**Analytical Resources, Incorporated**
Analytical Chemists and Consultants

13 January 2020

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) |
|---|---|
| 19K0396 | 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: 2020.01.13 13:19:38 -08'00'

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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.*

ACCREDITED IN ACCORDANCE WITH nelac
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 19140396 ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

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

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

**Project:** Gasco PDI
**Client:** NW Natural

**COC ID:** ARI-20191121-114220
**Sample Custodian:** SN
**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-134RAB-00-10-191120 | N | SO | 11/20/2019 | 14:45 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 002 | PDI-134RAB-10-20-191120 | N | SO | 11/20/2019 | 15:30 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 003 | PDI-134RAB-20-25.5-191120 | N | SO | 11/20/2019 | 15:55 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 004 | PDI-135RAB-00-10-191120 | N | SO | 11/20/2019 | 9:20 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 005 | PDI-135RAB-10-20-191120 | N | SO | 11/20/2019 | 9:55 | 2 | ☒ | TBT | SW8270DSIM | 30 | 4°C |
| 006 | PDI-135RAB-20-26.2-191120 | N | SO | 11/20/2019 | 11:00 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 007 | PDI-136RAB-00-10-191119 | N | SO | 11/19/2019 | 9:20 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 008 | PDI-136RAB-10-13.4-191119 | N | SO | 11/19/2019 | 10:00 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 009 | PDI-137RAB-00-10-191119 | N | SO | 11/19/2019 | 12:15 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |
| 010 | PDI-137RAB-10-17.7-191119 | N | SO | 11/19/2019 | 12:50 | 1 | ☐ | TBT | SW8270DSIM | 30 | 4°C |

**Comment:**

| Relinquished By: | Received By: | Relinquished By: | Received By: | Relinquished By: | Received By: |
|---|---|---|---|---|---|
| Signature | Signature | Signature | Signature | Signature | Signature |
| Print Name Sasha Norwood | Print Name Kenny Dang | Print Name | Print Name | Print Name | Print Name |
| Company Anchor QEA | Company ARI | Company | Company | Company | Company |
| Date/Time 11/21/19 1335 | Date/Time 11/26/19 1022 | Date/Time | Date/Time | Date/Time | Date/Time |

2 of 217

**Date Printed: 11/21/2019**

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

**Analytical Resources, Incorporated**
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client: Anchor QEA  Project Name: Gasco PDI

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

Assigned ARI Job No: 19L0396  Tracking No: 7770 7702 6387 NA
7770 7702 7019

**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 1022  1.8 0.8 ____ ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F  Temp Gun ID#: DOO 5206

Cooler Accepted by: KD  Date: 11/26/19  Time: 1022

***Complete custody forms and attach all shipping documents***

## Log-In Phase:

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: _____

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: 11/26/19  Time: 1240  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:

# Analytical Report

| | | |
|---|---|---|
| Anchor QEA, LLC | Project: Gasco PDI | |
| 1201 3rd Ave, Suite 2600 | Project Number: 000029-02.59 | **Reported:** |
| Seattle WA, 98101 | Project Manager: Delaney Peterson | 13-Jan-2020 13:02 |

## Case Narrative

**Sample receipt**

Samples as listed on the preceding page were received November 26, 2019 under ARI work order 19K0396. 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. The samples were frozen prior to extraction to extend the 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-135RAB-10-20-191120. 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 | 01/13/2020 13:02 |

## ANALYTICAL REPORT FOR SAMPLES

| Laboratory ID | Sample ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 19K0396-01 | PDI-134RAB-00-10-191120 | Solid | 11/20/19 14:45 | 11/26/19 10:22 |
| 19K0396-02 | PDI-134RAB-10-20-191120 | Solid | 11/20/19 15:30 | 11/26/19 10:22 |
| 19K0396-03 | PDI-134RAB-20-25.5-191120 | Solid | 11/20/19 15:55 | 11/26/19 10:22 |
| 19K0396-04 | PDI-135RAB-00-10-191120 | Solid | 11/20/19 09:20 | 11/26/19 10:22 |
| 19K0396-05 | PDI-135RAB-10-20-191120 | Solid | 11/20/19 09:55 | 11/26/19 10:22 |
| 19K0396-06 | PDI-135RAB-20-26.2-191120 | Solid | 11/20/19 11:00 | 11/26/19 10:22 |
| 19K0396-07 | PDI-136RAB-00-10-191119 | Solid | 11/19/19 09:20 | 11/26/19 10:22 |
| 19K0396-08 | PDI-136RAB-10-13.4-191119 | Solid | 11/19/19 10:00 | 11/26/19 10:22 |
| 19K0396-09 | PDI-137RAB-00-10-191119 | Solid | 11/19/19 12:15 | 11/26/19 10:22 |
| 19K0396-10 | PDI-137RAB-10-17.7-191119 | Solid | 11/19/19 12:50 | 11/26/19 10:22 |

# 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. |
| 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-134RAB-00-10-191120

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-01 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 14:45 | Prepared: | 01/07/20 09:05 | File ID: | N820011005.D |
| % Solids: | 82.36 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 12:41 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.04 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 4.65 | U | 0.542 | 4.65 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 54.417 | 17.5 | 32.2 | 30 - 160 | |
| Tripropyltin | 52.692 | 19.7 | 37.5 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011005.D

Date : 10-JAN-2020 12:41

Client ID:

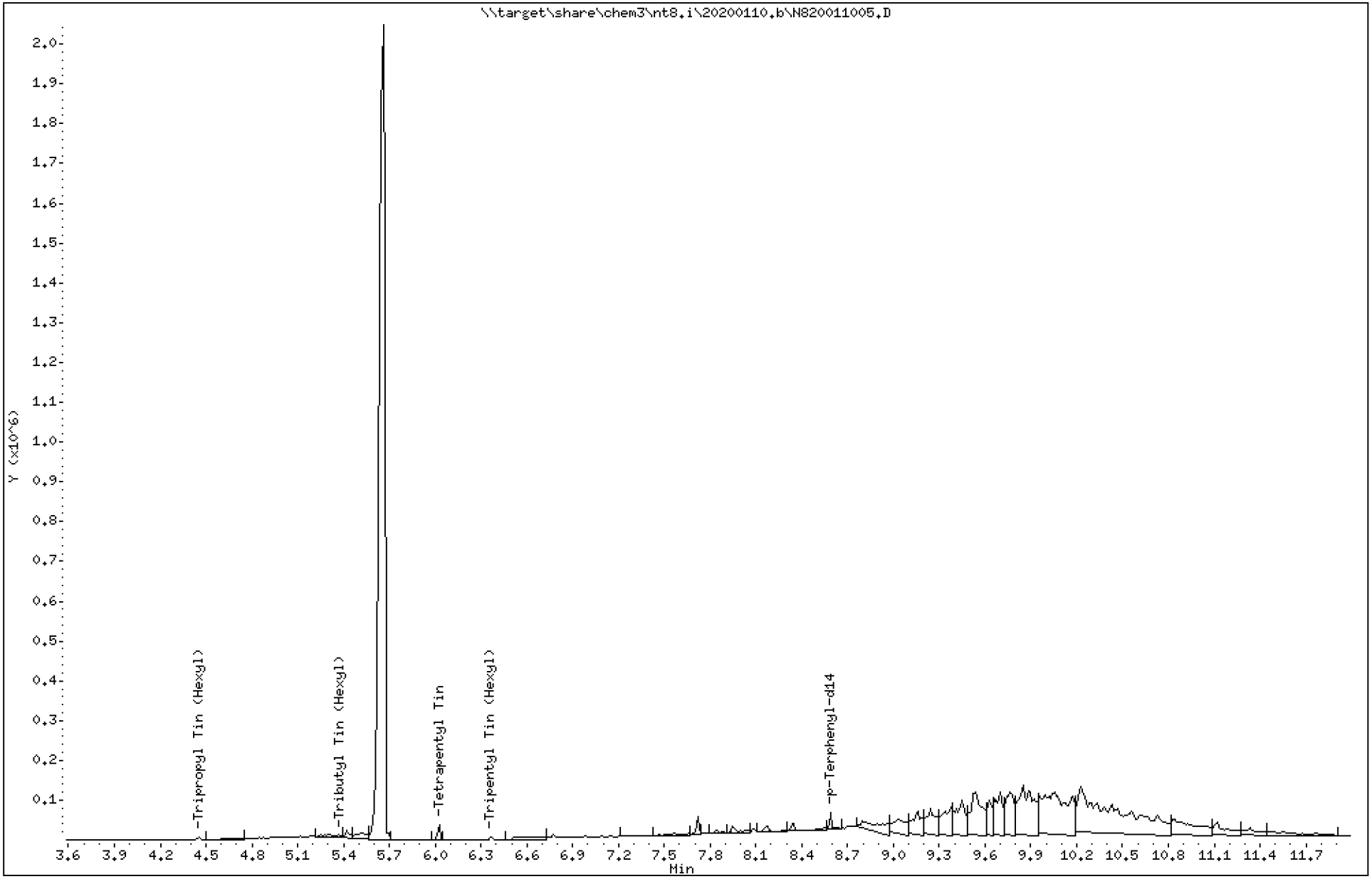
Sample Info: 19K0396-01

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011005.D

Date : 10-JAN-2020 12:41

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-01

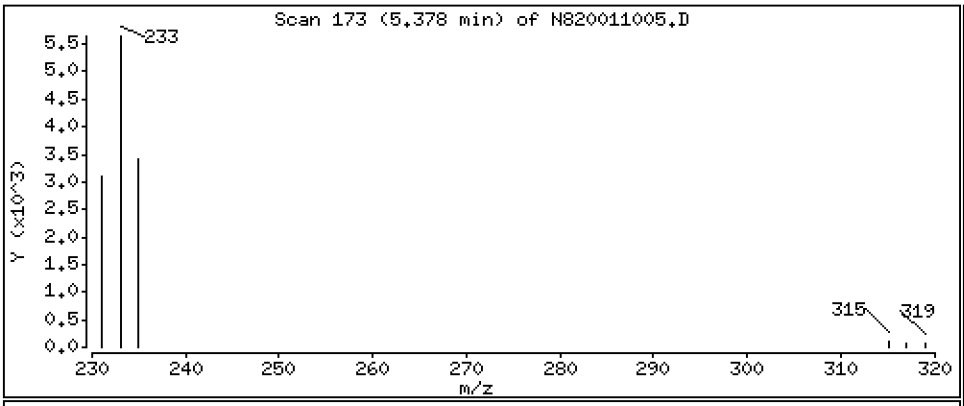
Operator: JZ

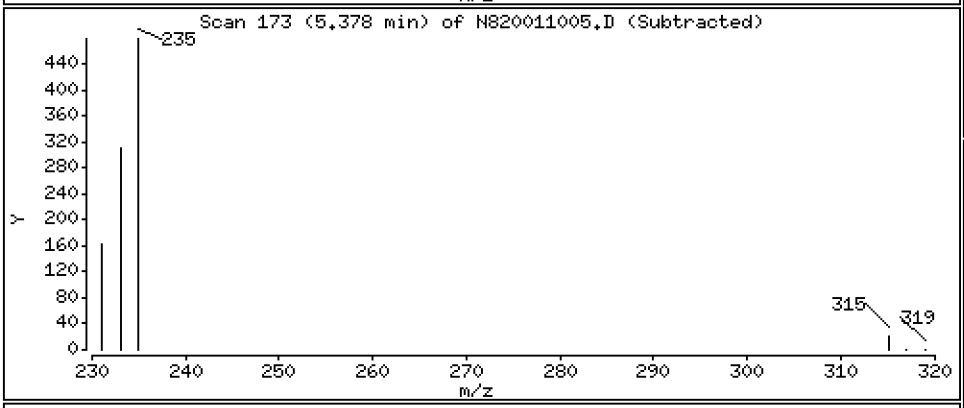
Column phase: ZB-5msi

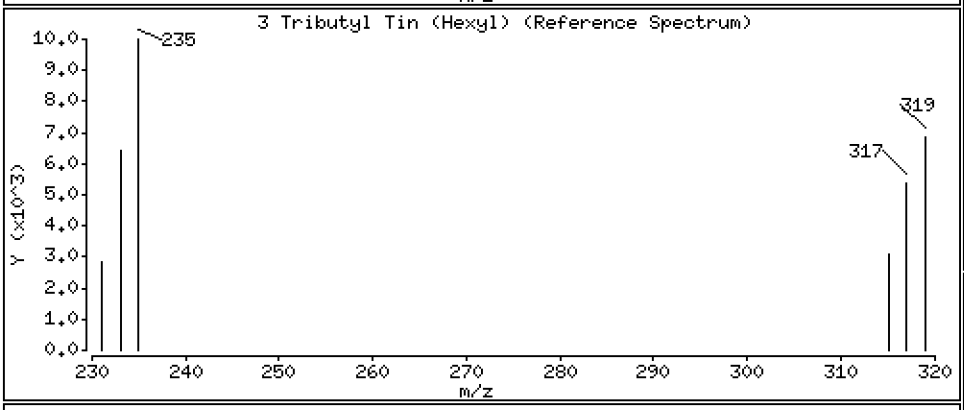
Column diameter: 0.25

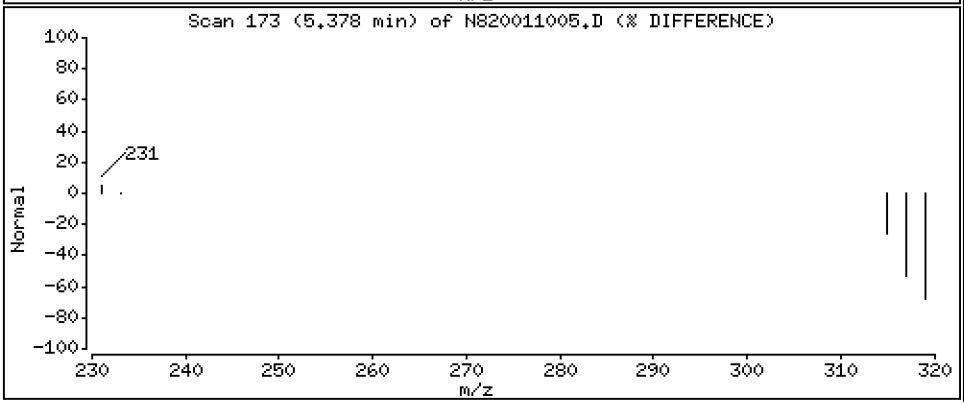
3 Tributyl Tin (Hexyl)

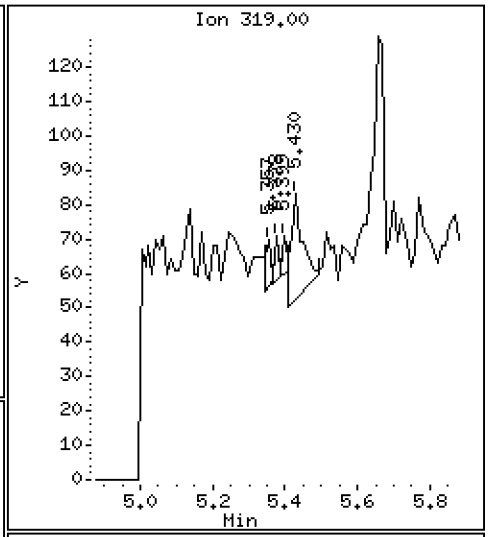
Concentration: 0.0006158 ug/mL

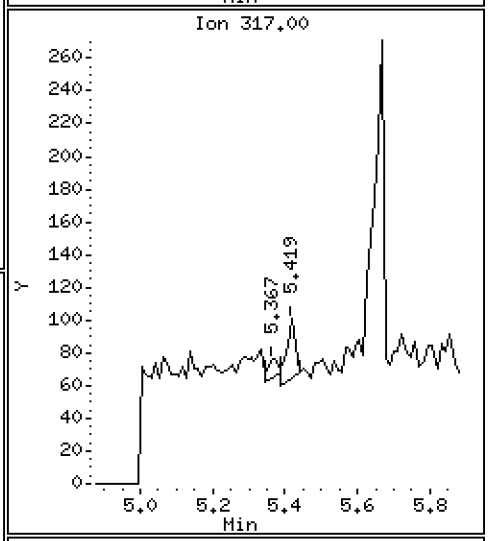


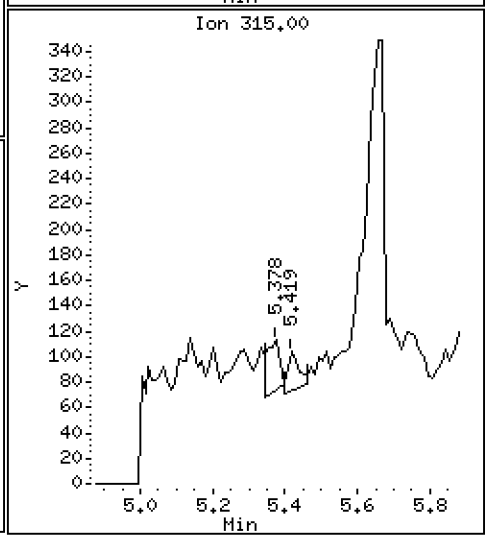



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011005.D
Lab Smp Id: 19K0396-01
Inj Date  : 10-JAN-2020 12:41
Operator  : JZ  Inst ID: nt8.i
Smp Info  : 19K0396-01
Misc Info : 20-
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 5
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: sedmdl.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.739) | 4435 | 0.22023 | 0.2202 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.377 | (0.893) | 10 | 6e-004 | 0.0006158 |
| * | 4 Tetrapentyl Tin | 333 | 6.025 | 6.013 | (1.000) | 38570 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.351 | (0.741) | 3082 | 0.18274 | 0.1827 |
| | 7 Butyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| * | 8 p-Terphenyl-d14 | 244 | 8.590 | 8.577 | (1.000) | 36845 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011005.D
Lab Smp Id: 19K0396-01
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 38570 | -11.03 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 36845 | 1.91 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.03 | 0.20 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.59 | 0.14 |

