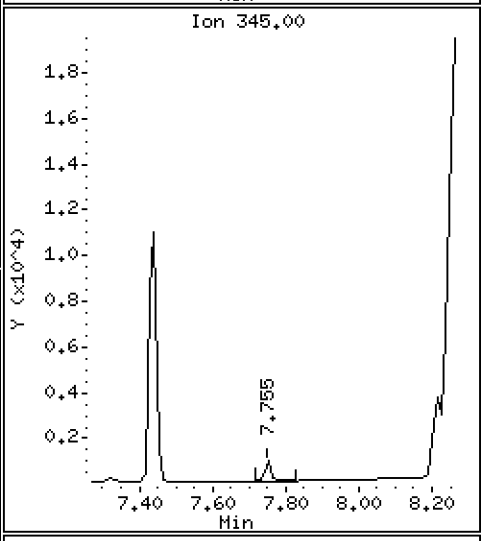
7 Butyl Tin (Hexyl)

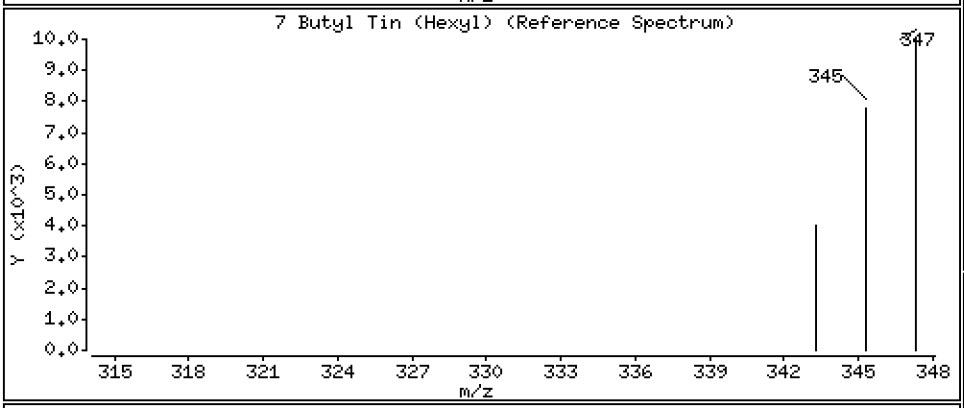
Concentration: 0.02114 ug/mL

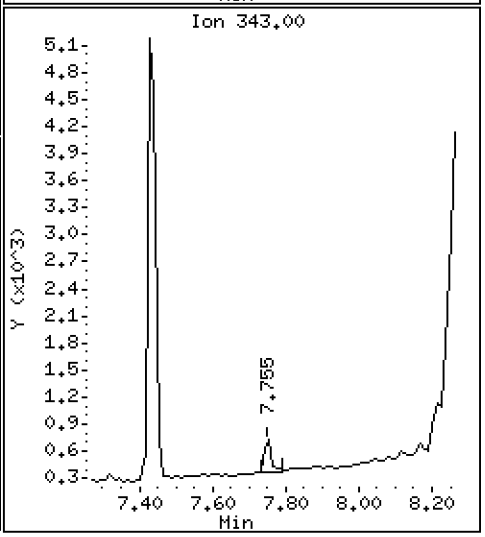


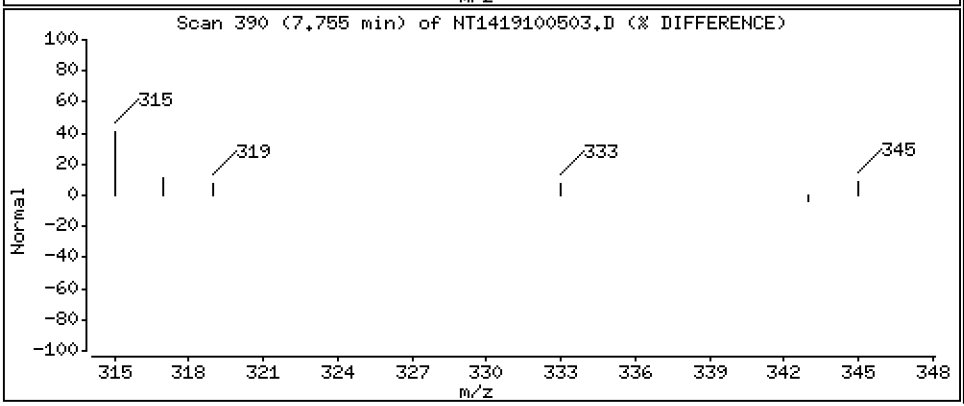












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100503.D
Lab Smp Id: BHJ0094-BLK1
Inj Date : 05-OCT-2019 14:06 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : BHJ0094-BLK1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	21930	0.30505	0.3051
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	Compound Not Detected.					
*	4 Tetrapentyl Tin	333	7.101	7.101	(1.000)	177561	2.00000	
	5 Dibutyl Tin (Hexyl)	347	Compound Not Detected.					
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	16219	0.32565	0.3256
	7 Butyl Tin (Hexyl)	347	7.754	7.766	(0.968)	1156	0.02114	0.02114
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	75752	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100503.D
Lab Smp Id: BHJ0094-BLK1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	177561	-13.93
8 p-Terphenyl-d14	96182	48091	192364	75752	-21.24

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100503.D

Lab ID: BHJ0094-BLK1
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 14:06

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100502.D

On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

LCS / LCS DUPLICATE RECOVERY

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Matrix:	Solid	Analyzed:	10/05/19 14:19
Batch:	BHJ0094	Laboratory ID:	BHJ0094-BS1
Preparation:	EPA 3546 (Microwave)	Sequence Name:	LCS
Initial/Final:	5 g / 0.5 mL		

COMPOUND	SPIKE ADDED (ug/kg wet)	LCS CONCENTRATION (ug/kg wet)	Q	LCS % REC. #	QC LIMITS REC.
Tributyltin Ion	44.6	27.2		61.1	30 - 160

* Indicates values outside of QC limits

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100504.D

Date : 05-OCT-2019 14:19

Client ID:

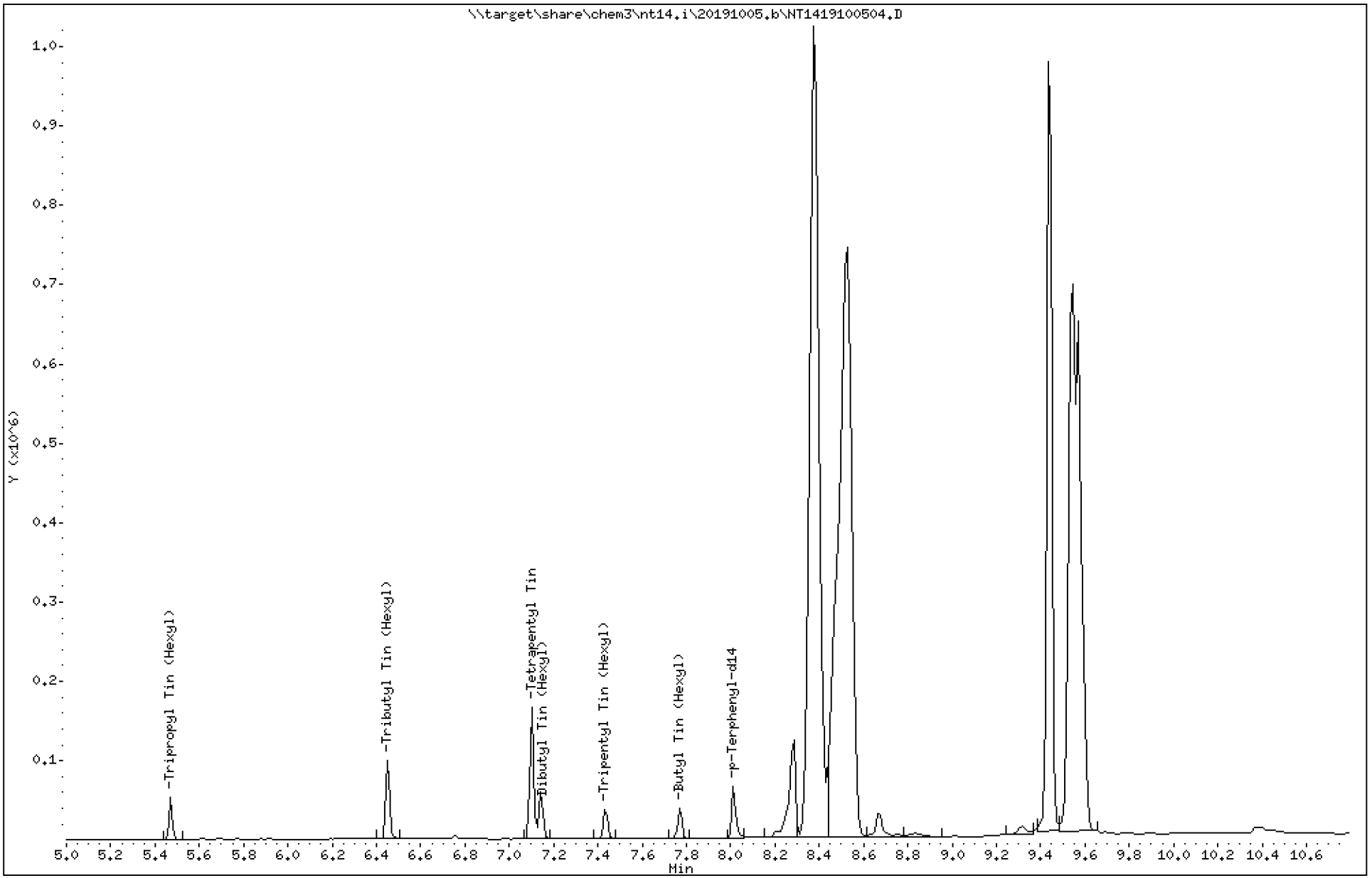
Sample Info: BHJ0094-BS1

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100504.D

Date : 05-OCT-2019 14:19

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-BS1

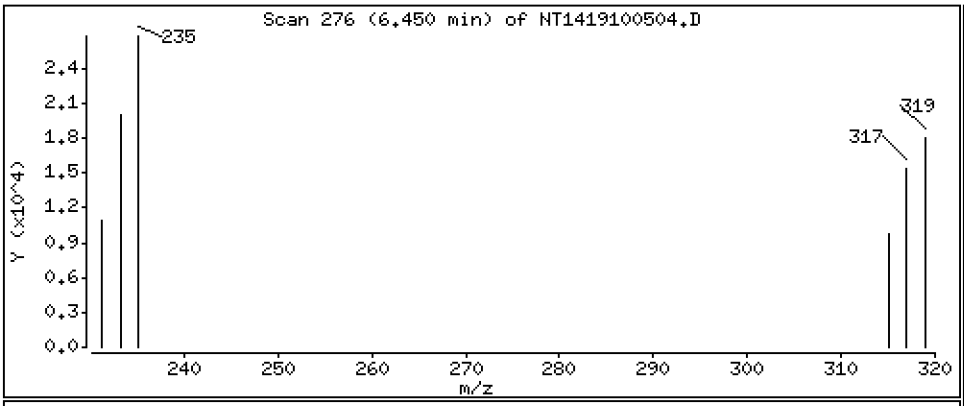
Operator: VTS

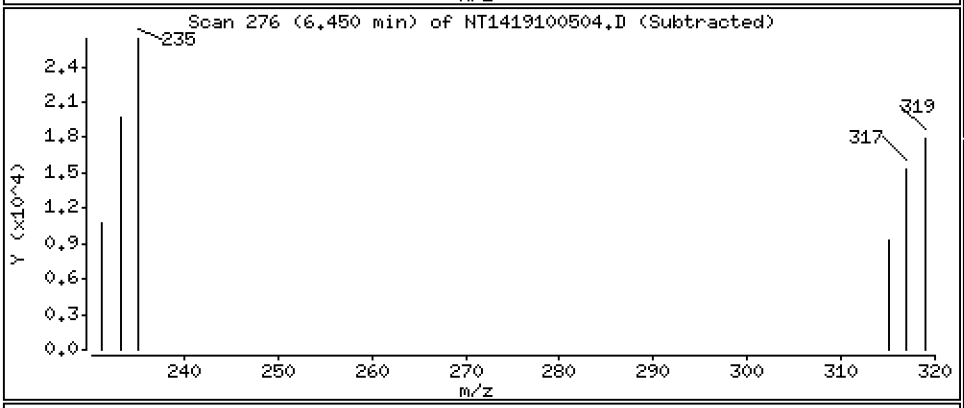
Column phase: ZB-5msi

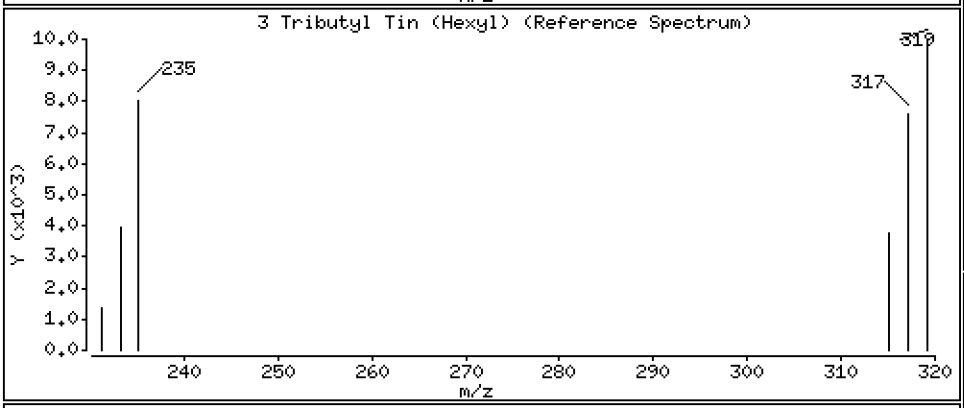
Column diameter: 0.25

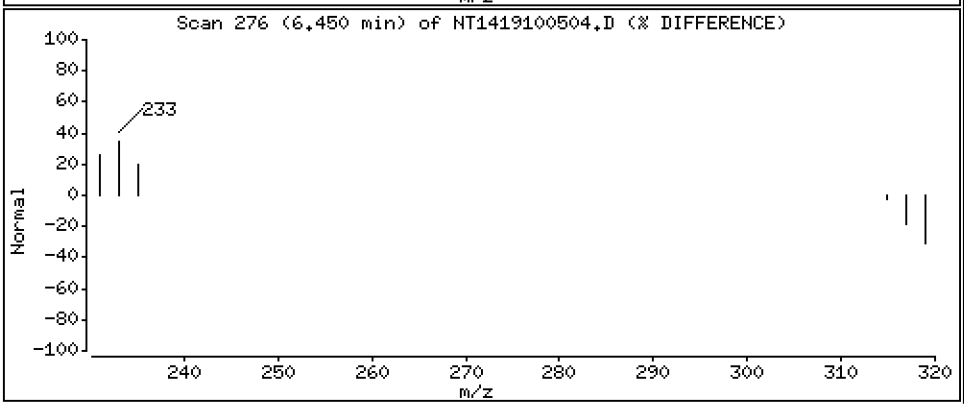
3 Tributyl Tin (Hexyl)

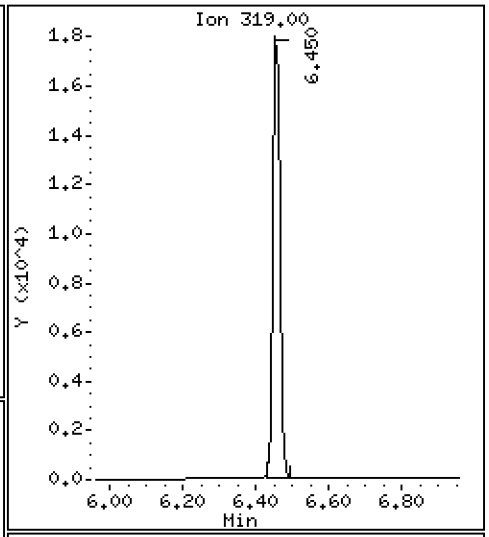
Concentration: 0.3523 ug/mL

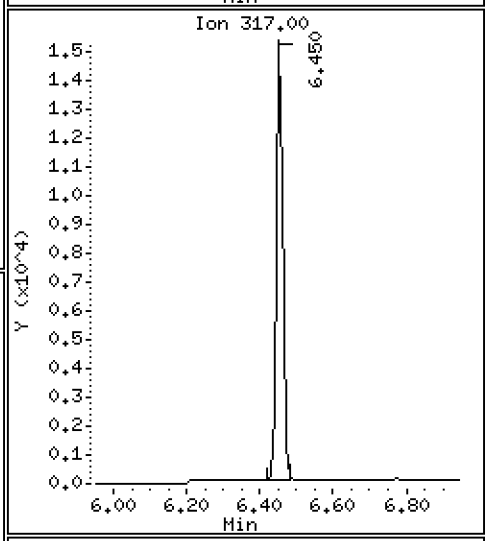


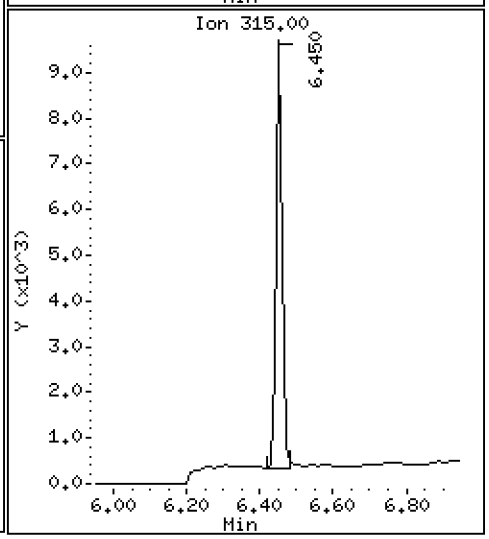












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100504.D

Date : 05-OCT-2019 14:19

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-BS1

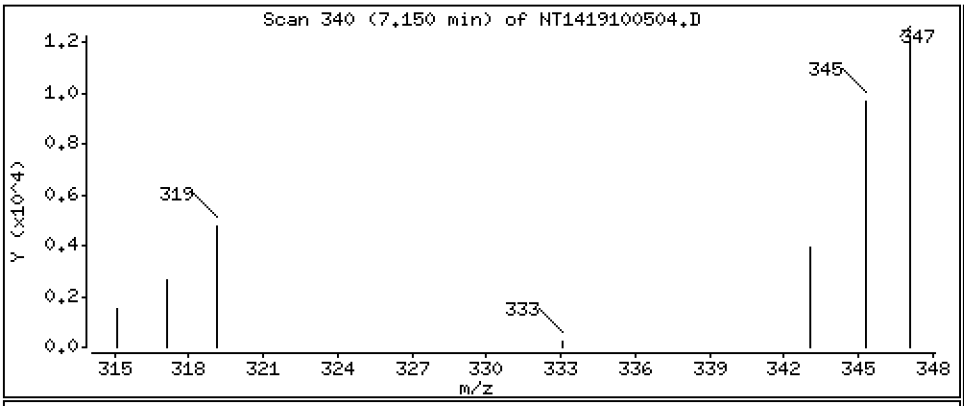
Operator: VTS

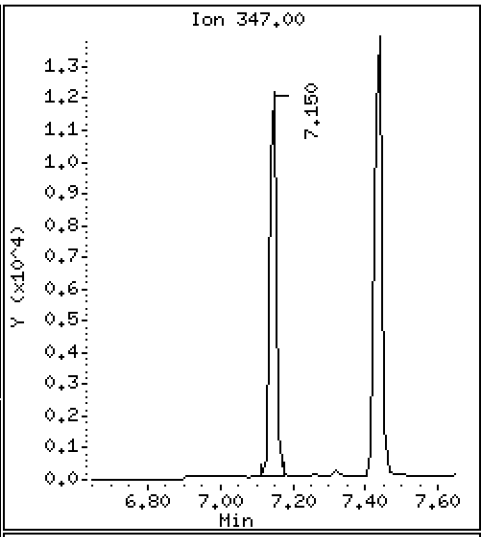
Column phase: ZB-5msi

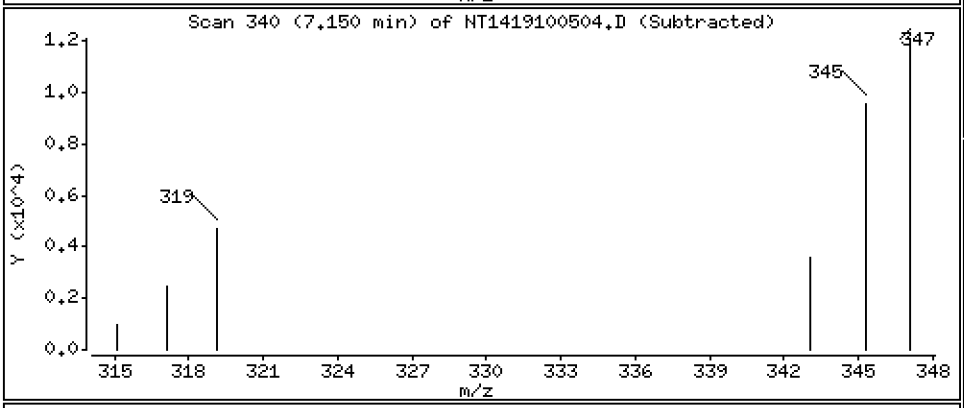
Column diameter: 0.25

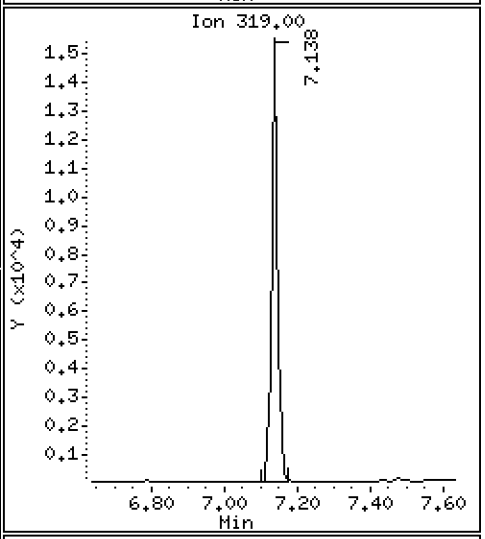
5 Dibutyl Tin (Hexyl)

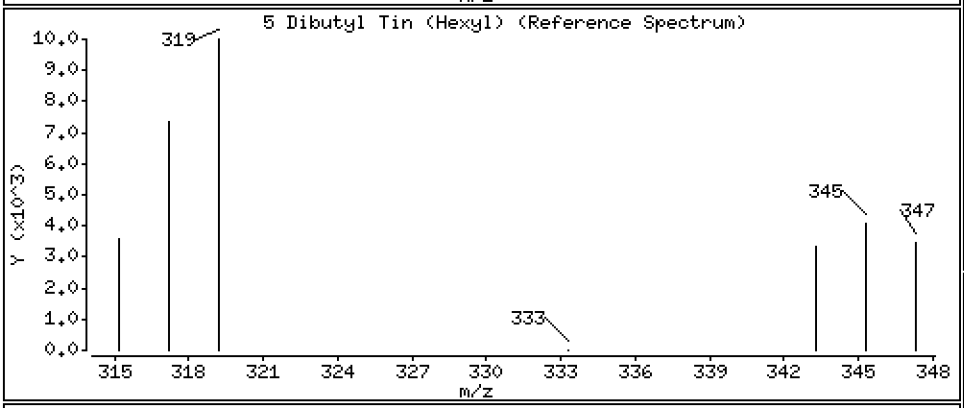
Concentration: 0.4053 ug/mL

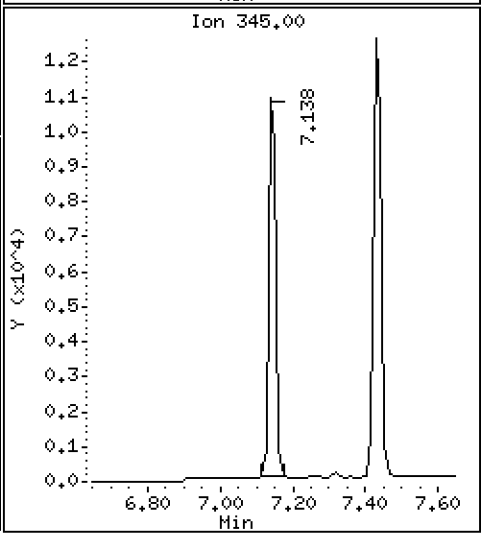


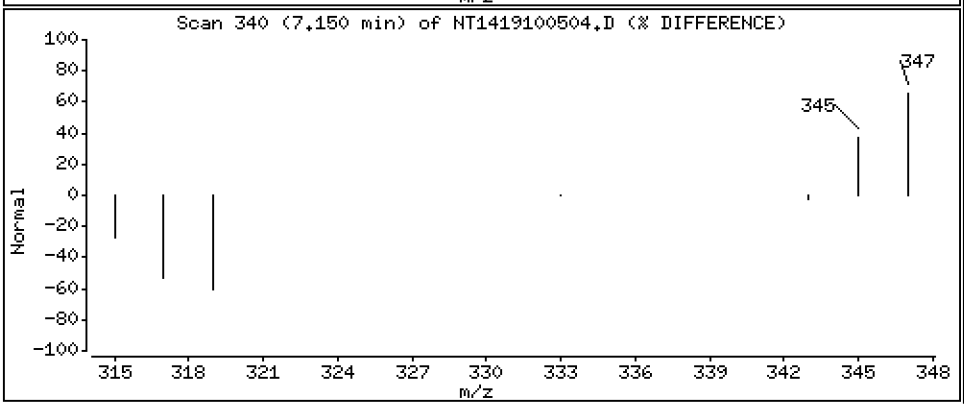












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100504.D

Date : 05-OCT-2019 14:19

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-BS1

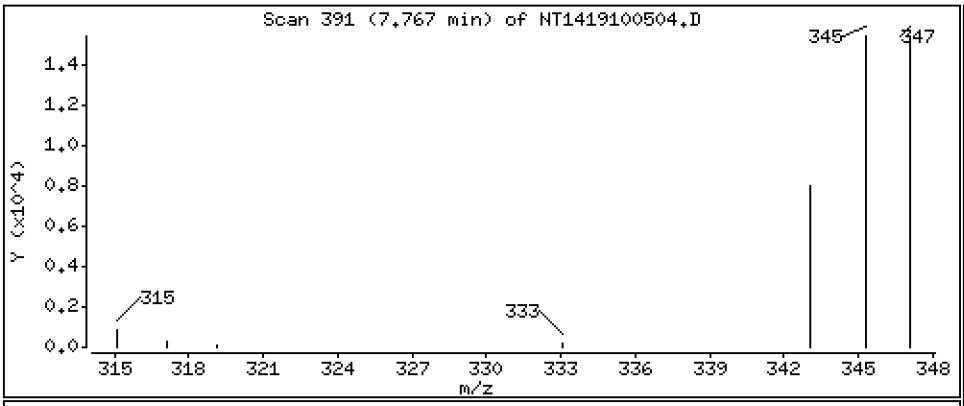
Operator: VTS

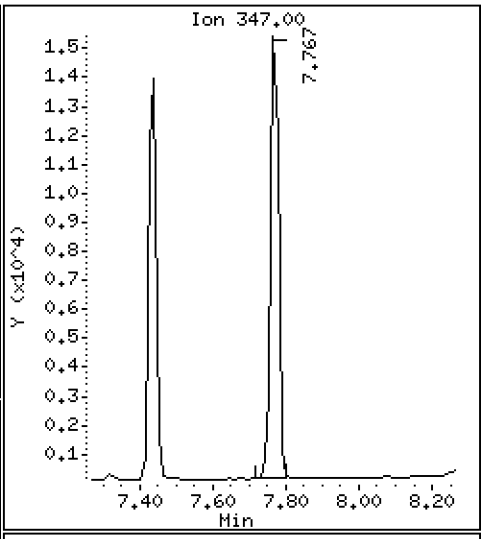
Column phase: ZB-5msi

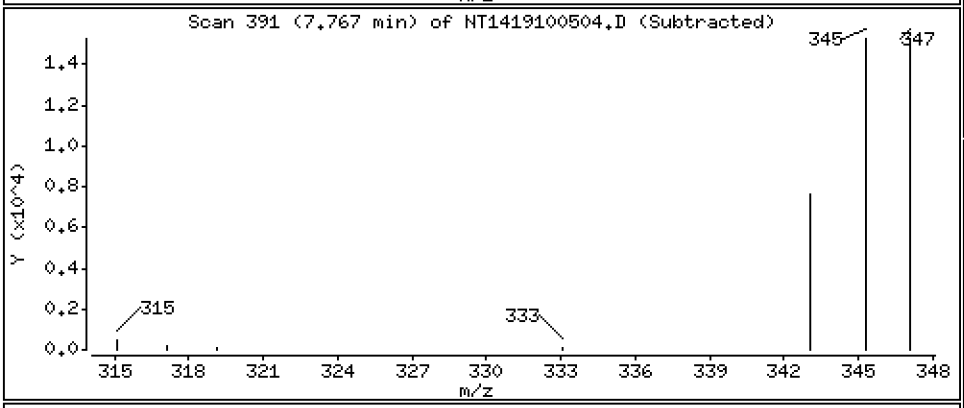
Column diameter: 0.25

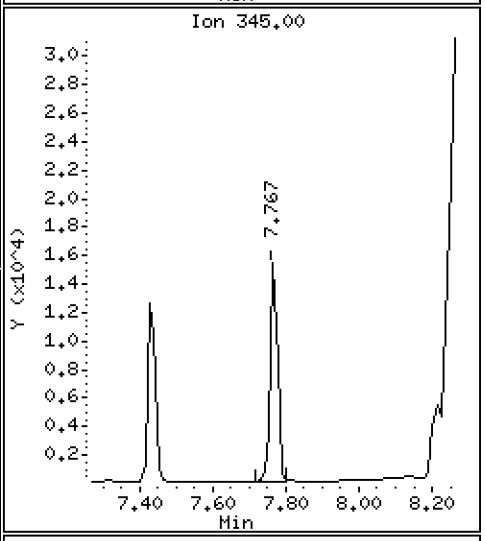
7 Butyl Tin (Hexyl)

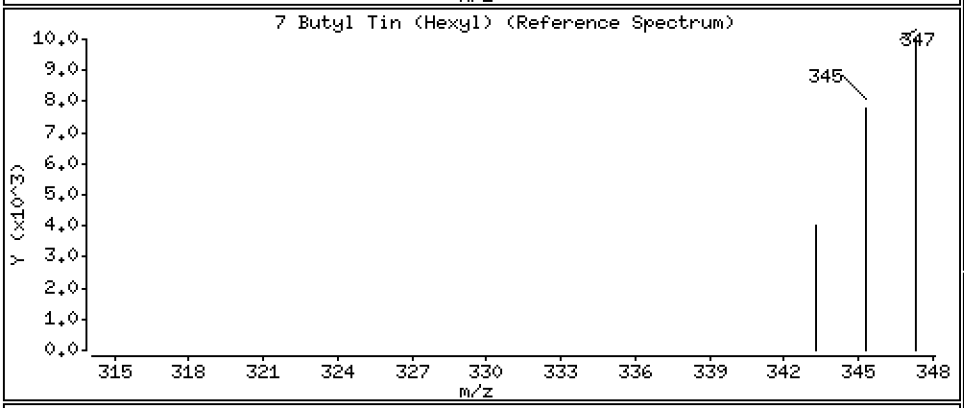
Concentration: 0.3562 ug/mL

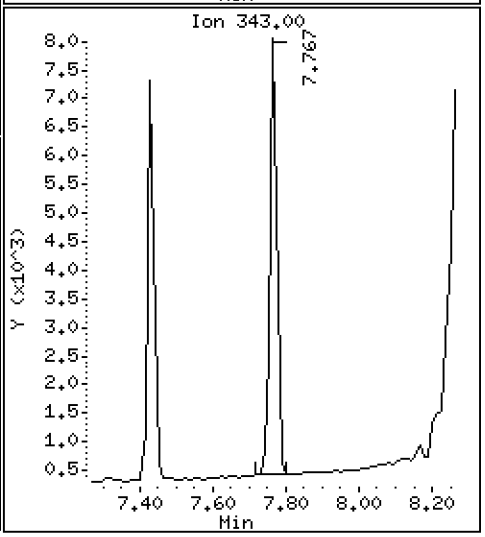


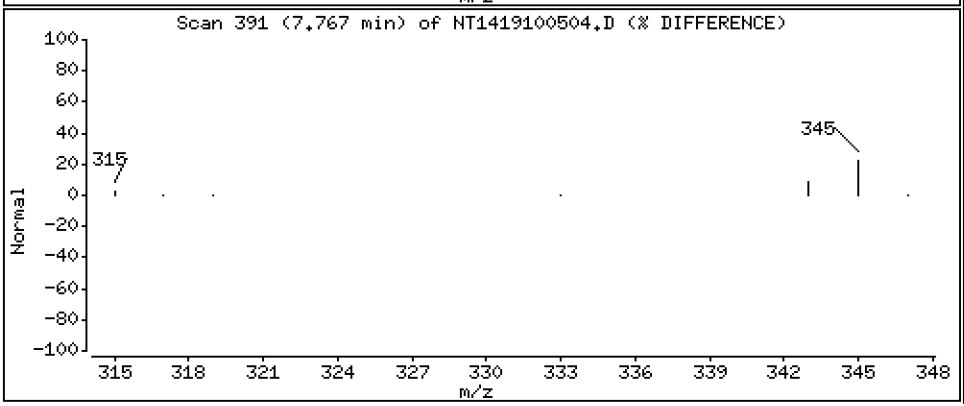












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100504.D
Lab Smp Id: BHJ0094-BS1
Inj Date : 05-OCT-2019 14:19 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : BHJ0094-BS1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	25668	0.32879	0.3288
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	6.450	6.460	(0.908)	24255	0.35225	0.3523
*	4 Tetrapentyl Tin	333	7.101	7.101	(1.000)	192821	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	17325	0.40533	0.4053
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	20031	0.34002	0.3400
	7 Butyl Tin (Hexyl)	347	7.766	7.766	(0.970)	23045	0.35622	0.3562
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	89603	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100504.D
Lab Smp Id: BHJ0094-BS1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	192821	-6.53
8 p-Terphenyl-d14	96182	48091	192364	89603	-6.84

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100504.D

Lab ID: BHJ0094-BS1
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 14:19

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100502.D

On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

MS / MS DUPLICATE RECOVERY
EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Matrix:	Solid	Analyzed:	10/05/19 14:46
Batch:	BHJ0094	Laboratory ID:	BHJ0094-MS1
Preparation:	EPA 3546 (Microwave)	Sequence Name:	Matrix Spike
Initial/Final:	11.53 g / 0.5 mL	Source Sample:	PDI-103SG-00-01-190924

COMPOUND	SPIKE ADDED (ug/kg dry)	SAMPLE CONCENTRATION (ug/kg dry)	Q	MS CONCENTRATION (ug/kg dry)	Q	MS % REC. #	QC LIMITS REC.
Tributyltin Ion	44.3	1.25	J	27.0		58.1	30 - 160

* Values outside of QC limits

MS / MS DUPLICATE RECOVERY
EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Matrix:	Solid	Analyzed:	10/05/19 15:00
Batch:	BHJ0094	Laboratory ID:	BHJ0094-MSD1
Preparation:	EPA 3546 (Microwave)	Sequence Name:	Matrix Spike Dup
Initial/Final:	11.72 g / 0.5 mL	Source Sample:	PDI-103SG-00-01-190924

COMPOUND	SPIKE ADDED (ug/kg dry)	MSD CONCENTRATION (ug/kg dry)	Q	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Tributyltin Ion	43.6	31.9		70.2	16.5	30	30 - 160

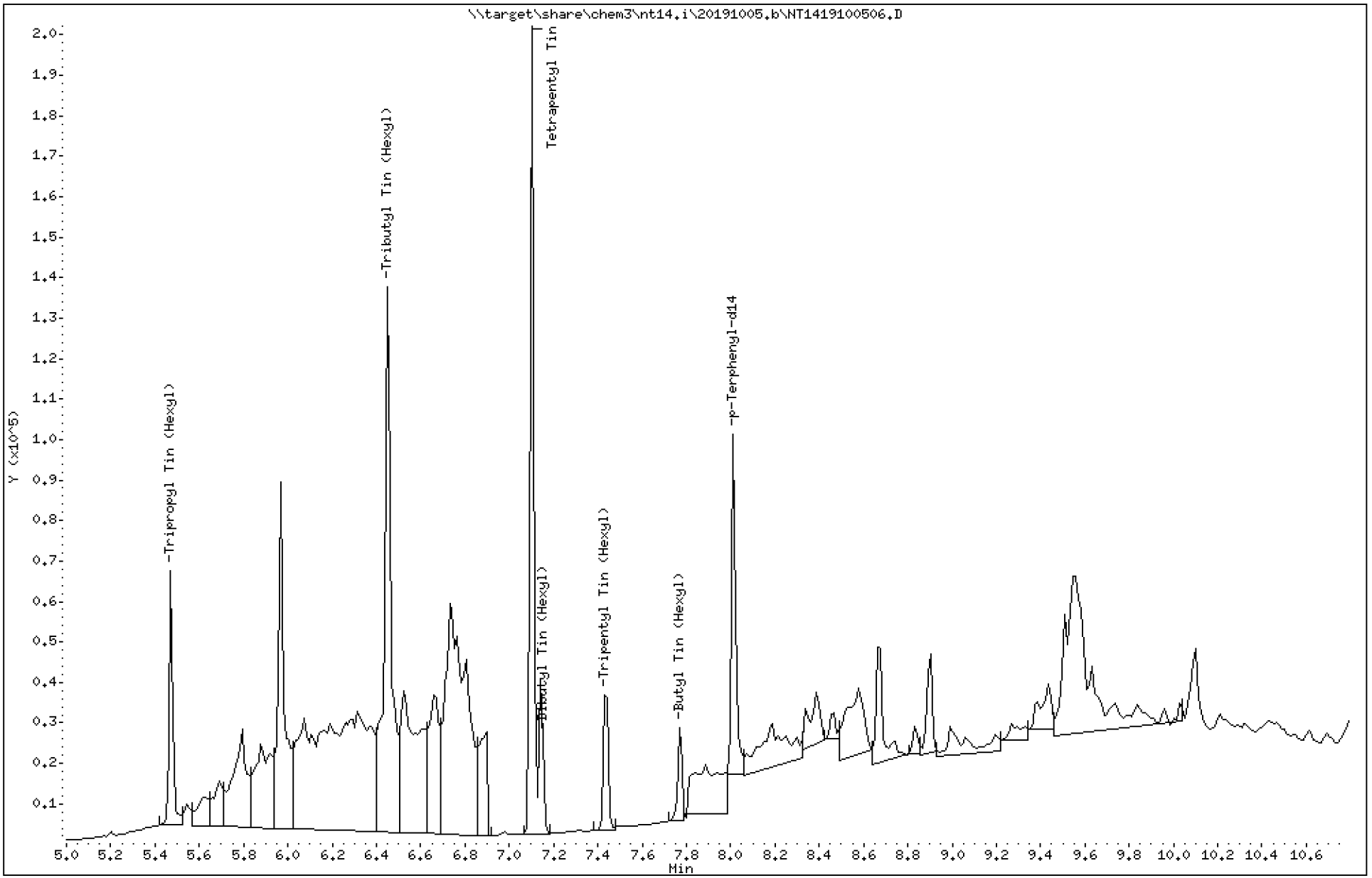
* Values outside of QC limits

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100506.D
Date : 05-OCT-2019 14:46
Client ID:
Sample Info: BHJ0094-MS1