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 - N820011005.D

Lab ID: 19K0396-01
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 12:41

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

PDI-134RAB-10-20-191120

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-02 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 15:30 | Prepared: | 01/07/20 09:05 | File ID: | N820011020.D |
| % Solids: | 76.90 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 16:46 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 15 | 75.3 | U | 8.78 | 75.3 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 58.752 | 23.2 | 39.4 | 30 - 160 | |
| Tripropyltin | 56.889 | 19.3 | 34.0 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011020.D

Date : 10-JAN-2020 16:46

Client ID: 10

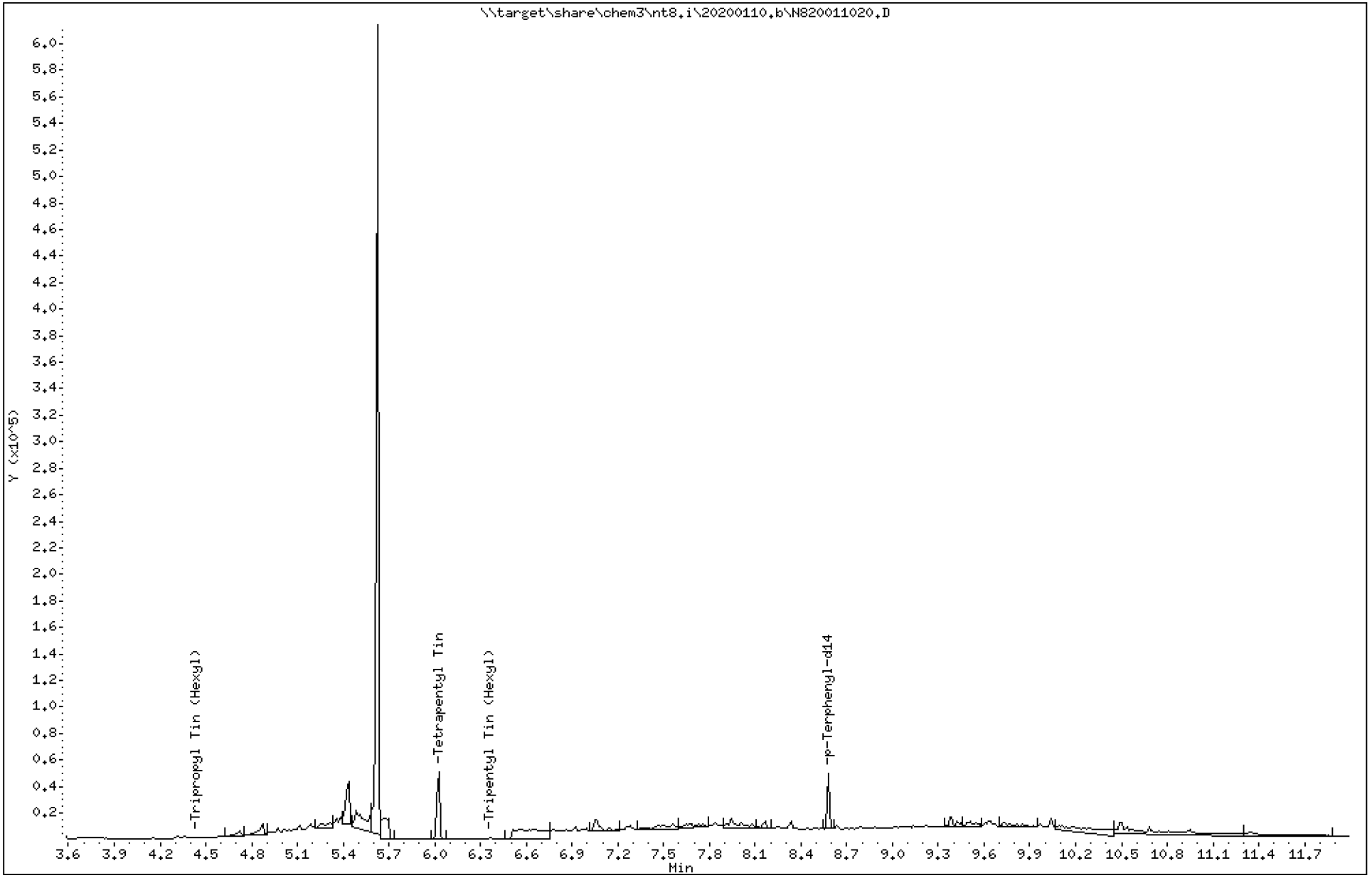
Instrument: nt8.i

Sample Info: 19K0396-02,15

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011020.D
Lab Smp Id: 19K0396-02  Client Smp ID: 10
Inj Date  : 10-JAN-2020 16:46
Operator  : JZ  Inst ID: nt8.i
Smp Info  : 19K0396-02,15
Misc Info : 20-
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 20
Dil Factor: 15.00000
Integrator: HP RTE  Compound Sublist: sedmdl.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | CONCENTRATIONS FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.440 | 4.419 | (0.737) | 431 | 0.01332 | 0.1998 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | Compound Not Detected. | | | | | |
| * | 4 Tetrapentyl Tin | 333 | 6.025 | 6.013 | (1.000) | 61973 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.351 | (0.742) | 279 | 0.01492 | 0.2238 |
| | 7 Butyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 41063 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011020.D
Lab Smp Id: 19K0396-02
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Client Smp ID: 10
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 61973 | 42.96 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 41063 | 13.57 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.03 | 0.20 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011020.D

Lab ID: 19K0396-02
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 16:46

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

PDI-134RAB-20-25.5-191120

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-03 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 15:55 | Prepared: | 01/07/20 09:05 | File ID: | N820011018.D |
| % Solids: | 74.55 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 16:13 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.02 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 3 | 15.5 | U | 1.80 | 15.5 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 60.359 | 26.5 | 43.8 | 30 - 160 | |
| Tripropyltin | 58.446 | 18.6 | 31.9 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011018.D

Date : 10-JAN-2020 16:13

Client ID: 3

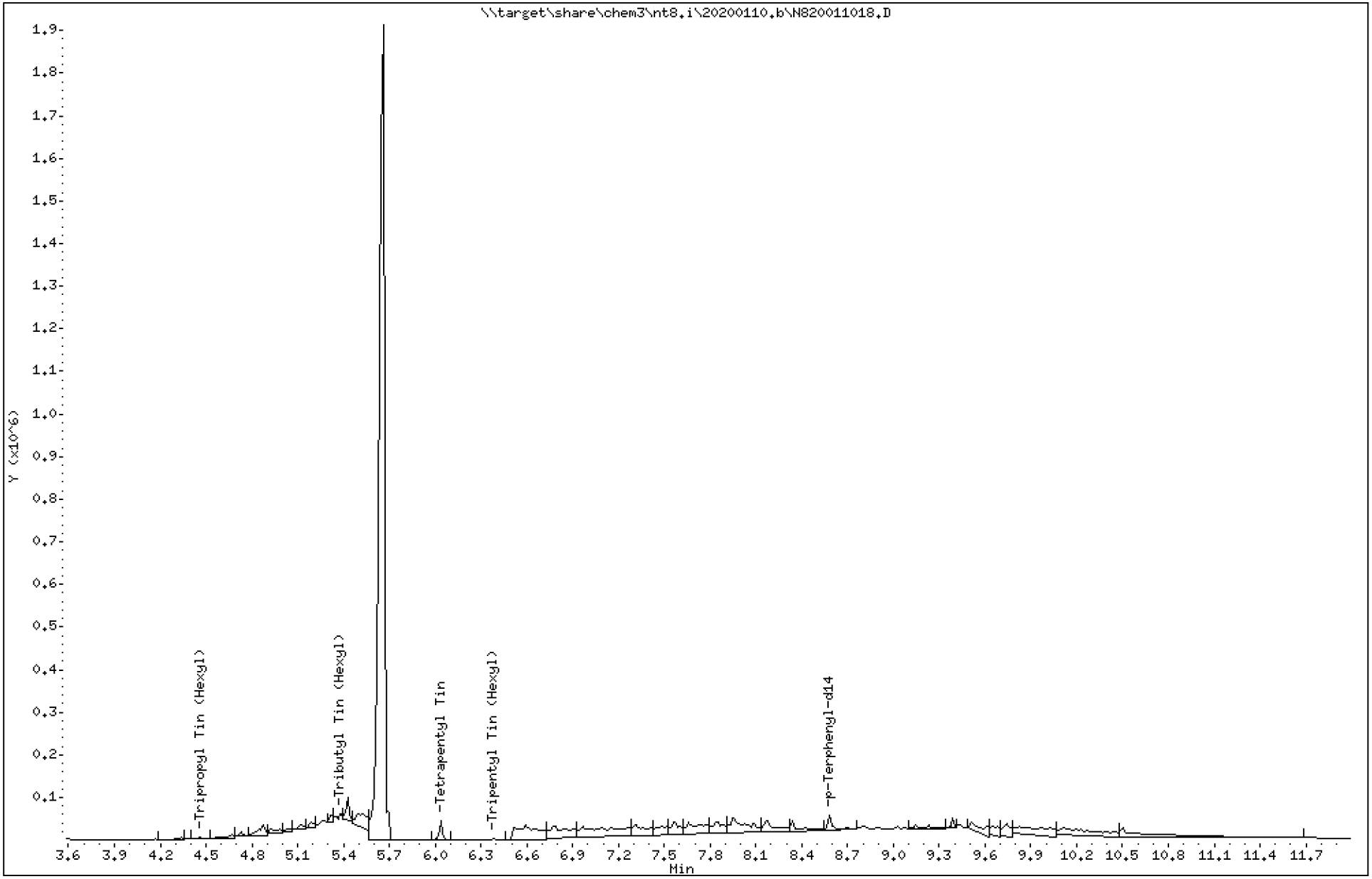
Sample Info: 19K0396-03,3

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011018.D

Date : 10-JAN-2020 16:13

Client ID: 3

Instrument: nt8.i

Sample Info: 19K0396-03,3

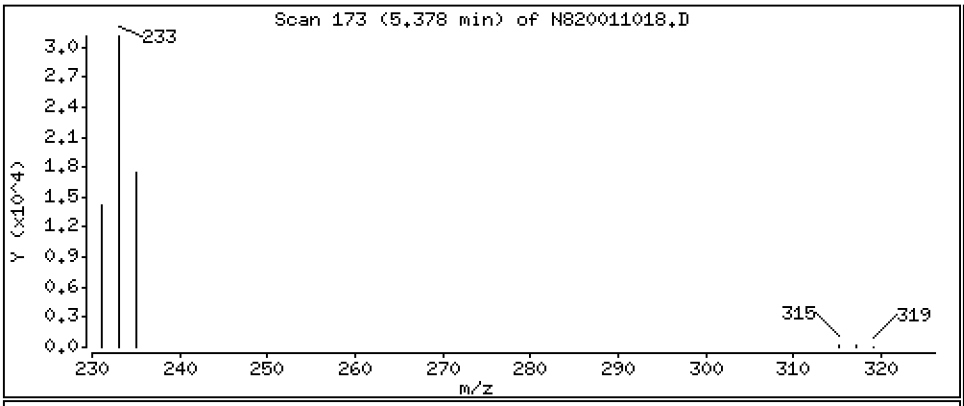
Operator: JZ

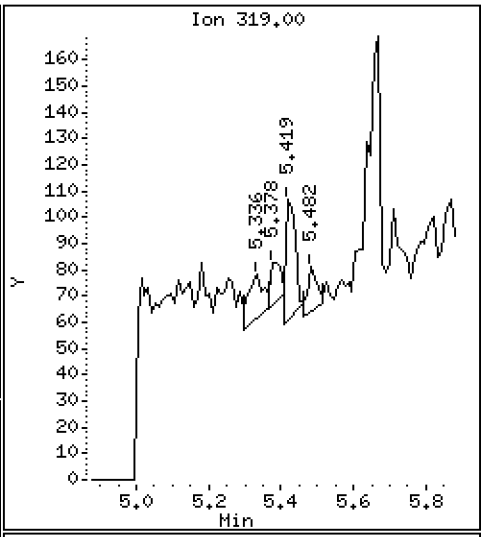
Column phase: ZB-5msi

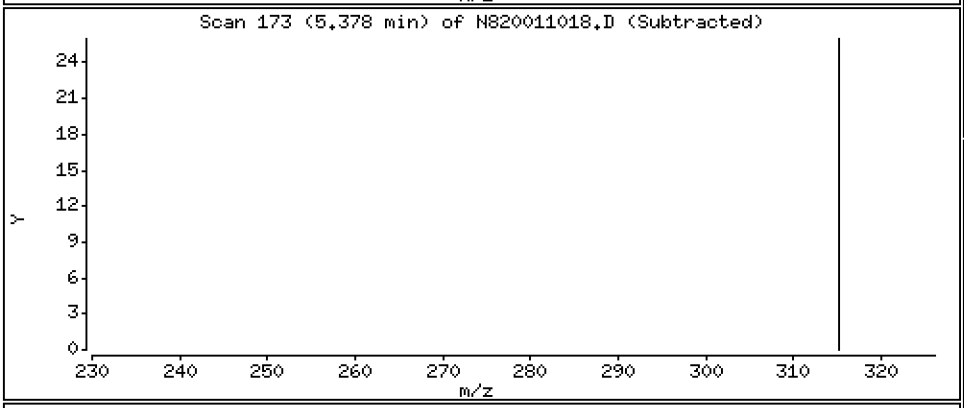
Column diameter: 0.25

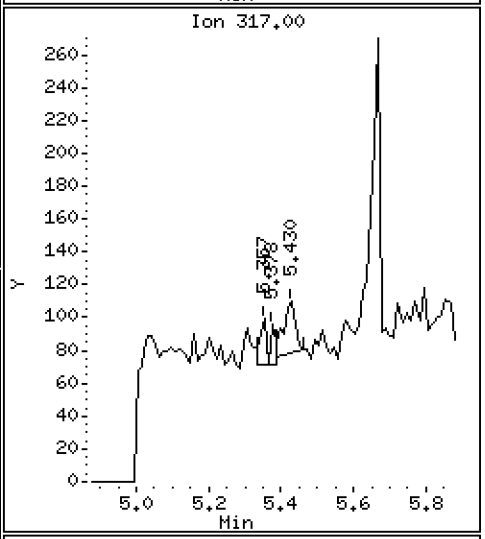
3 Tributyl Tin (Hexyl)

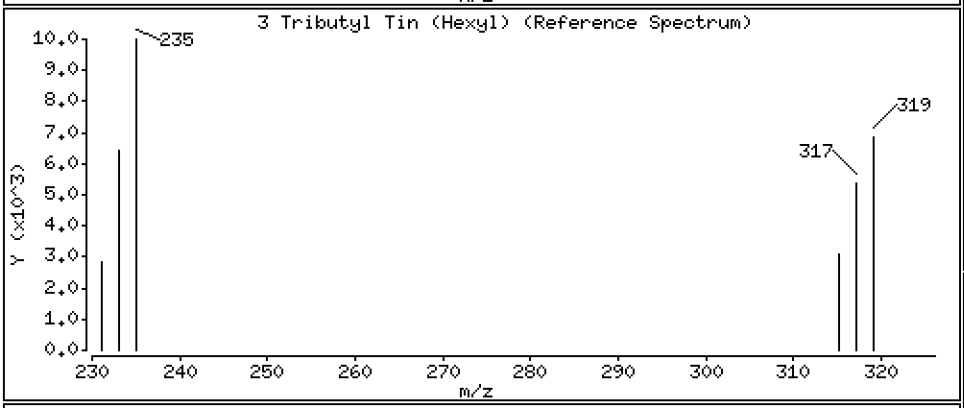
Concentration: 0.003375 ug/mL

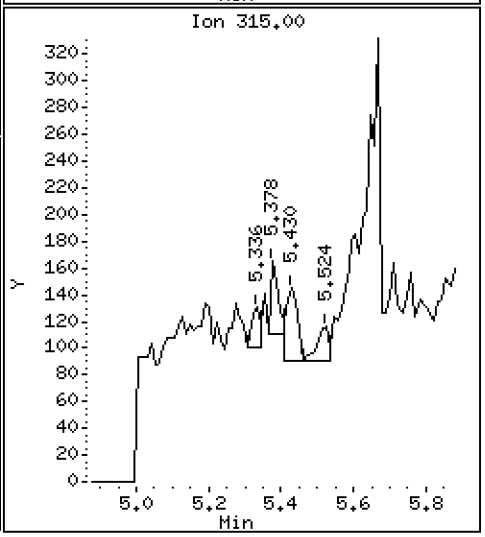


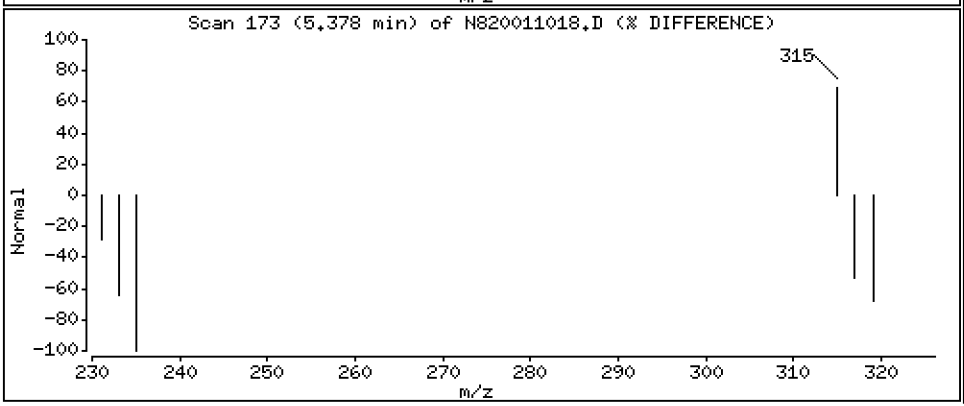



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011018.D
Lab Smp Id: 19K0396-03 Client Smp ID: 3
Inj Date : 10-JAN-2020 16:13
Operator : JZ Inst ID: nt8.i
Smp Info : 19K0396-03,3
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 18
Dil Factor: 3.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.461 | 4.419 | (0.739) | 2136 | 0.06250 | 0.1875 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.377 | (0.891) | 31 | 0.00112 | 0.003375 |
| * | 4 Tetrapentyl Tin | 333 | 6.037 | 6.013 | (1.000) | 65454 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.376 | 6.351 | (0.743) | 1598 | 0.08294 | 0.2488 |
| | 7 Butyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| * | 8 p-Terphenyl-d14 | 244 | 8.578 | 8.577 | (1.000) | 42218 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011018.D
Lab Smp Id: 19K0396-03
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Client Smp ID: 3
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 65454 | 50.99 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 42218 | 16.77 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.04 | 0.41 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011018.D

Lab ID: 19K0396-03
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 16:13

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

PDI-135RAB-00-10-191120

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-04 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 09:20 | Prepared: | 01/07/20 09:05 | File ID: | N820011008.D |
| % Solids: | 84.40 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 13:30 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.04 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 1.14 | J | 0.529 | 4.54 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 53.103 | 19.5 | 36.7 | 30 - 160 | |
| Tripropyltin | 51.420 | 20.1 | 39.1 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011008.D

Date : 10-JAN-2020 13:30

Client ID:

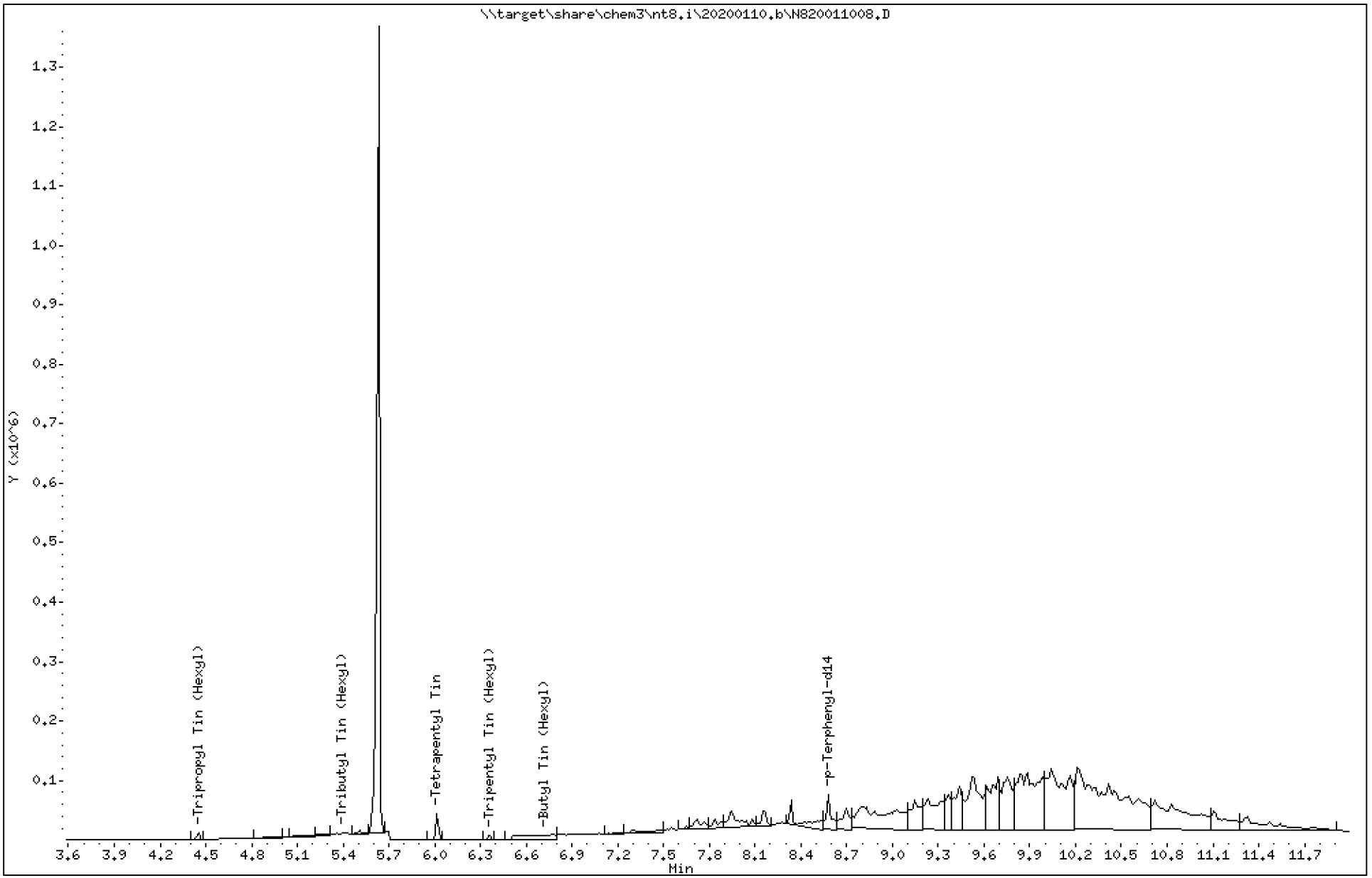
Sample Info: 19K0396-04

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011008.D

Date : 10-JAN-2020 13:30

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-04

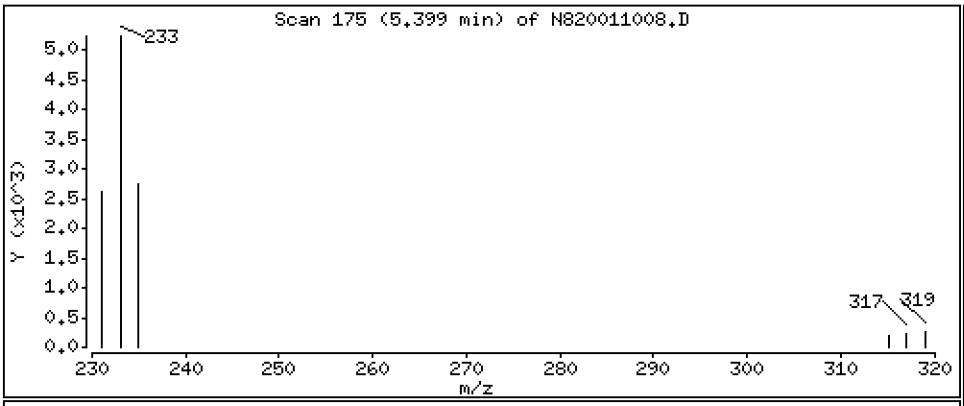
Operator: JZ

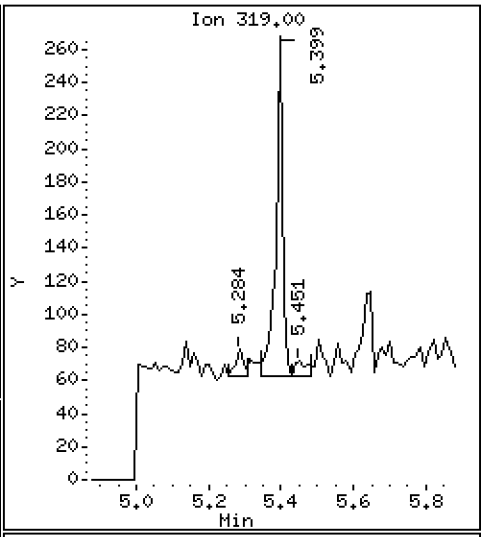
Column phase: ZB-5msi

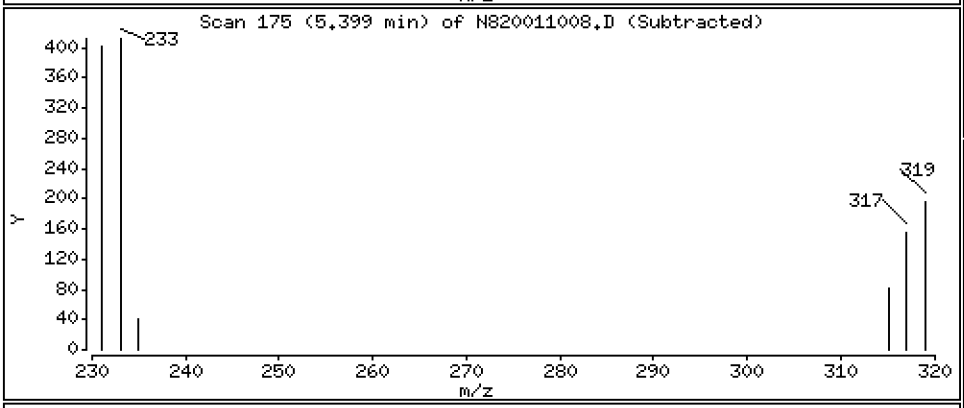
Column diameter: 0.25

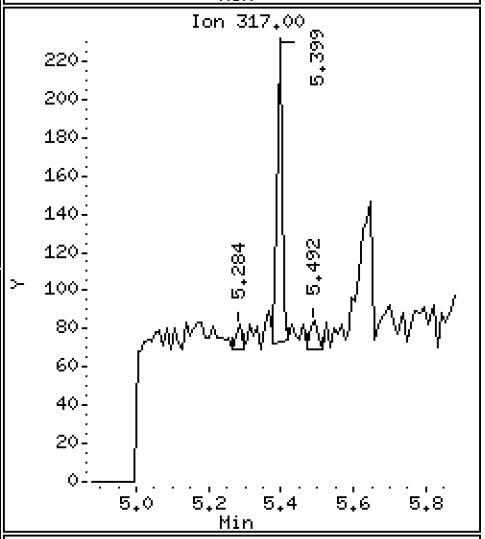
3 Tributyl Tin (Hexyl)

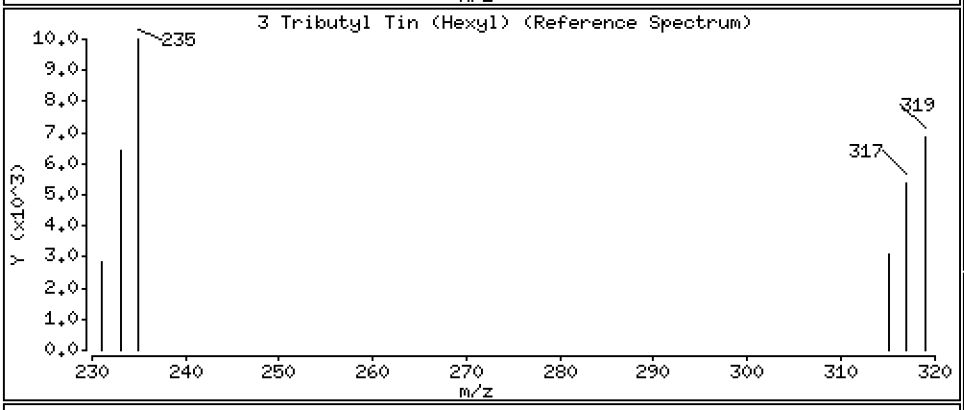
Concentration: 0.01259 ug/mL

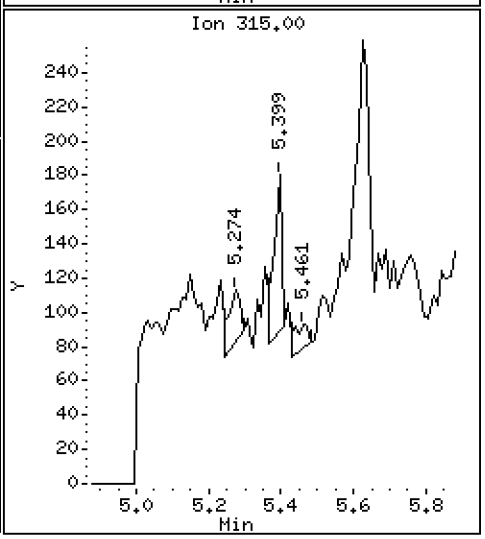


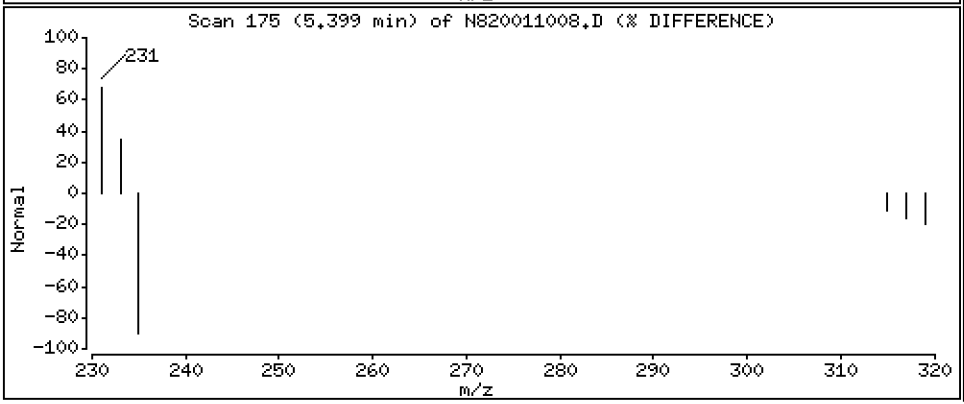



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011008.D

Date : 10-JAN-2020 13:30

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-04

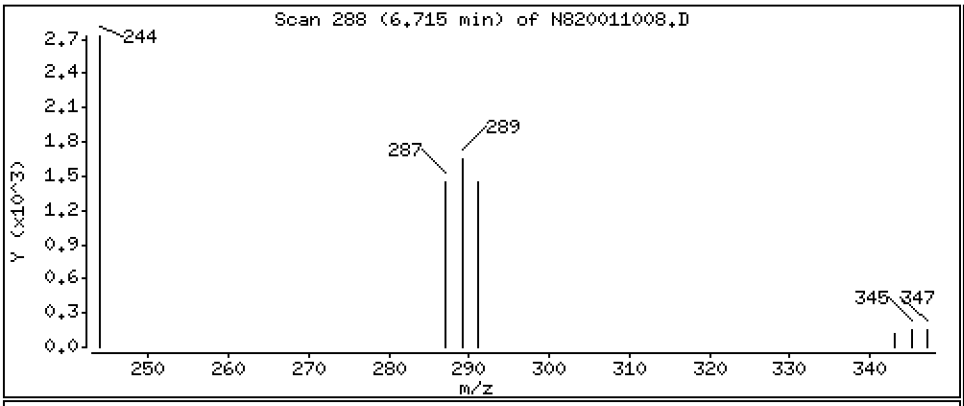
Operator: JZ

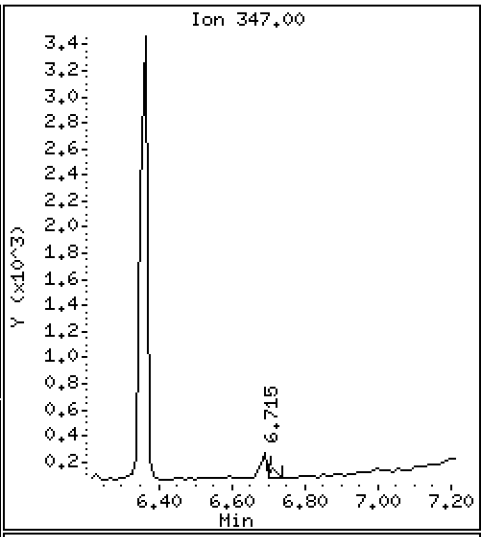
Column phase: ZB-5msi

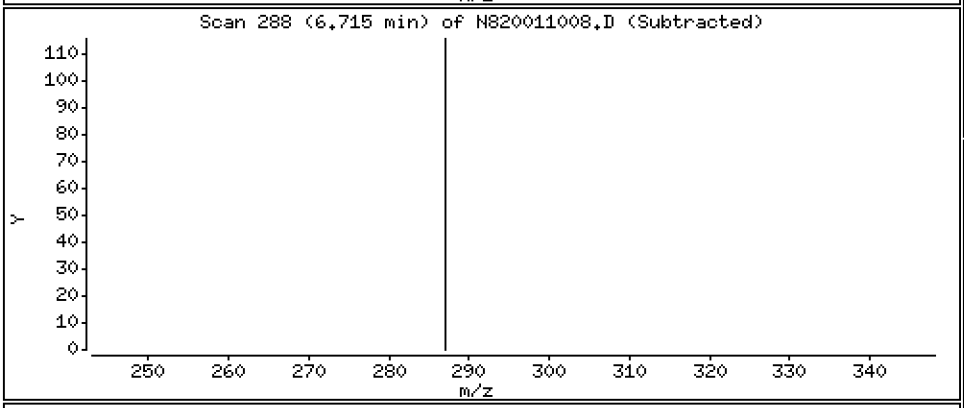
Column diameter: 0.25

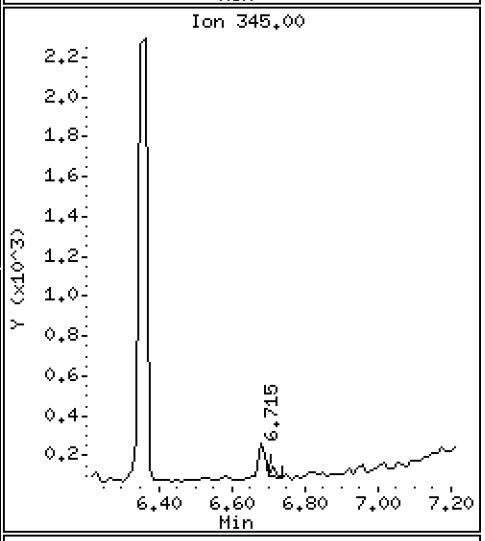
7 Butyl Tin (Hexyl)