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS
Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100506.D

Date : 05-OCT-2019 14:46

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-MS1

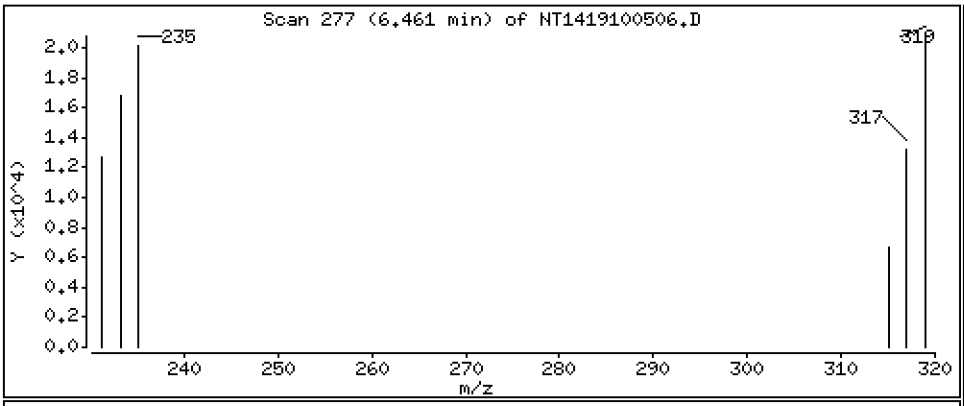
Operator: VTS

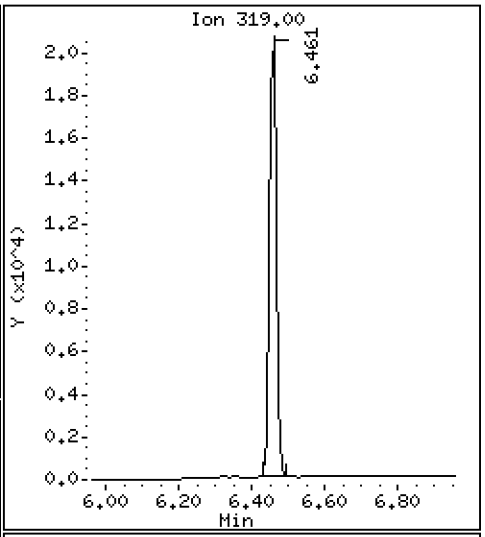
Column phase: ZB-5msi

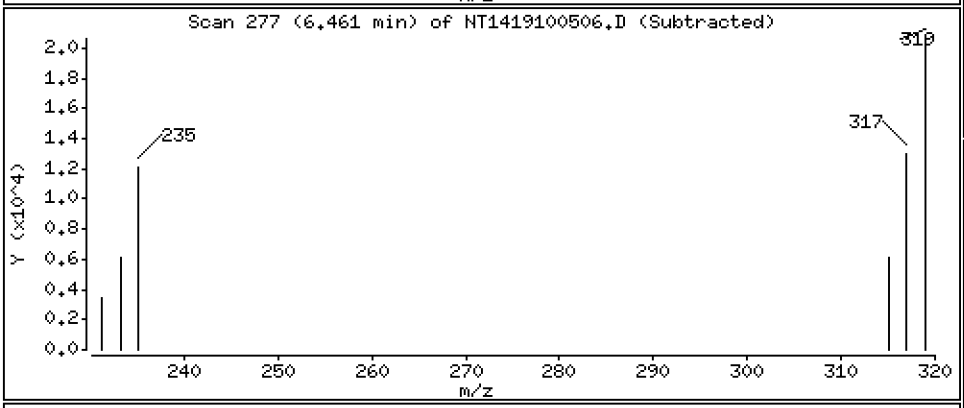
Column diameter: 0.25

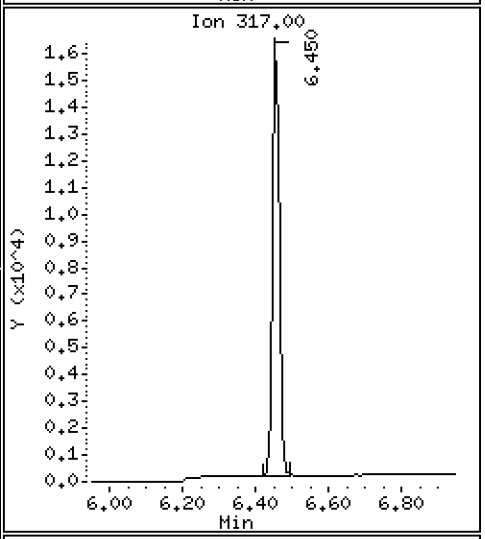
3 Tributyl Tin (Hexyl)

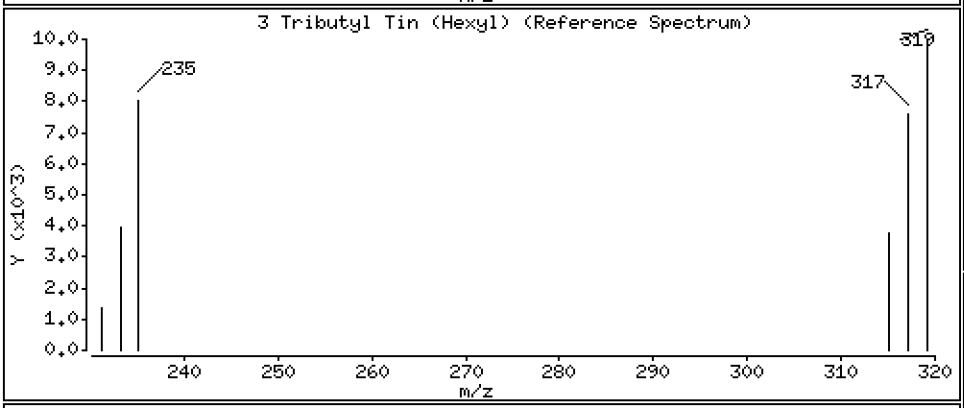
Concentration: 0.3509 ug/mL

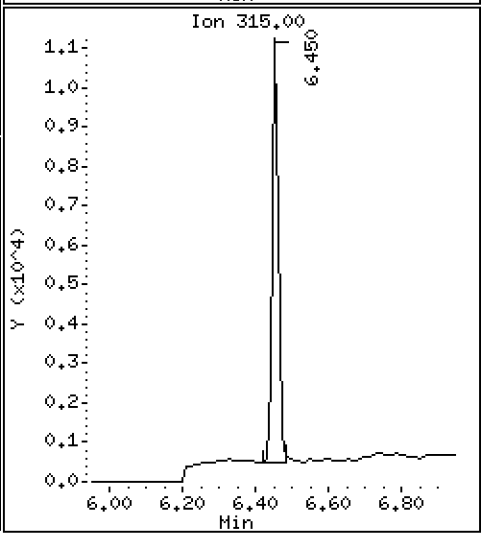


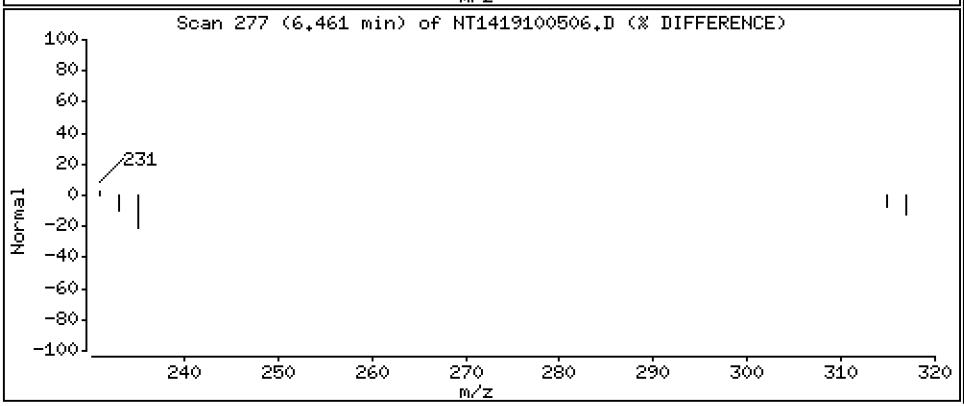












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100506.D

Date : 05-OCT-2019 14:46

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-MS1

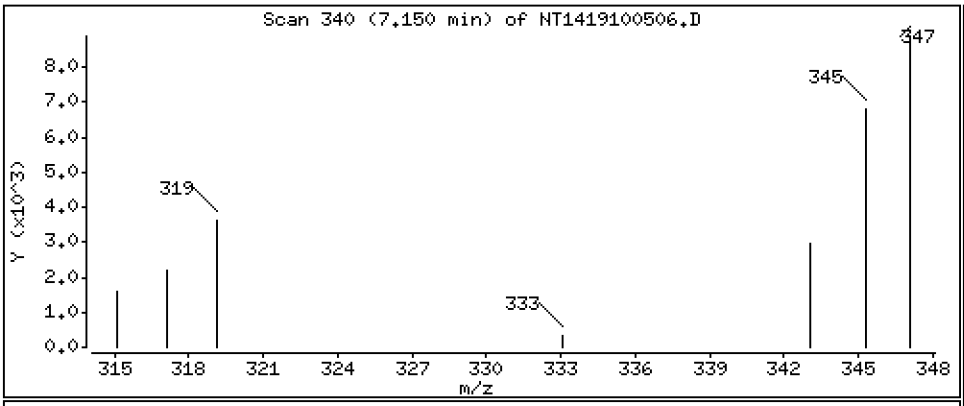
Operator: VTS

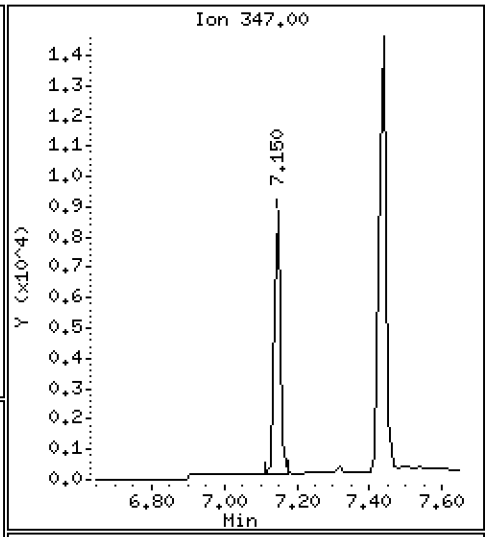
Column phase: ZB-5msi

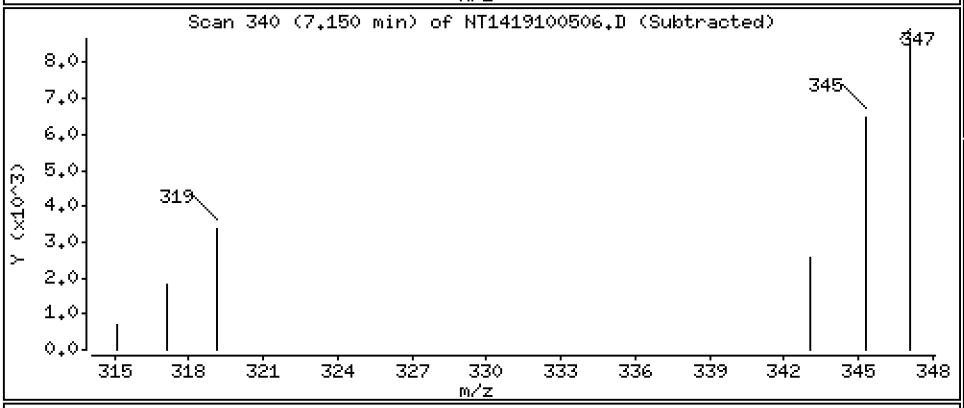
Column diameter: 0.25

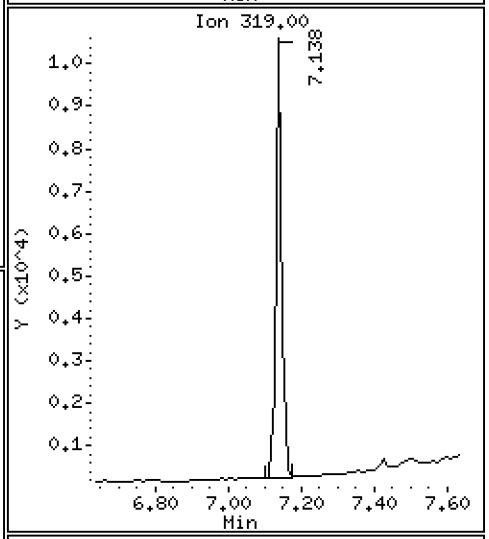
5 Dibutyl Tin (Hexyl)

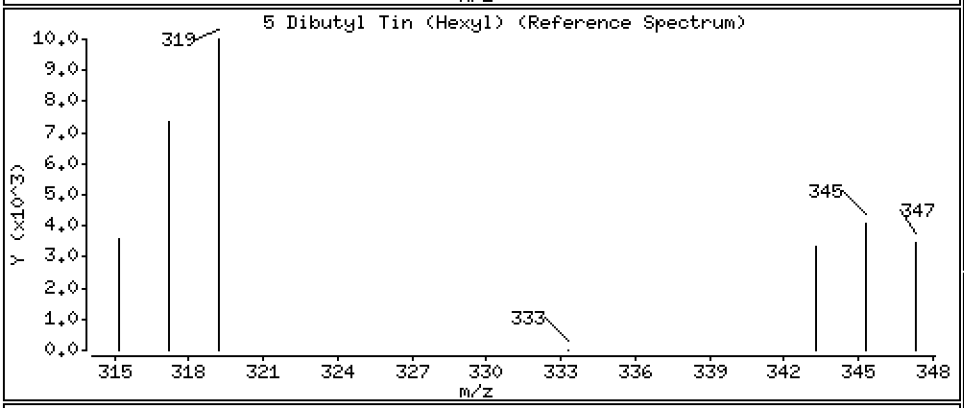
Concentration: 0.2234 ug/mL

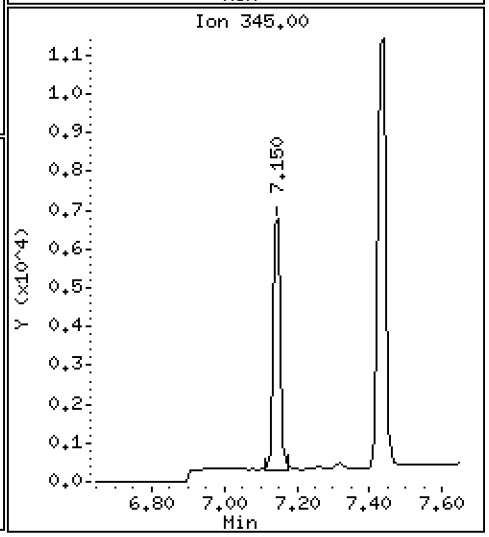


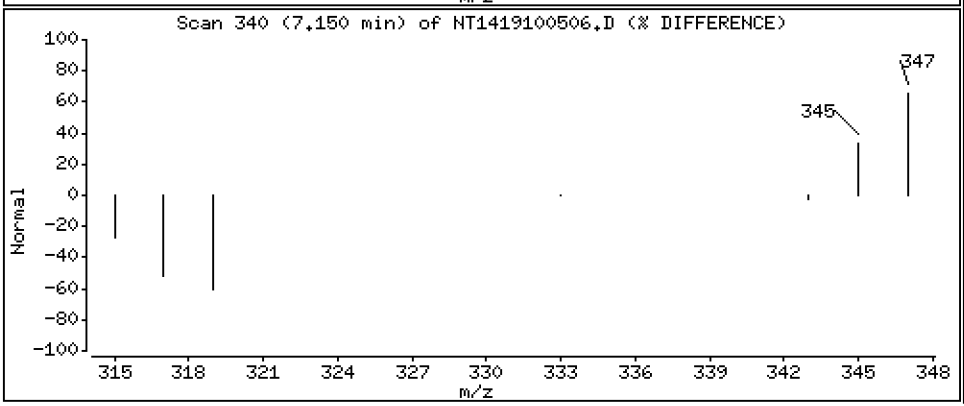












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100506.D

Date : 05-OCT-2019 14:46

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-MS1

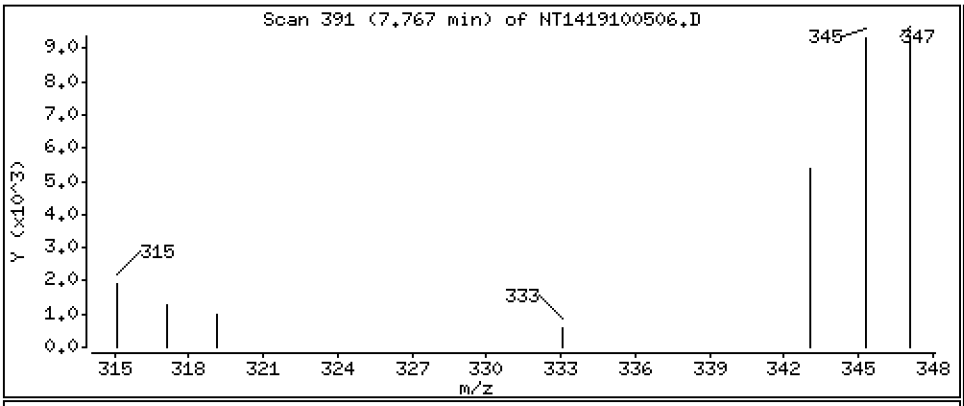
Operator: VTS

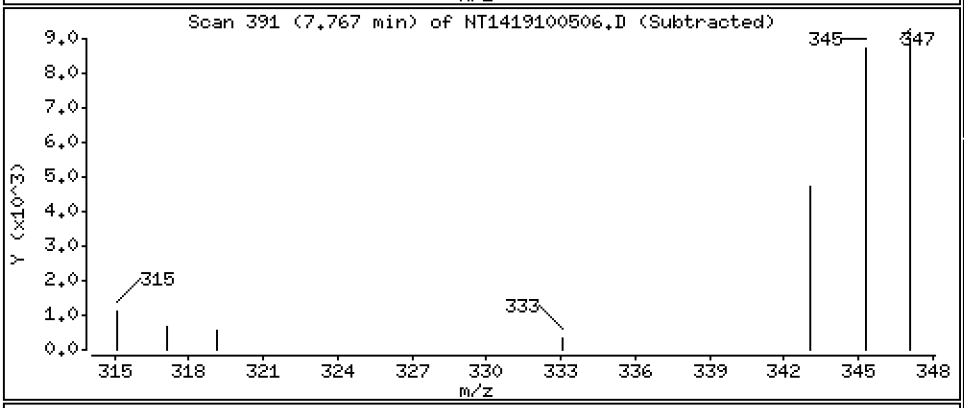
Column phase: ZB-5msi

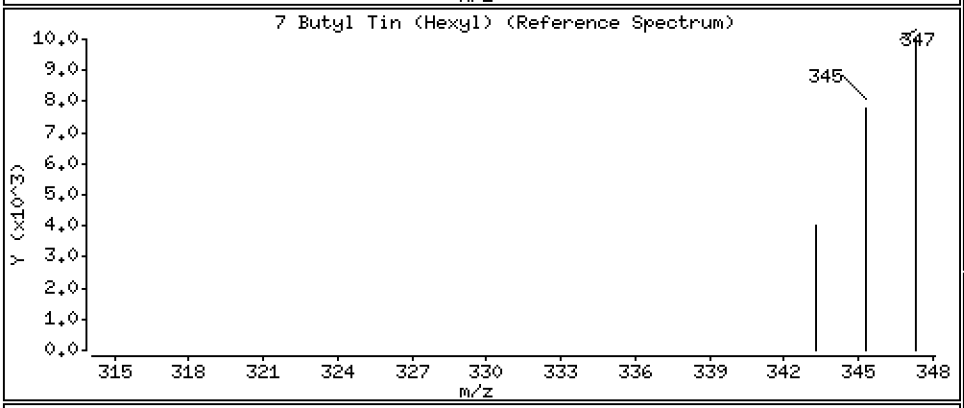
Column diameter: 0.25

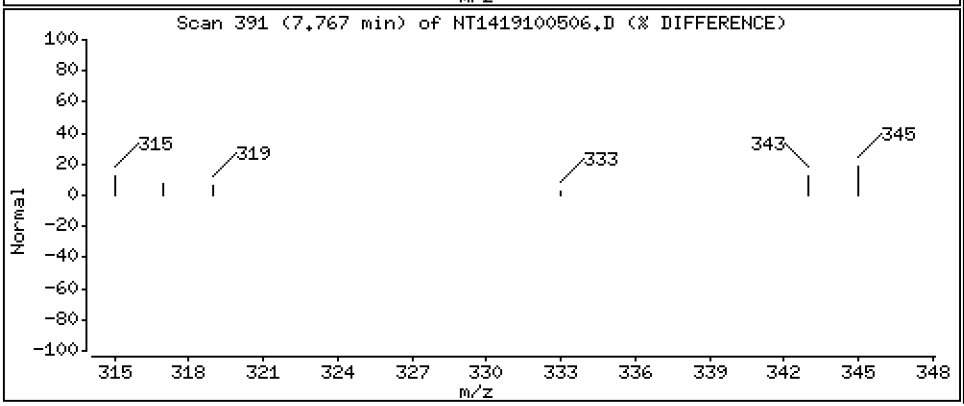
7 Butyl Tin (Hexyl)

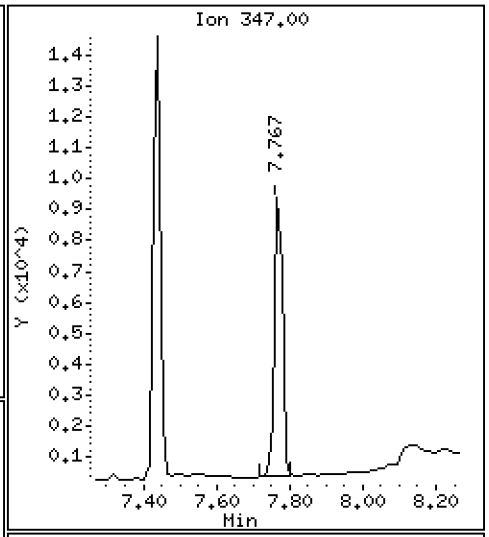
Concentration: 0.1753 ug/mL

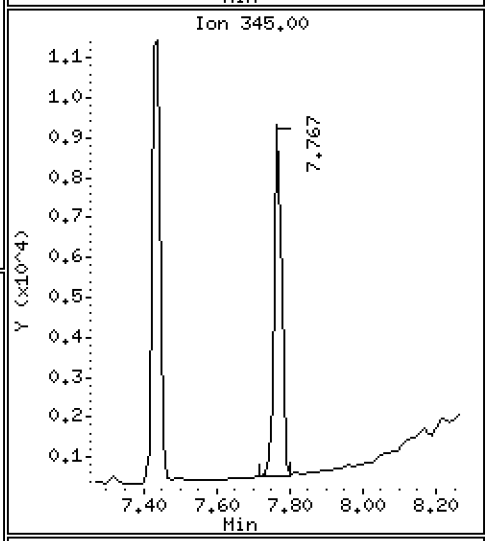


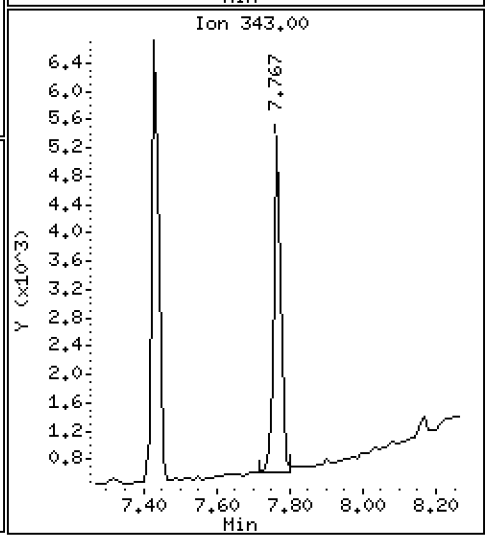












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100506.D
Lab Smp Id: BHJ0094-MS1
Inj Date : 05-OCT-2019 14:46 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : BHJ0094-MS1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	29288	0.33012	0.3301
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	27457	0.35088	0.3509
*	4 Tetrapentyl Tin	333	7.101	7.101	(1.000)	219132	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	11395	0.22338	0.2234
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	19433	0.27640	0.2764
	7 Butyl Tin (Hexyl)	347	7.766	7.766	(0.970)	13538	0.17535	0.1753
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	106936	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100506.D
Lab Smp Id: BHJ0094-MS1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	219132	6.22
8 p-Terphenyl-d14	96182	48091	192364	106936	11.18

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100506.D

Lab ID: BHJ0094-MS1
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 14:46

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100502.D

On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100507.D

Date : 05-OCT-2019 15:00

Client ID:

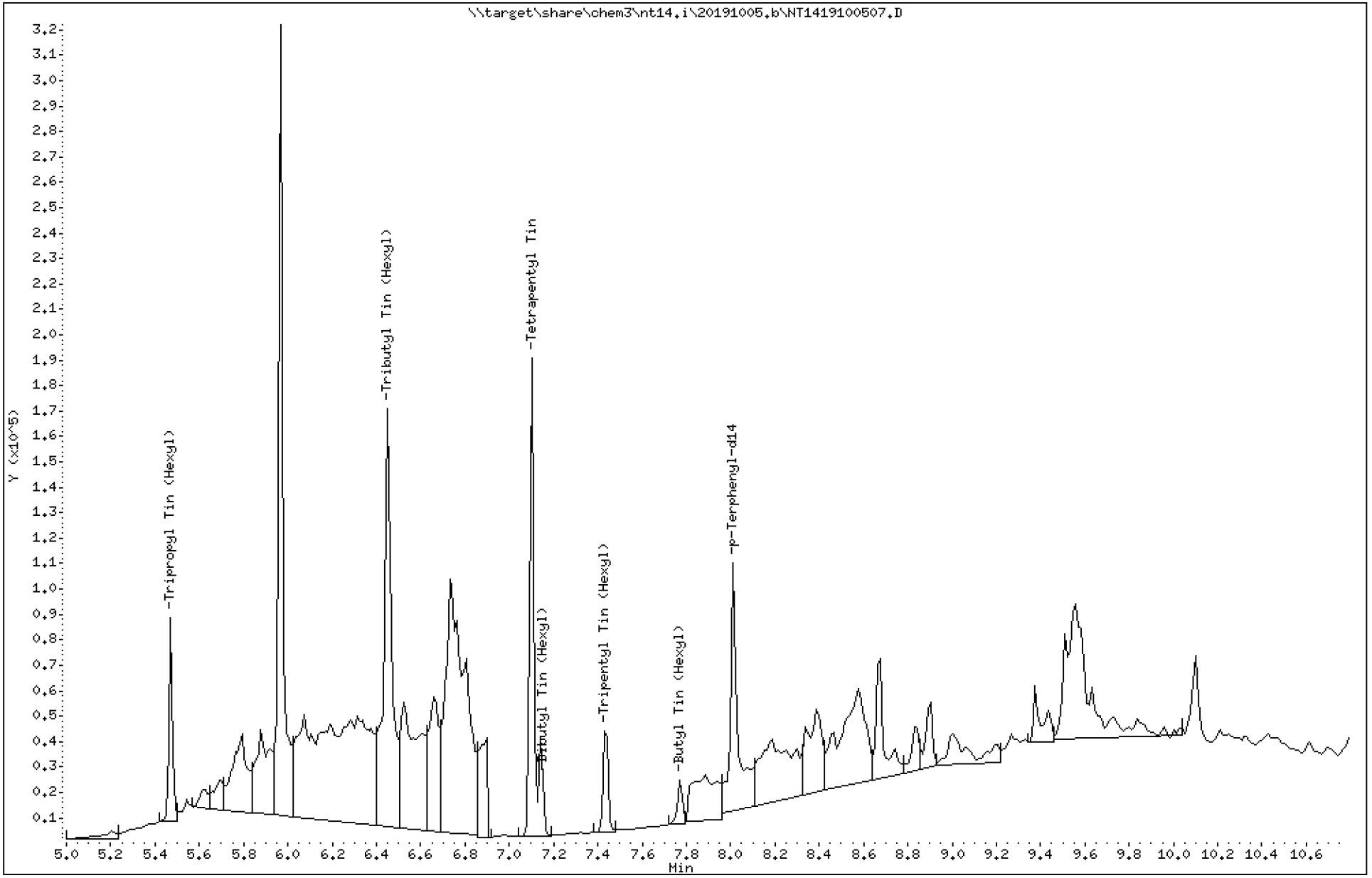
Sample Info: BHJ0094-MSD1

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100507.D

Date : 05-OCT-2019 15:00

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-MSD1

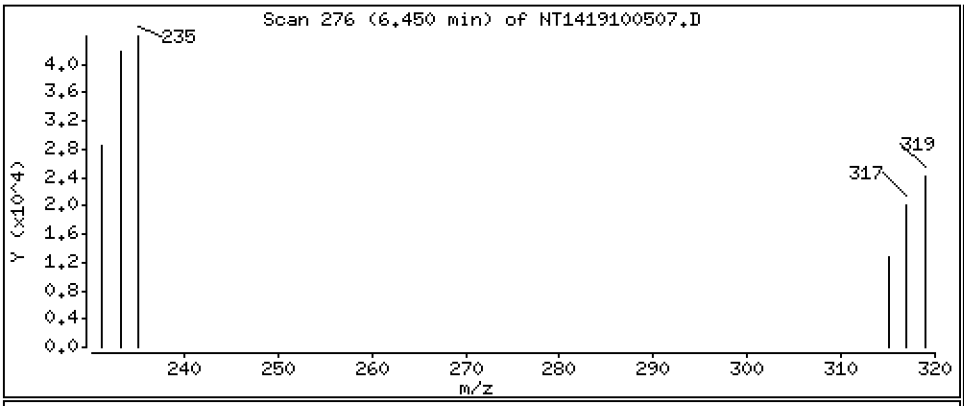
Operator: VTS

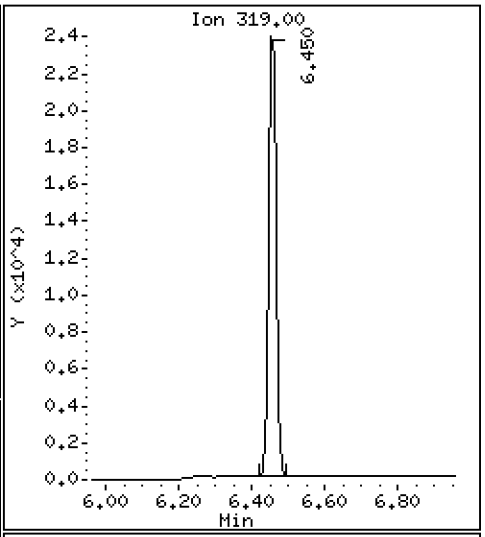
Column phase: ZB-5msi

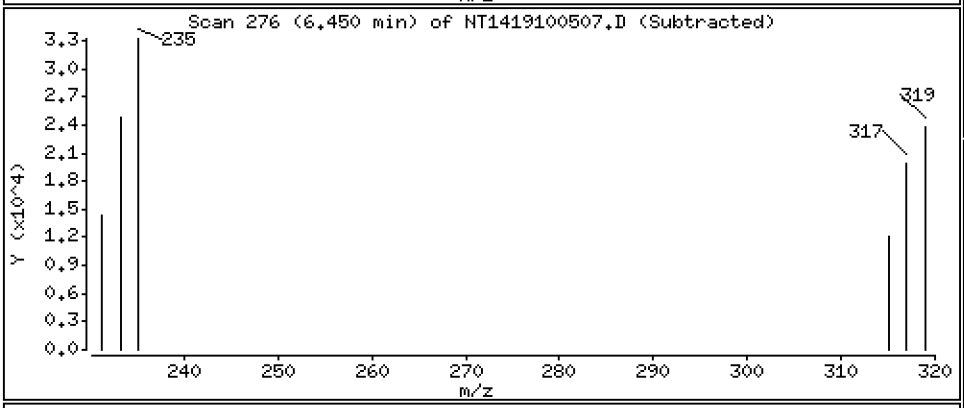
Column diameter: 0.25

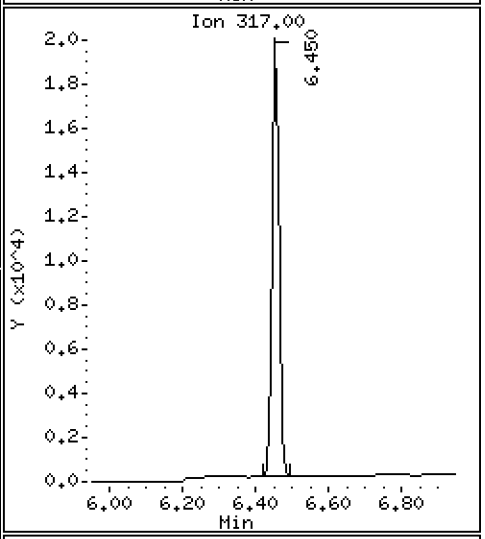
3 Tributyl Tin (Hexyl)

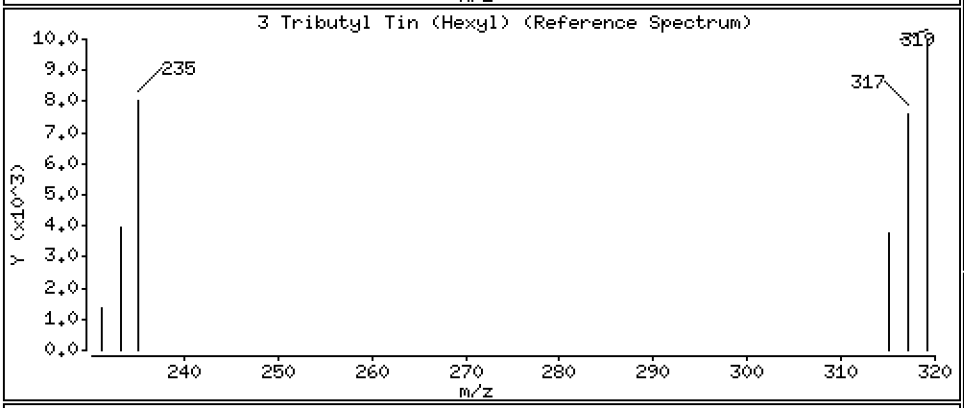
Concentration: 0.4210 ug/mL

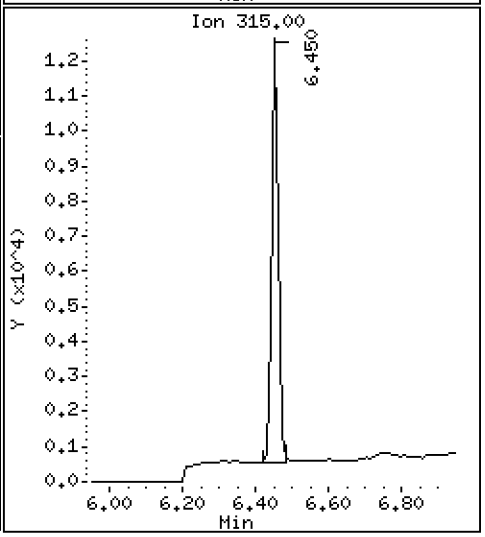


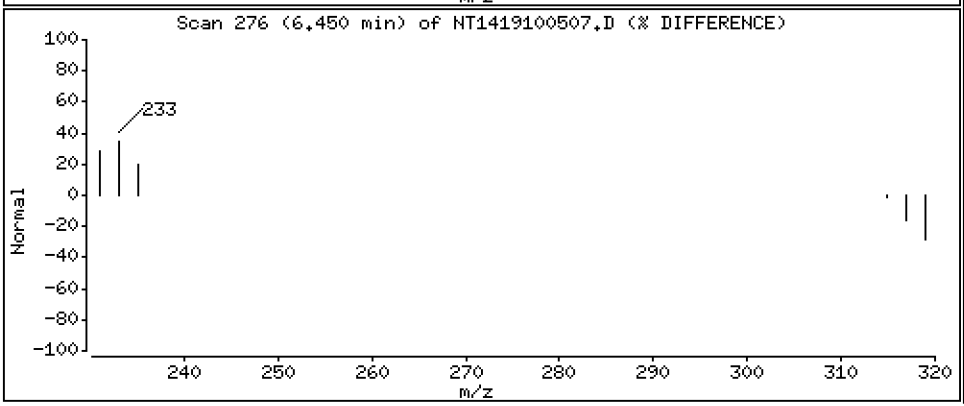












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100507.D

Date : 05-OCT-2019 15:00

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-MSD1

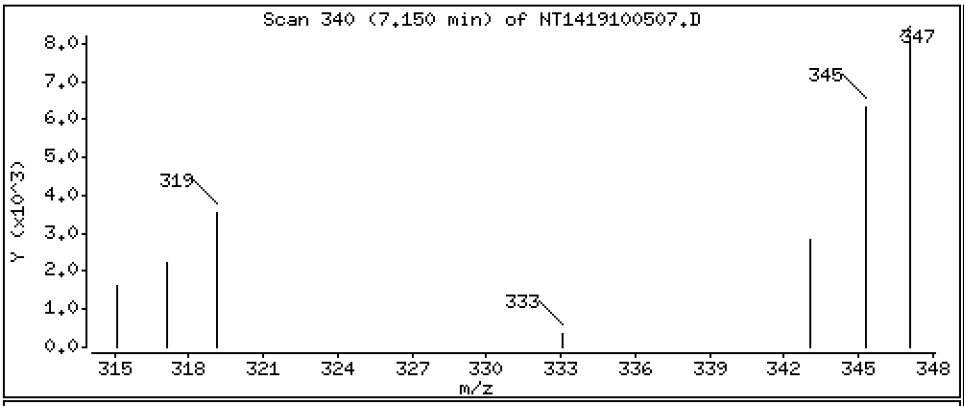
Operator: VTS

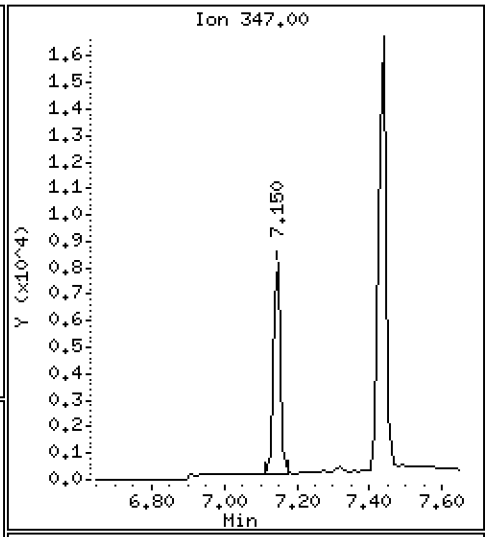
Column phase: ZB-5msi

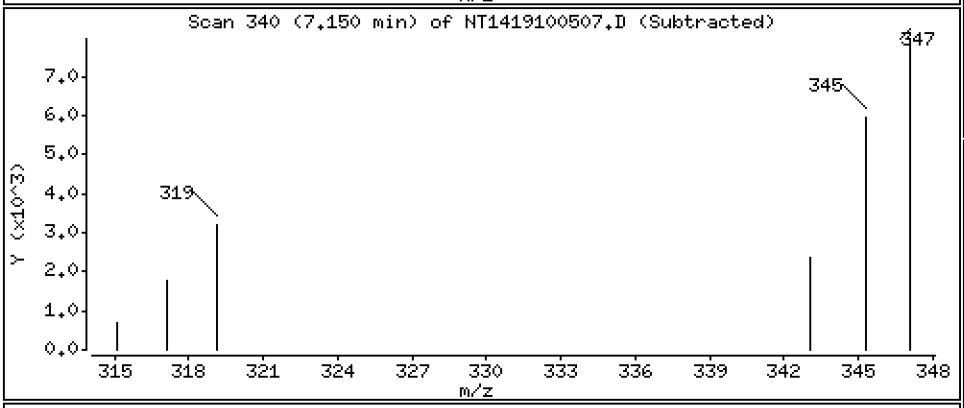
Column diameter: 0.25

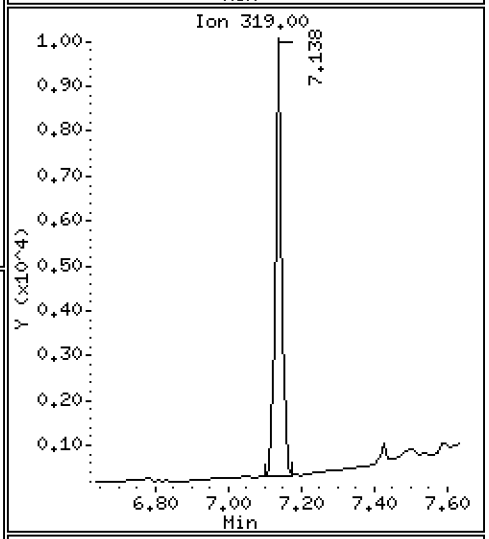
5 Dibutyl Tin (Hexyl)

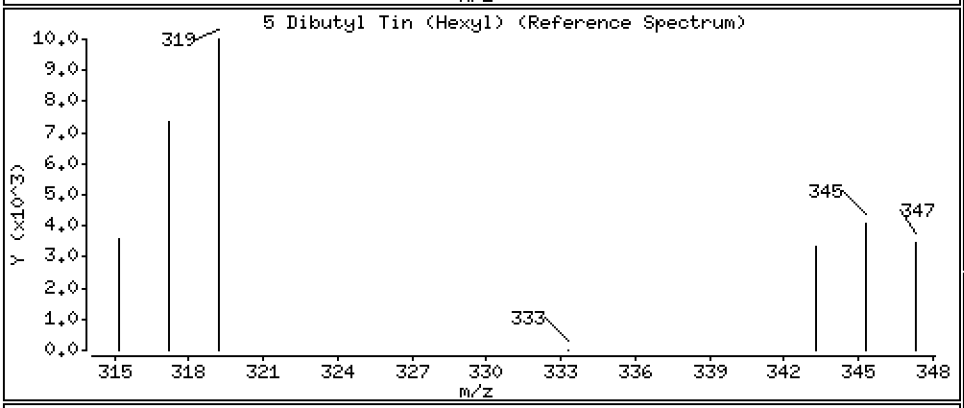
Concentration: 0.2237 ug/mL

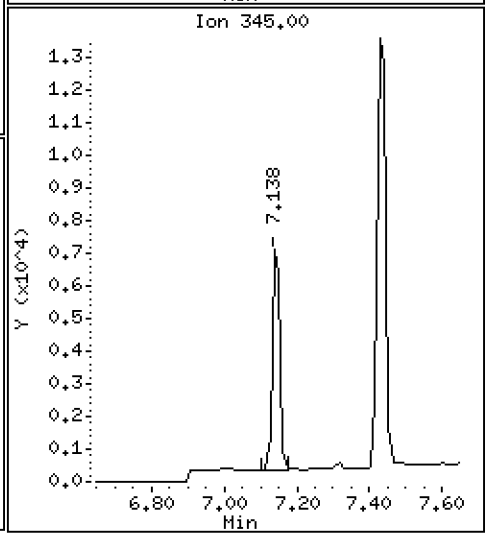


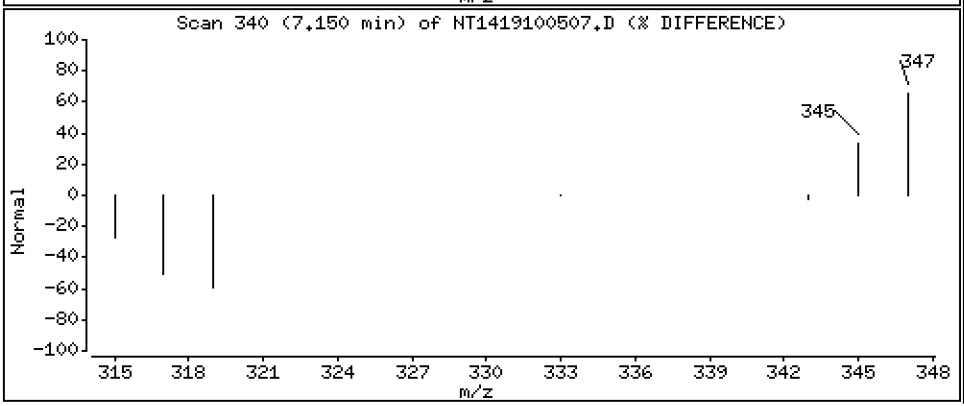












Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100507.D

Date : 05-OCT-2019 15:00

Client ID:

Instrument: nt14.i

Sample Info: BHJ0094-MSD1

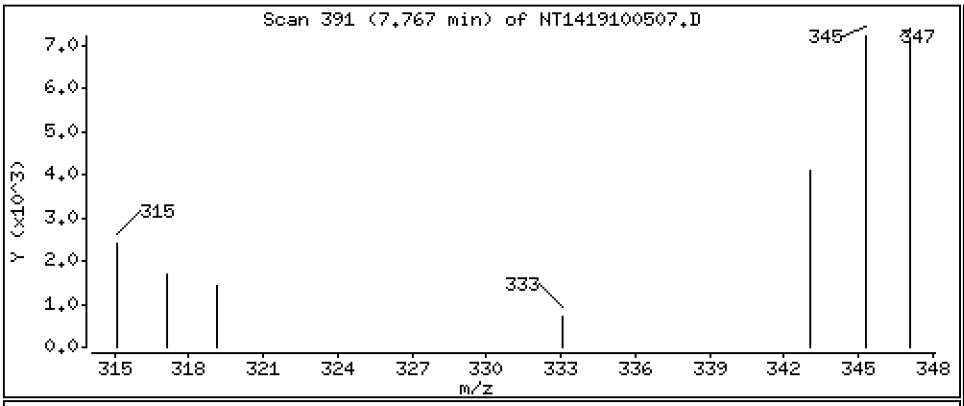
Operator: VTS

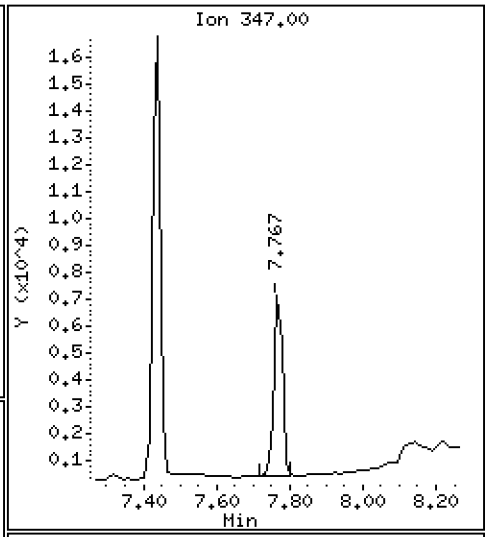
Column phase: ZB-5msi

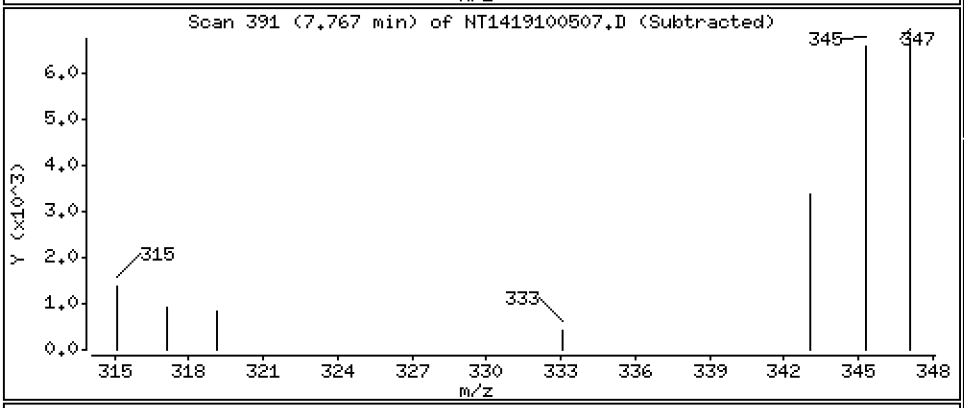
Column diameter: 0.25

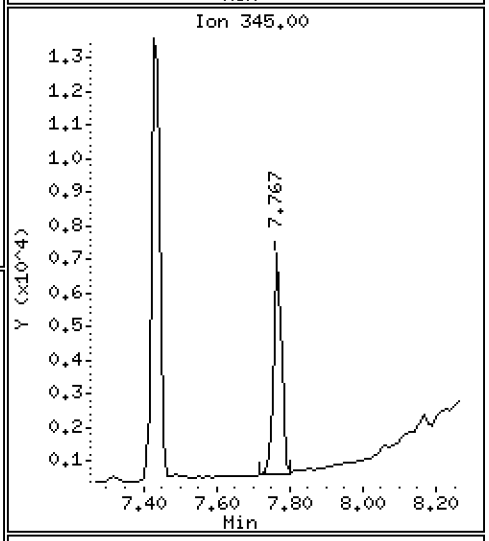
7 Butyl Tin (Hexyl)

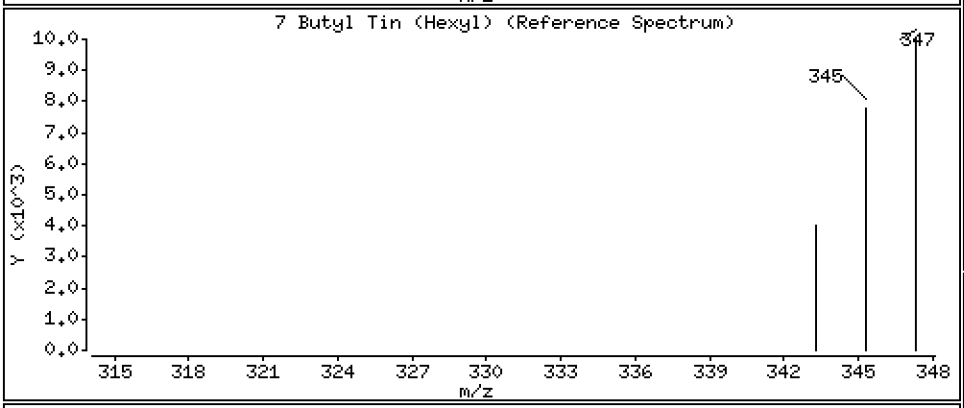
Concentration: 0.1363 ug/mL

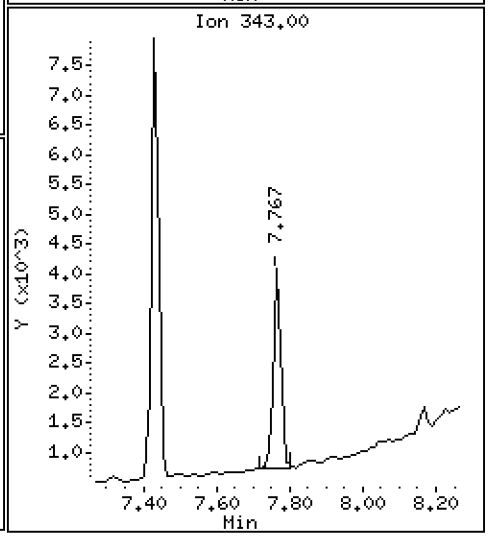


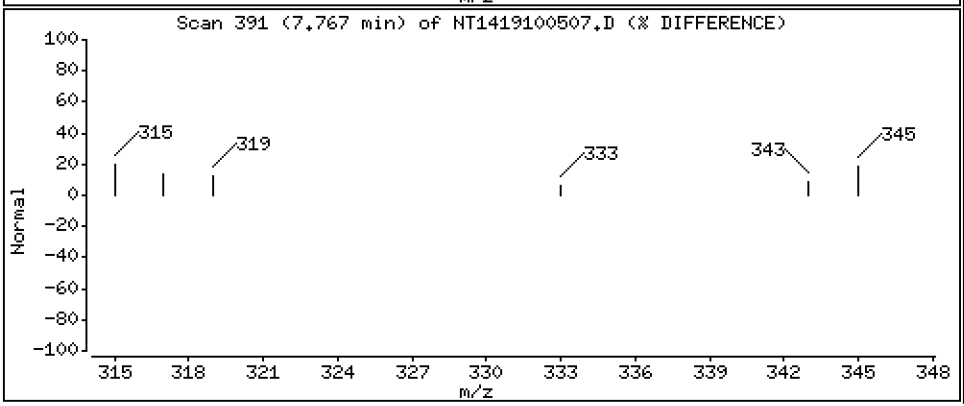












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100507.D
Lab Smp Id: BHJ0094-MSD1
Inj Date : 05-OCT-2019 15:00 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : BHJ0094-MSD1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)	
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	36329	0.39345	0.3934	
	2 Tetrabutyl Tin	289	Compound Not Detected.						
	3 Tributyl Tin (Hexyl)	319	6.450	6.460	(0.908)	34286	0.42099	0.4210	
*	4 Tetrapentyl Tin	333	7.102	7.101	(1.000)	228059	2.00000		
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	11770	0.22371	0.2237	
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	23743	0.32742	0.3274	
	7 Butyl Tin (Hexyl)	347	7.766	7.766	(0.970)	10855	0.13632	0.1363	
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	110294	0.20000		(M)

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100507.D
Lab Smp Id: BHJ0094-MSD1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 05-OCT-2019
Calibration Time: 13:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	228059	10.55
8 p-Terphenyl-d14	96182	48091	192364	110294	14.67

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100507.D

Lab ID: BHJ0094-MSD1
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 15:00

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

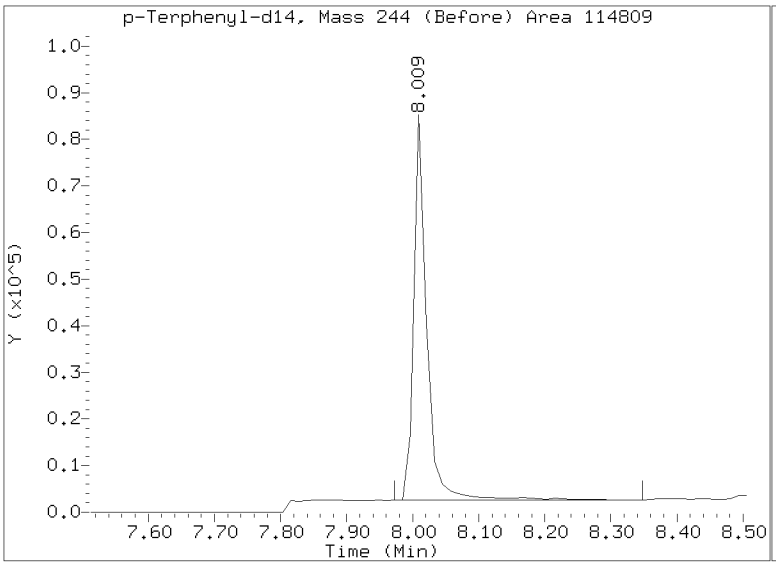
RRT check based on Ccal File: NT1419100502.D

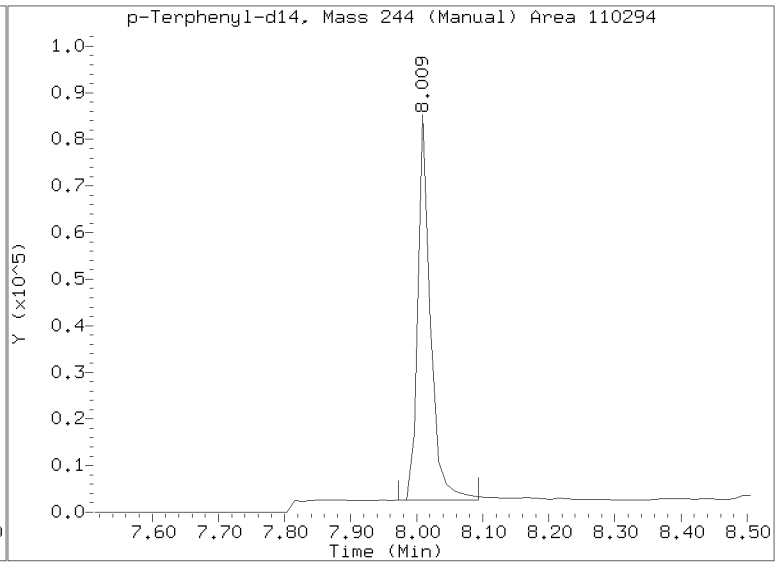
On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt14.i/20191005.b/NT1419100507.D
Injection Date: 05-OCT-2019 15:00
Lab ID:BHJ0094-MSD1 Client ID:
Report Date: 10/08/2019 08:23





Analytical Resources, Incorporated
Analytical Chemists and Consultants

MASS SPECTROMETER
INSTRUMENT PERFORMANCE CHECK
EPA 8270D-SIM

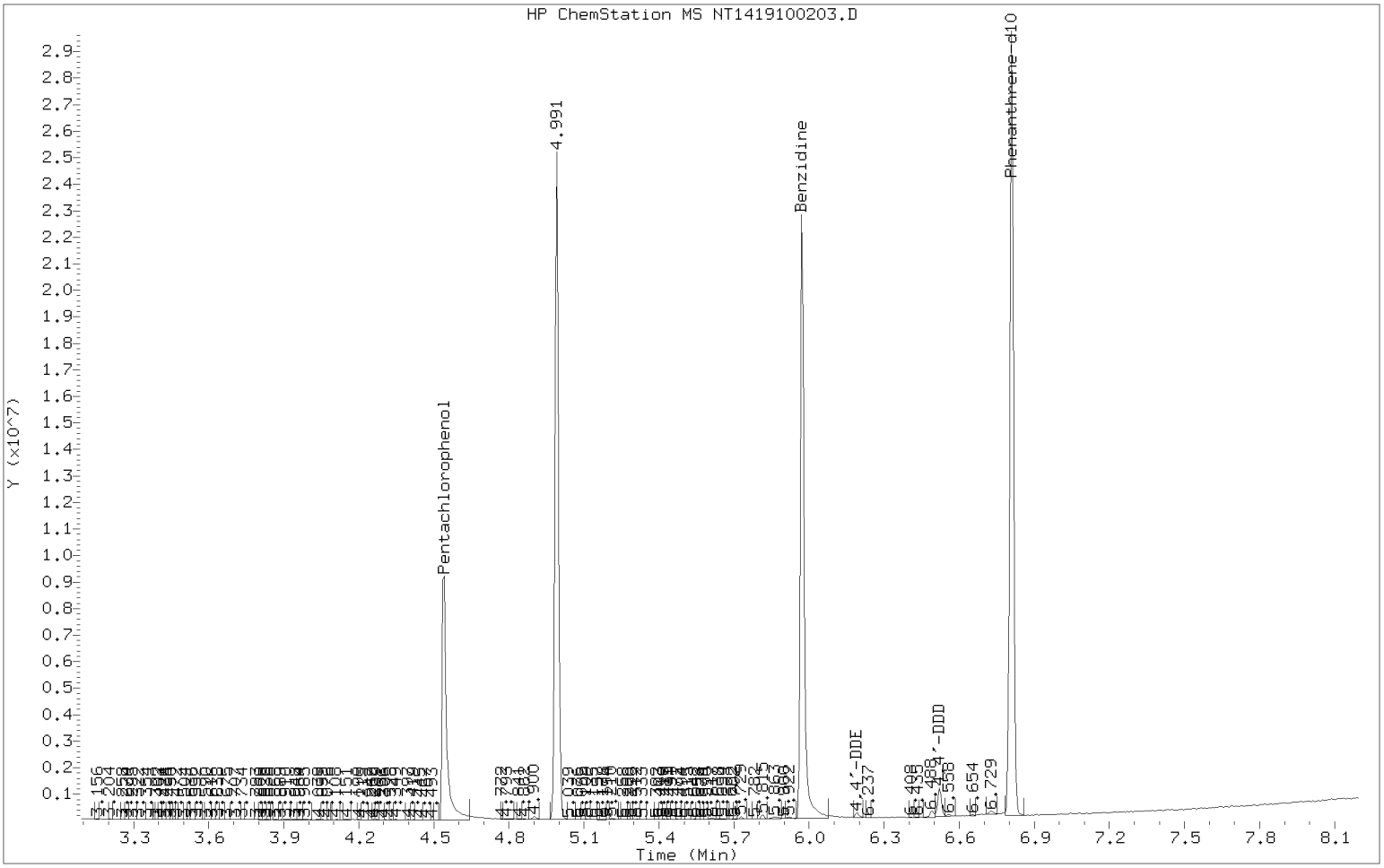
Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Lab File ID:	NT1419100203.D	Injection Date:	10/02/19
Instrument ID:	NT14	Injection Time:	07:36
Sequence:	SHJ0009	Lab Sample ID:	SHJ0009-TUN1

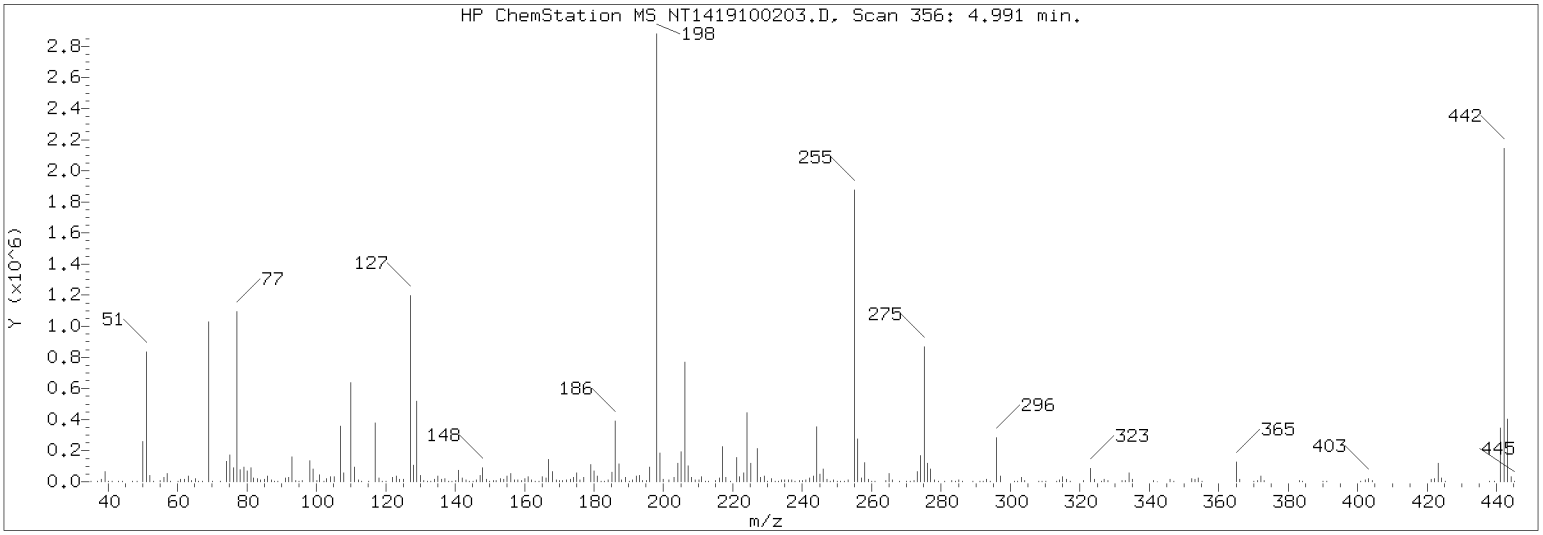
m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	10 - 80% of 198	29.7	PASS
68	Less than 2% of 69	0	PASS
69	Less than 100% of 198	36.4	PASS
70	Less than 2% of 69	0.558	PASS
127	10 - 80% of 198	42.2	PASS
197	Less than 2% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.63	PASS
275	10 - 60% of 198	29.8	PASS
365	1 - 100% of 198	4.44	PASS
441	0.1 - 24% of 442	16.4	PASS
442	50 - 200% of 198	74.4	PASS
443	15 - 24% of 442	18.8	PASS
4,4'-DDD	Less than 20% of 4,4'-DDT		
4,4'-DDE	Less than 20% of 4,4'-DDT		
4,4'-DDT	Base peak, 100% relative abundance		

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
MS Tune	SHJ0009-TUN1	NT1419100203.D	10/02/2019	7:36
Initial Cal Check	SHJ0009-ICV1	NT1419100204ICV.D	10/02/2019	7:47
Cal Standard	SHJ0009-CAL4	NT1419100204.D	10/02/2019	7:47
Cal Standard	SHJ0009-CAL6	NT1419100205.D	10/02/2019	8:12
Cal Standard	SHJ0009-CAL1	NT1419100206.D	10/02/2019	8:25
Cal Standard	SHJ0009-CAL5	NT1419100207.D	10/02/2019	8:39
Cal Standard	SHJ0009-CAL2	NT1419100208.D	10/02/2019	8:52
Cal Standard	SHJ0009-CAL3	NT1419100209.D	10/02/2019	9:06
Secondary Cal Check	SHJ0009-SCV1	NT1419100210.D	10/02/2019	10:07
Blank	BHI0813-BLK1	NT1419100211.D	10/02/2019	10:33
LCS	BHI0813-BS1	NT1419100212.D	10/02/2019	10:46
ZZZZZ	19I0351-05	NT1419100213.D	10/02/2019	11:00
Calibration Check	SHJ0009-CCV1	NT1419100216.D	10/02/2019	11:40

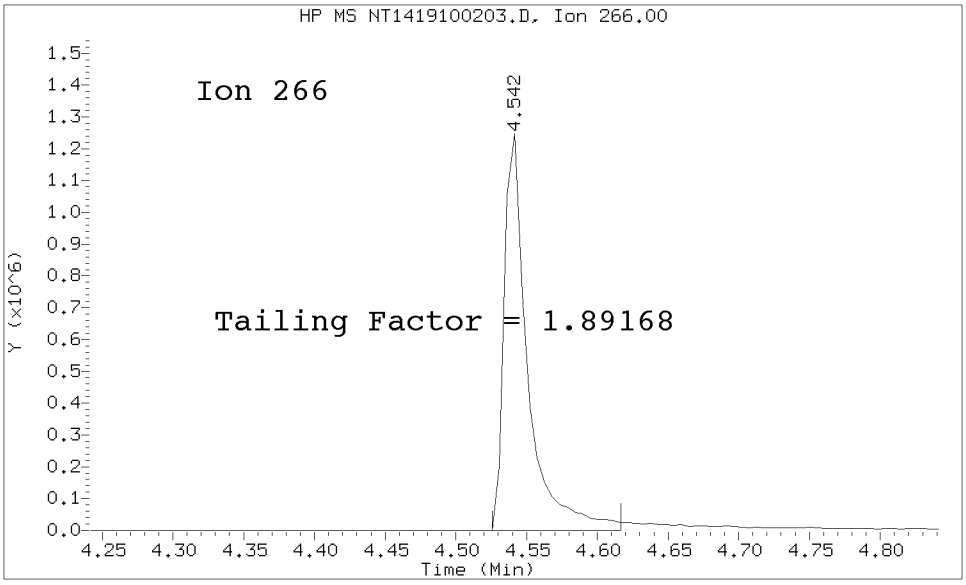
DFTPP TAILING FACTOR AND BREAKDOWN GRAPHIC REPORT

Datafile Analyzed: /20191002.b/NT1419100203.D/NT1419100203.D
Method Used: \20191002.b\df8270.m Inst: nt14
Injection Date: 02-OCT-2019 07:36 Operator: VTS
Sample Info: SHJ0009-TUN1 SHJ0009-TUN1
Report Date: 10/02/2019 12:06



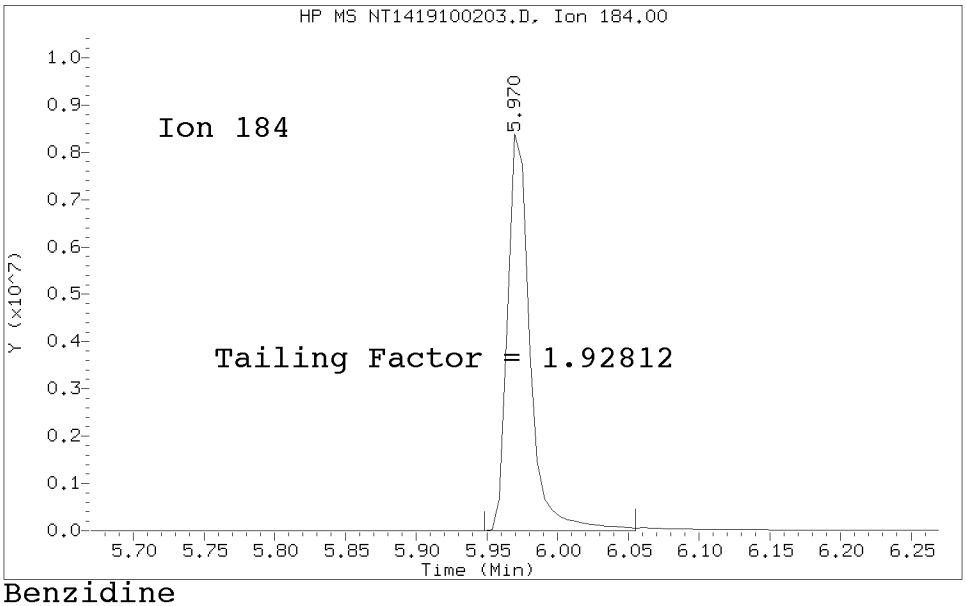


Datafile Analyzed: /20191002.b/NT1419100203.D/NT1419100203.D
Method Used: \20191002.b\df8270.m\sw846ddt.m Inst: nt14
Injection Date: 02-OCT-2019 07:36 Operator: VTS
Sample Info: SHJ0009-TUN1
Report Date: 10/02/2019 12:06



Pentachlorophenol
==========
Exp. RT = 4.542
Found RT = 4.542

Tail Factor = 1.892 Maximum Allowed = 2.0



Benzidine
==========
Exp. RT = 5.970
Found RT = 5.970

Tail Factor = 1.928 Maximum Allowed = 2.0

8270 TAILING FACTOR/BREAKDOWN SUMMARY RESULTS

TAILING ANALYSIS SUMMARY

Compound	Tail Factor	Max Allowed	Test
Pentachlorophenol	1.8916777	2.000	PASS
Benzidine	1.9281150	2.000	PASS

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

Compound	Response	%Breakdown	Max Allowed	Test
4,4-DDT	5858909			N/A
4,4-DDE	29680	0.5	20.0	PASS
4,4-DDD	221742	3.6	20.0	PASS
4,4-DDD + DDE	251422	4.1	20.0	PASS

Tuning Sample, nt14.i/20191002.b/NT1419100203.D, *** PASSED ***

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	29.70
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Mass 69 relative abundance	36.40
70	Less than 2.00% of mass 69	0.20 (0.56)
127	10.00 - 80.00% of mass 198	42.24
197	Less than 2.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.63
275	10.00 - 60.00% of mass 198	29.83
365	Greater than 1.00% of mass 198	4.44
441	0.01 - 24.00% of mass 442	12.22 (16.42)
442	50.00 - 200.00% of mass 198	74.40
443	15.00 - 24.00% of mass 442	13.97 (18.78)

Data File: NT1419100203.D
Spectrum: Avg. Scans 355-357 (4.99), Background Scan 350
Location of Maximum: 198.00
Number of points: 296

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	950	123.00	33184	200.00	12553	285.00	9773
36.00	703	124.00	14855	201.00	11503	286.00	1632
37.00	5804	125.00	14140	202.00	1796	289.00	2119
38.00	13985	127.00	970624	203.00	21288	290.00	770
39.00	54192	128.00	86032	204.00	93368	291.00	1459
40.00	3065	129.00	421760	205.00	158016	292.00	3341
41.00	987	130.00	35368	206.00	608448	293.00	14706
43.00	122	131.00	6681	207.00	80640	294.00	3522
44.00	1662	132.00	4124	208.00	24000	296.00	220096
45.00	731	133.00	2906	209.00	7995	297.00	31504
47.00	164	134.00	13417	210.00	10686	298.00	722
48.00	2680	135.00	32408	211.00	23552	301.00	2821
50.00	220992	136.00	15311	212.00	2847	302.00	4424
51.00	682496	137.00	17816	213.00	1725	303.00	23280
52.00	35312	138.00	3490	215.00	7969	304.00	7265
53.00	1617	139.00	2816	216.00	19688	308.00	3437
55.00	5139	140.00	5066	217.00	176896	309.00	1813
56.00	23832	141.00	57800	218.00	22096	310.00	2355
57.00	44640	142.00	18208	219.00	2311	313.00	2207
58.00	2459	143.00	11502	221.00	121584	314.00	11281
60.00	2303	144.00	3661	222.00	17448	315.00	25864
61.00	11818	145.00	3790	223.00	43096	316.00	12790
62.00	14347	146.00	11822	224.00	359296	317.00	2257
63.00	30920	147.00	34128	225.00	91080	321.00	6770
64.00	4645	148.00	74664	227.00	166208	322.00	1333
65.00	15071	149.00	12267	228.00	23296	323.00	65968
66.00	841	150.00	3339	229.00	32560	324.00	12653
67.00	2496	151.00	6506	230.00	4835	326.00	1014
69.00	836416	152.00	4888	231.00	13384	327.00	12687
70.00	4665	153.00	17440	232.00	1824	328.00	6787
72.00	758	154.00	14030	233.00	3712	332.00	6010
73.00	5956	155.00	30304	234.00	10500	333.00	7015
74.00	101832	156.00	46216	235.00	12185	334.00	44576
75.00	138752	157.00	9911	236.00	8535	335.00	10743
76.00	30832	158.00	11225	237.00	11942	341.00	7874
77.00	891840	159.00	8169	238.00	2122	342.00	2170
78.00	63640	160.00	19136	239.00	6641	346.00	15107
79.00	75984	161.00	24832	240.00	5474	347.00	3512
80.00	53376	162.00	7947	241.00	10857	351.00	913
81.00	72296	163.00	2663	242.00	20256	352.00	19792
82.00	17176	164.00	3727	243.00	28616	353.00	14125
83.00	16544	165.00	25296	244.00	281472	354.00	20128
84.00	2464	166.00	19672	245.00	39256	355.00	4280
85.00	13821	167.00	124368	246.00	63640	365.00	101960
86.00	23592	168.00	51504	247.00	12903	366.00	13881
87.00	10625	169.00	10356	248.00	2896	370.00	710
88.00	4417	170.00	4540	249.00	10399	371.00	6130
89.00	2073	171.00	6335	250.00	2020	372.00	31920
91.00	18976	172.00	11934	251.00	3332	373.00	8282