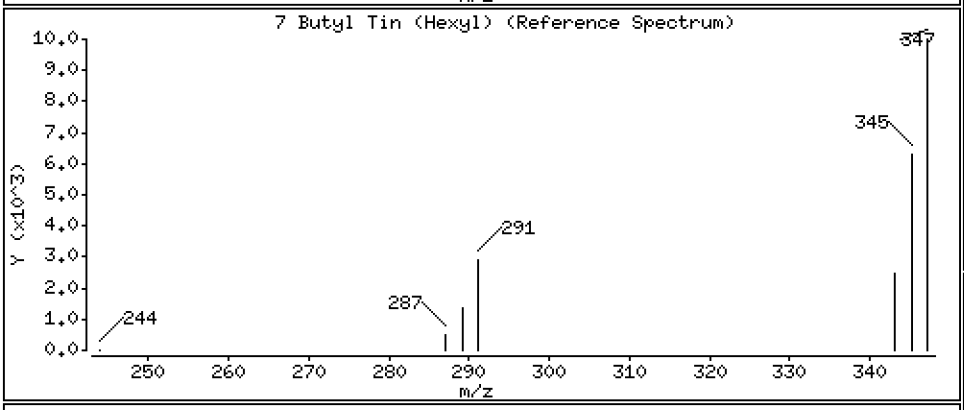
Concentration: 0.003270 ug/mL

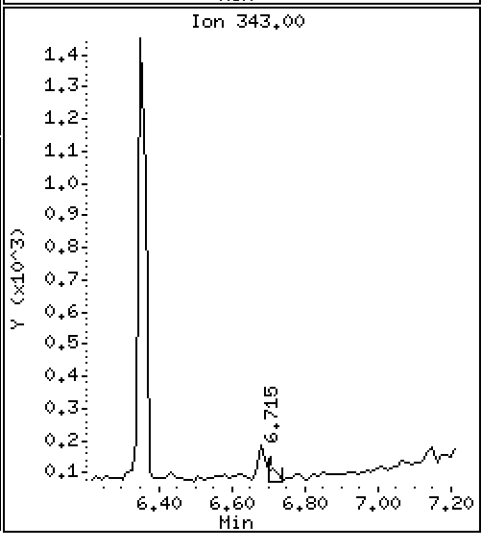


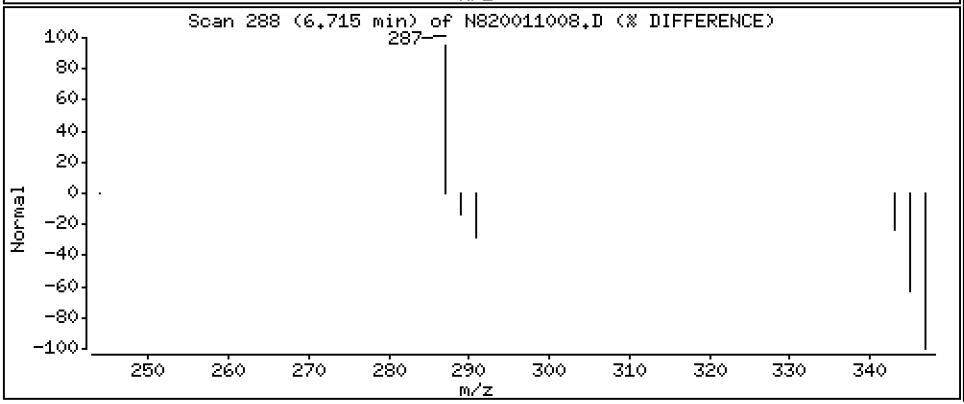



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011008.D
Lab Smp Id: 19K0396-04
Inj Date : 10-JAN-2020 13:30
Operator : JZ Inst ID: nt8.i
Smp Info : 19K0396-04
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.740) | 5821 | 0.22989 | 0.2299 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.398 | 5.377 | (0.898) | 257 | 0.01259 | 0.01259 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 48495 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.351 | (0.742) | 4221 | 0.20821 | 0.2082 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 88 | 0.00327 | 0.003270(M) |
| * | 8 p-Terphenyl-d14 | 244 | 8.578 | 8.577 | (1.000) | 44257 | 0.20000 | |

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011008.D
Lab Smp Id: 19K0396-04
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 48495 | 11.87 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 44257 | 22.41 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011008.D

Lab ID: 19K0396-04
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 13:30

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.740 | 0.735 | 0.0052 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

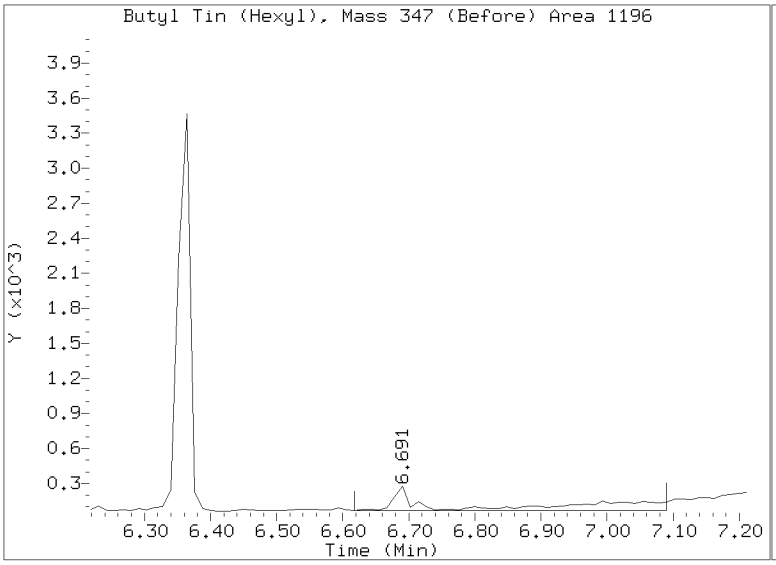
On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

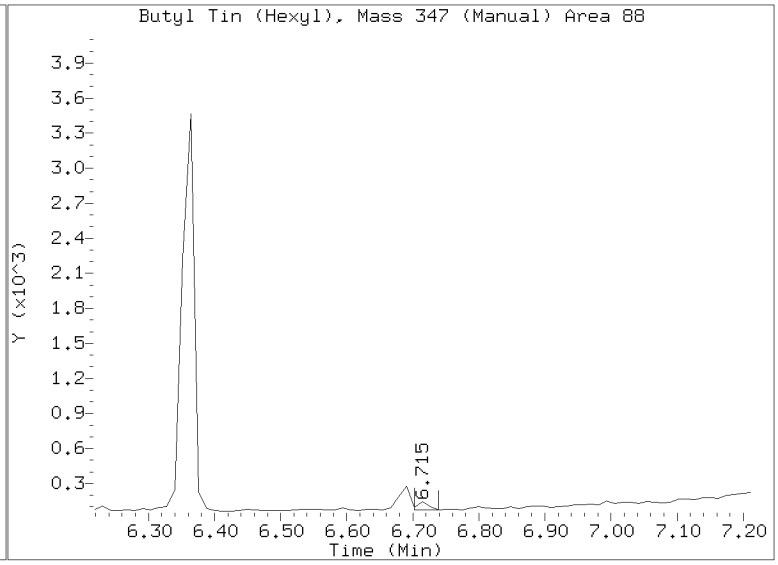
Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

# Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt8.i/20200110.b/N820011008.D
Injection Date: 10-JAN-2020 13:30
Lab ID:19K0396-04 Client ID:
Report Date: 01/10/2020 13:47



PDI-135RAB-10-20-191120

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-05 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 09:55 | Prepared: | 01/07/20 09:05 | File ID: | N820011009.D |
| % Solids: | 84.48 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 13:47 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.04 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 0.560 | J | 0.528 | 4.53 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 53.051 | 23.2 | 43.7 | 30 - 160 | |
| Tripropyltin | 51.369 | 23.4 | 45.6 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011009.D

Date : 10-JAN-2020 13:47

Client ID:

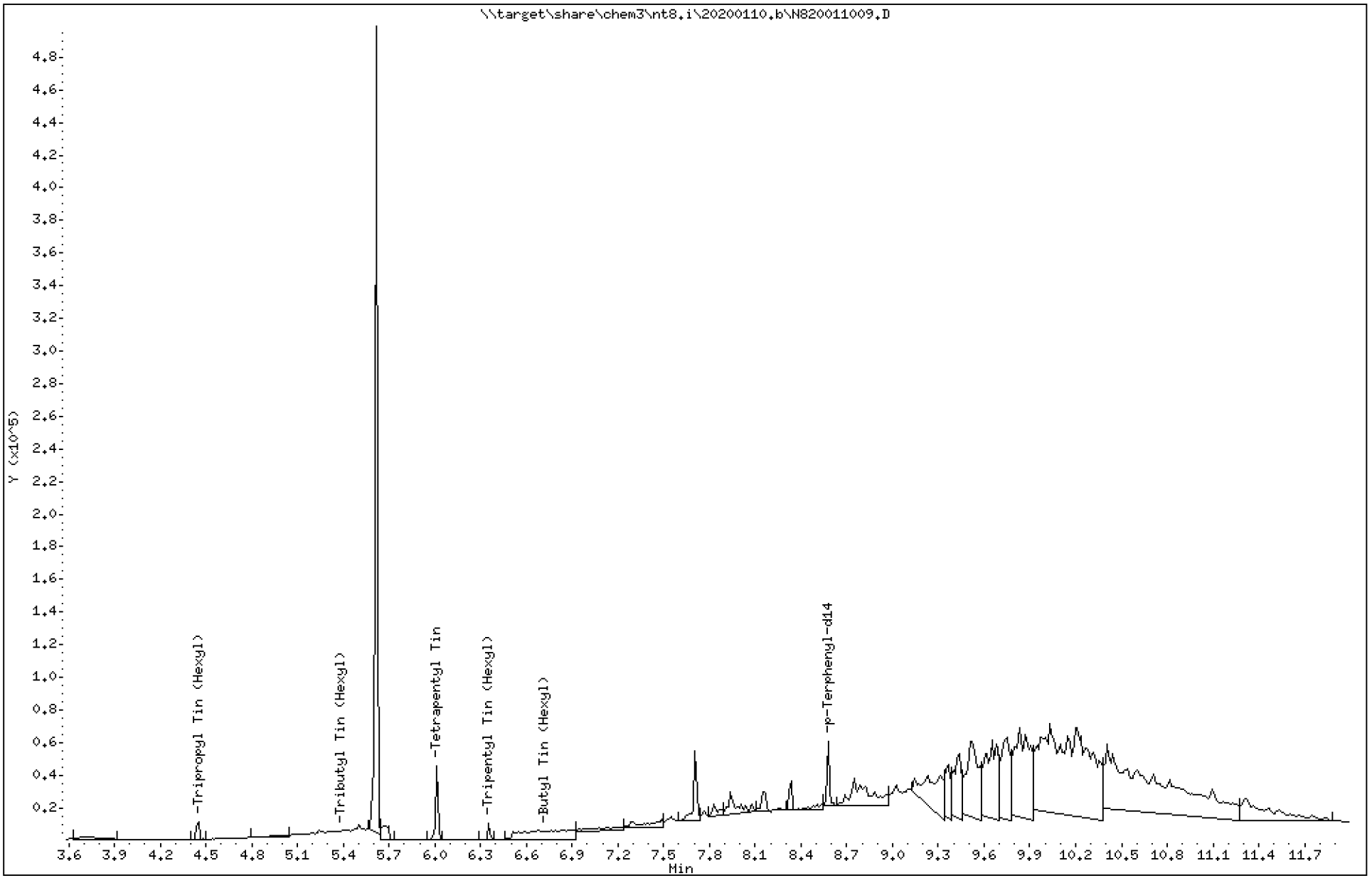
Sample Info: 19K0396-05

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011009.D

Date : 10-JAN-2020 13:47

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-05

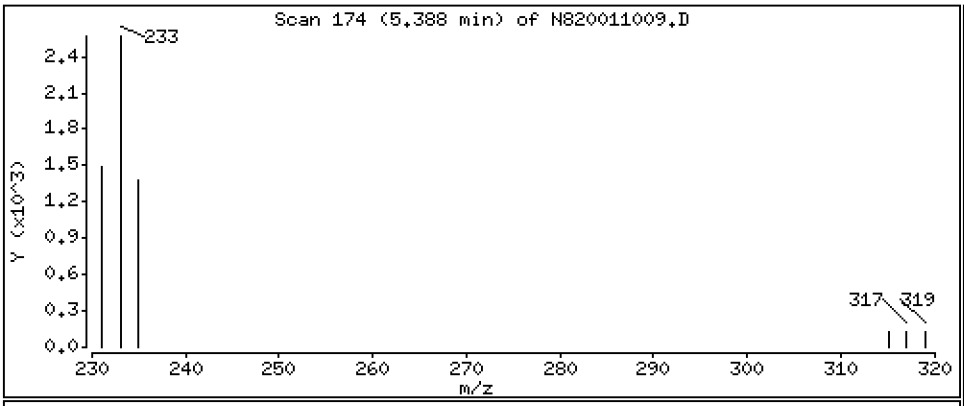
Operator: JZ

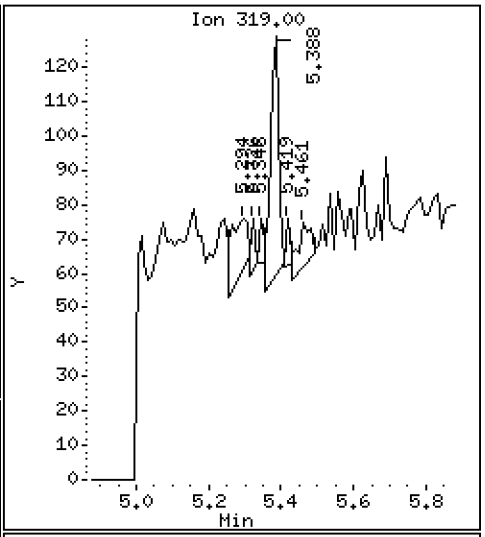
Column phase: ZB-5msi

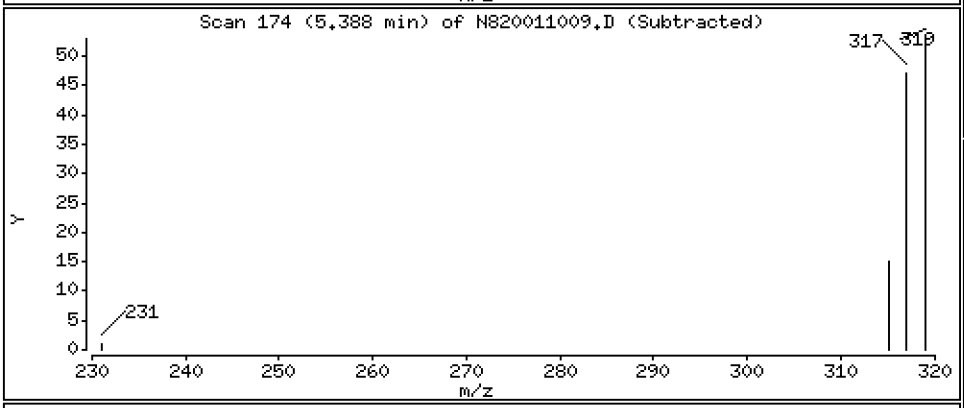
Column diameter: 0.25

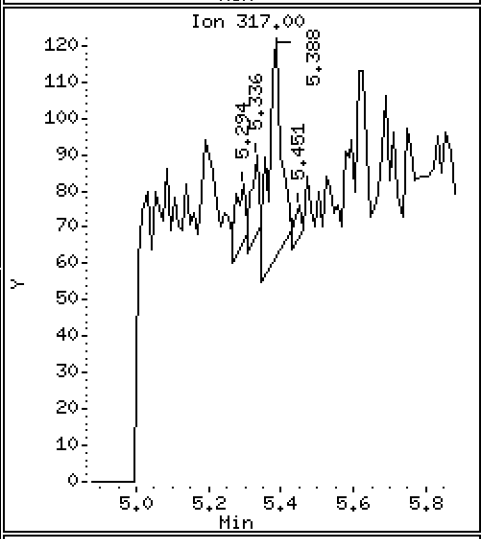
3 Tributyl Tin (Hexyl)