92.00	22976	173.00	14047	252.00	3303	383.00	8184
93.00	135616	174.00	23416	253.00	8070	384.00	2607
94.00	8488	175.00	46712	255.00	1486848	390.00	2381
95.00	4187	176.00	12274	256.00	218624	391.00	3197
96.00	5525	177.00	22664	257.00	20648	392.00	978
98.00	108984	178.00	2989	258.00	98672	401.00	1758
99.00	68944	179.00	89936	259.00	14291	402.00	11651
100.00	6779	180.00	56048	260.00	2506	403.00	15173
101.00	36584	181.00	28336	261.00	2036	404.00	6734
102.00	1743	182.00	4190	264.00	2929	405.00	699
103.00	15153	183.00	3168	265.00	39832	421.00	14265
104.00	27608	184.00	8264	266.00	6134	422.00	14533
105.00	26560	185.00	49256	270.00	2663	423.00	95168
107.00	295936	186.00	320064	271.00	3555	424.00	20960
108.00	44672	187.00	91832	272.00	5918	425.00	1739
110.00	508288	188.00	9764	273.00	51272	438.00	1627
111.00	77296	189.00	22872	274.00	136448	439.00	3890
112.00	9653	190.00	4517	275.00	685440	441.00	280704
113.00	3165	191.00	11579	276.00	96936	442.00	1709568
115.00	2275	192.00	28040	277.00	65744	443.00	321088
117.00	315328	193.00	32640	278.00	11217	444.00	29112
118.00	21120	194.00	6858	279.00	1821	445.00	1885
119.00	1141	195.00	5095	281.00	2429		
120.00	4228	196.00	71304	282.00	1229		
121.00	1748	198.00	2297856	283.00	8380		
122.00	23944	199.00	152256	284.00	5955		

Analytical Resources, Incorporated
Analytical Chemists and Consultants

MASS SPECTROMETER
INSTRUMENT PERFORMANCE CHECK
EPA 8270D-SIM

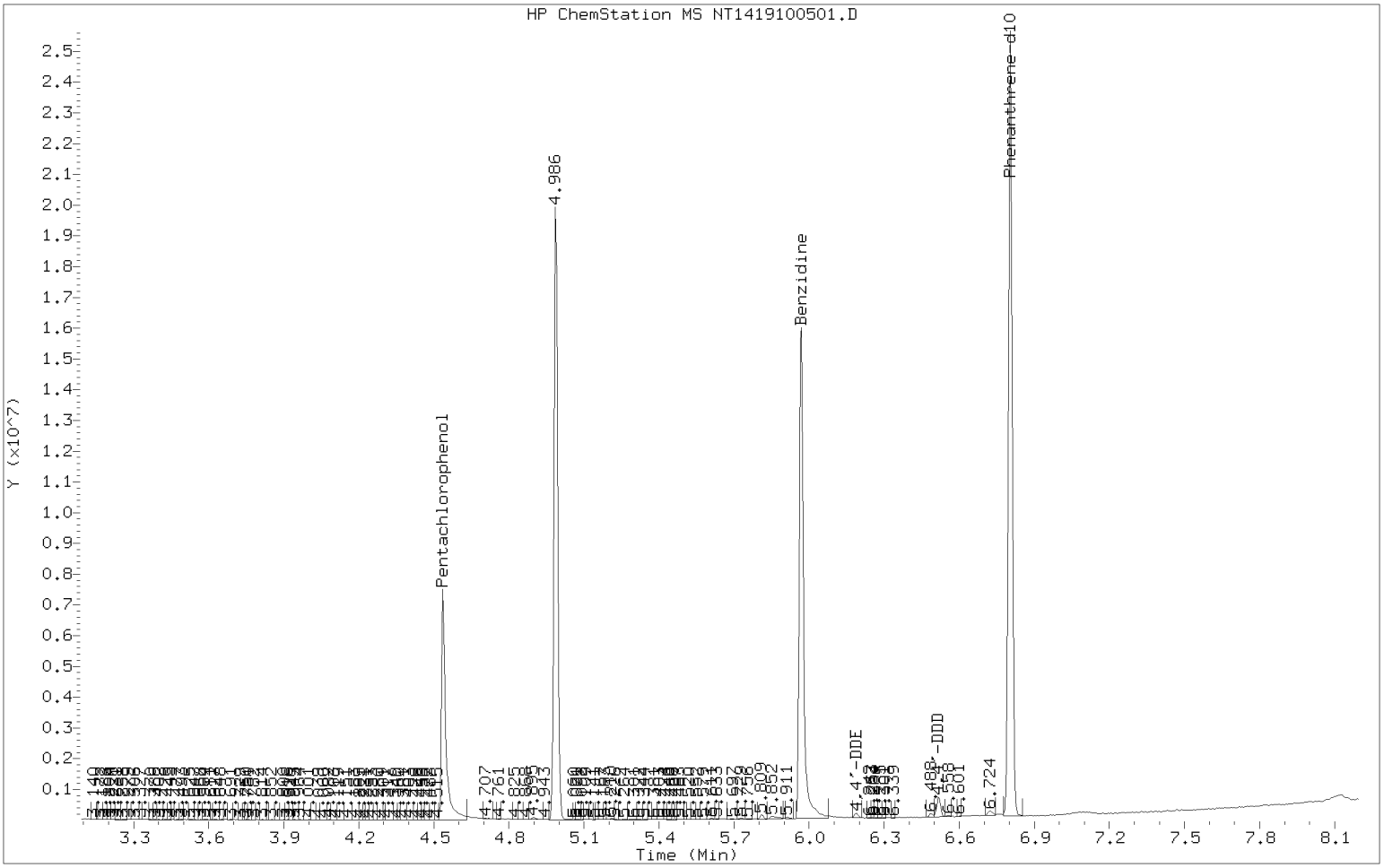
Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Lab File ID:	NT1419100501.D	Injection Date:	10/05/19
Instrument ID:	NT14	Injection Time:	13:37
Sequence:	SHJ0100	Lab Sample ID:	SHJ0100-TUN1

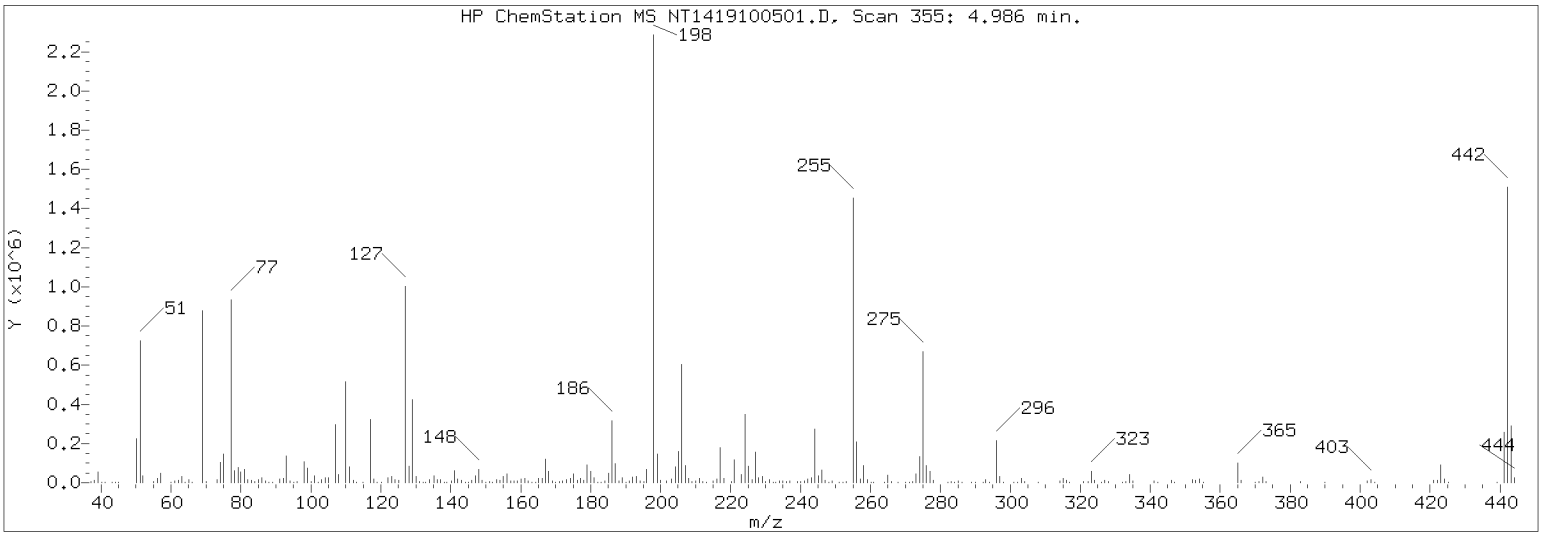
m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	10 - 80% of 198	31.1	PASS
68	Less than 2% of 69	0	PASS
69	Less than 100% of 198	38.2	PASS
70	Less than 2% of 69	0.633	PASS
127	10 - 80% of 198	43.6	PASS
197	Less than 2% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.61	PASS
275	10 - 60% of 198	29.8	PASS
365	1 - 100% of 198	4.52	PASS
441	0.1 - 24% of 442	16.9	PASS
442	50 - 200% of 198	71.6	PASS
443	15 - 24% of 442	19.2	PASS
4,4'-DDD	Less than 20% of 4,4'-DDT		
4,4'-DDE	Less than 20% of 4,4'-DDT		
4,4'-DDT	Base peak, 100% relative abundance		

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
MS Tune	SHJ0100-TUN1	NT1419100501.D	10/05/2019	13:37
Initial Cal Check	SHJ0100-ICV1	NT1419100502.D	10/05/2019	13:47
Blank	BHJ0094-BLK1	NT1419100503.D	10/05/2019	14:06
LCS	BHJ0094-BS1	NT1419100504.D	10/05/2019	14:19
PDI-103SG-00-01-190924	19I0422-01	NT1419100505.D	10/05/2019	14:33
Matrix Spike	BHJ0094-MS1	NT1419100506.D	10/05/2019	14:46
Matrix Spike Dup	BHJ0094-MSD1	NT1419100507.D	10/05/2019	15:00
PDI-104SG-00-01-190924	19I0422-02	NT1419100508.D	10/05/2019	15:13
PDI-105SG-00-0.99-190924	19I0422-03	NT1419100509.D	10/05/2019	15:27
PDI-106SG-00-01-190924	19I0422-04	NT1419100510.D	10/05/2019	15:40
Calibration Check	SHJ0100-CCV1	NT1419100511.D	10/05/2019	15:54

DFTPP TAILING FACTOR AND BREAKDOWN GRAPHIC REPORT

Datafile Analyzed: /20191005.b/NT1419100501.D/NT1419100501.D
Method Used: \20191005.b\df8270.m Inst: nt14
Injection Date: 05-OCT-2019 13:37 Operator: VTS
Sample Info: SHJ0100-TUN1 SHJ0100-TUN1
Report Date: 10/08/2019 08:25





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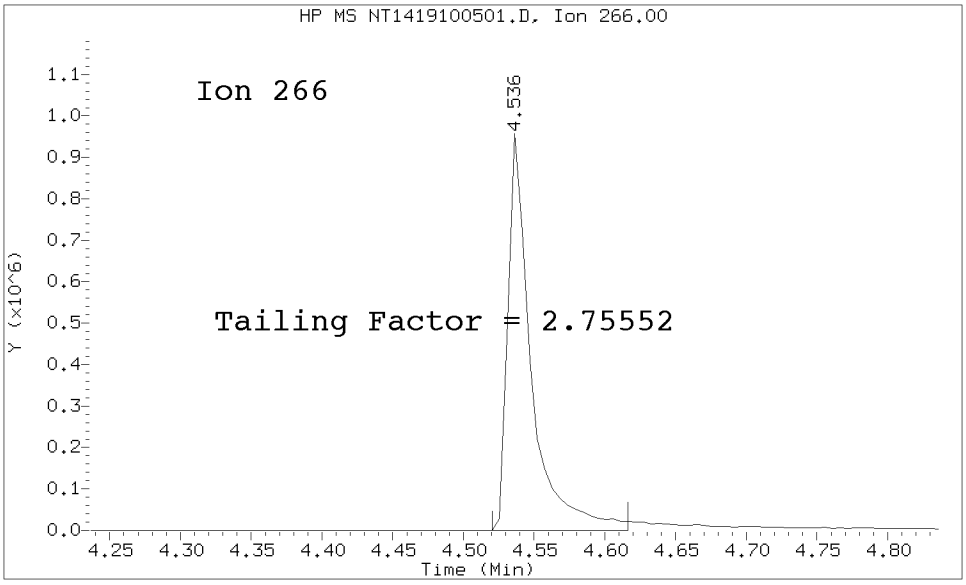
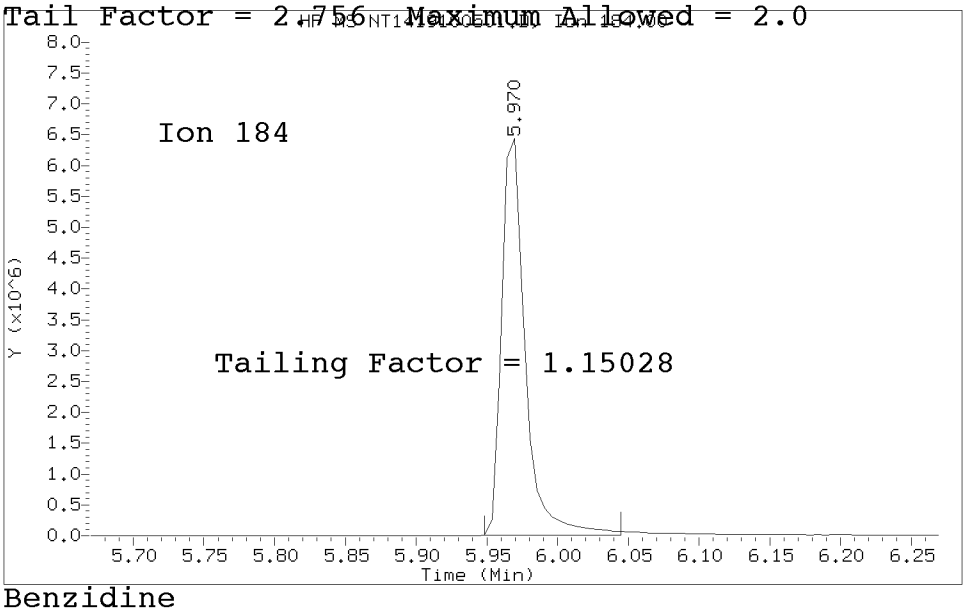
Method Used: \20191005.b\df8270.m\sw846ddt.m Inst: nt14
Injection Date: 05-OCT-2019 13:37 Operator: VTS
Sample Info: SHJ0100-TUN1
Report Date: 10/08/2019 08:25



Pentachlorophenol
==========
Exp. RT = 4.536
Found RT = 4.536

The tailing factor for Pentachlorophenol EXCEEDED

Tail Factor = 2.756 Maximum Allowed = 2.0



Benzidine
==========
Exp. RT = 5.970
Found RT = 5.970

Tail Factor = 1.150 Maximum Allowed = 2.0

8270 TAILING FACTOR/BREAKDOWN SUMMARY RESULTS

TAILING ANALYSIS SUMMARY

Compound	Tail Factor	Max Allowed	Test	
Pentachlorophenol	2.7555178	2.000	FAIL	[Failure]
Benzidine	1.1502762	2.000	PASS	

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

Compound	Response	%Breakdown	Max Allowed	Test
4,4-DDT	5045103			N/A
4,4-DDE	24466	0.5	20.0	PASS
4,4-DDD	140293	2.7	20.0	PASS
4,4-DDD + DDE	164759	3.2	20.0	PASS

Tuning Sample, nt14.i/20191005.b/NT1419100501.D, *** FAILED ***

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	31.13
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Mass 69 relative abundance	38.19
70	Less than 2.00% of mass 69	0.24 (0.63)
127	10.00 - 80.00% of mass 198	43.57
197	Less than 2.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.61
275	10.00 - 60.00% of mass 198	29.80
365	Greater than 1.00% of mass 198	4.52
441	0.01 - 24.00% of mass 442	12.09 (16.89)
442	50.00 - 200.00% of mass 198	71.56
443	15.00 - 24.00% of mass 442	13.71 (19.16)

Data File: NT1419100501.D
Spectrum: Avg. Scans 354-356 (4.99), Background Scan 348
Location of Maximum: 198.00
Number of points: 283

m/z	Y	m/z	Y	m/z	Y	m/z	Y
37.00	4747	128.00	70408	200.00	10998	282.00	699
38.00	10439	129.00	342464	201.00	3371	283.00	5890
39.00	45104	130.00	28768	202.00	5543	284.00	3741
40.00	2689	131.00	5526	203.00	16236	285.00	8138
41.00	1418	132.00	3686	204.00	71024	286.00	702
43.00	1765	133.00	2751	205.00	123336	289.00	1993
44.00	709	134.00	12224	206.00	495616	290.00	1569
45.00	821	135.00	27536	207.00	66040	292.00	1937
50.00	180544	136.00	13158	208.00	19688	293.00	12619
51.00	571648	137.00	14577	209.00	6697	294.00	3666
52.00	29376	138.00	3511	210.00	9145	296.00	178304
55.00	6666	139.00	822	211.00	20368	297.00	24552
56.00	19768	140.00	4849	212.00	2596	298.00	1518
57.00	39400	141.00	48696	213.00	1372	301.00	1608
60.00	706	142.00	15487	215.00	6875	302.00	3389
61.00	9600	143.00	10321	216.00	15403	303.00	19104
62.00	11031	144.00	2888	217.00	140352	304.00	5016
63.00	26400	145.00	2754	218.00	16744	308.00	1750
64.00	3787	146.00	10871	220.00	2010	309.00	790
65.00	12292	147.00	26552	221.00	91680	310.00	1197
66.00	705	148.00	58272	222.00	4291	313.00	731
67.00	793	149.00	10749	223.00	36544	314.00	8780
69.00	701312	150.00	2545	224.00	281280	315.00	18760
70.00	4436	151.00	6447	225.00	70064	316.00	10812
73.00	9306	152.00	4061	226.00	10897	317.00	1498
74.00	82608	153.00	14433	227.00	128312	321.00	5173
75.00	116992	154.00	11919	228.00	19976	322.00	2941
76.00	20120	155.00	26000	229.00	26432	323.00	51664
77.00	752064	156.00	38400	230.00	4017	324.00	9725
78.00	52552	157.00	6995	231.00	10483	326.00	1570
79.00	62944	158.00	9259	232.00	795	327.00	11323
80.00	45704	159.00	7914	233.00	3044	328.00	5662
81.00	57728	160.00	15418	234.00	8870	332.00	4159
82.00	14665	161.00	19632	235.00	8859	333.00	5994
83.00	12821	162.00	6568	236.00	6082	334.00	32776
84.00	1415	163.00	2325	237.00	8901	335.00	8007
85.00	12246	164.00	3564	239.00	5643	341.00	7530
86.00	18968	165.00	18576	240.00	4352	342.00	1514
87.00	7265	166.00	16608	241.00	8057	346.00	12299
88.00	2979	167.00	102304	242.00	16100	347.00	2198
89.00	958	168.00	44096	243.00	20928	351.00	764
91.00	14736	169.00	8030	244.00	224128	352.00	15789
92.00	18792	170.00	4092	245.00	30352	353.00	10818
93.00	108080	171.00	4419	246.00	50328	354.00	16181
94.00	7579	172.00	8437	247.00	10379	355.00	3569
95.00	2088	173.00	11914	248.00	1401	365.00	83000
96.00	5159	174.00	18160	249.00	7663	366.00	11701
98.00	88288	175.00	37912	251.00	1905	370.00	1869
99.00	57968	176.00	10317	252.00	1884	371.00	3512

100.00	5896	177.00	16776	253.00	7001	372.00	24264
101.00	27952	178.00	9500	255.00	1184768	373.00	6825
102.00	1832	179.00	75416	256.00	175680	383.00	6365
103.00	12703	180.00	45992	257.00	15714	384.00	1134
104.00	23816	181.00	21248	258.00	75664	390.00	2431
105.00	20680	182.00	3409	259.00	12423	391.00	935
107.00	242624	183.00	686	260.00	2090	401.00	844
108.00	34856	184.00	6764	261.00	1845	402.00	9239
110.00	414336	185.00	40728	264.00	2098	403.00	12619
111.00	65816	186.00	258176	265.00	32536	404.00	3786
112.00	9131	187.00	76856	266.00	6767	421.00	10250
113.00	2173	188.00	8456	268.00	1483	422.00	11678
115.00	878	189.00	19784	270.00	1577	423.00	78056
117.00	262336	190.00	3819	271.00	3110	424.00	17024
118.00	18024	191.00	9279	272.00	4539	425.00	1616
119.00	2797	192.00	22632	273.00	39472	439.00	2247
120.00	3757	193.00	26080	274.00	110760	441.00	222016
122.00	21104	194.00	6489	275.00	547264	442.00	1314304
123.00	25808	195.00	3836	276.00	72712	443.00	251776
124.00	12273	196.00	53448	277.00	52144	444.00	22992
125.00	10316	198.00	1836544	278.00	9120	445.00	702
127.00	800128	199.00	121328	279.00	801		

INITIAL CALIBRATION DATA

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Calibration:	CJ00005	Instrument:	NT14
Calibration Date:	10/02/2019 0:00	Column (1):	ZB-5MS

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RRF		**RRF**		**RRF**		**RRF**		**RRF**		**RRF**
Tributyltin Ion	0.03865	0.8174491	0.1546	0.6076896	0.3865	0.8005667	0.773	0.720482	1.546	0.6574618	3.092	0.6815865
Tripentyltin	0.07959	0.1386267	0.31836	0.1070262	0.7959	0.1427406	1.5918	0.1285968	3.1836	0.1237338	6.3672	0.1482459
Tripropyltin	0.037216	0.918516	0.14886	0.6931868	0.37216	0.9177281	0.74432	0.8183282	1.4886	0.7471526	2.9773	0.7634573

INITIAL CALIBRATION DATA

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Calibration:	CJ00005	Instrument:	NT14
Calibration Date:	10/02/2019 0:00	Column (1):	ZB-5MS

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
Tributyltin Ion	0.714206	11.5			RSD (15)	
Tripentyltin	0.131495	11.4			RSD (15)	
Tripropyltin	0.8097282	11.5			RSD (15)	

Printed: 10/2/2019 12:34:08PM

ANALYSIS SEQUENCE

SHJ0009

Instrument: NT14 Element Column ID: G002876
Calibration ID: CJ00005 Tune File: 190827.U
EM Voltage: 1871

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SHJ0009-TUN1	MS Tune	QC		1	H008234		
SHJ0009-CAL4	TBT 1.0	QC		2	H000010	H004622	
SHJ0009-CAL6	TBT 4.0	QC		3	H000008	H004622	
SHJ0009-CAL1	TBT 0.05	QC		4	H000013	H004622	
SHJ0009-CAL5	TBT 2.0	QC		5	H000009	H004622	
SHJ0009-CAL2	TBT 0.2	QC		6	H000012	H004622	
SHJ0009-CAL3	TBT 0.5	QC		7	H000011	H004622	
SHJ0009-SCV1	Secondary Cal Check	QC		8	H009522	H004622	
SHJ0009-ICV1	TBT 1.0	QC		9	H000010	H004622	
BHI0813-BLK1	Blank	QC		10		H004622	
BHI0813-BS1	LCS	QC		11		H004622	
19I0351-05	DSISUP-BT-RB01	8270D-SIM Butyl Tins	E 01	12		H004622	
BHI0813-MS1	Matrix Spike	QC		13		H004622	
BHI0813-MSD1	Matrix Spike Dup	QC		14		H004622	
SHJ0009-CCV1	TBT 1.0	QC		15	H000010	H004622	

INTERNAL STANDARD SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191002.b

	Time	Filename	LabID	ClientId	DF								
1	0707	NT1419100201.D	SHJ0009-TUN1		1	NO ISTDS FOUND							
2	0717	NT1419100202.D	SHJ0009-ICV1		1	7.10	208952	8.01	96786				
3	0736	NT1419100203.D	SHJ0009-TUN1		1	NO ISTDS FOUND							
4	0747	NT1419100204.D	SHJ0009-CAL4		1	7.10	206298	8.01	96182				
5	0747	NT1419100204ICV.D	SHJ0009-ICV1		1	7.10	206298	8.01	96182				
6	0812	NT1419100205.D	SHJ0009-CAL6		1	7.10	225157	8.02	89036				
7	0825	NT1419100206.D	SHJ0009-CAL1		1	7.10	192697	8.01	94383				
8	0839	NT1419100207.D	SHJ0009-CAL5		1	7.10	202106	8.01	92324				
9	0852	NT1419100208.D	SHJ0009-CAL2		1	7.10	194392	8.01	92426				
10	0906	NT1419100209.D	SHJ0009-CAL3		1	7.10	196201	8.01	92942				
11	1007	NT1419100210.D	SHJ0009-SCV1		1	7.10	190154	8.02	86746				
12	1033	NT1419100211.D	BHI0813-BLK1		1	7.10	182169	8.02	77407				
13	1046	NT1419100212.D	BHI0813-BS1		1	7.10	201795	8.01	93428				
14	1100	NT1419100213.D	19I0351-05		1	7.10	212108	8.01	103091				
15	1113	NT1419100214.D	BHI0813-MS1		1	7.10	216882	8.01	108937				
16	1127	NT1419100215.D	BHI0813-MSD1		1	7.10	211673	8.01	106627				
17	1140	NT1419100216.D	SHJ0009-CCV1		1	7.10	240085	8.01	124803				

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191002.b

Instrument: nt14.i Date: 02-OCT-2019

Time	Filename	LabID	DF	Manually Integrated Compounds
0707	NT1419100201.D	SHJ0009-TUN1	1	NO MANUAL INTEGRATION
0717	NT1419100202.D	SHJ0009-ICV1	1	Tributyl Tin (Hexyl), Dibutyl Tin (Hexyl), Butyl Tin (Hexyl), Tetrabutyl Tin, Tetrapentyl Tin, p-Terphenyl-d14 Tripropyl Tin (Hexyl), Tripentyl Tin (Hexyl),
0736	NT1419100203.D	SHJ0009-TUN1	1	NO MANUAL INTEGRATION
0747	NT1419100204.D	SHJ0009-CAL4	1	NO MANUAL INTEGRATION
0747	NT1419100204ICV.D	SHJ0009-ICV1	1	NO MANUAL INTEGRATION
0812	NT1419100205.D	SHJ0009-CAL6	1	NO MANUAL INTEGRATION
0825	NT1419100206.D	SHJ0009-CAL1	1	NO MANUAL INTEGRATION
0839	NT1419100207.D	SHJ0009-CAL5	1	NO MANUAL INTEGRATION
0852	NT1419100208.D	SHJ0009-CAL2	1	NO MANUAL INTEGRATION
0906	NT1419100209.D	SHJ0009-CAL3	1	NO MANUAL INTEGRATION
1007	NT1419100210.D	SHJ0009-SCV1	1	NO MANUAL INTEGRATION
1033	NT1419100211.D	BHI0813-BLK1	1	NO MANUAL INTEGRATION
1046	NT1419100212.D	BHI0813-BS1	1	NO MANUAL INTEGRATION
1100	NT1419100213.D	19I0351-05	1	NO MANUAL INTEGRATION
1113	NT1419100214.D	BHI0813-MS1	1	NO MANUAL INTEGRATION
1127	NT1419100215.D	BHI0813-MSD1	1	NO MANUAL INTEGRATION
1140	NT1419100216.D	SHJ0009-CCV1	1	NO MANUAL INTEGRATION

Security Status Report

Date: 02-Oct-2019 12:36

NT1419100201.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100202.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100203.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100204.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100204ICV.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100205.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100206.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100207.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100208.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100209.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100210.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100211.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100212.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100213.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100214.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100215.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100216.D	Data Locked	van, 02-Oct-2019 12:35

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 02-OCT-2019 07:47
End Cal Date : 02-OCT-2019 09:06
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP RTE
Method file : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Last Edit : 02-Oct-2019 09:39 van
Curve Type : Average

Calibration File Names:
Level 1: \\target\share\chem3\nt14.i\20191002.b\NT1419100206.D
Level 2: \\target\share\chem3\nt14.i\20191002.b\NT1419100208.D
Level 3: \\target\share\chem3\nt14.i\20191002.b\NT1419100209.D
Level 4: \\target\share\chem3\nt14.i\20191002.b\NT1419100204.D
Level 5: \\target\share\chem3\nt14.i\20191002.b\NT1419100207.D
Level 6: \\target\share\chem3\nt14.i\20191002.b\NT1419100205.D

Compound	0.05000 Level 1	0.20000 Level 2	0.50000 Level 3	1.000 Level 4	2.000 Level 5	4.000 Level 6	___ RRF	% RSD
2 Tetrabutyl Tin	0.87848	0.66068	0.85637	0.76581	0.68222	0.70531	0.75814	12.124
3 Tributyl Tin (Hexyl)	0.81745	0.60769	0.80057	0.72048	0.65746	0.68159	0.71421	11.510
5 Dibutyl Tin (Hexyl)	0.10057	0.07836	0.10616	0.09275	0.08840	0.10620	0.09541	11.536
7 Butyl Tin (Hexyl)	0.15123	0.11820	0.16013	0.14082	0.13245	0.16355	0.14440	12.006
$ 1 Tripropyl Tin (Hexyl)	0.91854	0.69319	0.91775	0.81835	0.74715	0.76348	0.80974	11.482
$ 6 Tripentyl Tin (Hexyl)	0.13863	0.10703	0.14274	0.12860	0.12373	0.14825	0.13150	11.409

ARI Labs, Inc.
RETENTION TIME SUMMARY REPORT

Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Batch File: \\target\share\chem3\nt14.i\20191002.b
Inst ID: nt14.i

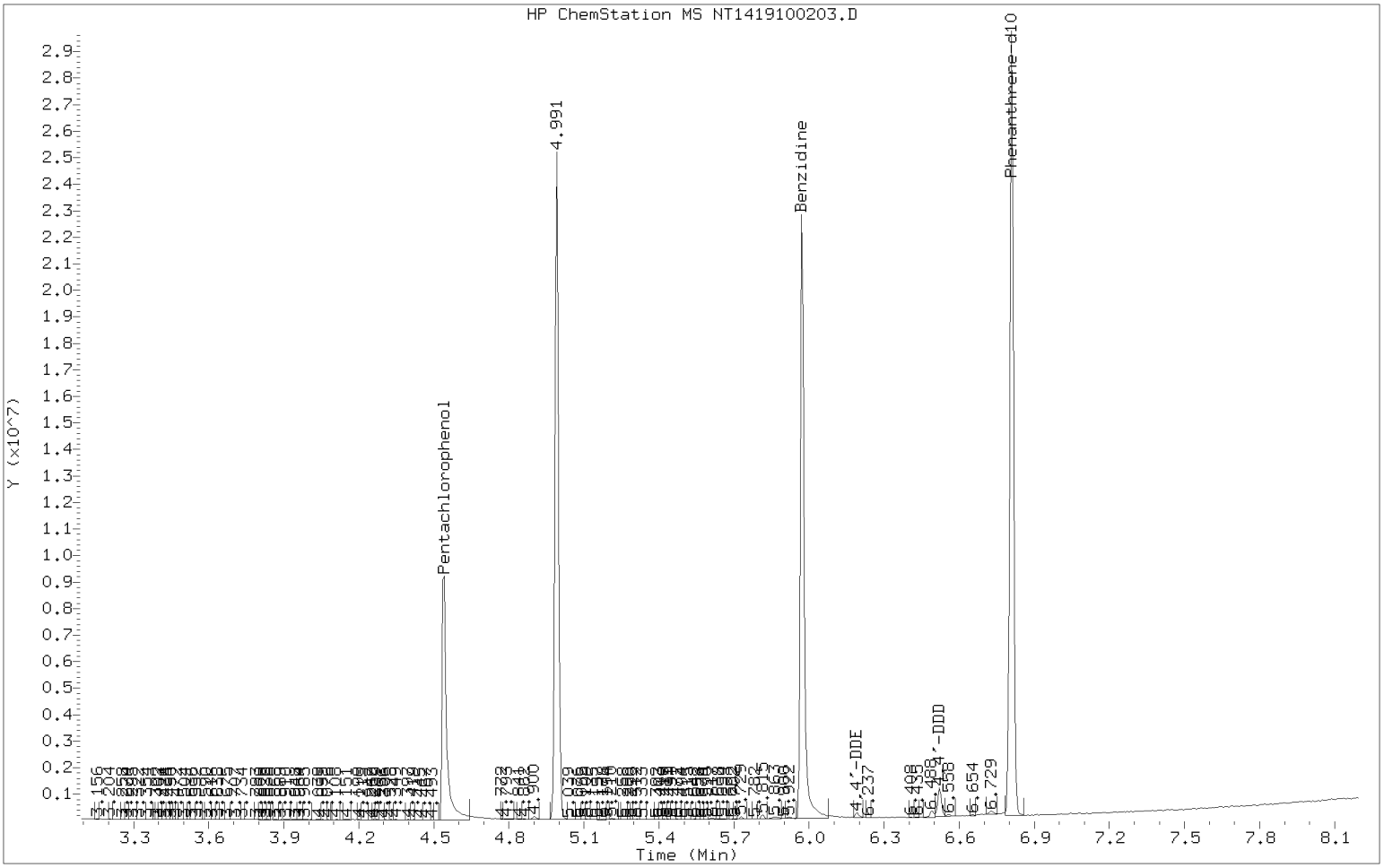
ID:	RT01	RT02	RT03	RT04	RT05	RT06
FILENAME:	NT1419100204	NT1419100205	NT1419100206	NT1419100207	NT1419100208	NT1419100209
INJ.DATE:	02-OCT-2019	02-OCT-2019	02-OCT-2019	02-OCT-2019	02-OCT-2019	02-OCT-2019
INJ.TIME:	07:47	08:12	08:25	08:39	08:52	09:06

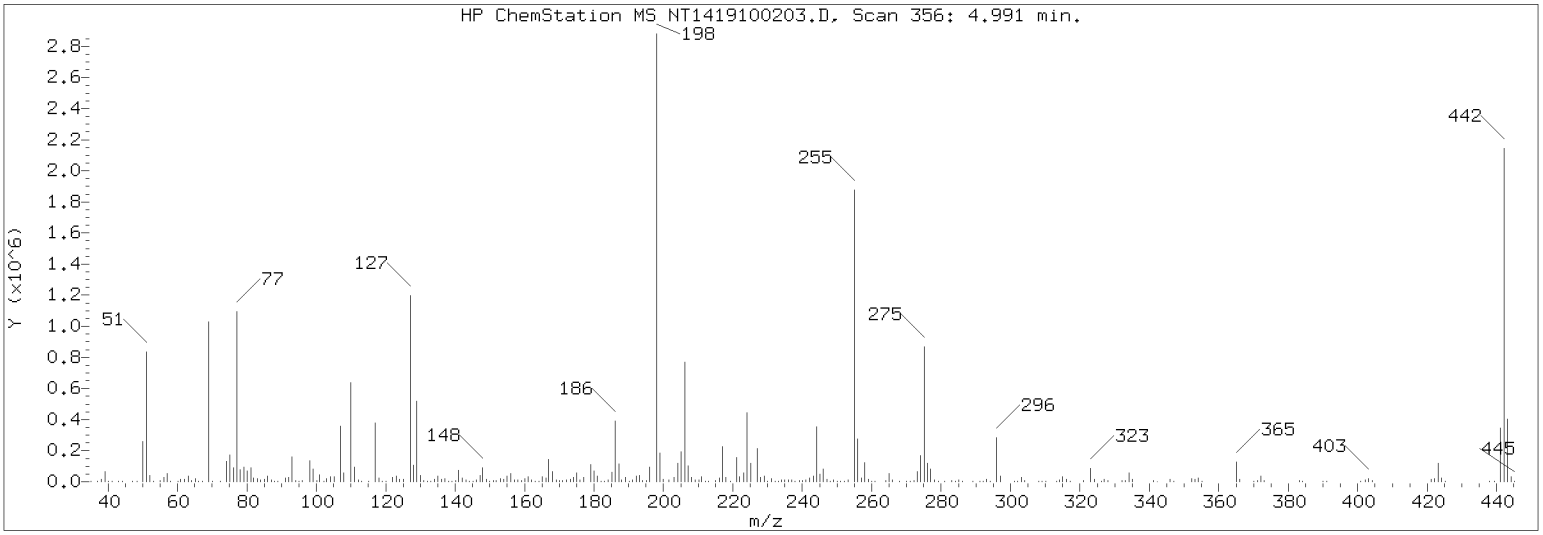
Compound	RT01	RT02	RT03	RT04	RT05	RT06	EXPEC RT	RT WINDOW	AVG RT	STD DEV
$ 1 Tripropyl Tin (Hexyl)	5.471	5.471	5.471	5.471	5.471	5.471	5.471	5.362-5.581	5.471	0.000
2 Tetrabutyl Tin	5.690	5.690	5.690	5.690	5.690	5.690	5.690	5.576-5.804	5.690	0.000
3 Tributyl Tin (Hexyl)	6.461	6.461	6.461	6.461	6.461	6.461	6.461	6.331-6.590	6.461	0.000
* 4 Tetrapentyl Tin	7.102	7.102	7.102	7.102	7.102	7.102	7.102	6.960-7.244	7.102	0.000
5 Dibutyl Tin (Hexyl)	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.007-7.293	7.150	0.000
$ 6 Tripentyl Tin (Hexyl)	7.440	7.440	7.440	7.440	7.440	7.440	7.440	7.292-7.589	7.440	0.000
7 Butyl Tin (Hexyl)	7.779	7.779	7.779	7.779	7.767	7.767	7.779	7.623-7.935	7.775	0.006
* 8 p-Terphenyl-d14	8.009	8.021	8.009	8.009	8.009	8.009	8.009	7.849-8.169	8.011	0.005

Reviewer 1 _____ Date:_____
Reviewer 2 _____ Date:_____

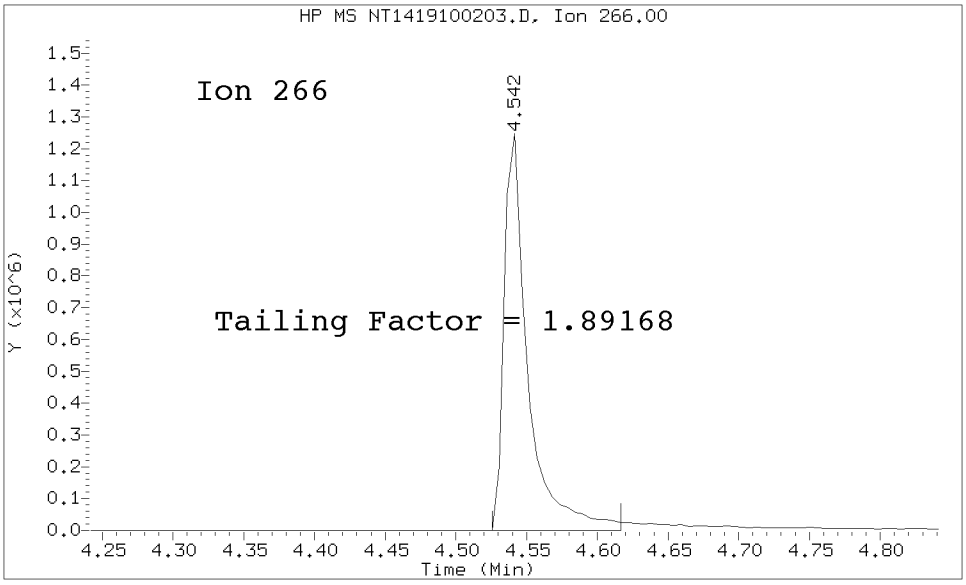
DFTPP TAILING FACTOR AND BREAKDOWN GRAPHIC REPORT

Datafile Analyzed: /20191002.b/NT1419100203.D/NT1419100203.D
Method Used: \20191002.b\df8270.m Inst: nt14
Injection Date: 02-OCT-2019 07:36 Operator: VTS
Sample Info: SHJ0009-TUN1 SHJ0009-TUN1
Report Date: 10/02/2019 12:06



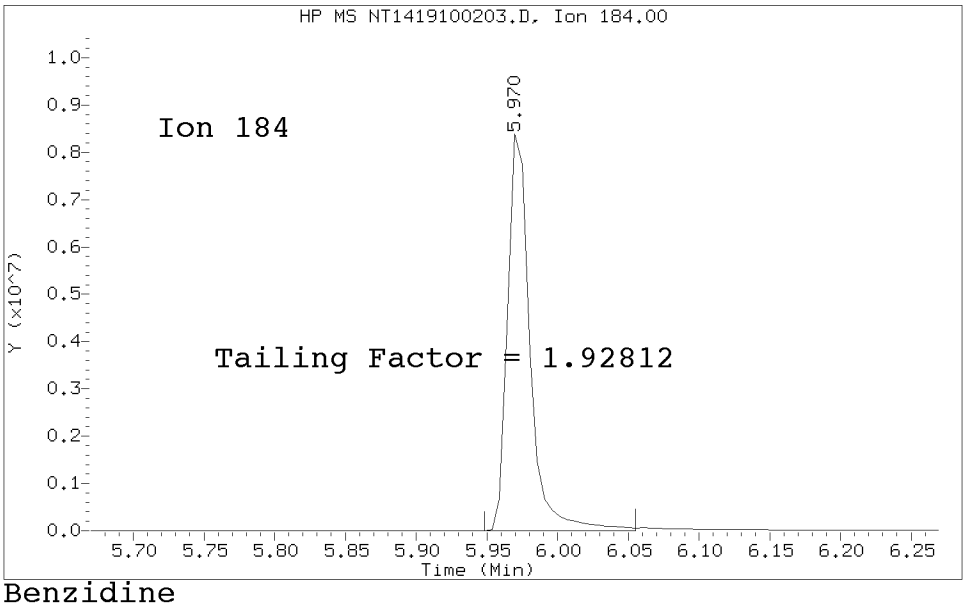


Datafile Analyzed: /20191002.b/NT1419100203.D/NT1419100203.D
Method Used: \20191002.b\df8270.m\sw846ddt.m Inst: nt14
Injection Date: 02-OCT-2019 07:36 Operator: VTS
Sample Info: SHJ0009-TUN1
Report Date: 10/02/2019 12:06



Pentachlorophenol
==========
Exp. RT = 4.542
Found RT = 4.542

Tail Factor = 1.892 Maximum Allowed = 2.0



Benzidine
==========
Exp. RT = 5.970
Found RT = 5.970

Tail Factor = 1.928 Maximum Allowed = 2.0

8270 TAILING FACTOR/BREAKDOWN SUMMARY RESULTS

TAILING ANALYSIS SUMMARY

Compound	Tail Factor	Max Allowed	Test
Pentachlorophenol	1.8916777	2.000	PASS
Benzidine	1.9281150	2.000	PASS

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

Compound	Response	%Breakdown	Max Allowed	Test
4,4-DDT	5858909			N/A
4,4-DDE	29680	0.5	20.0	PASS
4,4-DDD	221742	3.6	20.0	PASS
4,4-DDD + DDE	251422	4.1	20.0	PASS

Tuning Sample, nt14.i/20191002.b/NT1419100203.D, *** PASSED ***

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	29.70
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Mass 69 relative abundance	36.40
70	Less than 2.00% of mass 69	0.20 (0.56)
127	10.00 - 80.00% of mass 198	42.24
197	Less than 2.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.63
275	10.00 - 60.00% of mass 198	29.83
365	Greater than 1.00% of mass 198	4.44
441	0.01 - 24.00% of mass 442	12.22 (16.42)
442	50.00 - 200.00% of mass 198	74.40
443	15.00 - 24.00% of mass 442	13.97 (18.78)

Data File: NT1419100203.D
Spectrum: Avg. Scans 355-357 (4.99), Background Scan 350
Location of Maximum: 198.00
Number of points: 296

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	950	123.00	33184	200.00	12553	285.00	9773
36.00	703	124.00	14855	201.00	11503	286.00	1632
37.00	5804	125.00	14140	202.00	1796	289.00	2119
38.00	13985	127.00	970624	203.00	21288	290.00	770
39.00	54192	128.00	86032	204.00	93368	291.00	1459
40.00	3065	129.00	421760	205.00	158016	292.00	3341
41.00	987	130.00	35368	206.00	608448	293.00	14706
43.00	122	131.00	6681	207.00	80640	294.00	3522
44.00	1662	132.00	4124	208.00	24000	296.00	220096
45.00	731	133.00	2906	209.00	7995	297.00	31504
47.00	164	134.00	13417	210.00	10686	298.00	722
48.00	2680	135.00	32408	211.00	23552	301.00	2821
50.00	220992	136.00	15311	212.00	2847	302.00	4424
51.00	682496	137.00	17816	213.00	1725	303.00	23280
52.00	35312	138.00	3490	215.00	7969	304.00	7265
53.00	1617	139.00	2816	216.00	19688	308.00	3437
55.00	5139	140.00	5066	217.00	176896	309.00	1813
56.00	23832	141.00	57800	218.00	22096	310.00	2355
57.00	44640	142.00	18208	219.00	2311	313.00	2207
58.00	2459	143.00	11502	221.00	121584	314.00	11281
60.00	2303	144.00	3661	222.00	17448	315.00	25864
61.00	11818	145.00	3790	223.00	43096	316.00	12790
62.00	14347	146.00	11822	224.00	359296	317.00	2257
63.00	30920	147.00	34128	225.00	91080	321.00	6770
64.00	4645	148.00	74664	227.00	166208	322.00	1333
65.00	15071	149.00	12267	228.00	23296	323.00	65968
66.00	841	150.00	3339	229.00	32560	324.00	12653
67.00	2496	151.00	6506	230.00	4835	326.00	1014
69.00	836416	152.00	4888	231.00	13384	327.00	12687
70.00	4665	153.00	17440	232.00	1824	328.00	6787
72.00	758	154.00	14030	233.00	3712	332.00	6010
73.00	5956	155.00	30304	234.00	10500	333.00	7015
74.00	101832	156.00	46216	235.00	12185	334.00	44576
75.00	138752	157.00	9911	236.00	8535	335.00	10743
76.00	30832	158.00	11225	237.00	11942	341.00	7874
77.00	891840	159.00	8169	238.00	2122	342.00	2170
78.00	63640	160.00	19136	239.00	6641	346.00	15107
79.00	75984	161.00	24832	240.00	5474	347.00	3512
80.00	53376	162.00	7947	241.00	10857	351.00	913
81.00	72296	163.00	2663	242.00	20256	352.00	19792
82.00	17176	164.00	3727	243.00	28616	353.00	14125
83.00	16544	165.00	25296	244.00	281472	354.00	20128
84.00	2464	166.00	19672	245.00	39256	355.00	4280
85.00	13821	167.00	124368	246.00	63640	365.00	101960
86.00	23592	168.00	51504	247.00	12903	366.00	13881
87.00	10625	169.00	10356	248.00	2896	370.00	710
88.00	4417	170.00	4540	249.00	10399	371.00	6130
89.00	2073	171.00	6335	250.00	2020	372.00	31920
91.00	18976	172.00	11934	251.00	3332	373.00	8282

92.00	22976	173.00	14047	252.00	3303	383.00	8184
93.00	135616	174.00	23416	253.00	8070	384.00	2607
94.00	8488	175.00	46712	255.00	1486848	390.00	2381
95.00	4187	176.00	12274	256.00	218624	391.00	3197
96.00	5525	177.00	22664	257.00	20648	392.00	978
98.00	108984	178.00	2989	258.00	98672	401.00	1758
99.00	68944	179.00	89936	259.00	14291	402.00	11651
100.00	6779	180.00	56048	260.00	2506	403.00	15173
101.00	36584	181.00	28336	261.00	2036	404.00	6734
102.00	1743	182.00	4190	264.00	2929	405.00	699
103.00	15153	183.00	3168	265.00	39832	421.00	14265
104.00	27608	184.00	8264	266.00	6134	422.00	14533
105.00	26560	185.00	49256	270.00	2663	423.00	95168
107.00	295936	186.00	320064	271.00	3555	424.00	20960
108.00	44672	187.00	91832	272.00	5918	425.00	1739
110.00	508288	188.00	9764	273.00	51272	438.00	1627
111.00	77296	189.00	22872	274.00	136448	439.00	3890
112.00	9653	190.00	4517	275.00	685440	441.00	280704
113.00	3165	191.00	11579	276.00	96936	442.00	1709568
115.00	2275	192.00	28040	277.00	65744	443.00	321088
117.00	315328	193.00	32640	278.00	11217	444.00	29112
118.00	21120	194.00	6858	279.00	1821	445.00	1885
119.00	1141	195.00	5095	281.00	2429		
120.00	4228	196.00	71304	282.00	1229		
121.00	1748	198.00	2297856	283.00	8380		
122.00	23944	199.00	152256	284.00	5955		

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100204.D

Date : 02-OCT-2019 07:47

Client ID:

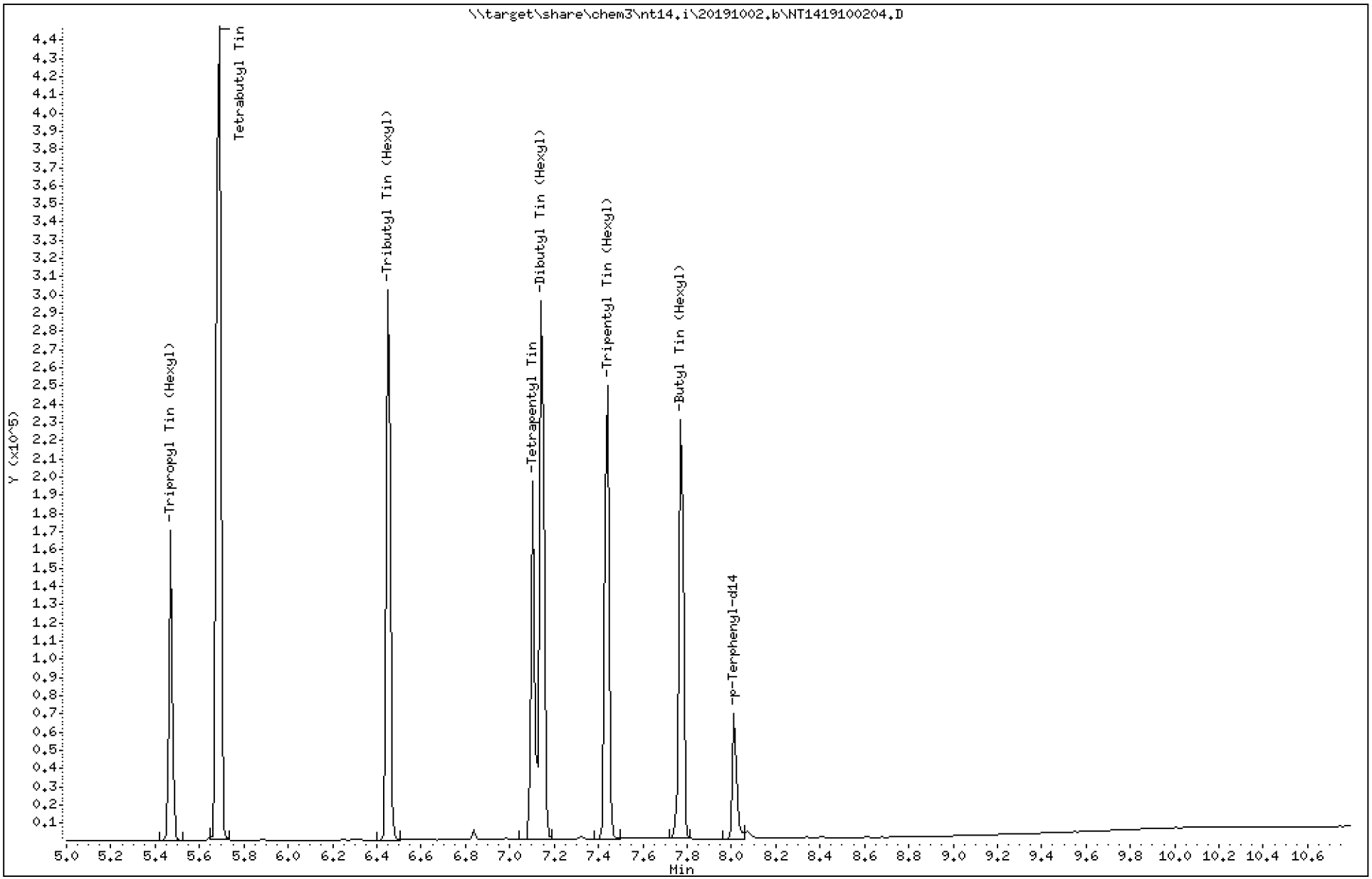
Sample Info: SHJ0009-CAL4

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100204.D
Lab Smp Id: SHJ0009-CAL4
Inj Date : 02-OCT-2019 07:47 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-CAL4
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 2 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	84412	1.00000	1.011
	2 Tetrabutyl Tin	289	5.690	5.690	(0.801)	78993	1.00000	1.010
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	74317	1.00000	1.009
*	4 Tetrapentyl Tin	333	7.102	7.102	(1.000)	206298	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	89205	2.00000	1.944
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	123687	2.00000	1.956
	7 Butyl Tin (Hexyl)	347	7.778	7.778	(0.971)	135445	2.00000	1.950
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	96182	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100204.D
Lab Smp Id: SHJ0009-CAL4
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	206298	0.00
8 p-Terphenyl-d14	96182	48091	192364	96182	0.00

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100204.D

Lab ID: SHJ0009-CAL4
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 07:47

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Q-FLAG SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191002.b

Instrument: nt14.i Date: 02-OCT-2019 Method: 20191002.b\BTS.m

INITIAL CAL: 04-APR-2019

Compound	%RSD or R^2
NO Q-FLAGS	

ICV CAL: NT1419100204.D 02-OCT-2019 07:47

Compound	%D
Dibutyl Tin (Hexyl)	27.3
Butyl Tin (Hexyl)	27.8
Tripentyl Tin (Hexyl)	29.0

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100204ICV.D

Date : 02-OCT-2019 07:47

Client ID:

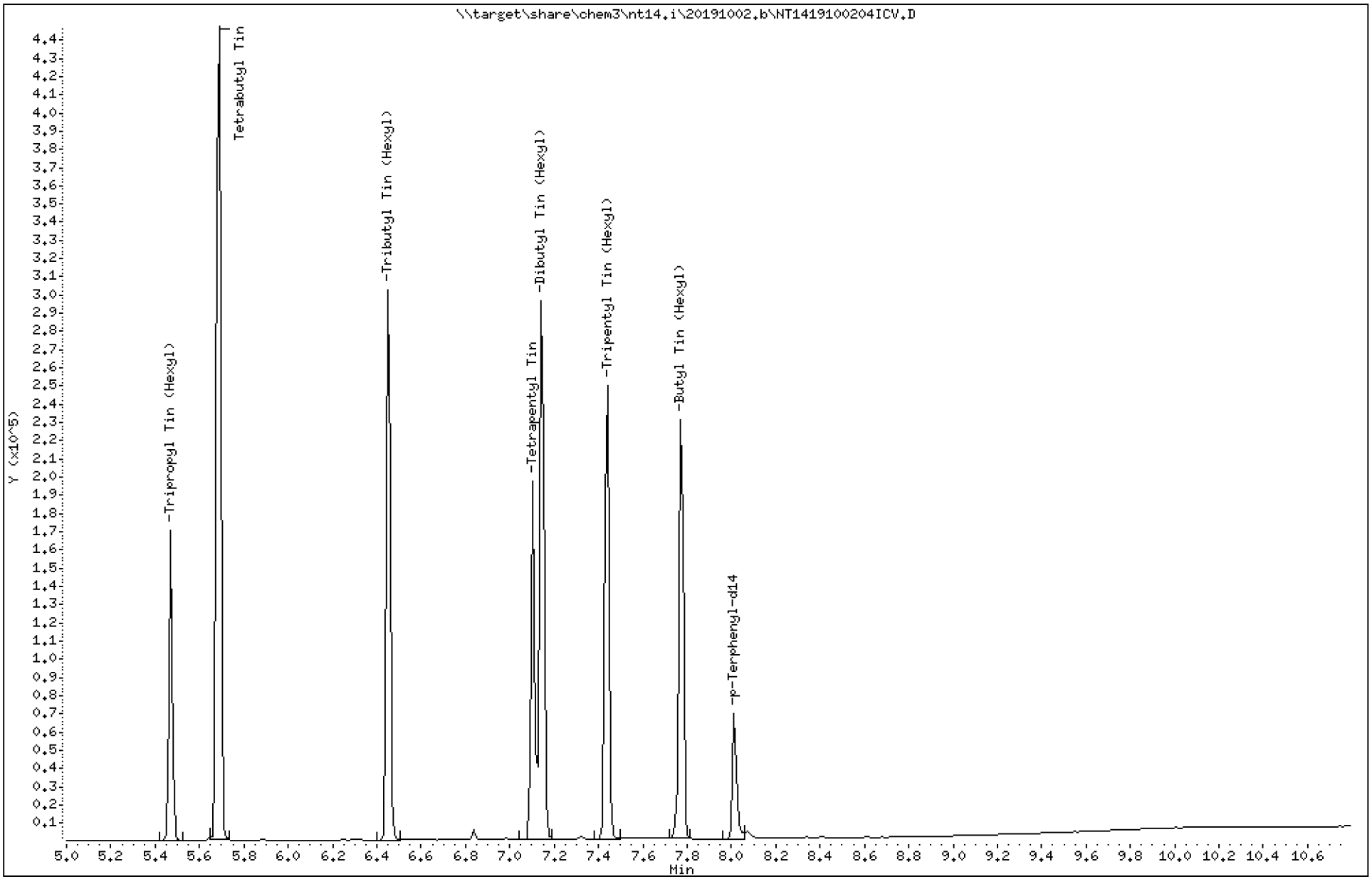
Instrument: nt14.i

Sample Info: SHJ0009-ICV1

Operator: VTS

Column phase: ZB-5msi

Column diameter: 0.25



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Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100204ICV.D
Lab Smp Id: SHJ0009-ICV1
Inj Date : 02-OCT-2019 07:47 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-ICV1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	84412	1.00000	1.011
	2 Tetrabutyl Tin	289	5.690	5.690	(0.801)	78993	1.00000	1.010
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	74317	1.00000	1.009
*	4 Tetrapentyl Tin	333	7.102	7.102	(1.000)	206298	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	89205	2.00000	1.944
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	123687	2.00000	1.956
	7 Butyl Tin (Hexyl)	347	7.778	7.778	(0.971)	135445	2.00000	1.950
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	96182	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100204ICV.D
Lab Smp Id: SHJ0009-ICV1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	206298	0.00
8 p-Terphenyl-d14	96182	48091	192364	96182	0.00

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100204ICV.D

Lab ID: SHJ0009-ICV1
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 07:47

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

No RRT check. Ccal file.

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Q-FLAG SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191002.b

Instrument: nt14.i Date: 02-OCT-2019 Method: 20191002.b\BTS.m

INITIAL CAL: 02-OCT-2019

Compound	%RSD or R^2
NO Q-FLAGS	

ICV CAL: NT1419100204ICV.D 02-OCT-2019 07:47

Compound	%D
NO Q-FLAGS	

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100205.D

Date : 02-OCT-2019 08:12

Client ID:

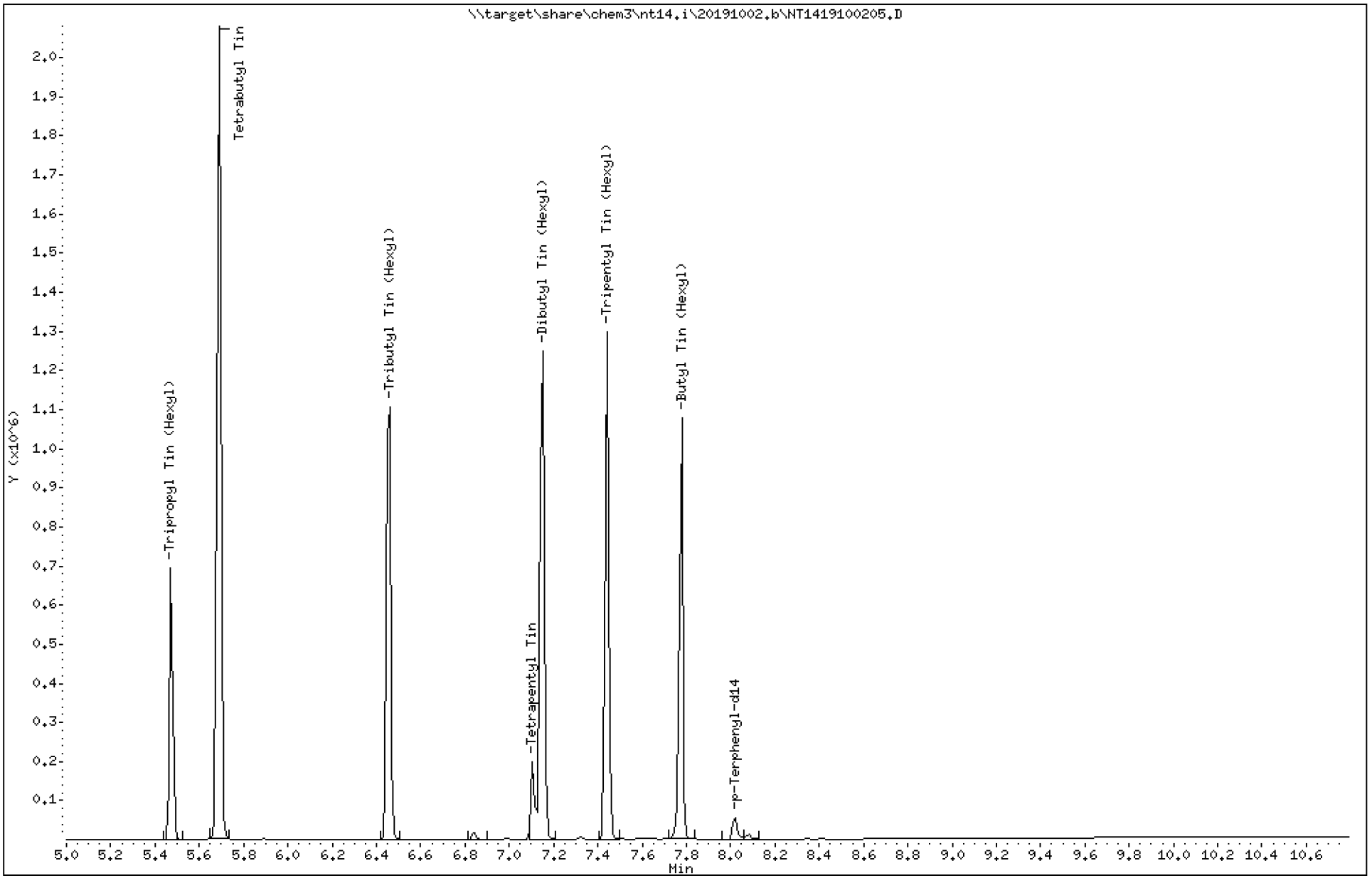
Instrument: nt14.i

Sample Info: SHJ0009-CAL6

Operator: VTS

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100205.D
Lab Smp Id: SHJ0009-CAL6
Inj Date : 02-OCT-2019 08:12 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-CAL6
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 3 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	343807	4.00000	3.771
	2 Tetrabutyl Tin	289	5.689	5.690	(0.801)	317610	4.00000	3.721
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	306928	4.00000	3.817
*	4 Tetrapentyl Tin	333	7.101	7.102	(1.000)	225157	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.891)	378241	8.00000	8.906
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.928)	527969	8.00000	9.019
	7 Butyl Tin (Hexyl)	347	7.778	7.778	(0.970)	582487	8.00000	9.061
*	8 p-Terphenyl-d14	244	8.020	8.008	(1.000)	89036	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100205.D
Lab Smp Id: SHJ0009-CAL6
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	225157	9.14
8 p-Terphenyl-d14	96182	48091	192364	89036	-7.43

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.02	0.15

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100205.D

Lab ID: SHJ0009-CAL6
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 08:12

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100206.D

Date : 02-OCT-2019 08:25

Client ID:

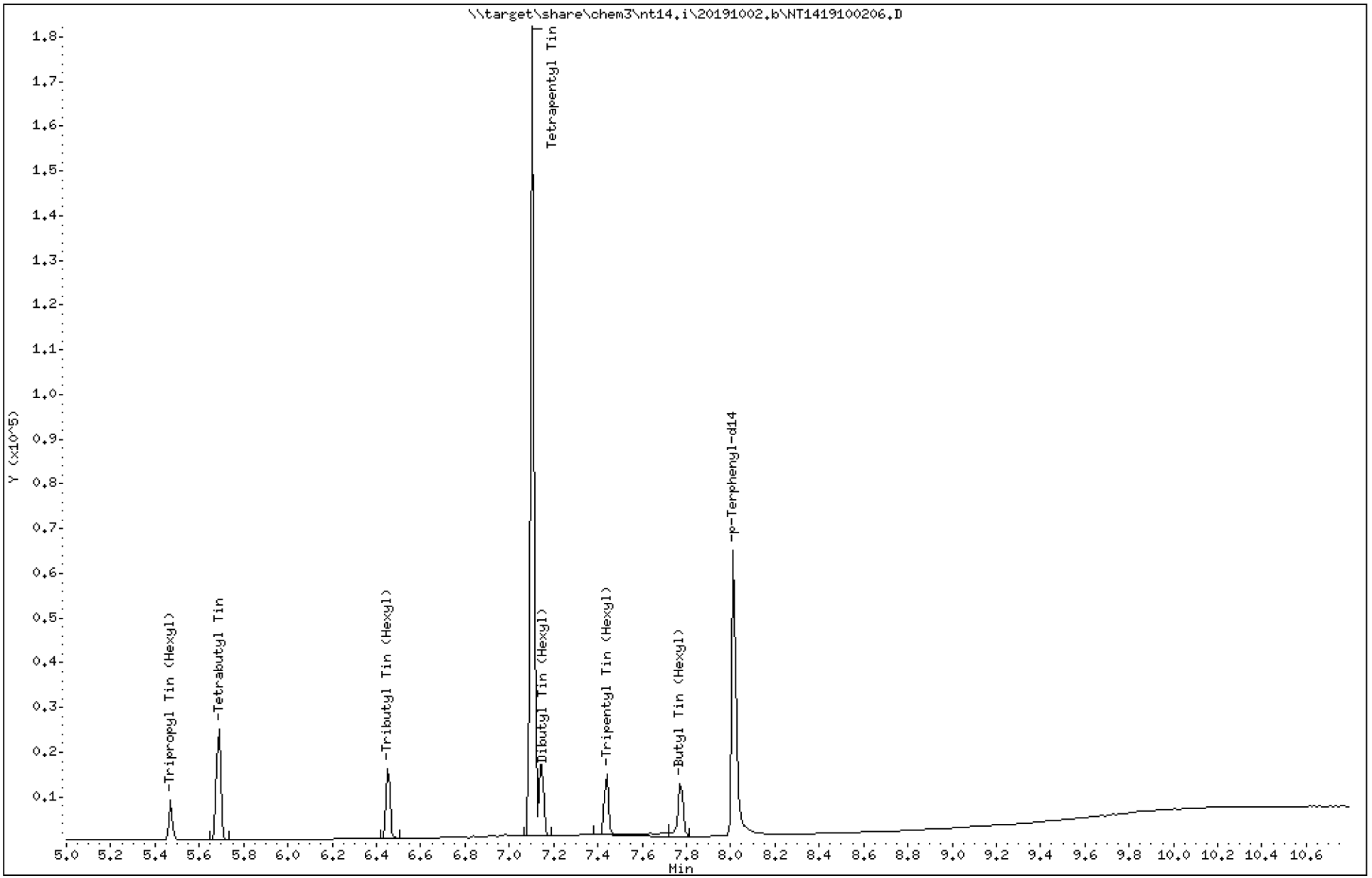
Sample Info: SHJ0009-CAL1

Instrument: nt14.i

Operator: VTS

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100206.D
Lab Smp Id: SHJ0009-CAL1
Inj Date : 02-OCT-2019 08:25 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-CAL1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 4 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	4425	0.05000	0.05672
	2 Tetrabutyl Tin	289	5.689	5.690	(0.801)	4232	0.05000	0.05794
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	3938	0.05000	0.05723
*	4 Tetrapentyl Tin	333	7.101	7.102	(1.000)	192697	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	4746	0.10000	0.1054
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	6542	0.10000	0.1054
	7 Butyl Tin (Hexyl)	347	7.778	7.778	(0.971)	7137	0.10000	0.1047
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	94383	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100206.D
Lab Smp Id: SHJ0009-CAL1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	192697	-6.59
8 p-Terphenyl-d14	96182	48091	192364	94383	-1.87

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100206.D

Lab ID: SHJ0009-CAL1
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 08:25

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100207.D

Date : 02-OCT-2019 08:39

Client ID:

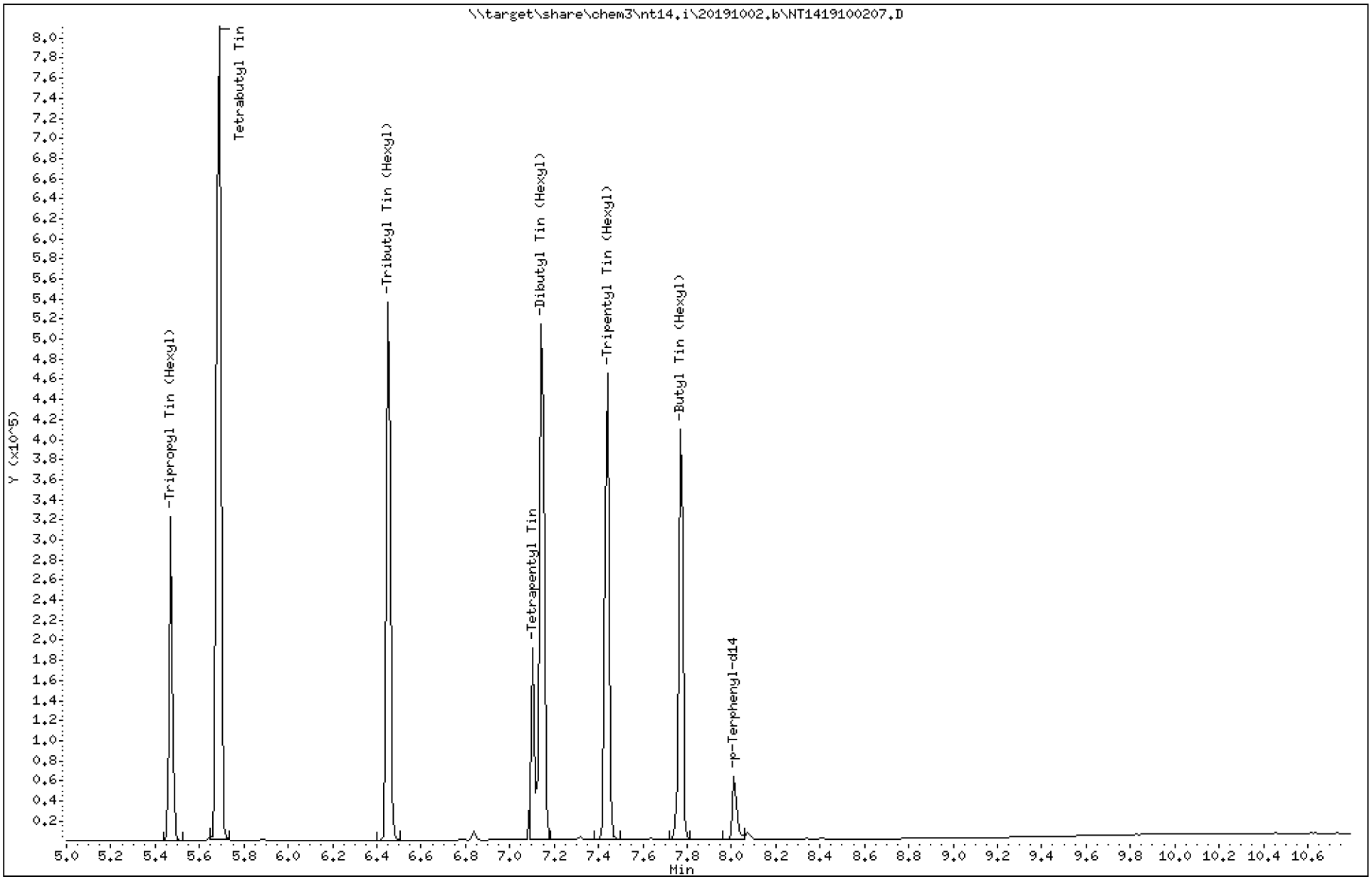
Sample Info: SHJ0009-CAL5

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100207.D
Lab Smp Id: SHJ0009-CAL5
Inj Date : 02-OCT-2019 08:39 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-CAL5
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 5 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	151004	2.00000	1.845
	2 Tetrabutyl Tin	289	5.689	5.690	(0.801)	137881	2.00000	1.800
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	132877	2.00000	1.841
*	4 Tetrapentyl Tin	333	7.101	7.102	(1.000)	202106	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	163220	4.00000	3.706
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	228472	4.00000	3.764
	7 Butyl Tin (Hexyl)	347	7.778	7.778	(0.971)	244572	4.00000	3.669
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	92324	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100207.D
Lab Smp Id: SHJ0009-CAL5
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	202106	-2.03
8 p-Terphenyl-d14	96182	48091	192364	92324	-4.01

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100207.D

Lab ID: SHJ0009-CAL5
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 08:39

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100208.D

Date : 02-OCT-2019 08:52

Client ID:

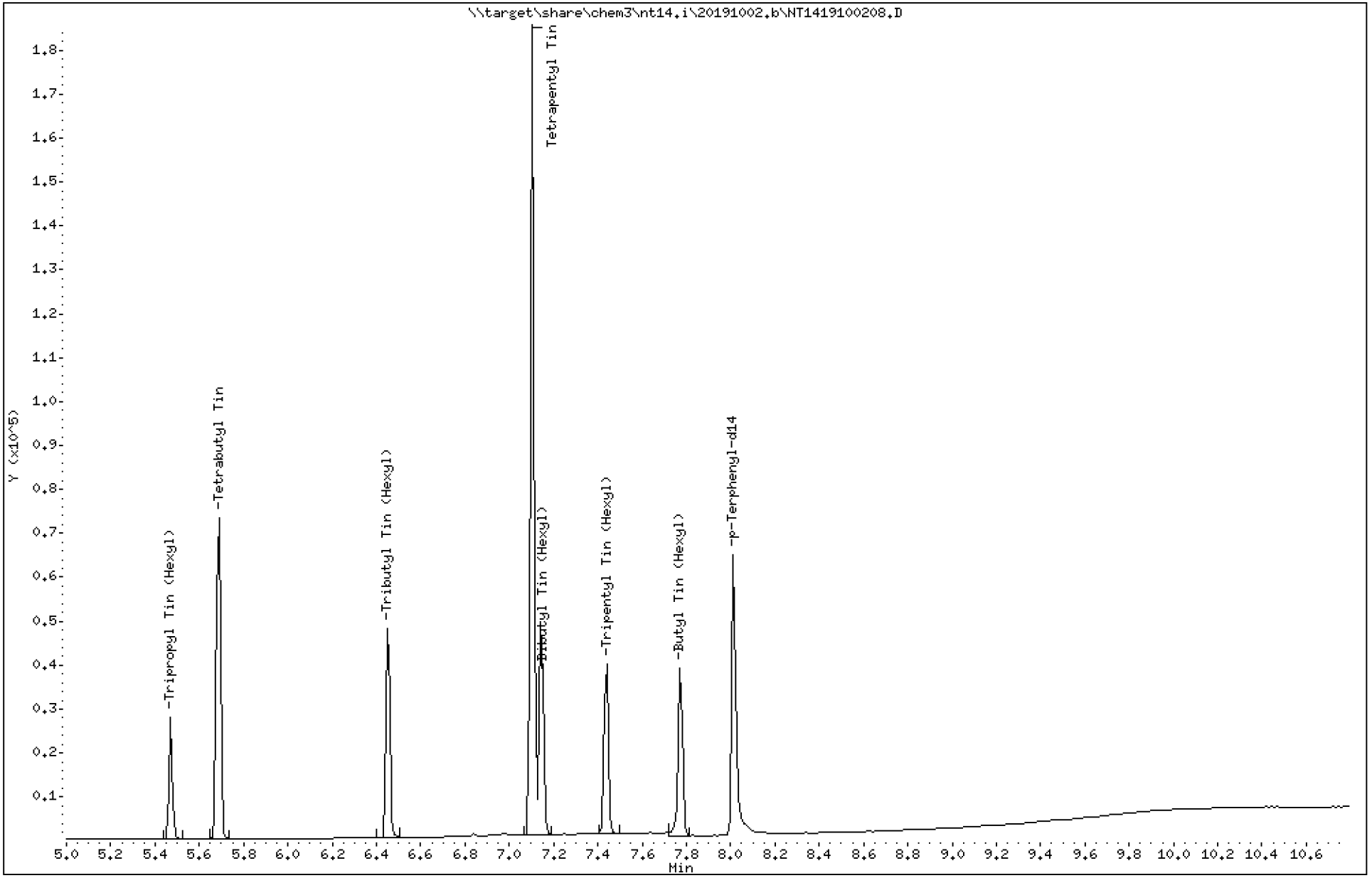
Sample Info: SHJ0009-CAL2

Instrument: nt14.i

Operator: VTS

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100208.D
Lab Smp Id: SHJ0009-CAL2
Inj Date : 02-OCT-2019 08:52 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-CAL2
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 6 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	13475	0.20000	0.1712
	2 Tetrabutyl Tin	289	5.689	5.690	(0.801)	12843	0.20000	0.1743
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	11813	0.20000	0.1702
*	4 Tetrapentyl Tin	333	7.101	7.102	(1.000)	194392	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	14485	0.40000	0.3285
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	19784	0.40000	0.3256
	7 Butyl Tin (Hexyl)	347	7.766	7.778	(0.970)	21850	0.40000	0.3274
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	92426	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100208.D
Lab Smp Id: SHJ0009-CAL2
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	194392	-5.77
8 p-Terphenyl-d14	96182	48091	192364	92426	-3.91