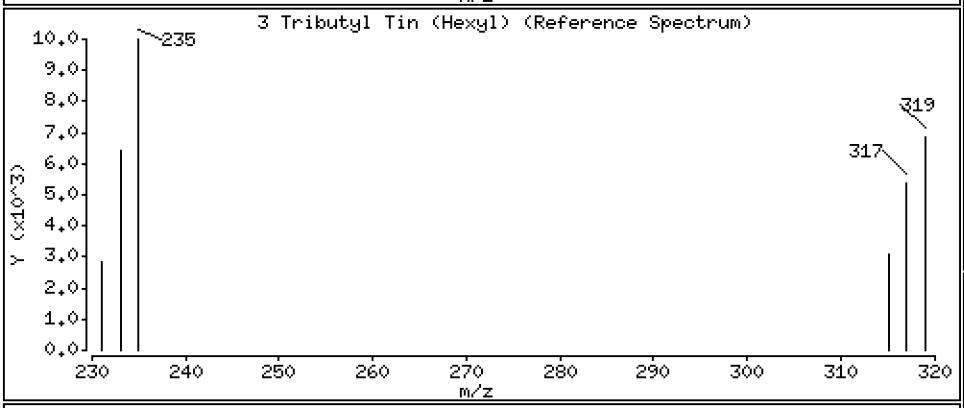
Concentration: 0.006169 ug/mL

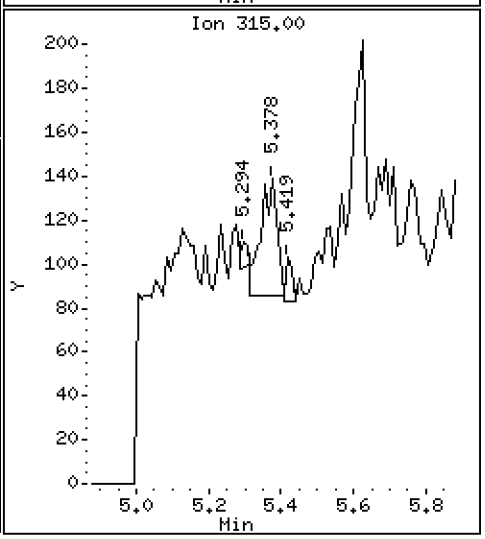


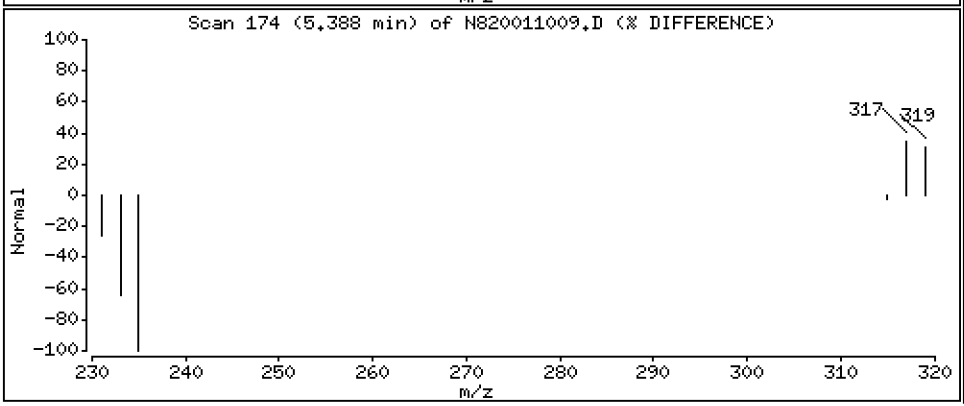



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011009.D

Date : 10-JAN-2020 13:47

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-05

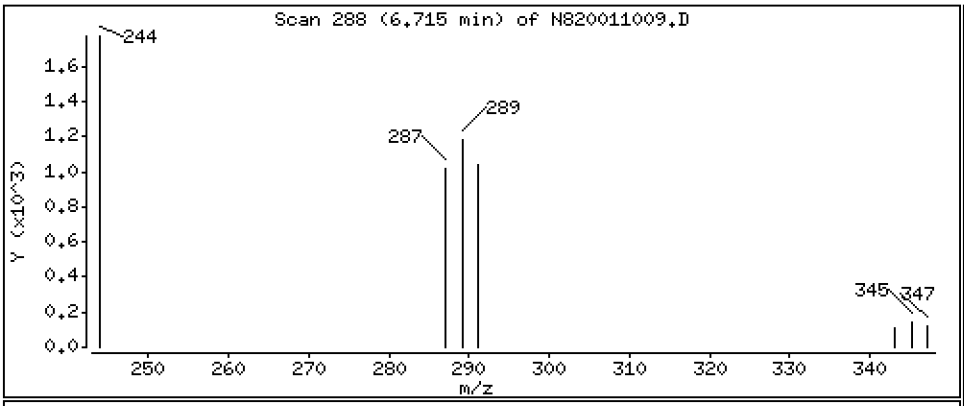
Operator: JZ

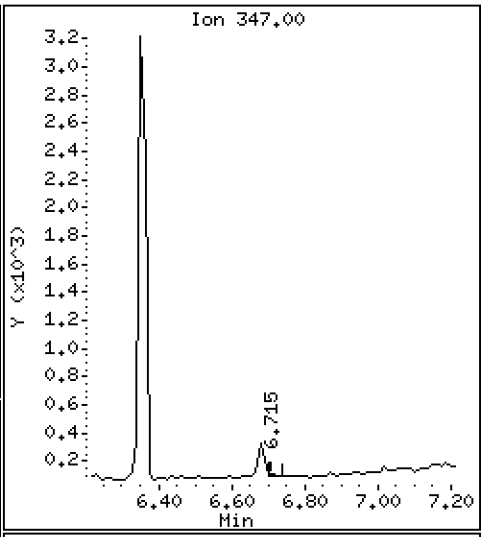
Column phase: ZB-5msi

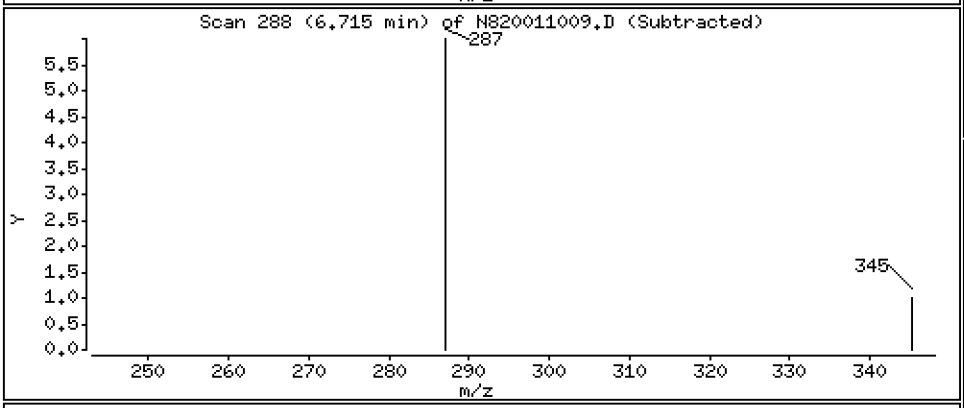
Column diameter: 0.25

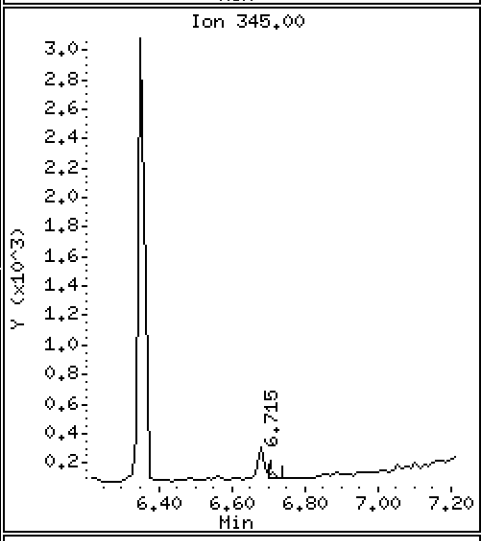
7 Butyl Tin (Hexyl)

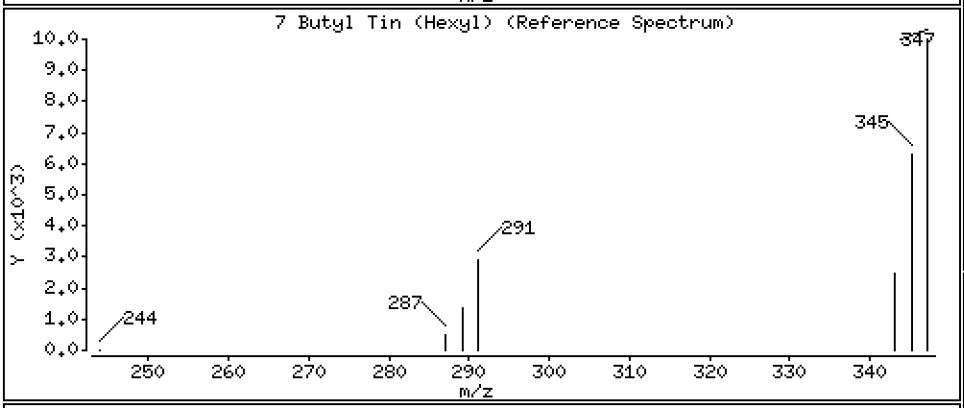
Concentration: 0.001296 ug/mL

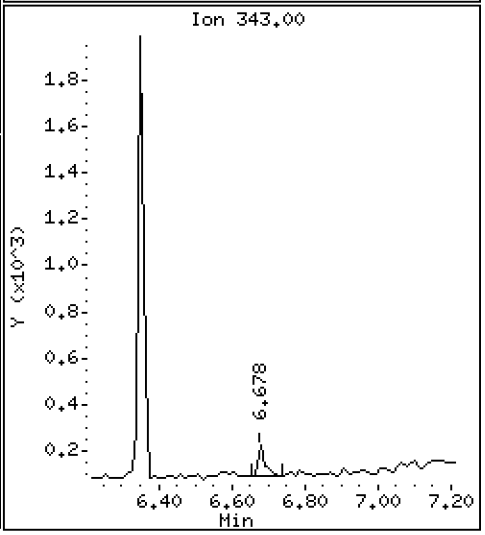


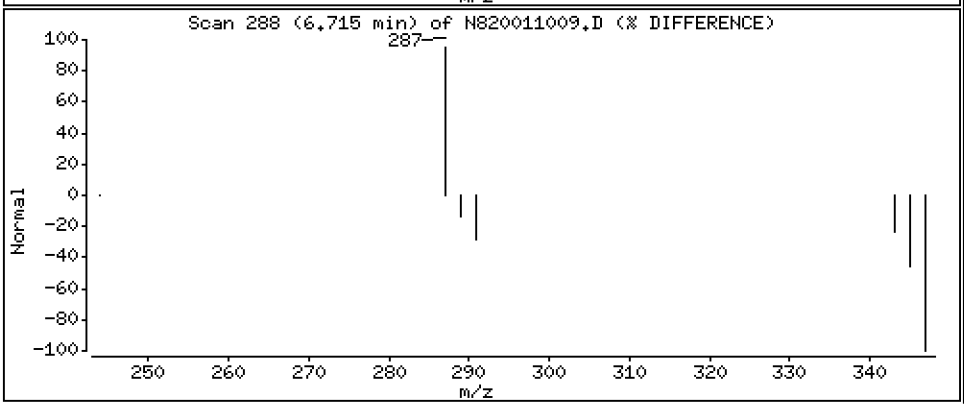



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011009.D
Lab Smp Id: 19K0396-05
Inj Date  : 10-JAN-2020 13:47
Operator  : JZ  Inst ID: nt8.i
Smp Info  : 19K0396-05
Misc Info : 20-
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: sedmdl.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.740) | 6144 | 0.26807 | 0.2681 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.388 | 5.377 | (0.896) | 114 | 0.00617 | 0.006169 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 43897 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.351 | (0.740) | 4187 | 0.24797 | 0.2480 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 29 | 0.00130 | 0.001296(M) |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 36817 | 0.20000 | |

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011009.D
Lab Smp Id: 19K0396-05
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 43897 | 1.26 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 36817 | 1.83 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011009.D

Lab ID: 19K0396-05
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 13:47

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.740 | 0.735 | 0.0052 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

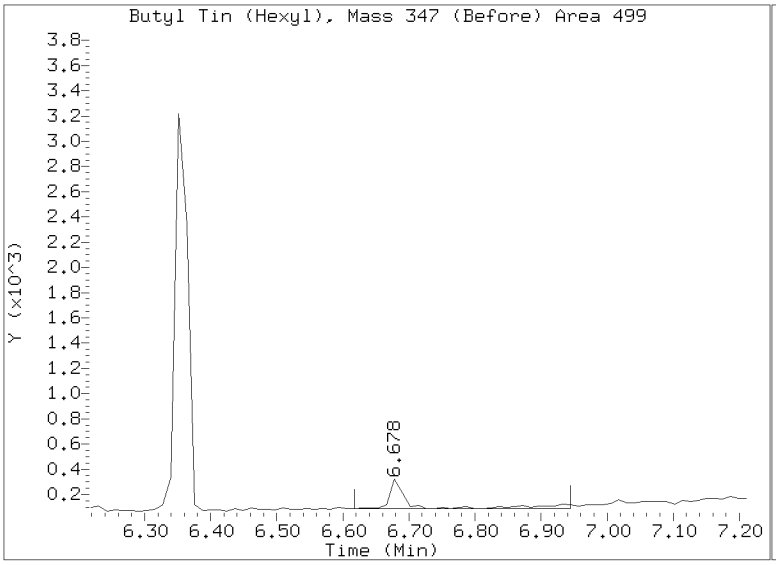
On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

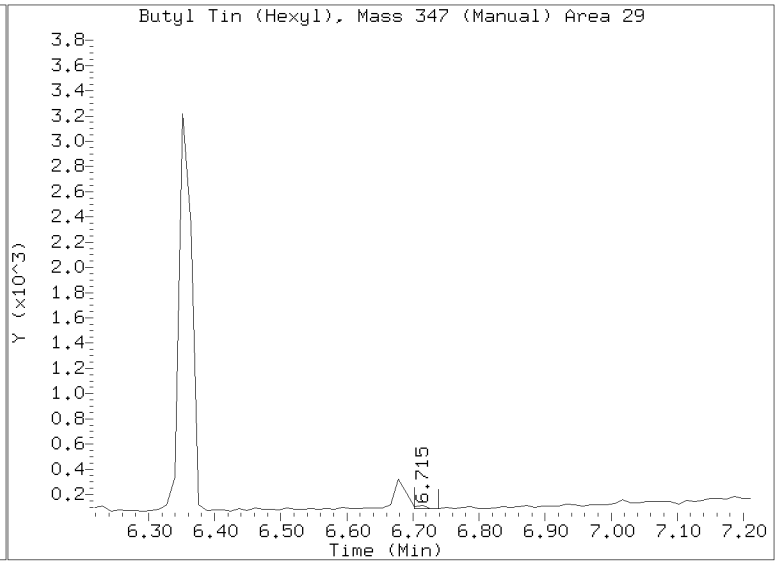
Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

# Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt8.i/20200110.b/N820011009.D
Injection Date: 10-JAN-2020 13:47
Lab ID:19K0396-05 Client ID:
Report Date: 01/10/2020 14:02



PDI-135RAB-20-26.2-191120

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-06 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 11:00 | Prepared: | 01/07/20 09:05 | File ID: | N820011019.D |
| % Solids: | 80.74 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 16:30 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.02 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 4.76 | U | 0.555 | 4.76 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 55.730 | 17.5 | 31.4 | 30 - 160 | |
| Tripropyltin | 53.964 | 17.3 | 32.1 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011019.D