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100208.D

Lab ID: SHJ0009-CAL2
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 08:52

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100209.D

Page 1

Date : 02-OCT-2019 09:06

Client ID:

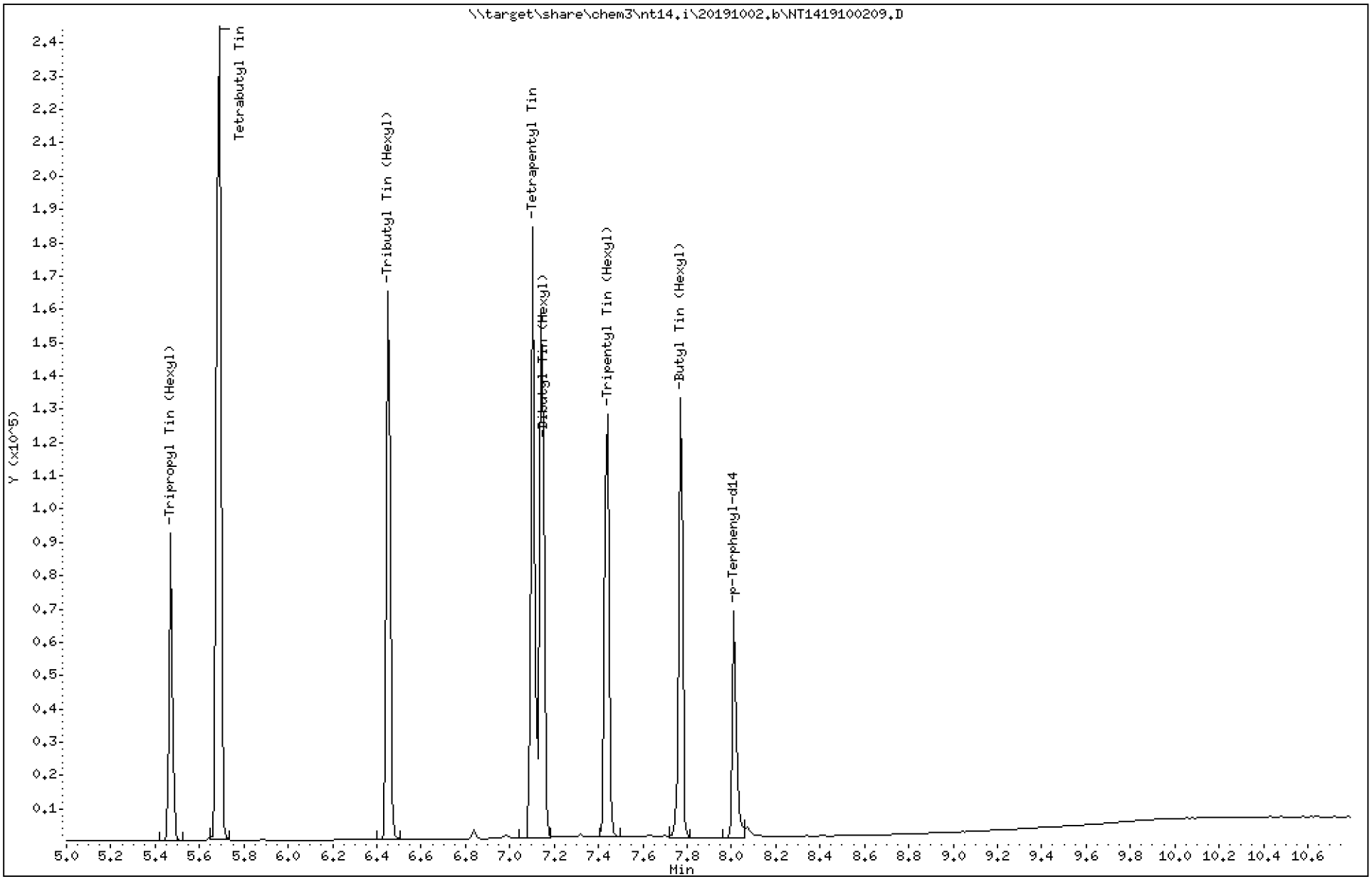
Instrument: nt14.i

Sample Info: SHJ0009-CAL3

Operator: VTS

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100209.D
Lab Smp Id: SHJ0009-CAL3
Inj Date : 02-OCT-2019 09:06 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-CAL3
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 7 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	45016	0.50000	0.5667
	2 Tetrabutyl Tin	289	5.689	5.690	(0.801)	42005	0.50000	0.5648
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	39268	0.50000	0.5605
*	4 Tetrapentyl Tin	333	7.101	7.102	(1.000)	196201	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	49333	1.00000	1.113
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	66333	1.00000	1.086
	7 Butyl Tin (Hexyl)	347	7.766	7.778	(0.970)	74413	1.00000	1.109
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	92942	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100209.D
Lab Smp Id: SHJ0009-CAL3
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	196201	-4.89
8 p-Terphenyl-d14	96182	48091	192364	92942	-3.37

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	-0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100209.D

Lab ID: SHJ0009-CAL3
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 09:06

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

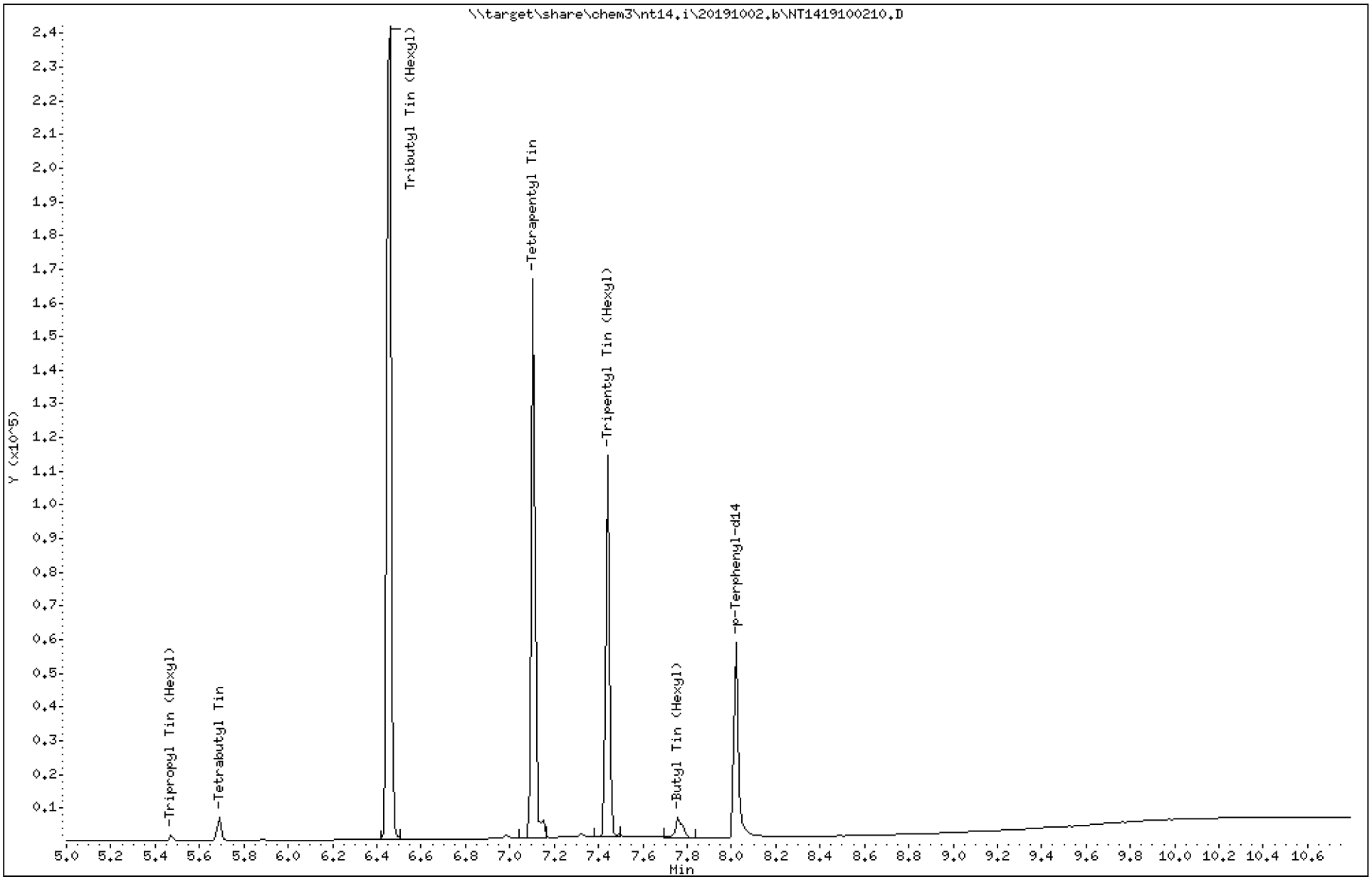
Sample Info: SHJ0009-SCV1

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

Instrument: nt14.i

Sample Info: SHJ0009-SCV1

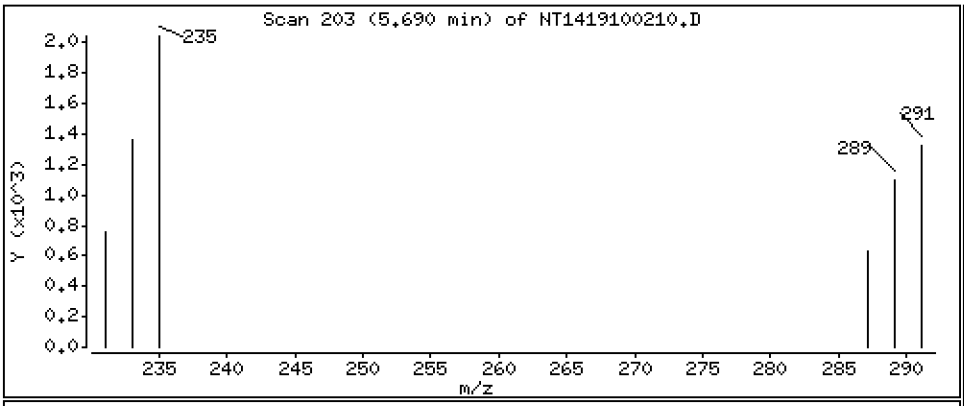
Operator: VTS

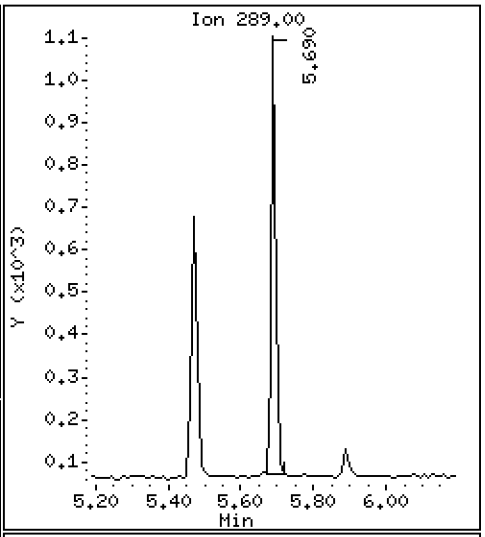
Column phase: ZB-5msi

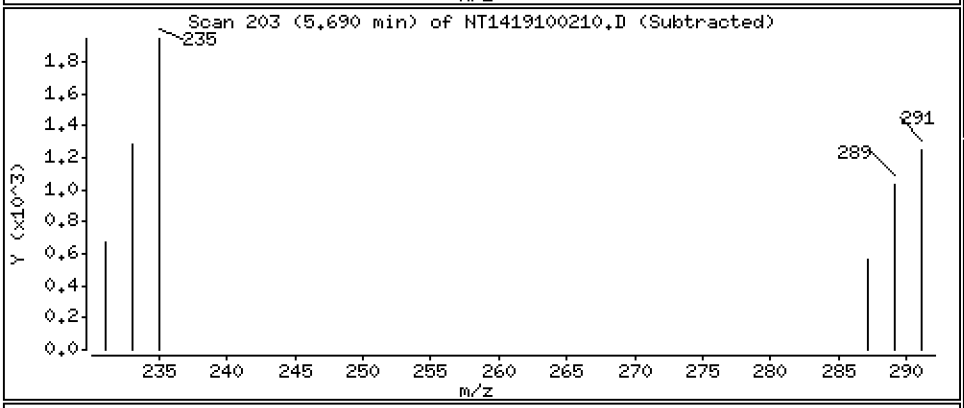
Column diameter: 0.25

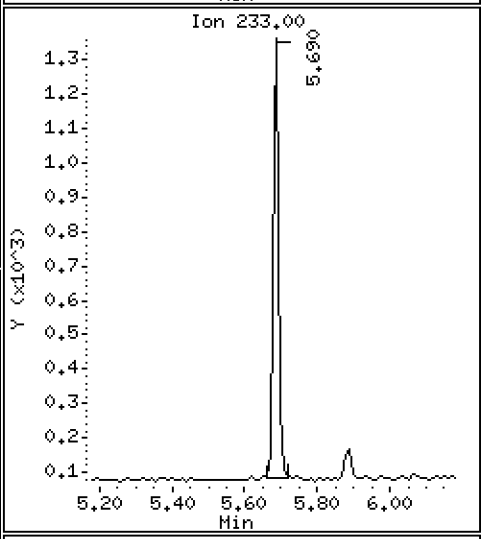
2 Tetrabutyl Tin

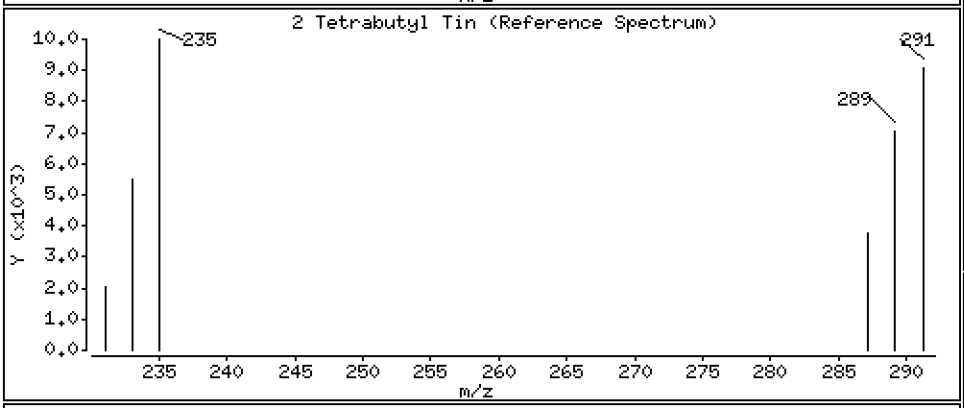
Concentration: 0.01469 ug/mL

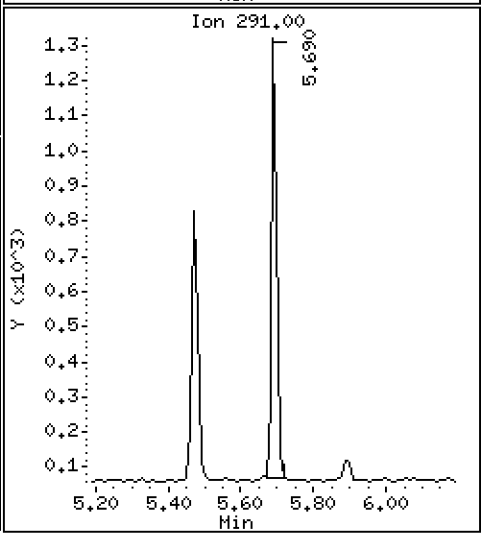


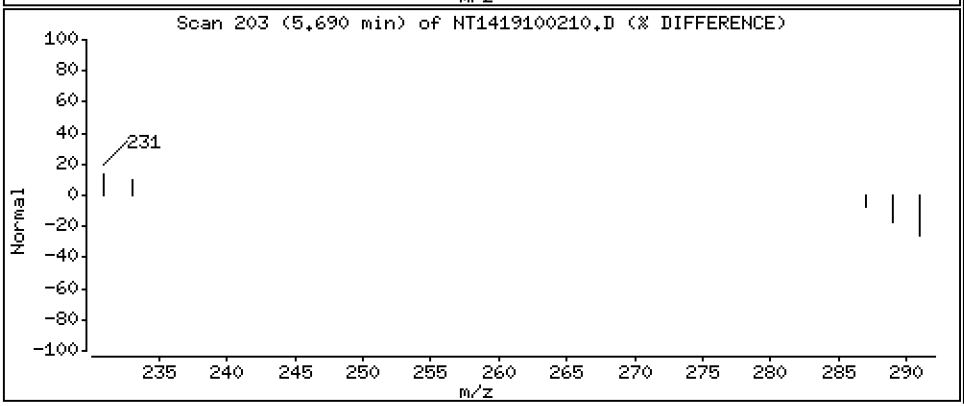












Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

Instrument: nt14.i

Sample Info: SHJ0009-SCV1

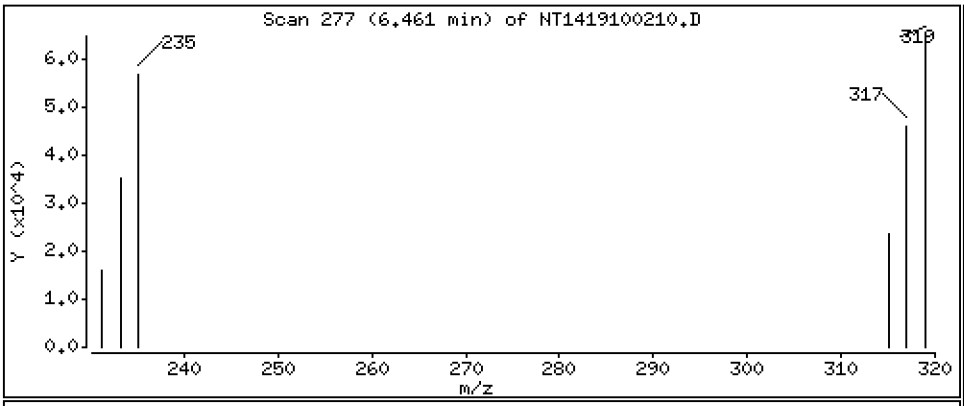
Operator: VTS

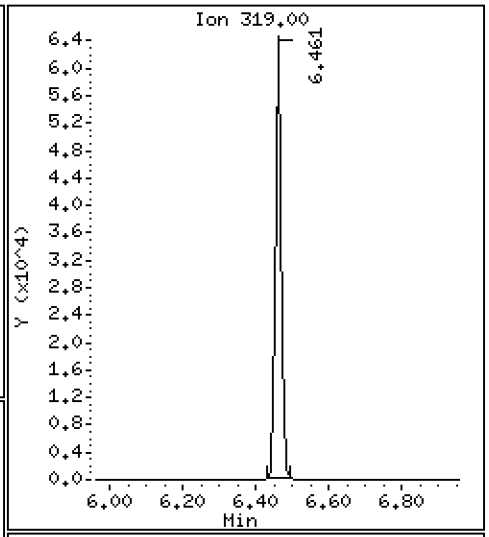
Column phase: ZB-5msi

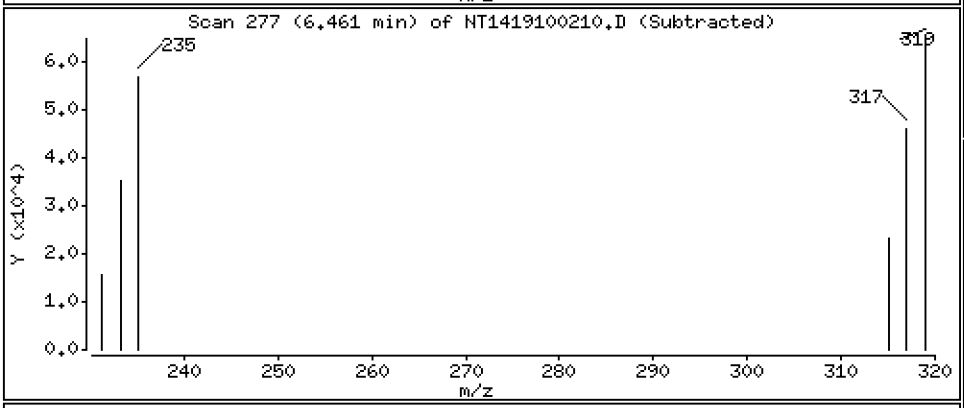
Column diameter: 0.25

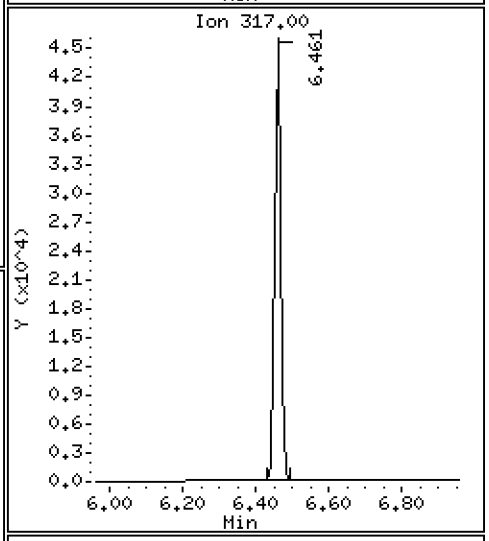
3 Tributyl Tin (Hexyl)

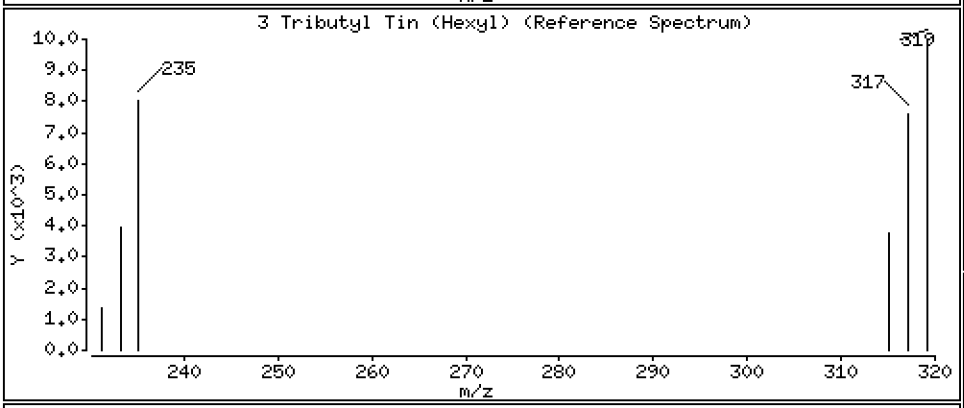
Concentration: 1.002 ug/mL

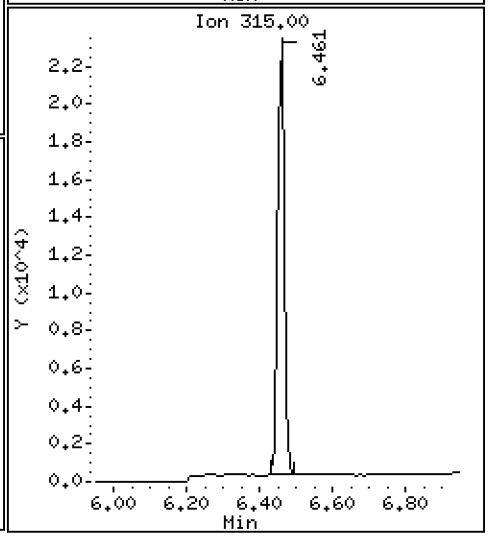


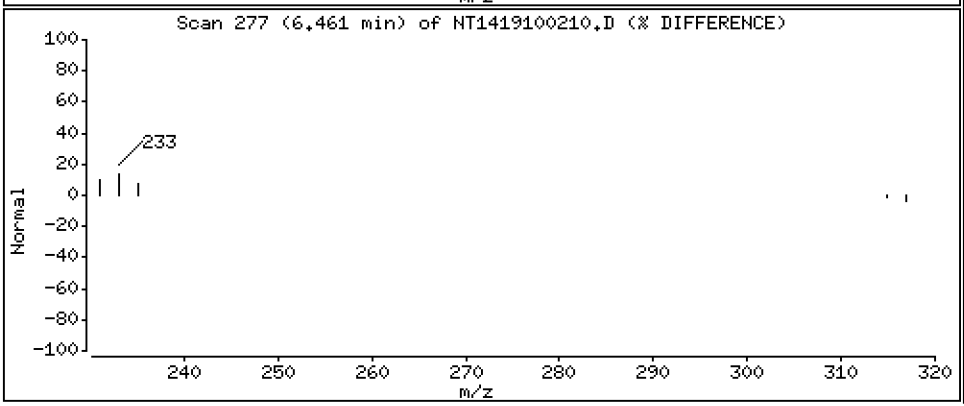












Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

Instrument: nt14.i

Sample Info: SHJ0009-SCV1

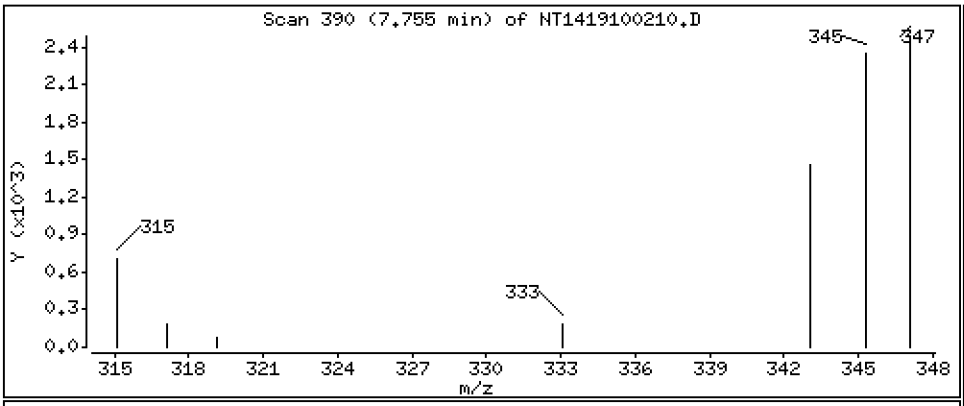
Operator: VTS

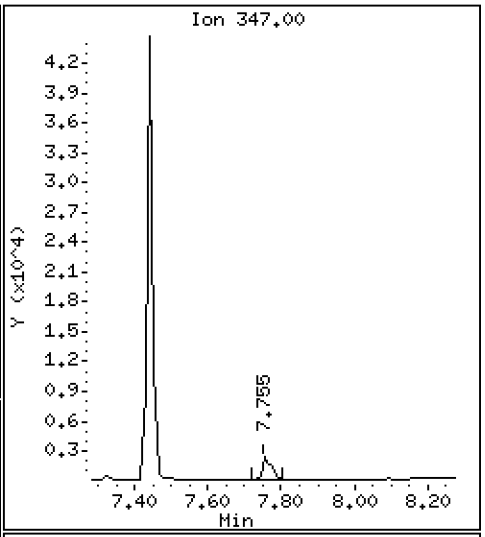
Column phase: ZB-5msi

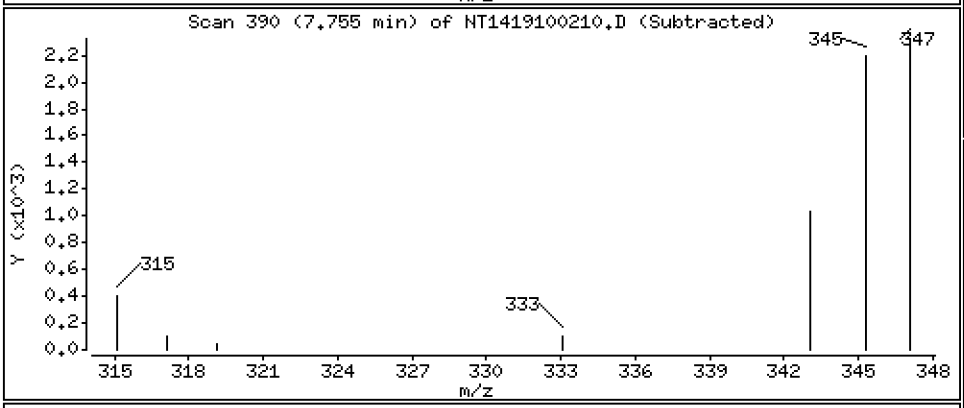
Column diameter: 0.25

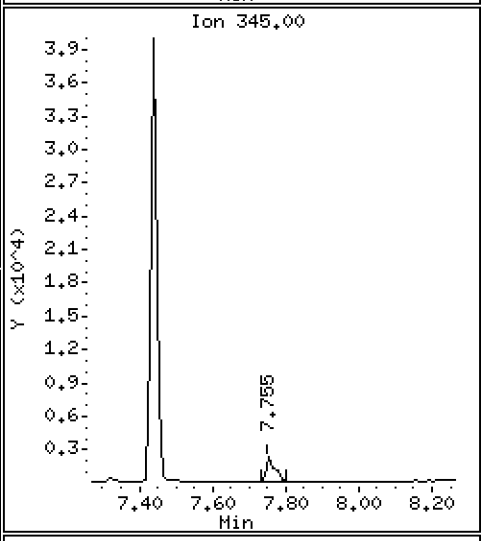
7 Butyl Tin (Hexyl)

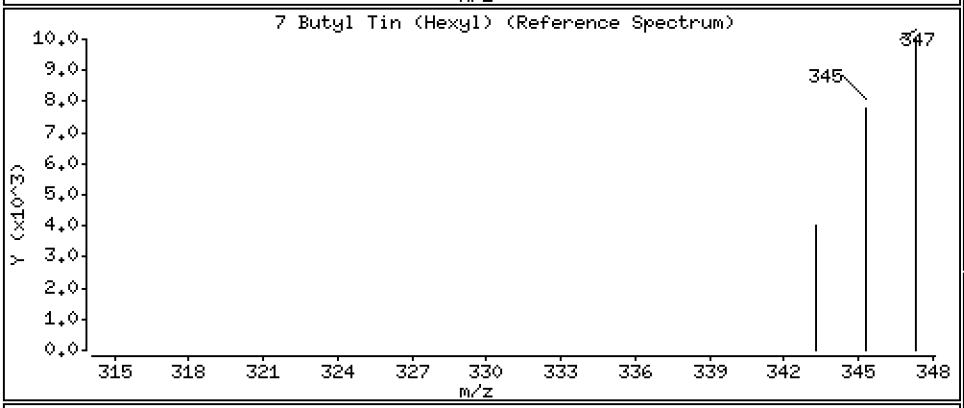
Concentration: 0.06534 ug/mL

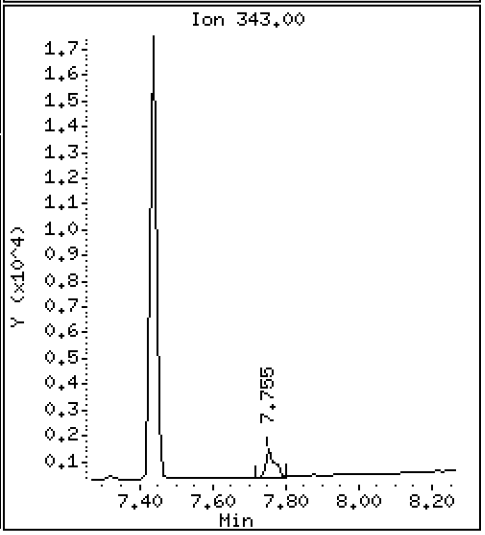


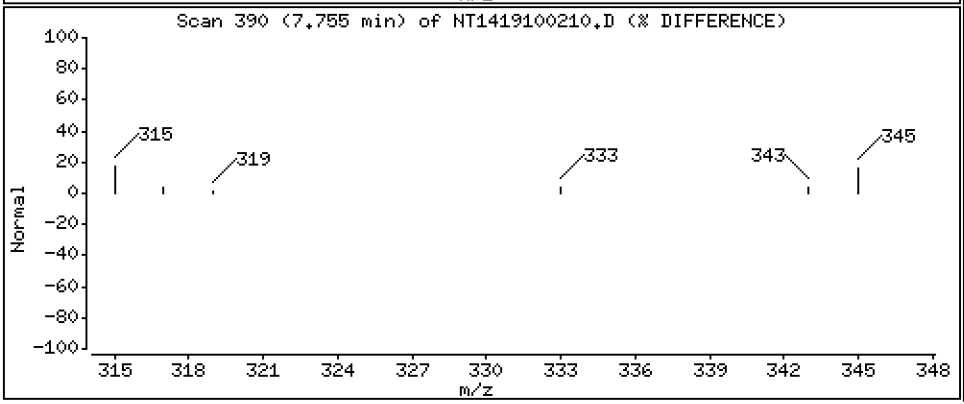












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D
Lab Smp Id: SHJ0009-SCV1
Inj Date : 02-OCT-2019 10:07 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-SCV1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	892	0.01159	0.01159
	2 Tetrabutyl Tin	289	5.689	5.690	(0.801)	1059	0.01469	0.01469
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	68031	1.00186	1.002
*	4 Tetrapentyl Tin	333	7.101	7.102	(1.000)	190154	2.00000	
	5 Dibutyl Tin (Hexyl)	347	Compound Not Detected.					
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.928)	47340	0.83004	0.8300
	7 Butyl Tin (Hexyl)	347	7.754	7.778	(0.967)	4092	0.06534	0.06534
*	8 p-Terphenyl-d14	244	8.020	8.008	(1.000)	86746	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100210.D
Lab Smp Id: SHJ0009-SCV1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	190154	-7.83
8 p-Terphenyl-d14	96182	48091	192364	86746	-9.81

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.02	0.15

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100210.D

Lab ID: SHJ0009-SCV1
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 10:07

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8270D-SIM

Laboratory: Analytical Resources, Inc.
SDG: 19I0422
Client: Anchor QEA, LLC
Project: Gasco PDI
Calibration: CJ00005
Laboratory ID: SHJ0009-SCV1
Sequence: SHJ0009
Sequence Name: Secondary Cal Check
Standard ID: H009522

ANALYTE	EXPECTED (ug/mL)	FOUND (ug/mL)	% DRIFT	QC LIMIT
Tributyltin Ion	0.77300	0.774	0.2	20.00
Tripentyltin	0.79590	0.661	-17.0	20.00

* Indicates values outside of QC limits

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

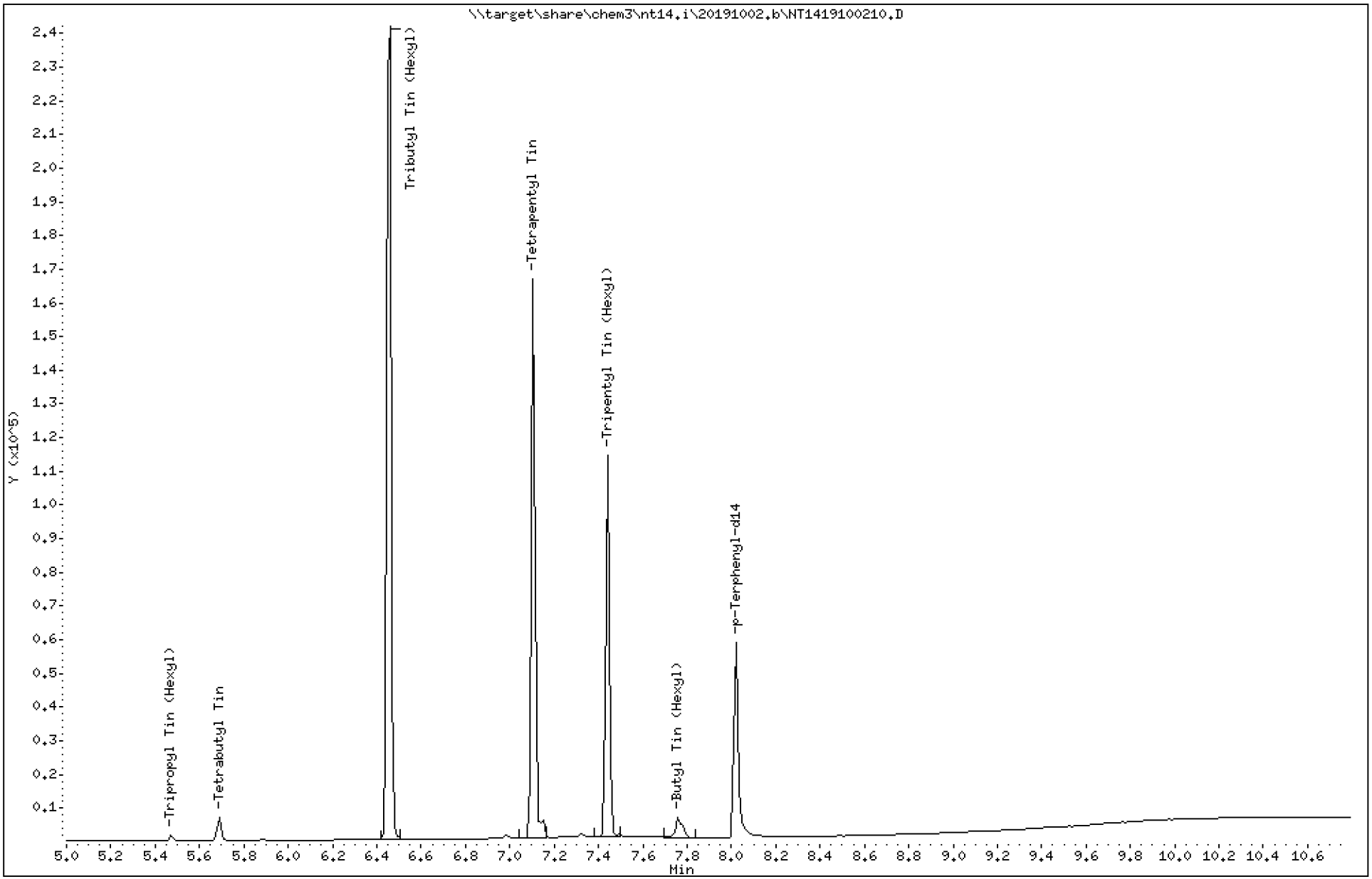
Sample Info: SHJ0009-SCV1

Column phase: ZB-5msi

Instrument: nt14.i

Operator: VTS

Column diameter: 0.25



Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

Instrument: nt14.i

Sample Info: SHJ0009-SCV1

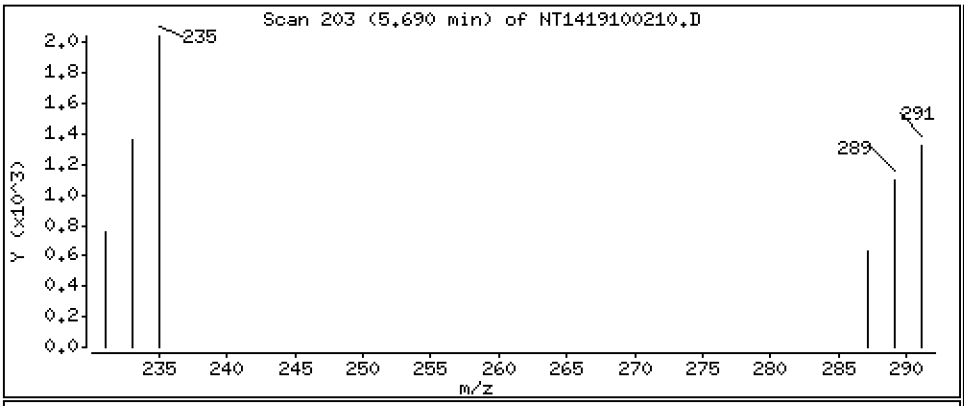
Operator: VTS

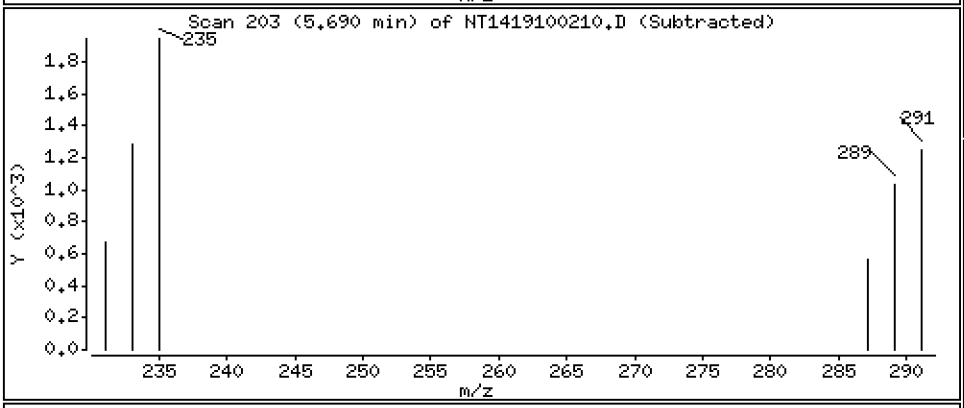
Column phase: ZB-5msi

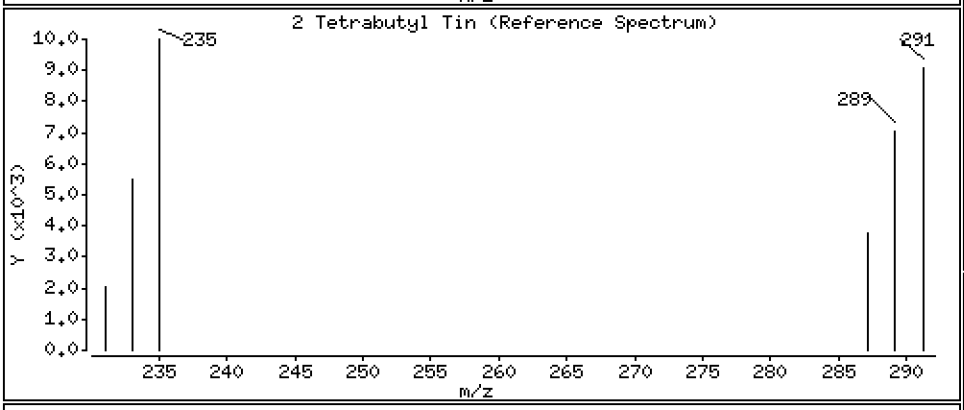
Column diameter: 0.25

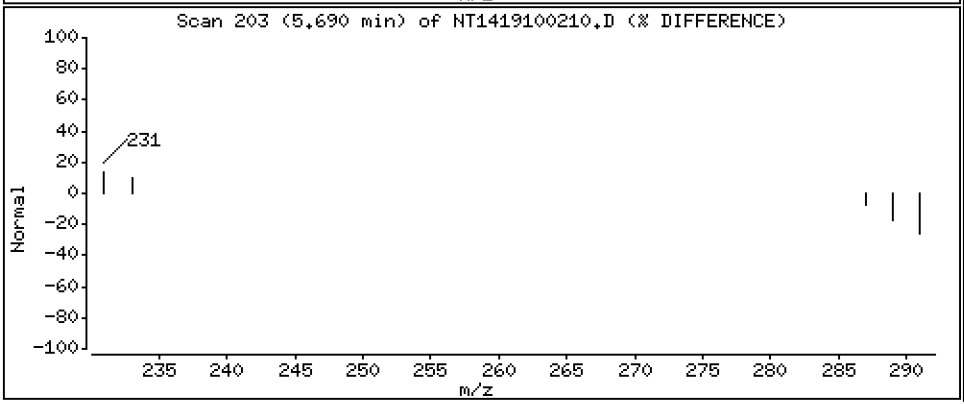
2 Tetrabutyl Tin

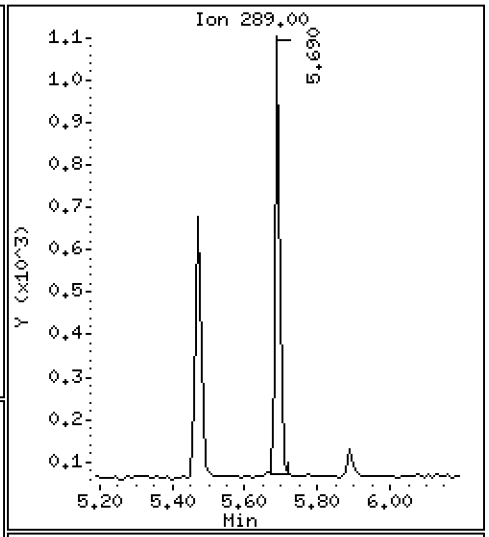
Concentration: 0.01469 ug/mL

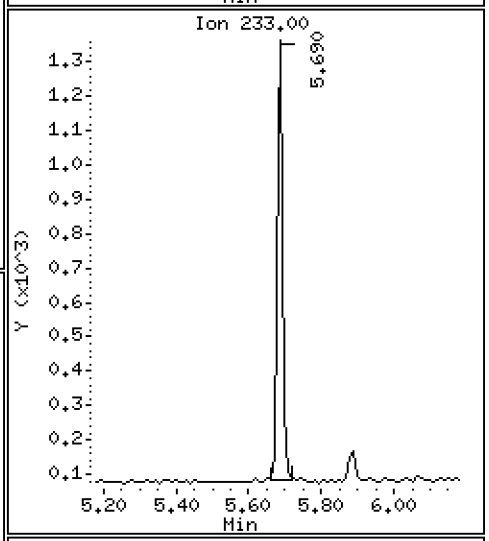


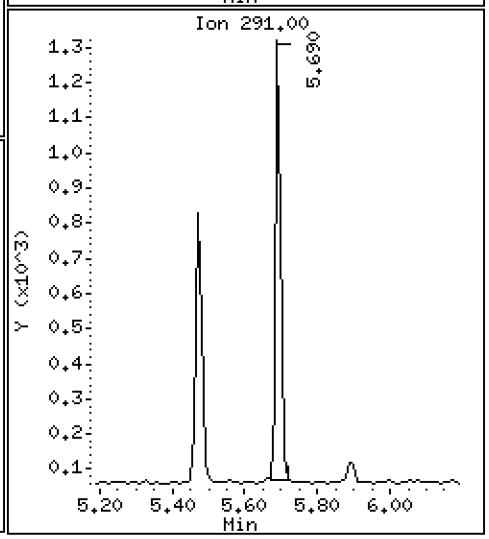












Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

Instrument: nt14.i

Sample Info: SHJ0009-SCV1

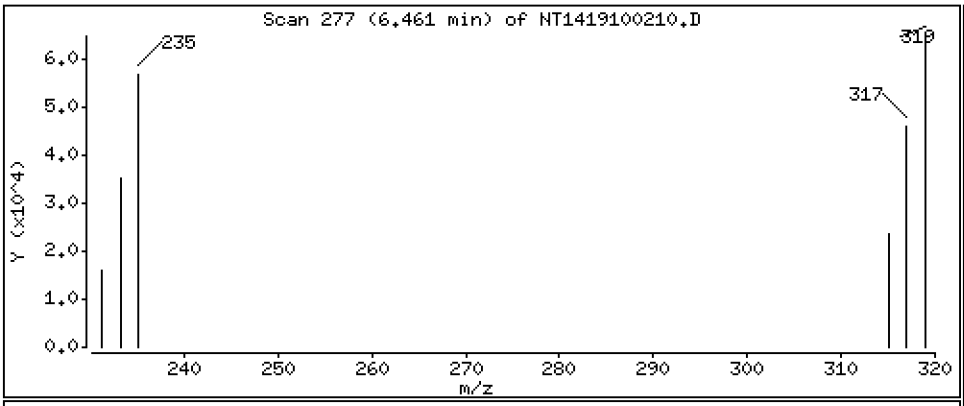
Operator: VTS

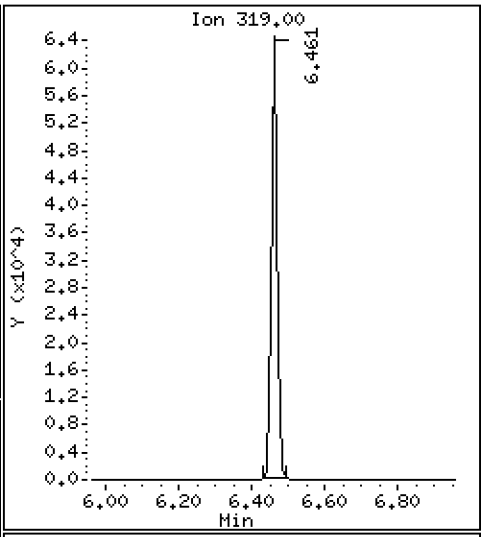
Column phase: ZB-5msi

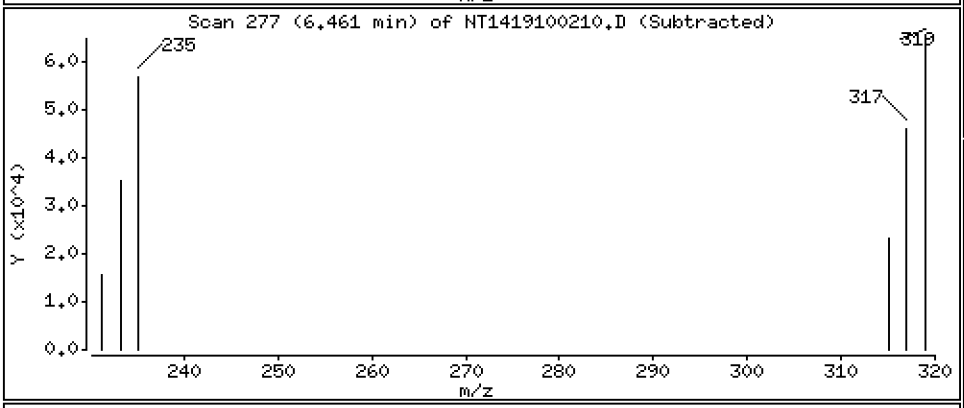
Column diameter: 0.25

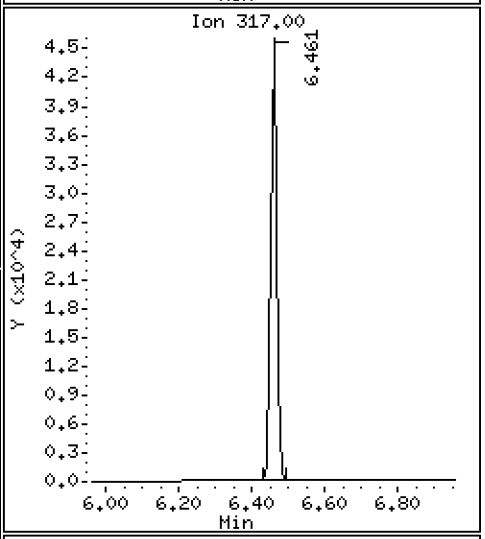
3 Tributyl Tin (Hexyl)

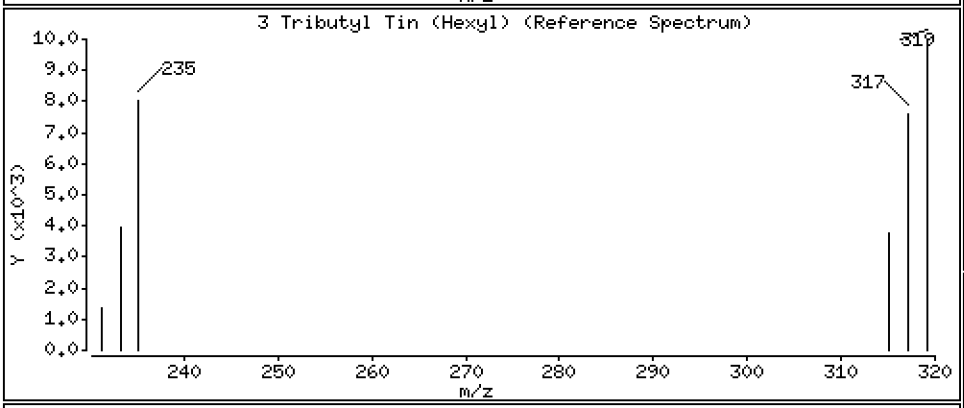
Concentration: 1.002 ug/mL

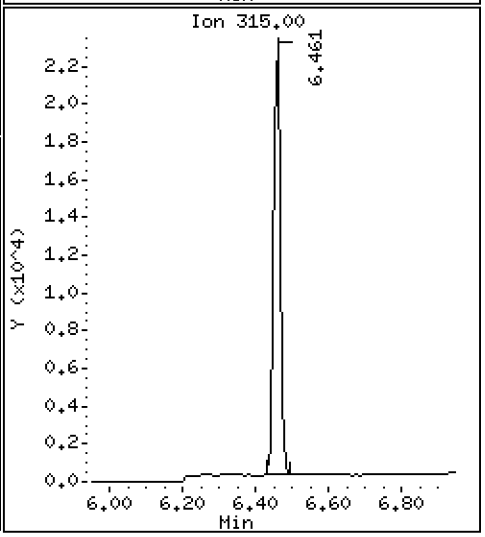


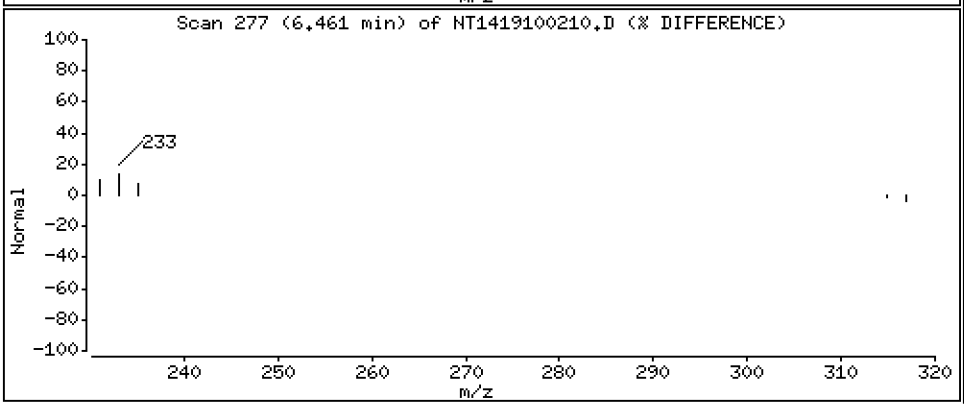












Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D

Date : 02-OCT-2019 10:07

Client ID:

Instrument: nt14.i

Sample Info: SHJ0009-SCV1

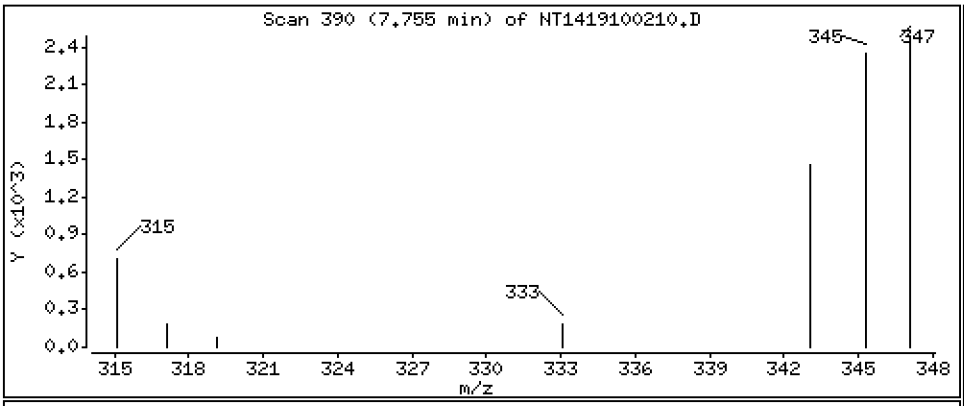
Operator: VTS

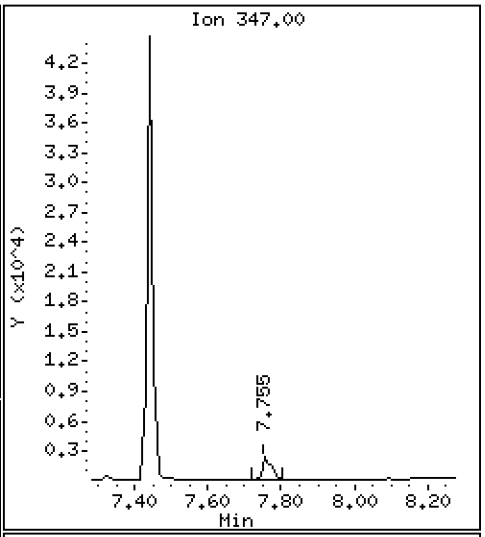
Column phase: ZB-5msi

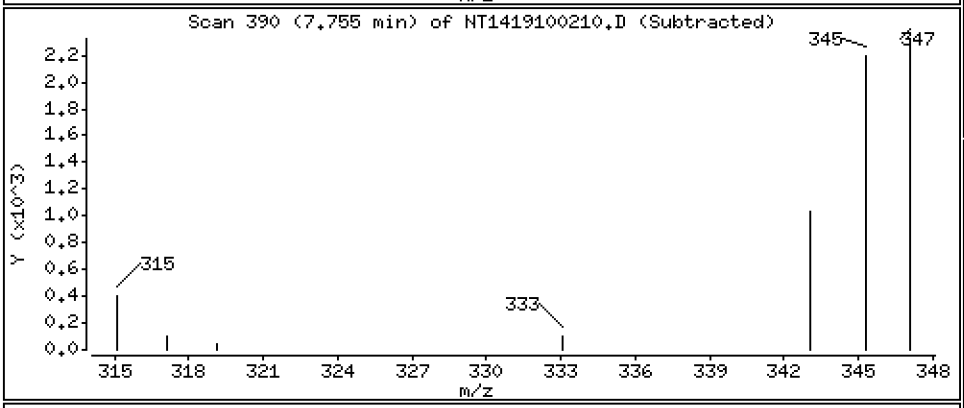
Column diameter: 0.25

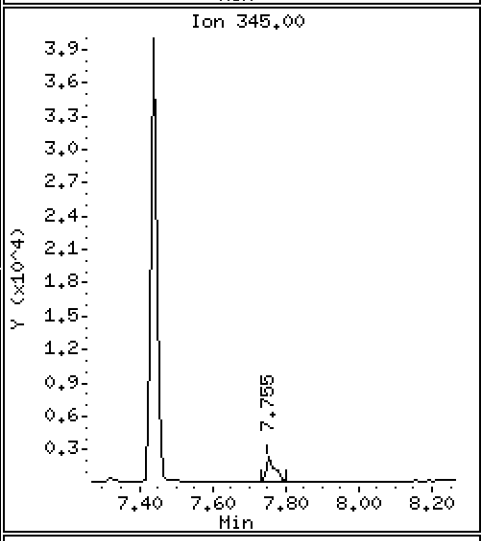
7 Butyl Tin (Hexyl)

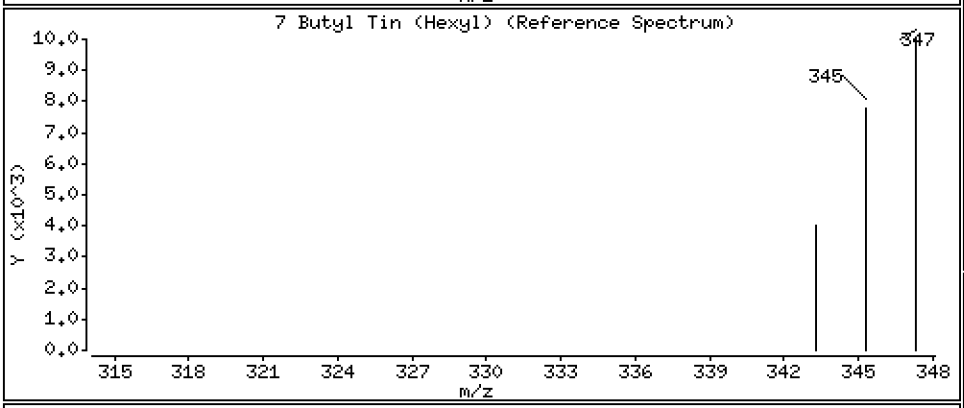
Concentration: 0.06534 ug/mL

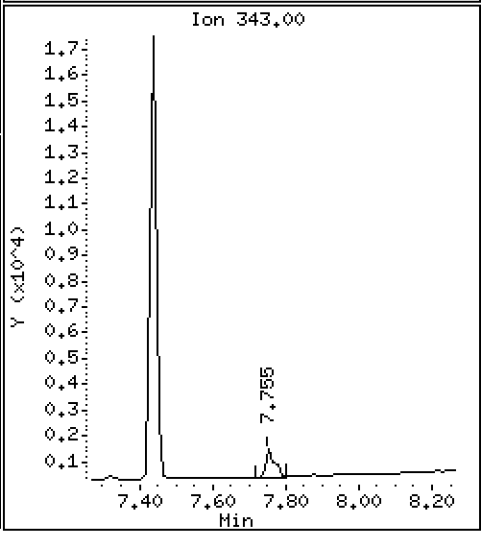


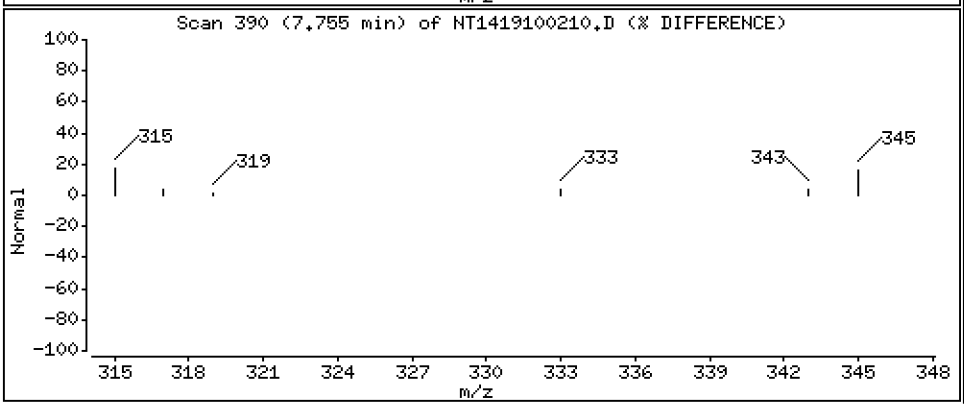












ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100210.D
Lab Smp Id: SHJ0009-SCV1
Inj Date : 02-OCT-2019 10:07 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-SCV1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	892	0.01159	0.01159
	2 Tetrabutyl Tin	289	5.689	5.690	(0.801)	1059	0.01469	0.01469
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	68031	1.00186	1.002
*	4 Tetrapentyl Tin	333	7.101	7.102	(1.000)	190154	2.00000	
	5 Dibutyl Tin (Hexyl)	347	Compound Not Detected.					
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.928)	47340	0.83004	0.8300
	7 Butyl Tin (Hexyl)	347	7.754	7.778	(0.967)	4092	0.06534	0.06534
*	8 p-Terphenyl-d14	244	8.020	8.008	(1.000)	86746	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100210.D
Lab Smp Id: SHJ0009-SCV1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	190154	-7.83
8 p-Terphenyl-d14	96182	48091	192364	86746	-9.81

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	-0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.02	0.15

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100210.D

Lab ID: SHJ0009-SCV1
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 10:07

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT	CCV RRT	DELTA	COMPOUND

NONE

RRT check based on Ccal File: NT1419100204ICV.D

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

INITIAL CALIBRATION CHECK

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Instrument ID:	NT14	Calibration:	CJ00005
Lab File ID:	NT1419100204ICV.D	Calibration Date:	10/02/19 00:00
Sequence:	SHJ0009	Injection Date:	10/02/19
Lab Sample ID:	SHJ0009-ICV1	Injection Time:	07:47
Sequence Name:	TBT 1.0		

		CONC. (ug/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
Tributyltin Ion	A	0.77300	0.780	0.7142060	0.7204820	0.01	0.9	20
Tripentyltin	A	1.5918	1.56	0.1314950	0.1285968	0.01	-2.2	20
Tripropyltin	A	0.74432	0.752	0.8097282	0.8183281	0.01	1.1	20
Tetrapentyltin	A	2.0000	2.00	101404.3000	1.0000		0.0	
p-Terphenyl-d14	A	0.20000	0.200	464410.8000	1.0000		0.0	

* Values outside of QC limits

Data File: \\target\share\chem3\nt14.i\20191002.b\NT1419100204ICV.D

Date : 02-OCT-2019 07:47

Client ID:

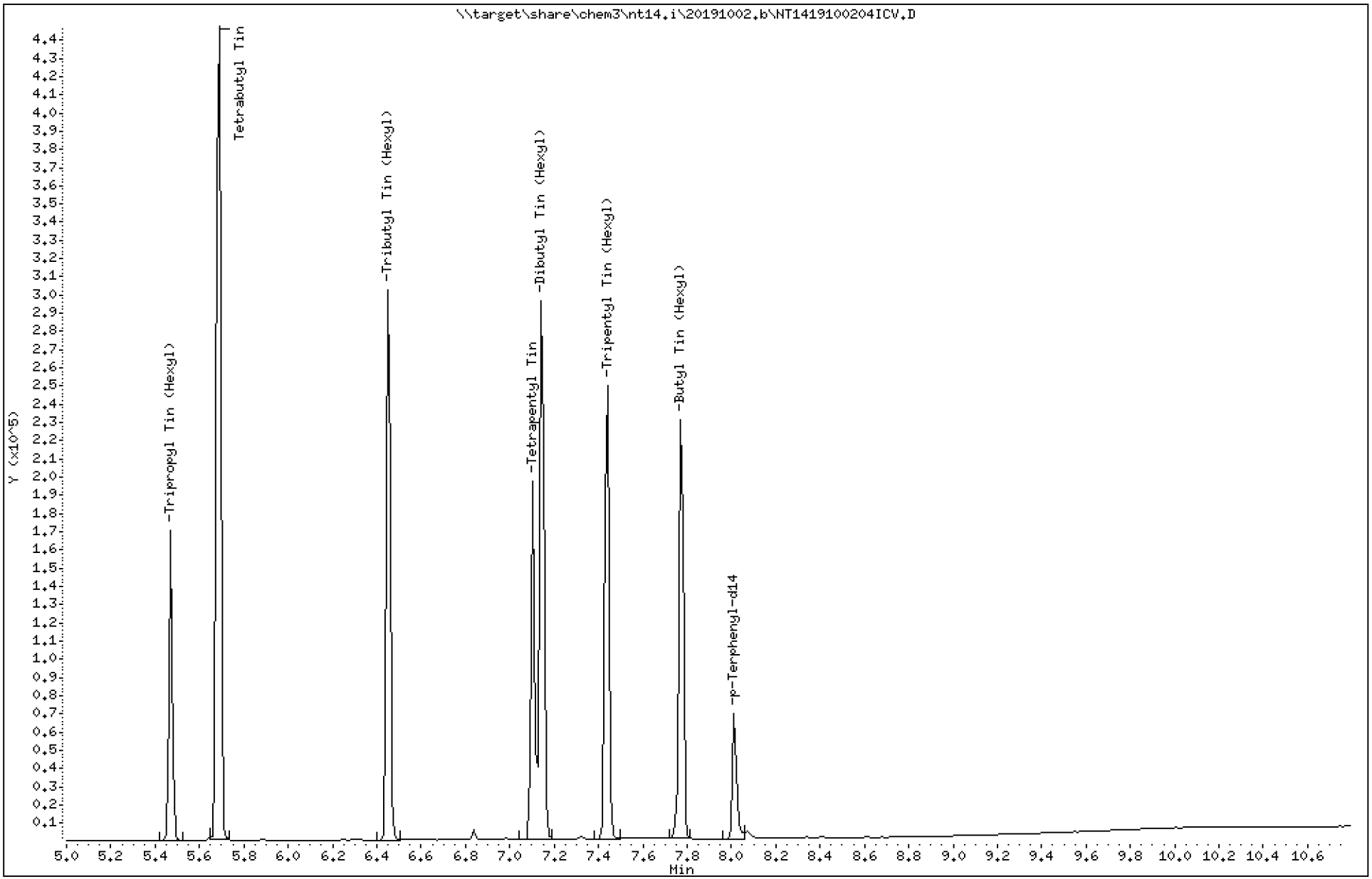
Instrument: nt14.i

Sample Info: SHJ0009-ICV1

Operator: VTS

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191002.b\NT1419100204ICV.D
Lab Smp Id: SHJ0009-ICV1
Inj Date : 02-OCT-2019 07:47 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0009-ICV1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191002.b\BTS.m
Meth Date : 02-Oct-2019 11:39 nt14.i Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	AMOUNTS ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	84412	1.00000	1.011
	2 Tetrabutyl Tin	289	5.690	5.690	(0.801)	78993	1.00000	1.010
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	74317	1.00000	1.009
*	4 Tetrapentyl Tin	333	7.102	7.102	(1.000)	206298	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	89205	2.00000	1.944
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	123687	2.00000	1.956
	7 Butyl Tin (Hexyl)	347	7.778	7.778	(0.971)	135445	2.00000	1.950
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	96182	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100204ICV.D
Lab Smp Id: SHJ0009-ICV1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191002.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	206298	0.00
8 p-Terphenyl-d14	96182	48091	192364	96182	0.00

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100204ICV.D

Lab ID: SHJ0009-ICV1
nt14.i, 20191002.b\BTS.m,   02-OCT-2019 07:47

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

No RRT check. Ccal file.

On Column LOD for nt14.i, 20191002.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Q-FLAG SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191002.b

Instrument: nt14.i Date: 02-OCT-2019 Method: 20191002.b\BTS.m

INITIAL CAL: 02-OCT-2019

Compound	%RSD or R^2
NO Q-FLAGS	

ICV CAL: NT1419100204ICV.D 02-OCT-2019 07:47

Compound	%D
NO Q-FLAGS	

INITIAL CALIBRATION CHECK

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Instrument ID:	NT14	Calibration:	CJ00005
Lab File ID:	NT1419100502.D	Calibration Date:	10/02/19 00:00
Sequence:	SHJ0100	Injection Date:	10/05/19
Lab Sample ID:	SHJ0100-ICV1	Injection Time:	13:47
Sequence Name:	TBT 1.0		

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
		STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
Tributyltin Ion	A	0.77300	0.752	0.7142060	0.6946277	0.01	-2.7	20
Tripentyltin	A	1.5918	1.56	0.1314950	0.1285907	0.01	-2.2	20
Tripropyltin	A	0.74432	0.735	0.8097282	0.7996619	0.01	-1.2	20
Tetrapentyltin	A	2.0000	2.00	101404.3000	1.0000		0.0	
p-Terphenyl-d14	A	0.20000	0.200	464410.8000	1.0000		0.0	

* Values outside of QC limits

Data File: \\target\share\chem3\nt14.i\20191005.b\NT1419100502.D

Date : 05-OCT-2019 13:47

Client ID:

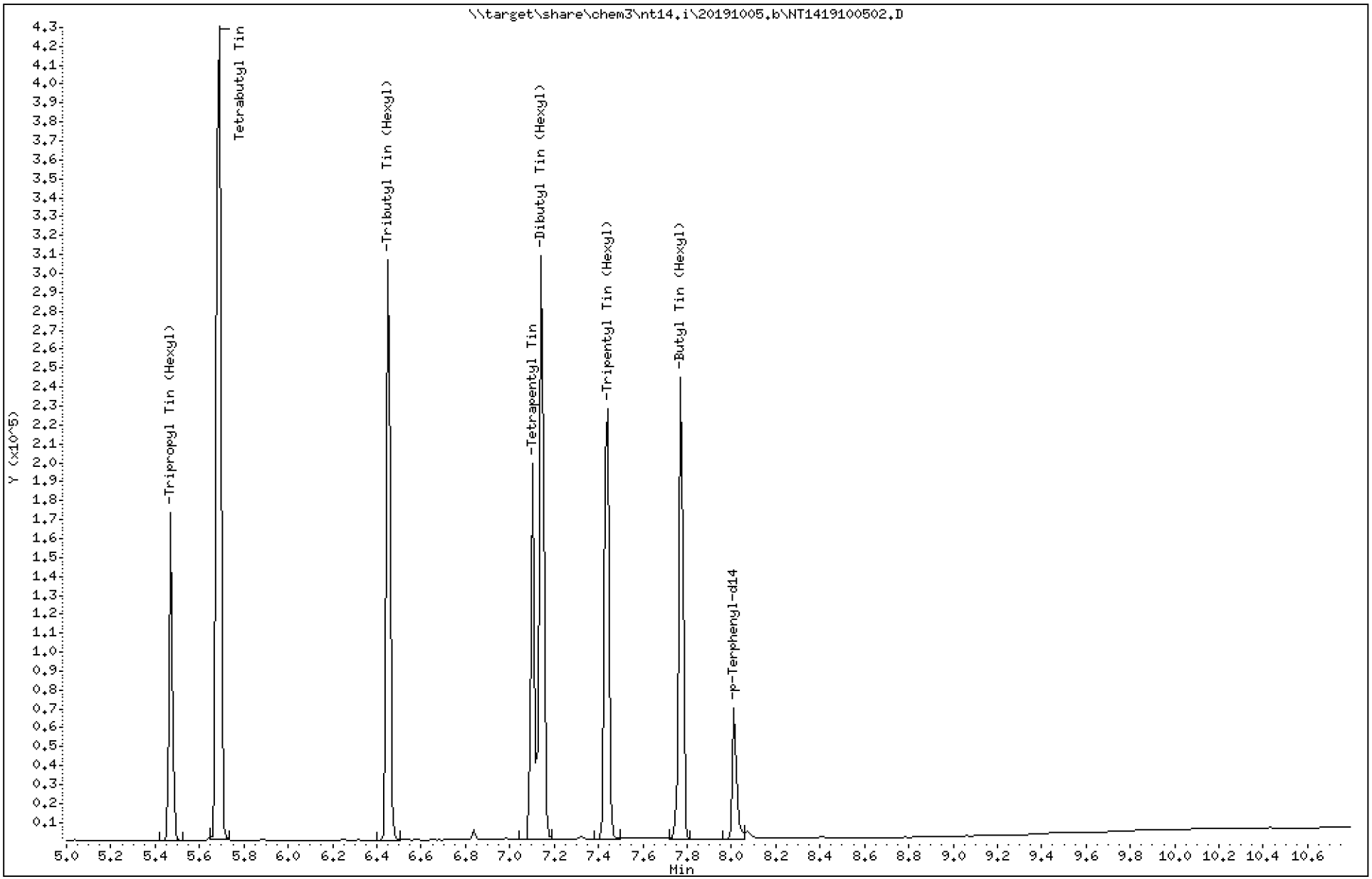
Instrument: nt14.i

Sample Info: SHJ0100-ICV1

Operator: VTS

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt14.i\20191005.b\NT1419100502.D
Lab Smp Id: SHJ0100-ICV1
Inj Date : 05-OCT-2019 13:47 MS Autotune Date: 17-MAY-2011 02:22
Operator : VTS Inst ID: nt14.i
Smp Info : SHJ0100-ICV1
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt14.i\20191005.b\BTS.m
Meth Date : 05-Oct-2019 14:01 van Quant Type: ISTD
Cal Date : 02-OCT-2019 09:06 Cal File: NT1419100209.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sed.sub
Target Version: 4.14
Processing Host: VANS

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/mL)	ON-COL (ug/mL)
$	1 Tripropyl Tin (Hexyl)	291	5.471	5.471	(0.770)	83359	1.00000	0.9876
	2 Tetrabutyl Tin	289	5.689	5.689	(0.801)	78634	1.00000	0.9950
	3 Tributyl Tin (Hexyl)	319	6.460	6.460	(0.910)	72408	1.00000	0.9726
*	4 Tetrapentyl Tin	333	7.101	7.101	(1.000)	208480	2.00000	
	5 Dibutyl Tin (Hexyl)	347	7.150	7.150	(0.893)	88970	2.00000	1.911
$	6 Tripentyl Tin (Hexyl)	347	7.440	7.440	(0.929)	125529	2.00000	1.956
	7 Butyl Tin (Hexyl)	347	7.766	7.766	(0.970)	136585	2.00000	1.938
*	8 p-Terphenyl-d14	244	8.008	8.008	(1.000)	97619	0.20000	

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt14.i
Lab File ID: NT1419100502.D
Lab Smp Id: SHJ0100-ICV1
Analysis Type: SV
Quant Type: ISTD
Operator: VTS
Method File: \\target\share\chem3\nt14.i\20191005.b\BTS.m
Misc Info:

Calibration Date: 02-OCT-2019
Calibration Time: 07:47
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	206298	103149	412596	208480	1.06
8 p-Terphenyl-d14	96182	48091	192364	97619	1.49

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	7.10	6.60	7.60	7.10	0.00
8 p-Terphenyl-d14	8.01	7.51	8.51	8.01	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

REVIEW SUMMARY FOR FILE - NT1419100502.D

Lab ID: SHJ0100-ICV1
nt14.i, 20191005.b\BTS.m,   05-OCT-2019 13:47

RT	CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

No RRT check. Ccal file.