Date : 10-JAN-2020 16:30

Client ID:

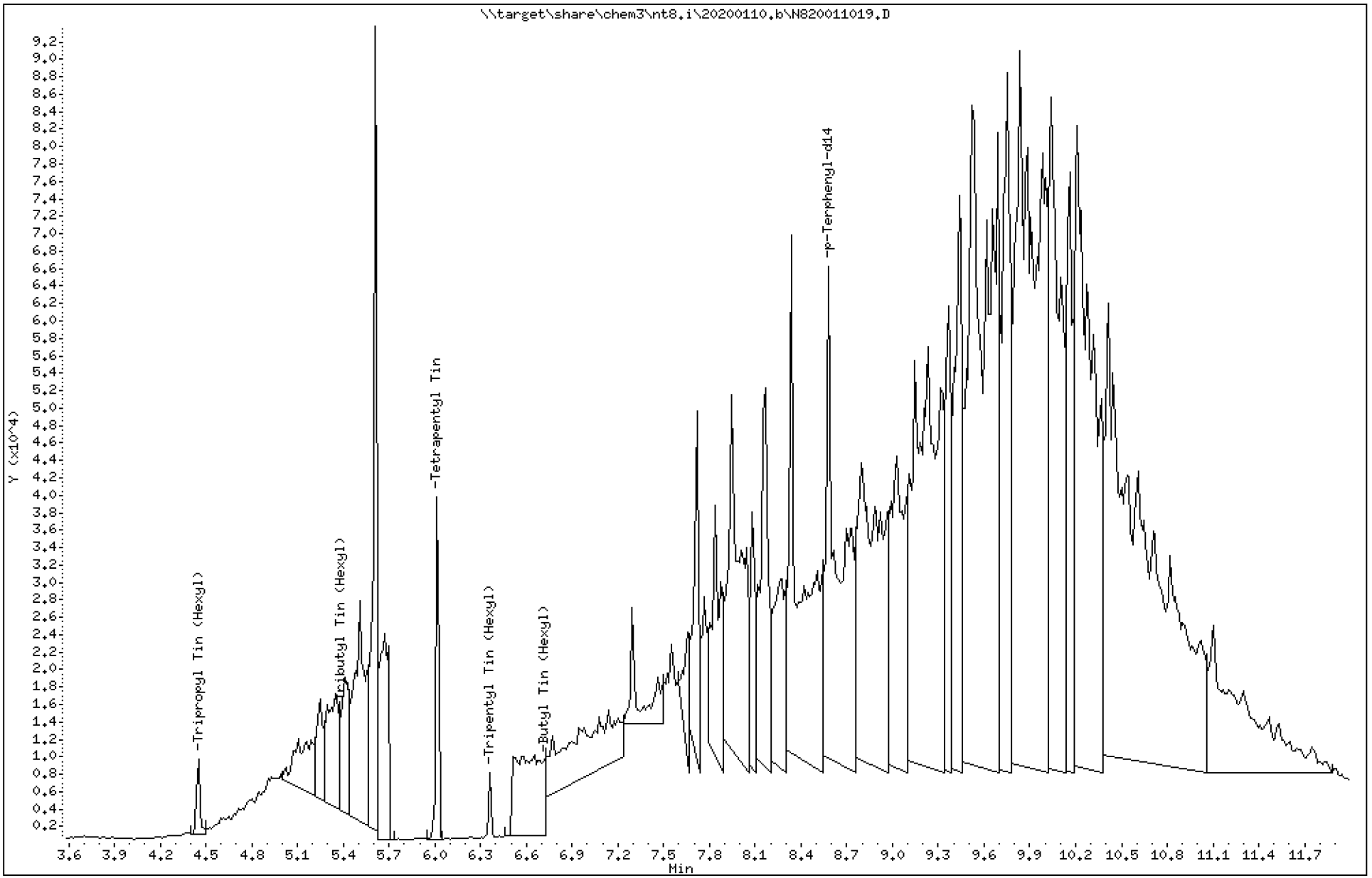
Sample Info: 19K0396-06

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011019.D

Date : 10-JAN-2020 16:30

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-06

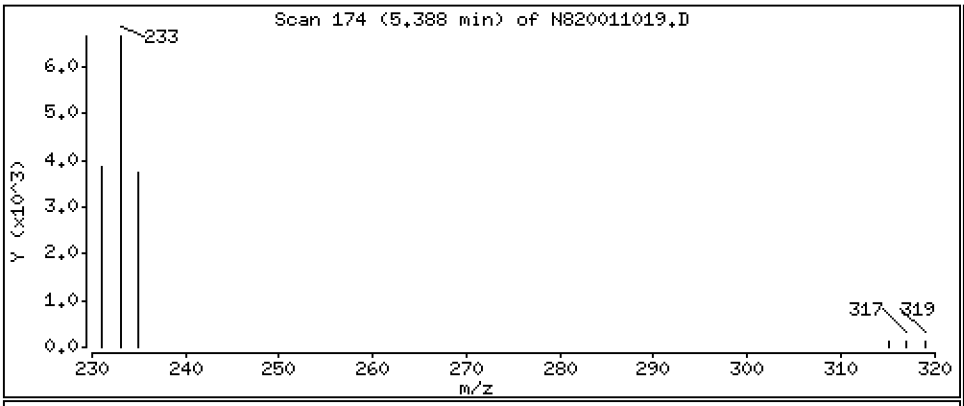
Operator: JZ

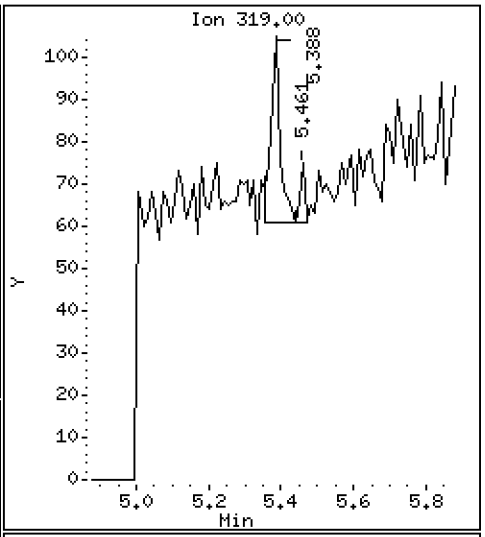
Column phase: ZB-5msi

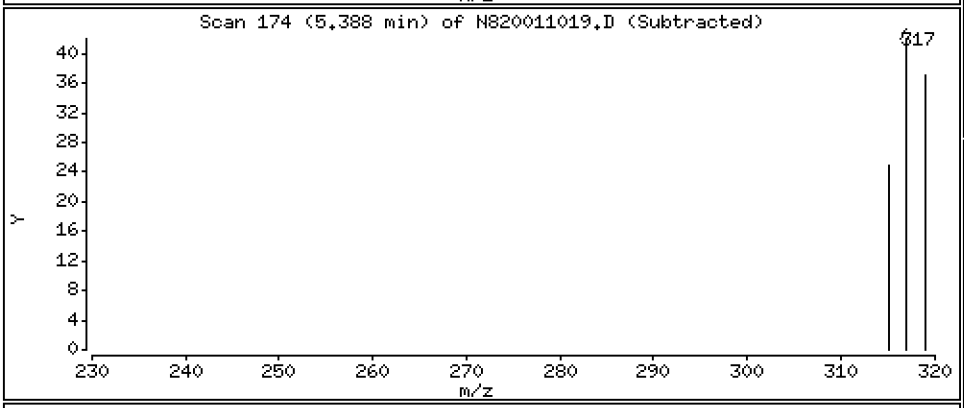
Column diameter: 0.25

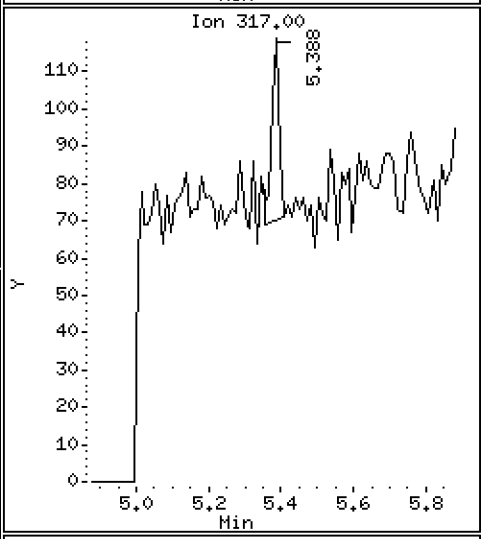
3 Tributyl Tin (Hexyl)

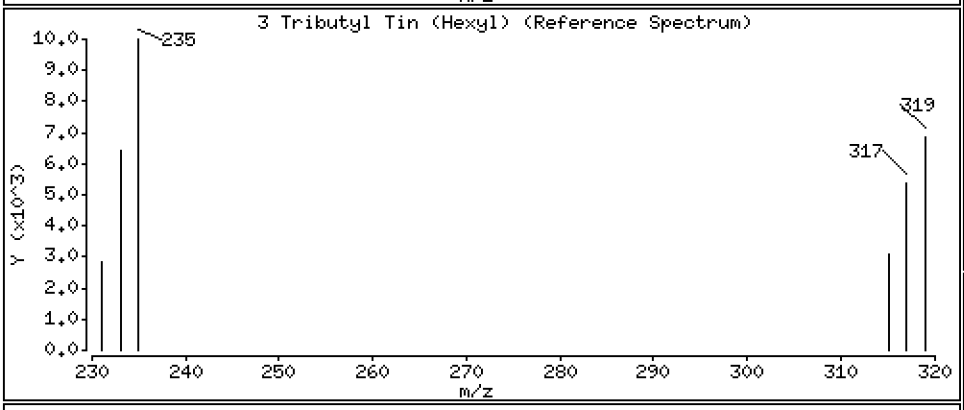
Concentration: 0.003926 ug/mL

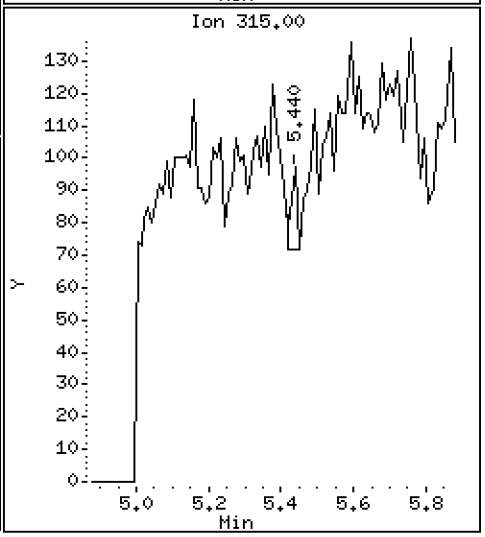


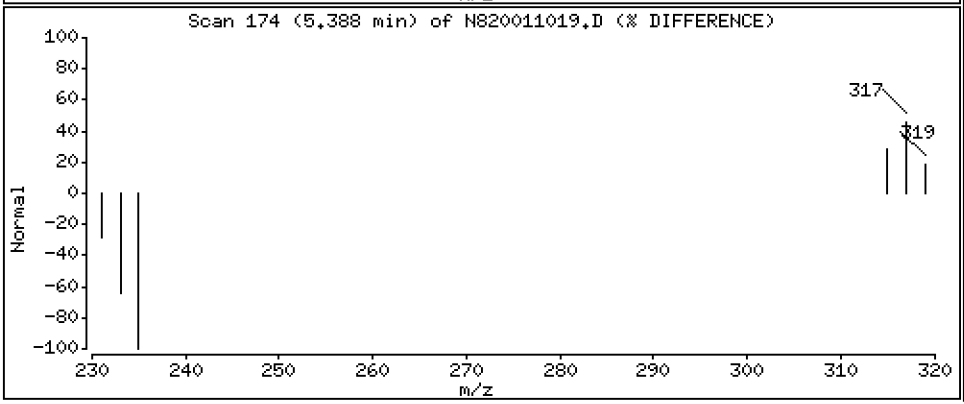



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011019.D
Lab Smp Id: 19K0396-06
Inj Date : 10-JAN-2020 16:30
Operator : JZ Inst ID: nt8.i
Smp Info : 19K0396-06
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.740) | 4642 | 0.18840 | 0.1884 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.388 | 5.377 | (0.896) | 78 | 0.00393 | 0.003926 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 47190 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.351 | (0.742) | 3388 | 0.17817 | 0.1782 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 67 | 0.00265 | 0.002652(M) |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 41549 | 0.20000 | |

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011019.D
Lab Smp Id: 19K0396-06
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 47190 | 8.86 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 41549 | 14.92 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011019.D

Lab ID: 19K0396-06
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 16:30

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.740 | 0.735 | 0.0052 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

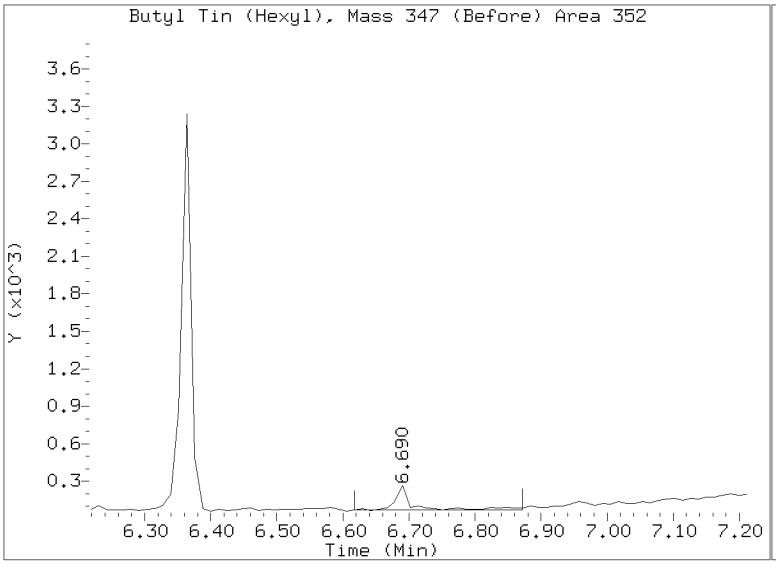
On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

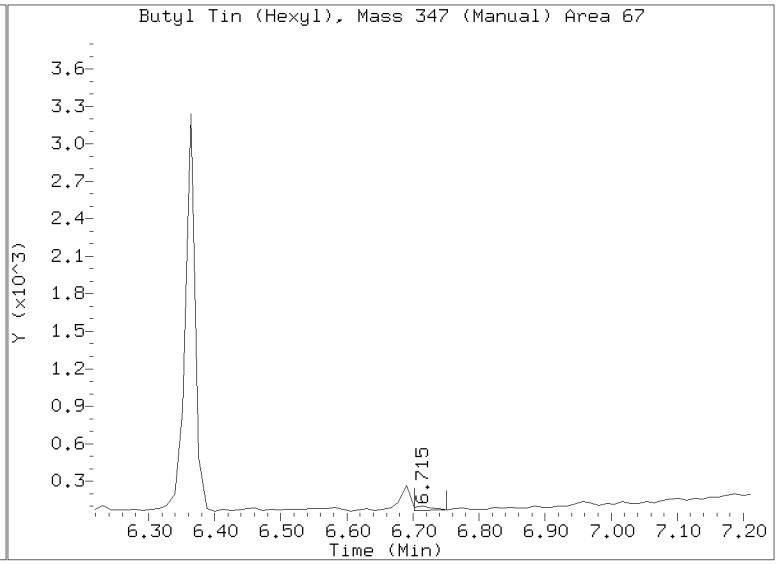
Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

# Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt8.i/20200110.b/N820011019.D
Injection Date: 10-JAN-2020 16:30
Lab ID:19K0396-06 Client ID:
Report Date: 01/10/2020 16:44



PDI-136RAB-00-10-191119

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-07 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 09:20 | Prepared: | 01/07/20 09:05 | File ID: | N820011013.D |
| % Solids: | 83.46 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 14:52 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.03 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 1.70 | J | 0.536 | 4.60 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 53.812 | 20.7 | 38.5 | 30 - 160 | |
| Tripropyltin | 52.106 | 22.0 | 42.2 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011013.D

Date : 10-JAN-2020 14:52

Client ID:

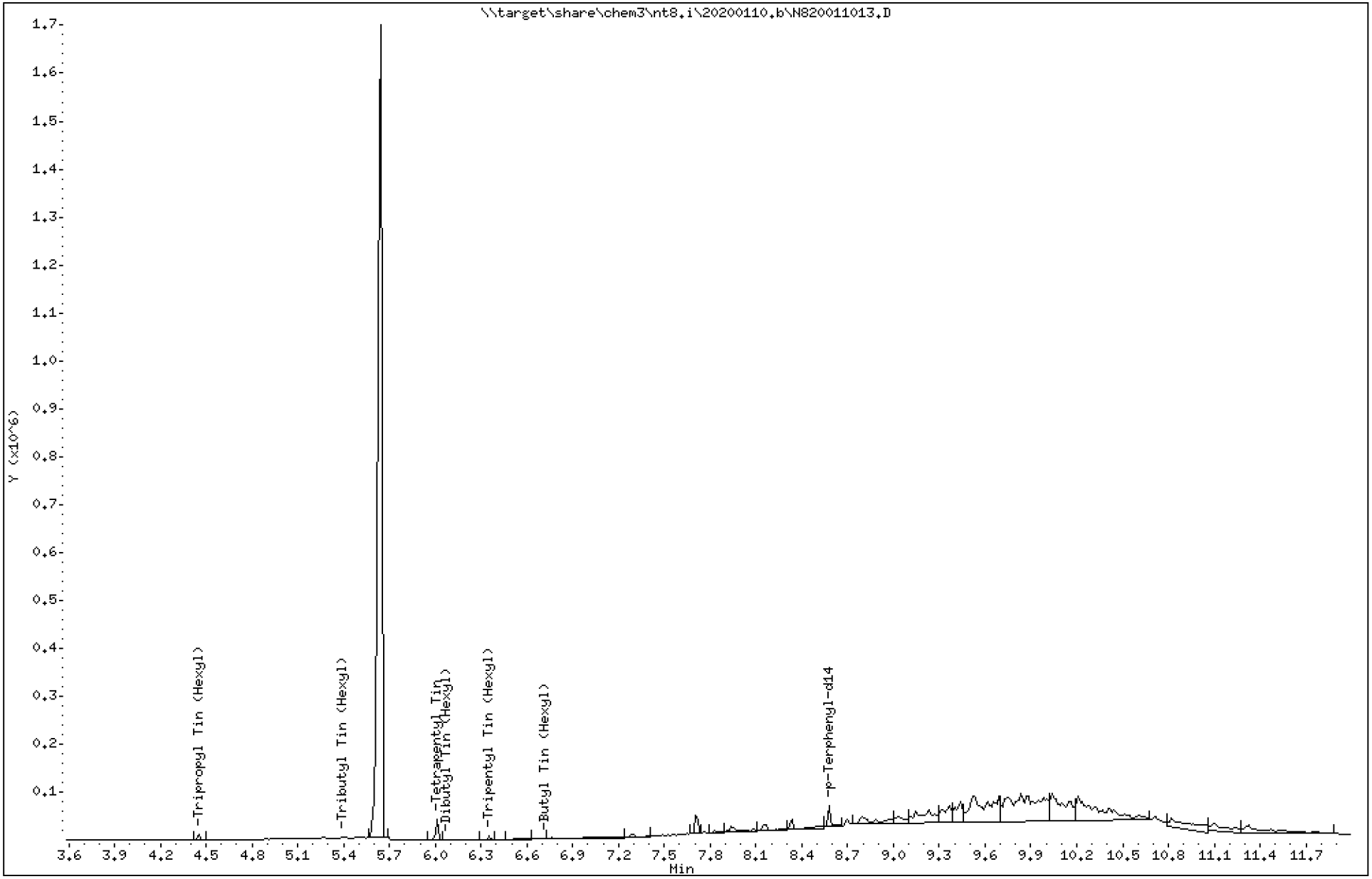
Sample Info: 19K0396-07

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011013.D

Date : 10-JAN-2020 14:52

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-07

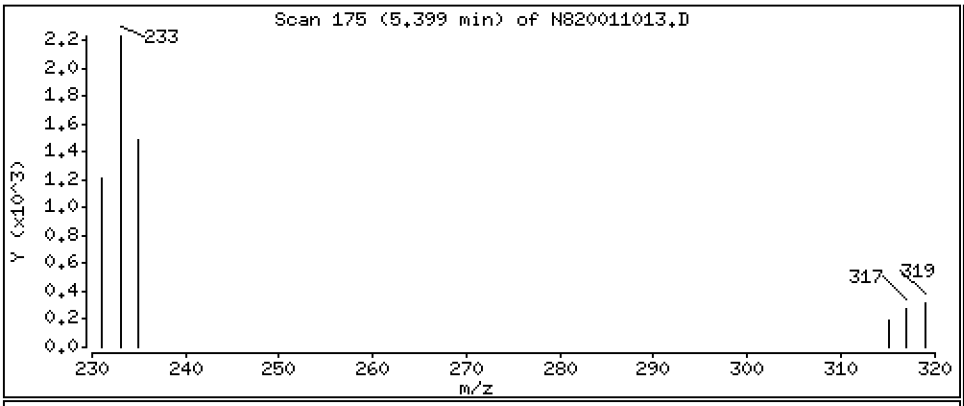
Operator: JZ

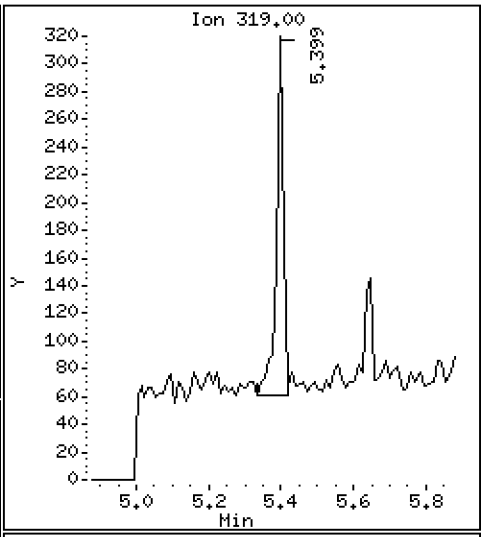
Column phase: ZB-5msi

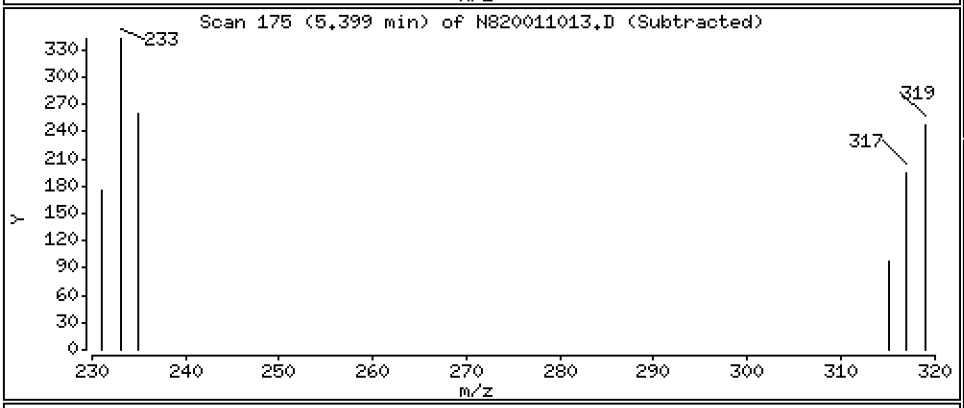
Column diameter: 0.25

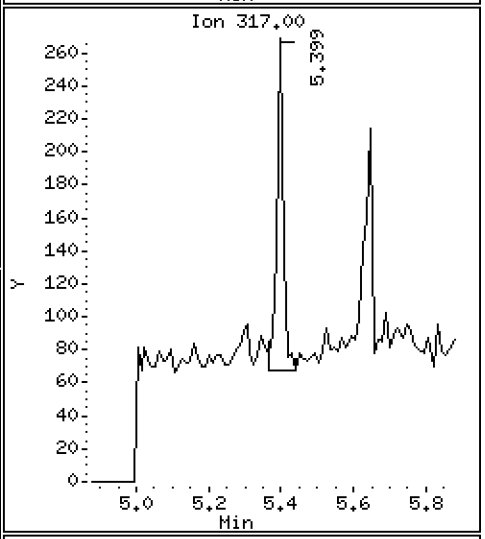
3 Tributyl Tin (Hexyl)

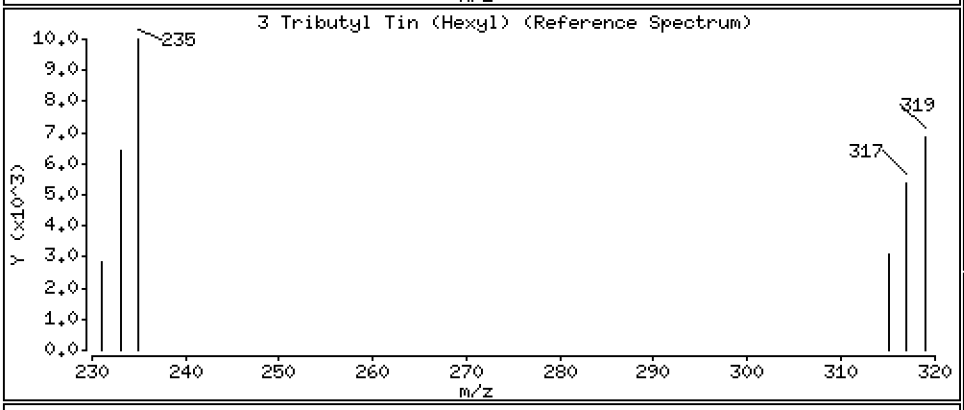
Concentration: 0.01841 ug/mL

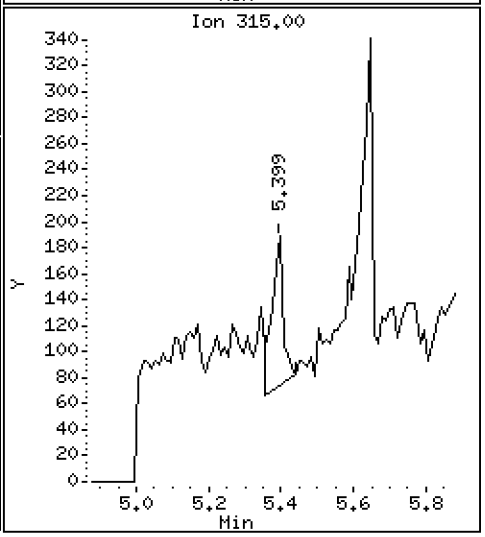


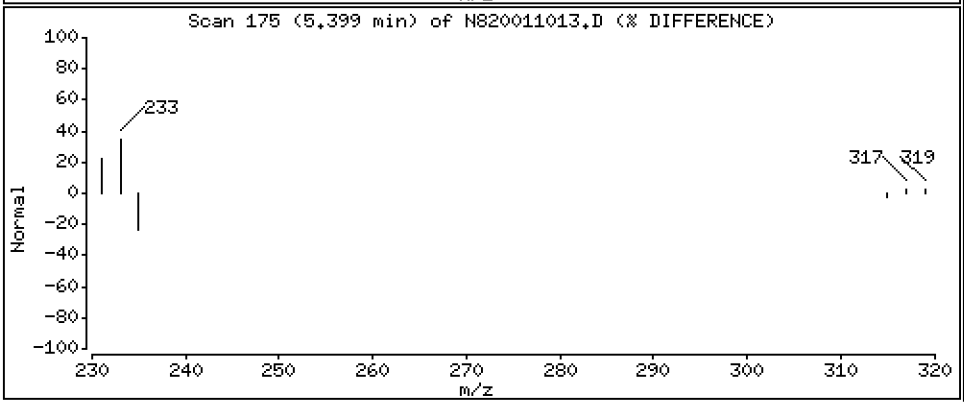



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011013.D

Date : 10-JAN-2020 14:52

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-07

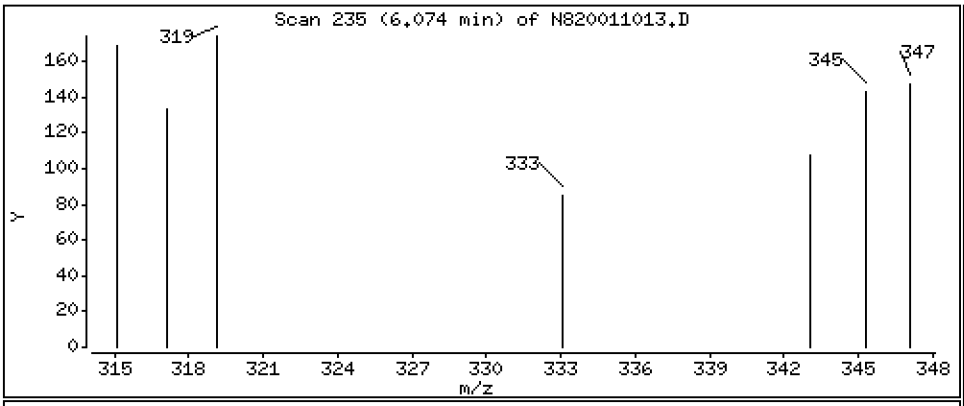
Operator: JZ

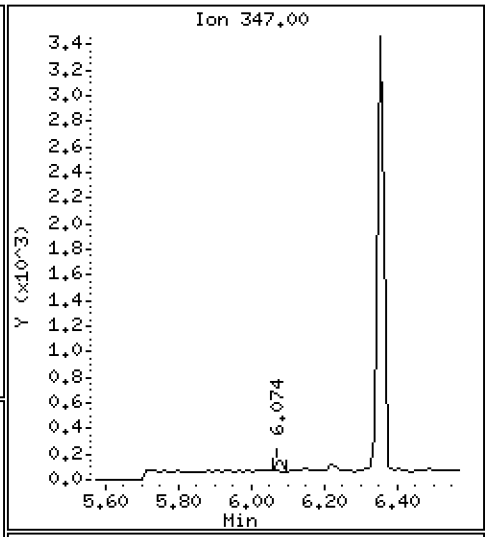
Column phase: ZB-5msi

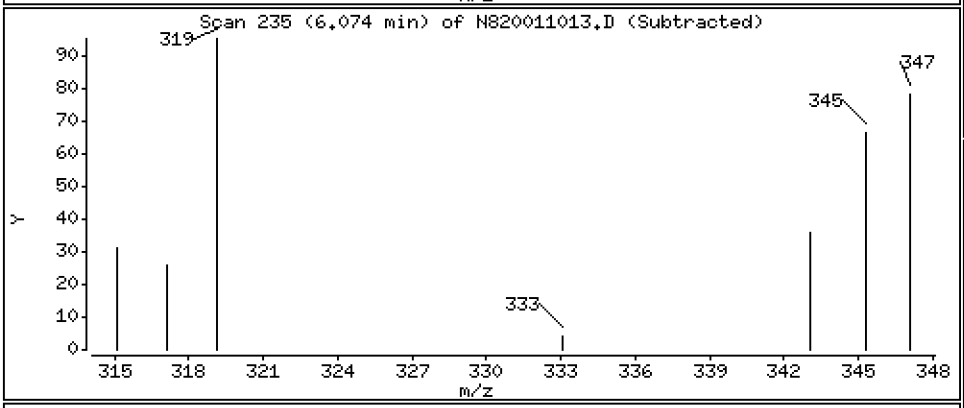
Column diameter: 0.25

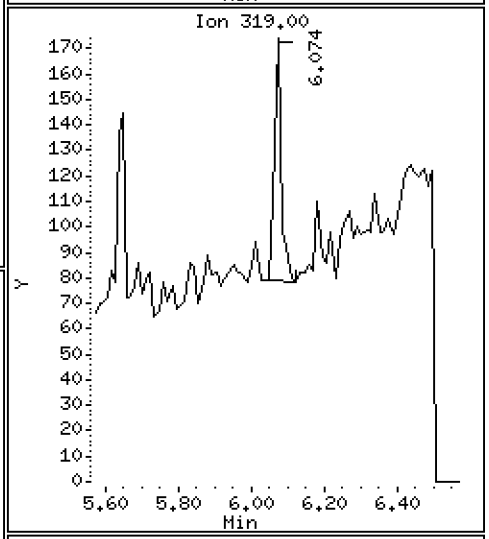
5 Dibutyl Tin (Hexyl)