On Column LOD for nt14.i, 20191005.b\BTS.m, sed.sub = 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Q-FLAG SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191005.b

Instrument: nt14.i Date: 05-OCT-2019 Method: 20191005.b\BTS.m

INITIAL CAL: 02-OCT-2019

Compound	%RSD or R^2
NO Q-FLAGS	

ICV CAL: NT1419100502.D 05-OCT-2019 13:47

Compound	%D
NO Q-FLAGS	

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Sequence:	SHJ0009	Instrument:	NT14
		Calibration:	CJ00005

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
MS Tune	SHJ0009-TUN1	NT1419100203.D	NA	10/02/19 07:36
TBT 1.0	SHJ0009-CAL4	NT1419100204.D	NA	10/02/19 07:47
TBT 1.0	SHJ0009-ICV1	NT1419100204ICV.D	NA	10/02/19 07:47
TBT 4.0	SHJ0009-CAL6	NT1419100205.D	NA	10/02/19 08:12
TBT 0.05	SHJ0009-CAL1	NT1419100206.D	NA	10/02/19 08:25
TBT 2.0	SHJ0009-CAL5	NT1419100207.D	NA	10/02/19 08:39
TBT 0.2	SHJ0009-CAL2	NT1419100208.D	NA	10/02/19 08:52
TBT 0.5	SHJ0009-CAL3	NT1419100209.D	NA	10/02/19 09:06
Secondary Cal Check	SHJ0009-SCV1	NT1419100210.D	NA	10/02/19 10:07
ZZZZZ	BHI0813-BLK1	NT1419100211.D	Water	10/02/19 10:33
ZZZZZ	BHI0813-BS1	NT1419100212.D	Water	10/02/19 10:46
ZZZZZ	19I0351-05	NT1419100213.D	Water	10/02/19 11:00
TBT 1.0	SHJ0009-CCV1	NT1419100216.D	NA	10/02/19 11:40

Printed: 10/2/2019 12:34:08PM

ANALYSIS SEQUENCE

SHJ0009

Instrument: NT14 Element Column ID: G002876
Calibration ID: CJ00005 Tune File: 190827.U
EM Voltage: 1871

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SHJ0009-TUN1	MS Tune	QC		1	H008234		
SHJ0009-CAL4	TBT 1.0	QC		2	H000010	H004622	
SHJ0009-CAL6	TBT 4.0	QC		3	H000008	H004622	
SHJ0009-CAL1	TBT 0.05	QC		4	H000013	H004622	
SHJ0009-CAL5	TBT 2.0	QC		5	H000009	H004622	
SHJ0009-CAL2	TBT 0.2	QC		6	H000012	H004622	
SHJ0009-CAL3	TBT 0.5	QC		7	H000011	H004622	
SHJ0009-SCV1	Secondary Cal Check	QC		8	H009522	H004622	
SHJ0009-ICV1	TBT 1.0	QC		9	H000010	H004622	
BHI0813-BLK1	Blank	QC		10		H004622	
BHI0813-BS1	LCS	QC		11		H004622	
19I0351-05	DSISUP-BT-RB01	8270D-SIM Butyl Tins	E 01	12		H004622	
BHI0813-MS1	Matrix Spike	QC		13		H004622	
BHI0813-MSD1	Matrix Spike Dup	QC		14		H004622	
SHJ0009-CCV1	TBT 1.0	QC		15	H000010	H004622	

INTERNAL STANDARD SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191002.b

	Time	Filename	LabID	ClientId	DF							
1	0707	NT1419100201.D		SHJ0009-TUN1	1	NO ISTDS FOUND						
2	0717	NT1419100202.D		SHJ0009-ICV1	1	7.10	208952	8.01	96786			
3	0736	NT1419100203.D		SHJ0009-TUN1	1	NO ISTDS FOUND						
4	0747	NT1419100204.D		SHJ0009-CAL4	1	7.10	206298	8.01	96182			
5	0747	NT1419100204ICV.D		SHJ0009-ICV1	1	7.10	206298	8.01	96182			
6	0812	NT1419100205.D		SHJ0009-CAL6	1	7.10	225157	8.02	89036			
7	0825	NT1419100206.D		SHJ0009-CAL1	1	7.10	192697	8.01	94383			
8	0839	NT1419100207.D		SHJ0009-CAL5	1	7.10	202106	8.01	92324			
9	0852	NT1419100208.D		SHJ0009-CAL2	1	7.10	194392	8.01	92426			
10	0906	NT1419100209.D		SHJ0009-CAL3	1	7.10	196201	8.01	92942			
11	1007	NT1419100210.D		SHJ0009-SCV1	1	7.10	190154	8.02	86746			
12	1033	NT1419100211.D		BHI0813-BLK1	1	7.10	182169	8.02	77407			
13	1046	NT1419100212.D		BHI0813-BS1	1	7.10	201795	8.01	93428			
14	1100	NT1419100213.D		19I0351-05	1	7.10	212108	8.01	103091			
15	1113	NT1419100214.D		BHI0813-MS1	1	7.10	216882	8.01	108937			
16	1127	NT1419100215.D		BHI0813-MSD1	1	7.10	211673	8.01	106627			
17	1140	NT1419100216.D		SHJ0009-CCV1	1	7.10	240085	8.01	124803			

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191002.b

Instrument: nt14.i Date: 02-OCT-2019

Time	Filename	LabID	DF	Manually Integrated Compounds
0707	NT1419100201.D	SHJ0009-TUN1	1	NO MANUAL INTEGRATION
0717	NT1419100202.D	SHJ0009-ICV1	1	Tributyl Tin (Hexyl), Dibutyl Tin (Hexyl), Butyl Tin (Hexyl), Tetrabutyl Tin, Tetrapentyl Tin, p-Terphenyl-d14 Tripropyl Tin (Hexyl), Tripentyl Tin (Hexyl),
0736	NT1419100203.D	SHJ0009-TUN1	1	NO MANUAL INTEGRATION
0747	NT1419100204.D	SHJ0009-CAL4	1	NO MANUAL INTEGRATION
0747	NT1419100204ICV.D	SHJ0009-ICV1	1	NO MANUAL INTEGRATION
0812	NT1419100205.D	SHJ0009-CAL6	1	NO MANUAL INTEGRATION
0825	NT1419100206.D	SHJ0009-CAL1	1	NO MANUAL INTEGRATION
0839	NT1419100207.D	SHJ0009-CAL5	1	NO MANUAL INTEGRATION
0852	NT1419100208.D	SHJ0009-CAL2	1	NO MANUAL INTEGRATION
0906	NT1419100209.D	SHJ0009-CAL3	1	NO MANUAL INTEGRATION
1007	NT1419100210.D	SHJ0009-SCV1	1	NO MANUAL INTEGRATION
1033	NT1419100211.D	BHI0813-BLK1	1	NO MANUAL INTEGRATION
1046	NT1419100212.D	BHI0813-BS1	1	NO MANUAL INTEGRATION
1100	NT1419100213.D	19I0351-05	1	NO MANUAL INTEGRATION
1113	NT1419100214.D	BHI0813-MS1	1	NO MANUAL INTEGRATION
1127	NT1419100215.D	BHI0813-MSD1	1	NO MANUAL INTEGRATION
1140	NT1419100216.D	SHJ0009-CCV1	1	NO MANUAL INTEGRATION

Security Status Report

Date: 02-Oct-2019 12:36

NT1419100201.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100202.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100203.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100204.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100204ICV.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100205.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100206.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100207.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100208.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100209.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100210.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100211.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100212.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100213.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100214.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100215.D	Data Locked	van, 02-Oct-2019 12:35
NT1419100216.D	Data Locked	van, 02-Oct-2019 12:35

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Sequence:	SHJ0100	Instrument:	NT14
		Calibration:	CJ00005

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
MS Tune	SHJ0100-TUN1	NT1419100501.D	NA	10/05/19 13:37
TBT 1.0	SHJ0100-ICV1	NT1419100502.D	NA	10/05/19 13:47
Blank	BHJ0094-BLK1	NT1419100503.D	Solid	10/05/19 14:06
LCS	BHJ0094-BS1	NT1419100504.D	Solid	10/05/19 14:19
PDI-103SG-00-01-190924	19I0422-01	NT1419100505.D	Solid	10/05/19 14:33
PDI-103SG-00-01-190924	BHJ0094-MS1	NT1419100506.D	Solid	10/05/19 14:46
PDI-103SG-00-01-190924	BHJ0094-MSD1	NT1419100507.D	Solid	10/05/19 15:00
PDI-104SG-00-01-190924	19I0422-02	NT1419100508.D	Solid	10/05/19 15:13
PDI-105SG-00-0.99-190924	19I0422-03	NT1419100509.D	Solid	10/05/19 15:27
PDI-106SG-00-01-190924	19I0422-04	NT1419100510.D	Solid	10/05/19 15:40
TBT 1.0	SHJ0100-CCV1	NT1419100511.D	NA	10/05/19 15:54

Work Order(s):	19I0422

Checklist for SEQUENCE SHJ0100 **Checklist: Analyst Checklist-SVOA(rev4)**

#	Checklist Item	Response		Analyst Initials	Date
1	Instrument maintenance is recorded in Element	NA		VTS	10/08/2019
2	DFTPP abundance and time criteria met (8270D only)	YES		VTS	10/08/2019
3	DDT Breakdown <20% and Peak Tailing <=2 (8270D only)	NO		VTS	10/08/2019
	Comments: *PCP @ 2.76 tailing-does not affect data quality.*				
4	Narrate all Internal Standard areas not within 50-200% for all affected Workorders	NA		VTS	10/08/2019
5	Retention times within windows and Coelution summary checked for all Workorders	YES		VTS	10/08/2019
6	Rationale provided for all manual integrations not done for baseline correction per SOP 1021s	NA		VTS	10/08/2019
7	Narrate any Workorders where the Project specific requirements have not been met	NA		VTS	10/08/2019
8	Extraction basis, cleanups, and total solids are correctly entered	YES		VTS	10/08/2019
9	An extract dilution bench sheet is attached to the sequence PDF for all dilutions performed	NA		VTS	10/08/2019
10	AUTOCHECK: Blank checked for exceedence of criteria	YES	*	VTS	10/08/2019
11	AUTOCHECK: Check blank spike recovery	YES	*	VTS	10/08/2019
12	AUTOCHECK: Check blank spike/blank spike duplicate RPD. If exceeded include outliers in exception report.	NA	*	VTS	10/08/2019
13	AUTOCHECK: Compounds in method designated as blank spike compounds are present	YES	*	VTS	10/08/2019
14	AUTOCHECK: Check %RPD between sample and sample duplicate	NA	*	VTS	10/08/2019
15	AUTOCHECK: Matrix spike recoveries within limits	NO	*	VTS	10/08/2019
	Comments: *Project is TBT only. No corrective action taken.* *Matrix Spike Recovery for Butyltin Ion (23.0%) was outside acceptance limits (30-160) in BHJ0094-MS1 for 8270D-SIM Butyl Tins* *- Flagged value is not within established control limits.* *Matrix Spike Recovery for Butyltin Ion (17.9%) was outside acceptance limits (30-160) in BHJ0094-MSD1 for 8270D-SIM Butyl Tins* *- Flagged value is not within established control limits.*				
16	AUTOCHECK: Matrix spike/matrix spike duplicate RPD within limits	YES	*	VTS	10/08/2019
17	AUTOCHECK: List of compounds listed as spiked are present	YES	*	VTS	10/08/2019
18	AUTOCHECK: Check SRM limits for exceedance	NA	*	VTS	10/08/2019
19	AUTOCHECK: Check Surrogate recoveries	YES	*	VTS	10/08/2019
20	AUTOCHECK: Checks Surrogate spike list against Analysis	YES	*	VTS	10/08/2019
21	Data locked, checklist completed and status is analyzed (REVIEWER)	YES		MW	10/08/2019
22	Color warnings have been addressed, narrated and (or) qualified (REVIEWER)	YES		MW	10/08/2019
23	rev_DilutionCheck.rpt and rev_DilutionCheck.exe was run to verify multiple sample results are consistent (REVIEWER)	NO		MW	10/08/2019

* = Indicates Automated Response from Element DataSyst

Work Order(s):	19I0422

Checklist for SEQUENCE SHJ0100 **Checklist: Analyst Checklist-SVOA(rev4)**

#	Checklist Item	Response	Analyst Initials	Date
	Comments: *EXCEPTION REPORT REQUIRED*			
24	List samples by workorder or batch QC to be reanalyzed-verify rebatch created (ANALYST)	NA	VTS	10/08/2019
25	List samples by workorder or batch QC reanalyzed and samples reported from two or more analyses (ANALYST)	NA	VTS	10/08/2019
26	Additional Notes (ANALYST and REVIEWER)	NA	VTS	10/08/2019

Printed: 10/8/2019 8:48:38AM

ANALYSIS SEQUENCE

SHJ0100

Instrument: NT14 Element Column ID: G002876
Calibration ID: CJ00005 Tune File: 190827.U
EM Voltage: 1871

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SHJ0100-TUN1	MS Tune	QC		1	H008234		
SHJ0100-ICV1	TBT 1.0	QC		2	H000010	H004622	
BHJ0094-BLK1	Blank	QC		3		H004622	
BHJ0094-BS1	LCS	QC		4		H004622	
19I0422-01	PDI-103SG-00-01-190924	8270D-SIM Butyl Tins	A 01	5		H004622	
BHJ0094-MS1	Matrix Spike	QC		6		H004622	
BHJ0094-MSD1	Matrix Spike Dup	QC		7		H004622	
19I0422-02	PDI-104SG-00-01-190924	8270D-SIM Butyl Tins	A 01	8		H004622	
19I0422-03	PDI-105SG-00-0.99-190924	8270D-SIM Butyl Tins	A 01	9		H004622	
19I0422-04	PDI-106SG-00-01-190924	8270D-SIM Butyl Tins	A 01	10		H004622	
SHJ0100-CCV1	TBT 1.0	QC		11	H000010	H004622	

INTERNAL STANDARD SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191005.b

	Time	Filename	LabID	ClientId	DF					
1	1337	NT1419100501.D	SHJ0100-TUN1		1	NO ISTDS FOUND				
2	1347	NT1419100502.D	SHJ0100-ICV1		1	7.10	208480	8.01	97619	
3	1406	NT1419100503.D	BHJ0094-BLK1		1	7.10	177561	8.01	75752	
4	1419	NT1419100504.D	BHJ0094-BS1		1	7.10	192821	8.01	89603	
5	1433	NT1419100505.D	19I0422-01		1	7.10	215992	8.01	103277	
6	1446	NT1419100506.D	BHJ0094-MS1		1	7.10	219132	8.01	106936	
7	1500	NT1419100507.D	BHJ0094-MSD1		1	7.10	228059	8.01	110294	
8	1513	NT1419100508.D	19I0422-02		1	7.10	226169	8.01	115306	
9	1527	NT1419100509.D	19I0422-03		1	7.10	221430	8.01	114842	
10	1540	NT1419100510.D	19I0422-04		1	7.10	220637	8.01	113338	
11	1554	NT1419100511.D	SHJ0100-CCV1		1	7.10	224619	8.01	118204	

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem3\nt14.i\20191005.b

Instrument: nt14.i Date: 05-OCT-2019

Time	Filename	LabID	DF	Manually Integrated Compounds
1337	NT1419100501.D	SHJ0100-TUN1	1	NO MANUAL INTEGRATION
1347	NT1419100502.D	SHJ0100-ICV1	1	NO MANUAL INTEGRATION
1406	NT1419100503.D	BHJ0094-BLK1	1	NO MANUAL INTEGRATION
1419	NT1419100504.D	BHJ0094-BS1	1	NO MANUAL INTEGRATION
1433	NT1419100505.D	19I0422-01	1	NO MANUAL INTEGRATION
1446	NT1419100506.D	BHJ0094-MS1	1	NO MANUAL INTEGRATION
1500	NT1419100507.D	BHJ0094-MSD1	1	p-Terphenyl-d14,
1513	NT1419100508.D	19I0422-02	1	p-Terphenyl-d14,
1527	NT1419100509.D	19I0422-03	1	NO MANUAL INTEGRATION
1540	NT1419100510.D	19I0422-04	1	p-Terphenyl-d14,
1554	NT1419100511.D	SHJ0100-CCV1	1	p-Terphenyl-d14,

Security Status Report

Date: 08-Oct-2019 08:49

NT1419100501.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100502.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100503.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100504.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100505.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100506.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100507.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100508.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100509.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100510.D	Data Locked	van, 08-Oct-2019 08:49
NT1419100511.D	Data Locked	van, 08-Oct-2019 08:49

SURROGATE RECOVERY AND RT SUMMARY

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG/WO:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Sequence:	SHJ0009	Instrument:	NT14
Calibration:	CJ00005	Calibration Date:	10/02/2019

Surrogate Compound	Spike Level ug/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SHJ0009-ICV1 (Water)		Lab File ID: NT1419100204ICV.D				Analyzed: 10/02/19 07:47		
Tripentyltin	1.5918	97.8	80 - 120	7.44	7.44	0.0000	N/A	
Tripropyltin	0.74432	101	80 - 120	5.471	5.471	0.0000	N/A	
SHJ0009-SCV1 (Water)		Lab File ID: NT1419100210.D				Analyzed: 10/02/19 10:07		
Tripentyltin	0.79590	83.0	80 - 120	7.44	7.44	0.0000	N/A	

SURROGATE RECOVERY AND RT SUMMARY

EPA 8270D-SIM

Laboratory: Analytical Resources, Inc.
SDG/WO: 19I0422
Client: Anchor QEA, LLC
Project: Gasco PDI
Sequence: SHJ0100
Instrument: NT14
Calibration: CJ00005
Calibration Date: 10/02/2019

Surrogate Compound	Spike Level ug/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SHJ0100-ICV1 (Solid)			Lab File ID: NT1419100502.D				Analyzed: 10/05/19 13:47	
Tripentyltin	1.5918	97.8	80 - 120	7.44	7.44	0.0000	N/A	
Tripropyltin	0.74432	98.8	80 - 120	5.471	5.471	0.0000	N/A	
BHJ0094-BLK1 (Solid)			Lab File ID: NT1419100503.D				Analyzed: 10/05/19 14:06	
Tripentyltin	45.178	57.4	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	43.746	51.9	30 - 160	5.471	5.471	0.0000	N/A	
BHJ0094-BS1 (Solid)			Lab File ID: NT1419100504.D				Analyzed: 10/05/19 14:19	
Tripentyltin	45.178	59.9	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	43.746	55.9	30 - 160	5.471	5.471	0.0000	N/A	
19I0422-01 (Solid)			Lab File ID: NT1419100505.D				Analyzed: 10/05/19 14:33	
Tripentyltin	44.297	47.0	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	42.893	53.4	30 - 160	5.471	5.471	0.0000	N/A	
BHJ0094-MS1 (Solid)			Lab File ID: NT1419100506.D				Analyzed: 10/05/19 14:46	
Tripentyltin	44.950	48.7	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	43.525	56.2	30 - 160	5.471	5.471	0.0000	N/A	
BHJ0094-MSD1 (Solid)			Lab File ID: NT1419100507.D				Analyzed: 10/05/19 15:00	
Tripentyltin	44.221	57.7	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	42.820	66.9	30 - 160	5.471	5.471	0.0000	N/A	
19I0422-02 (Solid)			Lab File ID: NT1419100508.D				Analyzed: 10/05/19 15:13	
Tripentyltin	44.367	50.5	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	42.961	62.7	30 - 160	5.471	5.471	0.0000	N/A	
19I0422-03 (Solid)			Lab File ID: NT1419100509.D				Analyzed: 10/05/19 15:27	
Tripentyltin	44.833	50.6	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	43.412	62.0	30 - 160	5.471	5.471	0.0000	N/A	
19I0422-04 (Solid)			Lab File ID: NT1419100510.D				Analyzed: 10/05/19 15:40	
Tripentyltin	44.520	49.8	30 - 160	7.44	7.44	0.0000	N/A	
Tripropyltin	43.109	58.7	30 - 160	5.471	5.471	0.0000	N/A	

INTERNAL STANDARD AREA AND RT SUMMARY

EPA 8270D-SIM

Laboratory:	Analytical Resources, Inc.	SDG:	19I0422
Client:	Anchor QEA, LLC	Project:	Gasco PDI
Sequence:	SHJ0009	Instrument:	NT14
		Calibration:	CJ00005

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (SHJ0009-ICV1)		(Water)	Lab File ID: NT1419100204ICV.D				Analyzed: 10/02/19 07:47		
Tetrapentyltin	206298	7.102	206298	7.102	100	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	96182	8.008	96182	8.008	100	50 - 200	0.000	+/-0.50	
Secondary Cal Check (SHJ0009-SCV1)		(Water)	Lab File ID: NT1419100210.D				Analyzed: 10/02/19 10:07		
Tetrapentyltin	190154	7.101	206298	7.102	92	50 - 200	-0.001	+/-0.50	
p-Terphenyl-d14	86746	8.02	96182	8.008	90	50 - 200	0.012	+/-0.50	
Calibration Check (SHJ0009-CCV1)		(Water)	Lab File ID: NT1419100216.D				Analyzed: 10/02/19 11:40		
Tetrapentyltin	240085	7.101	206298	7.102	116	50 - 200	-0.001	+/-0.50	
p-Terphenyl-d14	124803	8.008	96182	8.008	130	50 - 200	0.000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY

EPA 8270D-SIM

Laboratory: Analytical Resources, Inc.
SDG: 19I0422
Client: Anchor QEA, LLC
Project: Gasco PDI
Sequence: SHJ0100
Instrument: NT14
Calibration: CJ00005

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (SHJ0100-ICV1)		(Solid)	Lab File ID: NT1419100502.D				Analyzed: 10/05/19 13:47		
Tetrapentyltin	208480	7.101	208480	7.101	100	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	97619	8.008	97619	8.008	100	50 - 200	0.000	+/-0.50	
Blank (BHJ0094-BLK1)		(Solid)	Lab File ID: NT1419100503.D				Analyzed: 10/05/19 14:06		
Tetrapentyltin	177561	7.101	208480	7.101	85	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	75752	8.008	97619	8.008	78	50 - 200	0.000	+/-0.50	
LCS (BHJ0094-BS1)		(Solid)	Lab File ID: NT1419100504.D				Analyzed: 10/05/19 14:19		
Tetrapentyltin	192821	7.101	208480	7.101	92	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	89603	8.008	97619	8.008	92	50 - 200	0.000	+/-0.50	
PDI-103SG-00-01-190924 (19I0422-01)		(Solid)	Lab File ID: NT1419100505.D				Analyzed: 10/05/19 14:33		
Tetrapentyltin	215992	7.101	208480	7.101	104	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	103277	8.008	97619	8.008	106	50 - 200	0.000	+/-0.50	
Matrix Spike (BHJ0094-MS1)		(Solid)	Lab File ID: NT1419100506.D				Analyzed: 10/05/19 14:46		
Tetrapentyltin	219132	7.101	208480	7.101	105	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	106936	8.008	97619	8.008	110	50 - 200	0.000	+/-0.50	
Matrix Spike Dup (BHJ0094-MSD1)		(Solid)	Lab File ID: NT1419100507.D				Analyzed: 10/05/19 15:00		
Tetrapentyltin	228059	7.102	208480	7.101	109	50 - 200	0.001	+/-0.50	
p-Terphenyl-d14	110294	8.008	97619	8.008	113	50 - 200	0.000	+/-0.50	
PDI-104SG-00-01-190924 (19I0422-02)		(Solid)	Lab File ID: NT1419100508.D				Analyzed: 10/05/19 15:13		
Tetrapentyltin	226169	7.101	208480	7.101	108	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	115306	8.008	97619	8.008	118	50 - 200	0.000	+/-0.50	
PDI-105SG-00-0.99-190924 (19I0422-03)		(Solid)	Lab File ID: NT1419100509.D				Analyzed: 10/05/19 15:27		
Tetrapentyltin	221430	7.102	208480	7.101	106	50 - 200	0.001	+/-0.50	
p-Terphenyl-d14	114842	8.008	97619	8.008	118	50 - 200	0.000	+/-0.50	
PDI-106SG-00-01-190924 (19I0422-04)		(Solid)	Lab File ID: NT1419100510.D				Analyzed: 10/05/19 15:40		
Tetrapentyltin	220637	7.101	208480	7.101	106	50 - 200	0.000	+/-0.50	
p-Terphenyl-d14	113338	8.008	97619	8.008	116	50 - 200	0.000	+/-0.50	
Calibration Check (SHJ0100-CCV1)		(Water)	Lab File ID: NT1419100511.D				Analyzed: 10/05/19 15:54		
Tetrapentyltin	224619	7.102	208480	7.101	108	50 - 200	0.001	+/-0.50	
p-Terphenyl-d14	118204	8.008	97619	8.008	121	50 - 200	0.000	+/-0.50	

HOLDING TIME SUMMARY

Analysis: EPA 8270D-SIM

Laboratory: Analytical Resources, Inc. SDG: 19I0422

Client: Anchor QEA, LLC Project: Gasco PDI

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
PDI-103SG-00-01-190924 19I0422-01	09/24/19 14:30	09/26/19 10:24	10/03/19 14:05	8	14	10/05/19 14:33	2	40	
PDI-104SG-00-01-190924 19I0422-02	09/24/19 14:45	09/26/19 10:24	10/03/19 14:05	8	14	10/05/19 15:13	2	40	
PDI-105SG-00-0.99-190924 19I0422-03	09/24/19 14:00	09/26/19 10:24	10/03/19 14:05	9	14	10/05/19 15:27	2	40	
PDI-106SG-00-01-190924 19I0422-04	09/24/19 15:05	09/26/19 10:24	10/03/19 14:05	8	14	10/05/19 15:40	2	40	
Matrix Spike BHJ0094-MS1	09/24/19 14:30	09/26/19 10:24	10/03/19 14:05	8	14	10/05/19 14:46	2	40	
Matrix Spike Dup BHJ0094-MSD1	09/24/19 14:30	09/26/19 10:24	10/03/19 14:05	8	14	10/05/19 15:00	2	40	

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

EPA 8270D-SIM

Laboratory: Analytical Resources, Inc. SDG: 19I0422

Client: Anchor QEA, LLC Project: Gasco PDI

Matrix: Solid Instrument: NT14

Analyte	MDL	RL	Units
Tributyltin Ion	0.450	3.86	ug/kg

METHOD DETECTION AND REPORTING LIMITS

EPA 8270D-SIM

Laboratory: Analytical Resources, Inc. SDG: 19I0422

Client: Anchor QEA, LLC Project: Gasco PDI

Matrix: Water Instrument: NT14

Analyte	MDL	RL	Units
Tributyltin Ion	0.043	0.193	ug/L
Dibutyltin Ion	0.096	0.289	ug/L
Butyltin Ion	0.108	0.204	ug/L
Tetrabutyltin	0.300	0.300	ug/L

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-97

PDI-103SG-00-01-190924

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-01 A	SDG:	19I0422
Sampled:	09/24/19 14:30	Prepared:	09/29/19 21:33	File ID:	
% Solids:	43.59	Preparation:	No Prep Wet Chem	Analyzed:	09/29/19 22:51
Batch:	BHI0870	Sequence:		Initial/Final:	10 g Wet / 10 g
Instrument:	BAL2			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	43.59	1	0.04	0.04	

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-97

PDI-104SG-00-01-190924

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-02 A	SDG:	19I0422
Sampled:	09/24/19 14:45	Prepared:	09/29/19 21:33	File ID:	
% Solids:	39.26	Preparation:	No Prep Wet Chem	Analyzed:	09/29/19 22:51
Batch:	BHI0870	Sequence:		Initial/Final:	10 g Wet / 10 g
Instrument:	BAL2			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	39.26	1	0.04	0.04	

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-97

PDI-105SG-00-0.99-190924

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-03 A	SDG:	19I0422
Sampled:	09/24/19 14:00	Prepared:	09/29/19 21:33	File ID:	
% Solids:	44.08	Preparation:	No Prep Wet Chem	Analyzed:	09/29/19 22:51
Batch:	BHI0870	Sequence:		Initial/Final:	10 g Wet / 10 g
Instrument:	BAL2			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	44.08	1	0.04	0.04	

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-97

PDI-106SG-00-01-190924

Laboratory:	Analytical Resources, Inc.				
Client:	Anchor QEA, LLC				
Project:	Gasco PDI				
Matrix:	Sediment	Laboratory ID:	19I0422-04 A	SDG:	19I0422
Sampled:	09/24/19 15:05	Prepared:	09/29/19 21:33	File ID:	
% Solids:	39.95	Preparation:	No Prep Wet Chem	Analyzed:	09/29/19 22:51
Batch:	BHI0870	Sequence:		Initial/Final:	10 g Wet / 10 g
Instrument:	BAL2			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	39.95	1	0.04	0.04	

PREPARATION BATCH SUMMARY

SM 2540 G-97

Laboratory: Analytical Resources, Inc. SDG: 19I0422

Client: Anchor QEA, LLC Project: Gasco PDI

Batch: BHI0870 Batch Matrix: Solid Preparation: No Prep Wet Chem

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
PDI-103SG-00-01-190924	19I0422-01		09/29/19 21:33	
PDI-104SG-00-01-190924	19I0422-02		09/29/19 21:33	
PDI-105SG-00-0.99-190924	19I0422-03		09/29/19 21:33	
PDI-106SG-00-01-190924	19I0422-04		09/29/19 21:33	
Blank	BHI0870-BLK1		09/29/19 21:33	
PDI-103SG-00-01-190924	BHI0870-DUP4		09/29/19 21:33	

TOTAL SOLIDS/VOLATILE SOLIDS (TS / TVS) BENCHSHEET for Solid samples

Method: PSEP 1986, SM2540, EPA 160.1

(dry at 104 (12-24 hr) then combust at 550 (30 min))

Batch:	BHI0870
Date:	9/29/2019 22:51
Analyst:	KLE

Instrumentation

Drying Ovens:	12	**Analytical Balance:**	BAL2
Muffle Furnace:	N / A		

Batch drying time

record times as mm/dd/yy hh:mm

date/time in oven:	9/29/2019 22:51	
date/time out:	9/30/2019 19:42	
elapsed hrs =	20.9	OK

TS (%) calculated as:
Final dry wt (g) = (Dry Wt - Tare Wt)
TS = (Final Dry Wt)/ (grams Sample-Tare)

TVS (mg/kg dry wt) calculated as:
Final ash wt (g) = (min ash wt - tare wt)
TVS (mg/kg) = [(Dry wt-Ash wt)/ (dry weight)] *1,000,000
if ash wt > dry wt, "Chk for Err"
if dry wt-ash wt < 0.001 g, "< (1/dry wt)*1,000,000

Balance Calibration Check

Record weights to 4 places

Cal Weight ID:	CV-02	CV-02	CV-02	CV-02	CV-02		CV-02	CV-02	CV-02
Date & Time:	9/29/19 21:58	9/29/19 22:28	9/30/19 20:00						
Cal Wt (g): 10.0000	9.9999	9.9999	9.9999						
	Cal OK!	Cal OK!	Cal OK!						

Sample ID	Dish #	Tare Wt. (g)	Dish & Sample (g)	Dry Wt 104C (grams) 1	2	3	dry Wt (g)	TS (%)	Notes	ASH WT 550C (grams) 1	2	3	Ash Wt (g)	TVS (mg/kg)	TVS (%)	Notes
BHI0870-BLK1	1	1.0900	0.0000	1.0899			-0.0001	0.01%								
19I0187-01	2	1.0688	6.1927	5.8572			4.7884	93.45%								
19I0331-01	3	1.1060	8.5955	5.8389			4.7329	63.19%								
19I0331-02	4	1.0789	7.9886	5.5329			4.4540	64.46%								
BHI0870-DUP1	5	1.1025	7.4736	5.2132			4.1107	64.52%	RPD=0.1							
19I0331-11	6	1.1005	9.8084	6.8049			5.7044	65.51%								
19I0331-12	7	1.0899	6.6970	4.9355			3.8456	68.58%								
19I0331-21	8	1.0762	8.0023	5.8337			4.7575	68.69%								
19I0331-22	9	1.0807	8.3684	5.9151			4.8344	66.34%								
19I0331-32	10	1.0795	9.3817	7.0769			5.9974	72.24%								
19I0331-33	11	1.0995	8.0582	6.0587			4.9592	71.27%								
19I0331-42	12	1.0960	8.1947	5.9316			4.8356	68.12%								
19I0331-43	13	1.0624	8.1597	5.8610			4.7986	67.61%								
19I0331-44	14	1.0749	8.2111	5.9844			4.9095	68.80%								
19I0331-52	15	1.0907	8.2166	5.8158			4.7251	66.31%								
19I0331-53	16	1.0862	6.0389	4.4116			3.3254	67.14%								
19I0339-01	17	1.0942	7.9763	6.1112			5.0170	72.90%								
BHI0870-DUP2	18	1.0485	7.7912	6.0265			4.9780	73.83%	RSD=0.7							
BHI0870-DUP3	19	1.0919	7.8781	6.0984			5.0065	73.77%								
19I0339-02	20	1.0954	8.5293	6.6260			5.5306	74.40%								
19I0422-01	21	1.0937	6.4297	3.4194			2.3257	43.59%								
BHI0870-DUP4	22	1.0896	6.4435	3.4373			2.3477	43.85%	RSD=0.3							
19I0422-02	23	1.0890	6.9249	3.3799			2.2909	39.26%								
19I0422-03	24	1.0920	7.6486	3.9822			2.8902	44.08%								
19I0422-04	25	1.0926	6.1542	3.1148			2.0222	39.95%								

Form I

METHOD BLANK DATA SHEET

SM 2540 G-97

TotalAnalytes

Blank

Batch: BHI0870 Laboratory ID: BHI0870-BLK1 Prepared: 09/29/19 21:33

Matrix: Solid Preparation: No Prep Wet Chem Analyzed: 09/29/19 22:51

Sequence: Calibration: Instrument: BAL2

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	ND	1	0.04	0.04	U

METHOD DETECTION AND REPORTING LIMITS

SM 2540 G-97

Laboratory: Analytical Resources, Inc.
SDG: 19I0422
Client: Anchor QEA, LLC
Project: Gasco PDI
Matrix: Solid
Instrument:

Analyte	MDL	RL	Units
Total Solids	0.04	0.04	%

HOLDING TIME SUMMARY

Analysis: SM 2540 G-97

Laboratory: Analytical Resources, Inc. SDG: 19I0422

Client: Anchor QEA, LLC Project: Gasco PDI

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
PDI-103SG-00-01-190924 19I0422-01	09/24/19 14:30	09/26/19 10:24	09/29/19 21:33	5	28	09/29/19 22:51	5	28	
PDI-104SG-00-01-190924 19I0422-02	09/24/19 14:45	09/26/19 10:24	09/29/19 21:33	5	28	09/29/19 22:51	5	28	
PDI-105SG-00-0.99-190924 19I0422-03	09/24/19 14:00	09/26/19 10:24	09/29/19 21:33	5	28	09/29/19 22:51	5	28	
PDI-106SG-00-01-190924 19I0422-04	09/24/19 15:05	09/26/19 10:24	09/29/19 21:33	5	28	09/29/19 22:51	5	28	
Duplicate BHI0870-DUP4	09/24/19 14:30	09/26/19 10:24	09/29/19 21:33	5	28	09/29/19 22:51	5	28	

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

SM 2540 G-97

Laboratory: Analytical Resources, Inc.
SDG: 19I0422
Client: Anchor QEA, LLC
Project: Gasco PDI
Matrix: Solid
Instrument:

Analyte	MDL	RL	Units
Total Solids	0.04	0.04	%