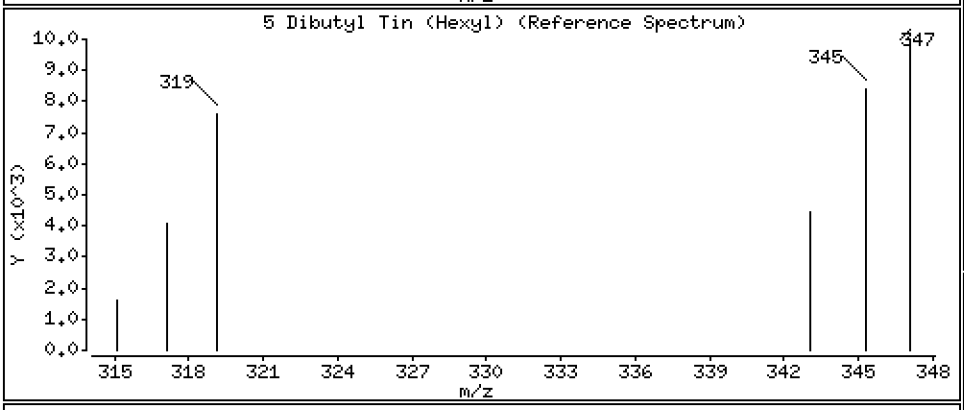
Concentration: 0.007084 ug/mL

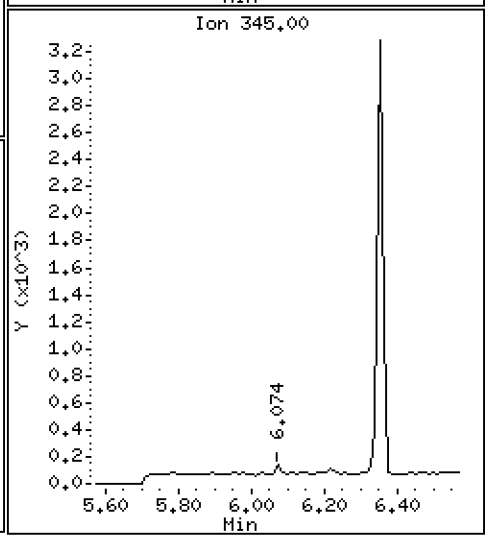


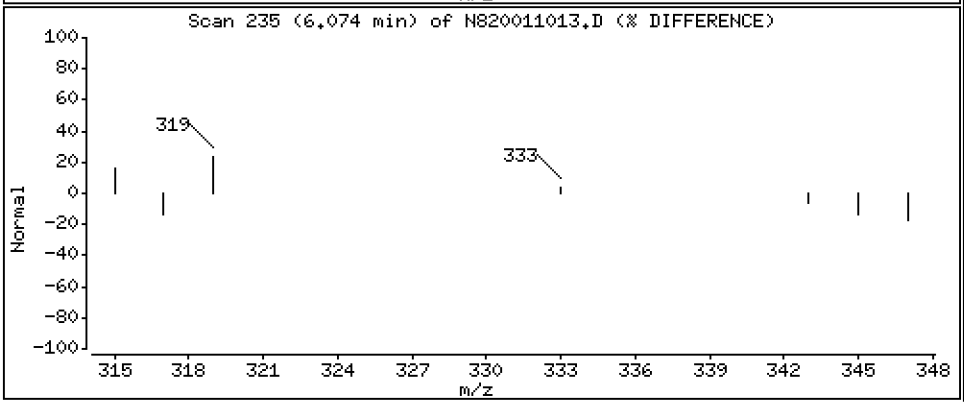



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011013.D

Date : 10-JAN-2020 14:52

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-07

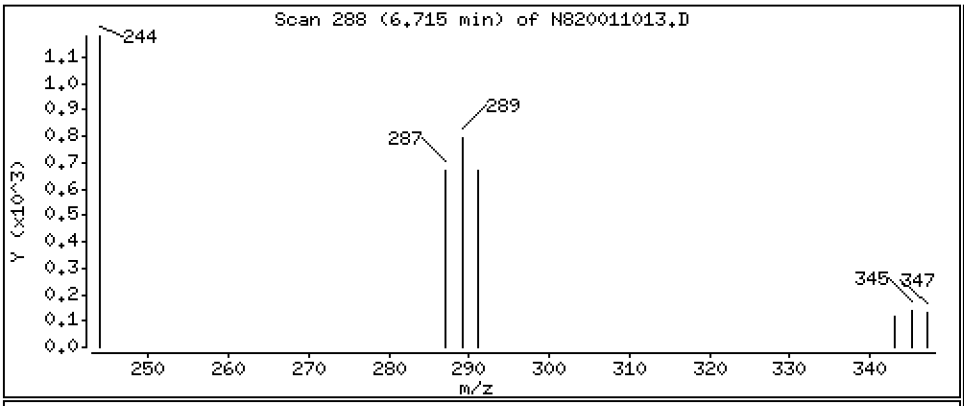
Operator: JZ

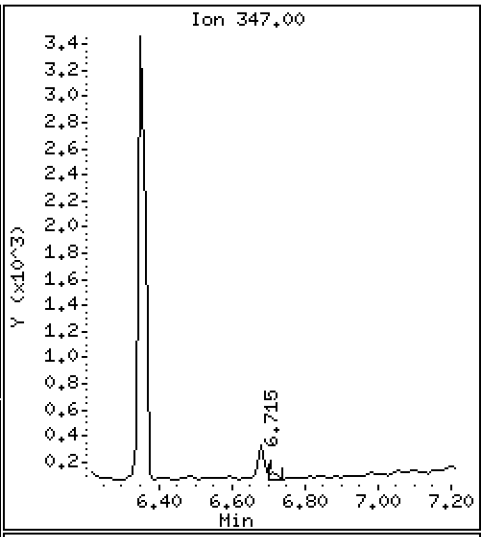
Column phase: ZB-5msi

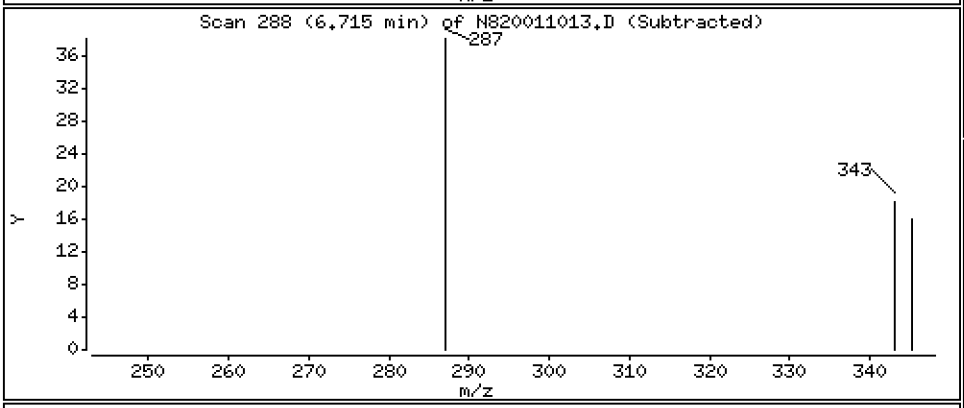
Column diameter: 0.25

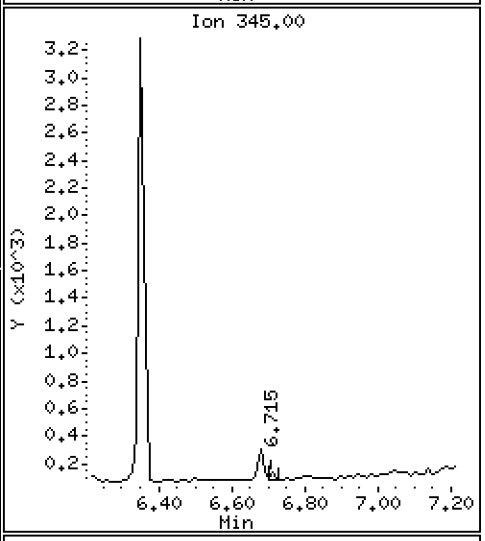
7 Butyl Tin (Hexyl)

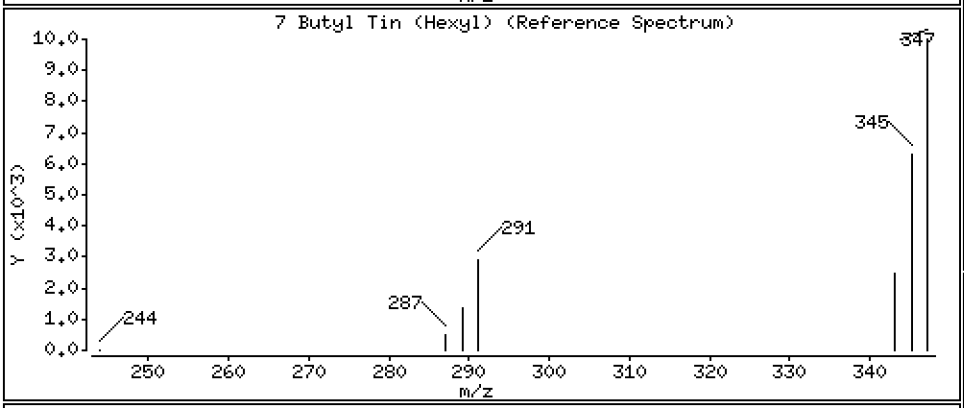
Concentration: 0.002805 ug/mL

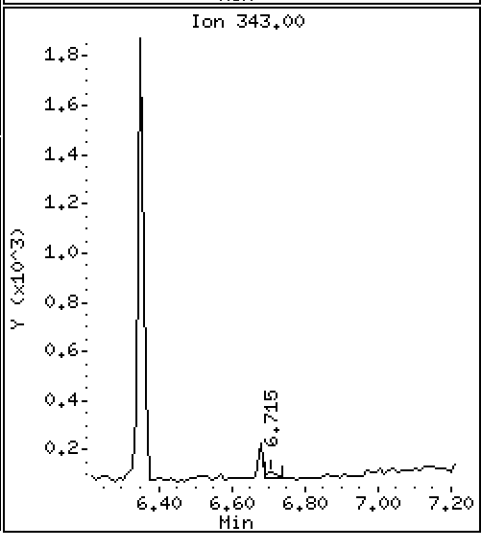


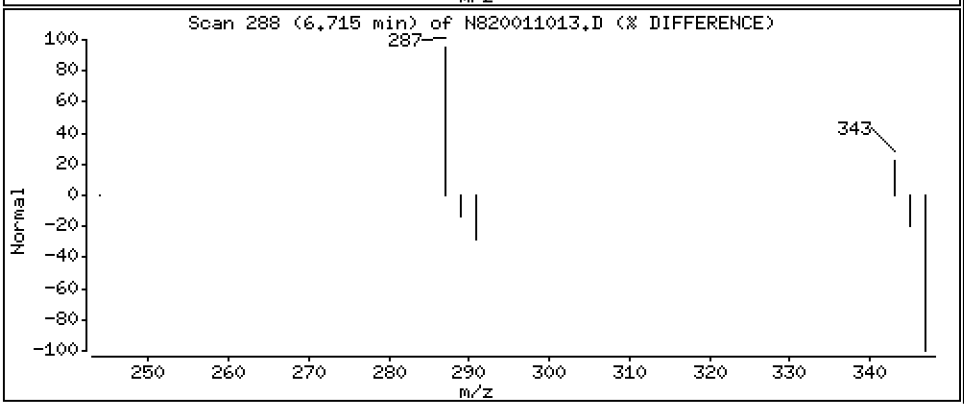



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011013.D
Lab Smp Id: 19K0396-07
Inj Date : 10-JAN-2020 14:52
Operator : JZ Inst ID: nt8.i
Smp Info : 19K0396-07
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 13
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.740) | 5697 | 0.24802 | 0.2480 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.398 | 5.377 | (0.898) | 341 | 0.01841 | 0.01841 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 43993 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.073 | 6.073 | (0.708) | 98 | 0.00708 | 0.007084(M) |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.351 | (0.740) | 4170 | 0.21858 | 0.2186 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 71 | 0.00280 | 0.002805(M) |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 41634 | 0.20000 | |

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011013.D
Lab Smp Id: 19K0396-07
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 43993 | 1.48 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 41634 | 15.15 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011013.D

Lab ID: 19K0396-07
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 14:52

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.740 | 0.735 | 0.0052 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

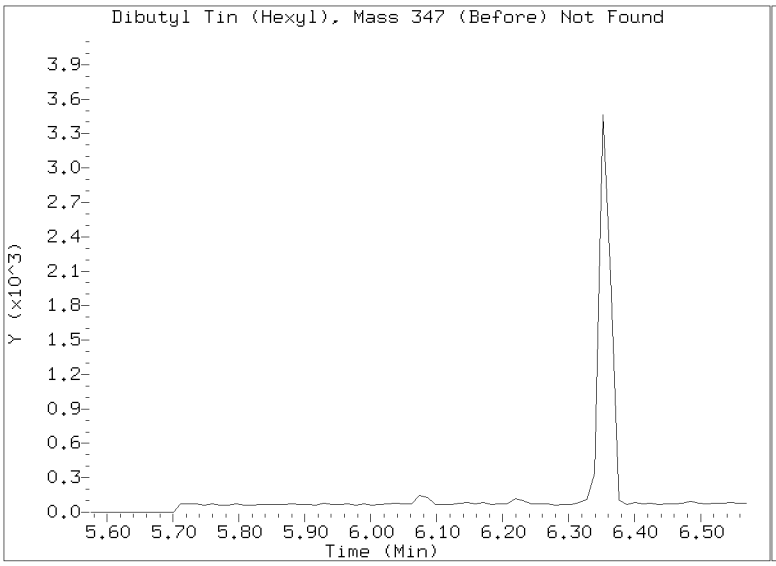
On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

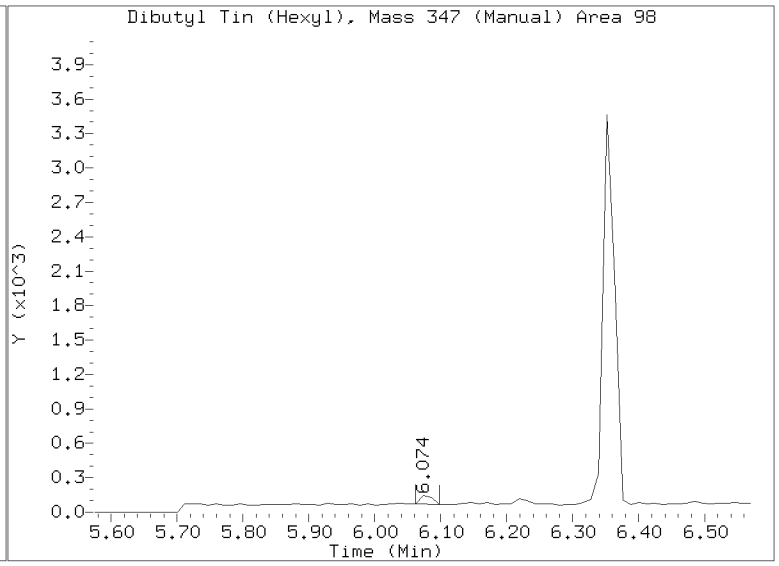
Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

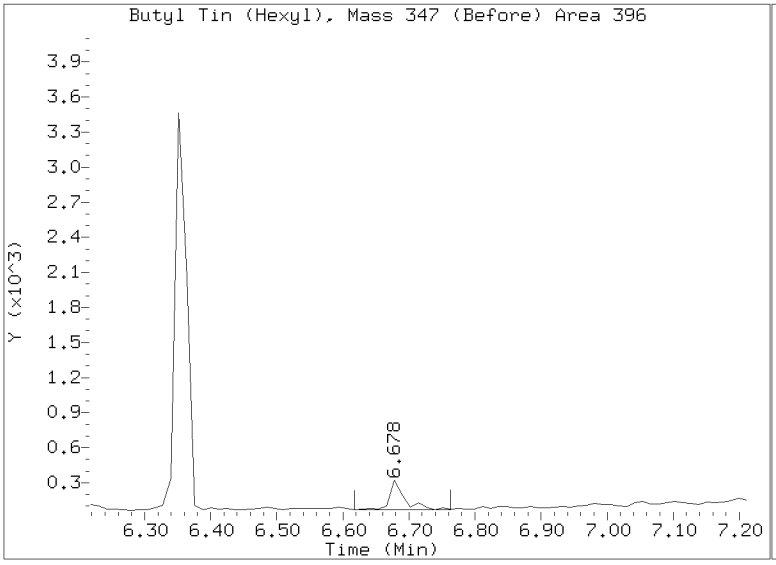
* Only compounds listed in the work order have been verified by the analyst *

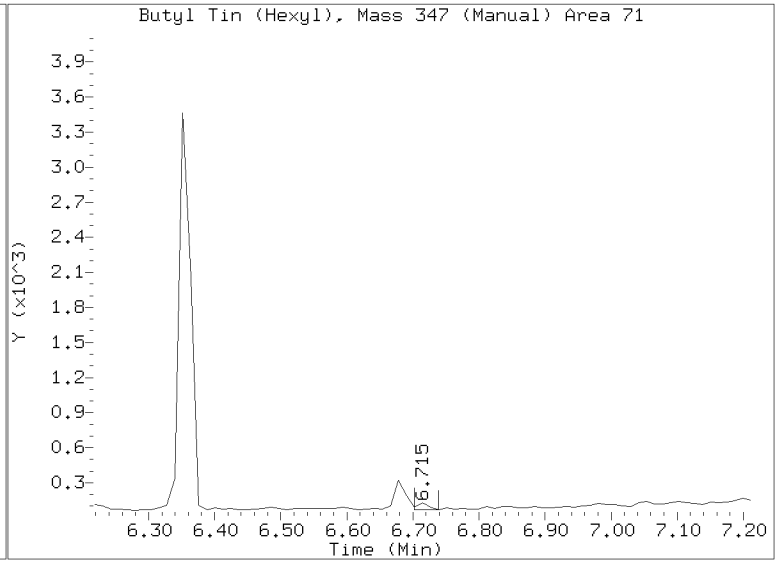
# Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt8.i/20200110.b/N820011013.D
Injection Date: 10-JAN-2020 14:52
Lab ID:19K0396-07 Client ID:
Report Date: 01/10/2020 15:08



PDI-136RAB-10-13.4-191119

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-08 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 10:00 | Prepared: | 01/07/20 09:05 | File ID: | N820011014.D |
| % Solids: | 84.89 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 15:08 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.02 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 1.00 | J | 0.528 | 4.53 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 53.010 | 19.8 | 37.4 | 30 - 160 | |
| Tripropyltin | 51.329 | 19.7 | 38.4 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011014.D

Date : 10-JAN-2020 15:08

Client ID:

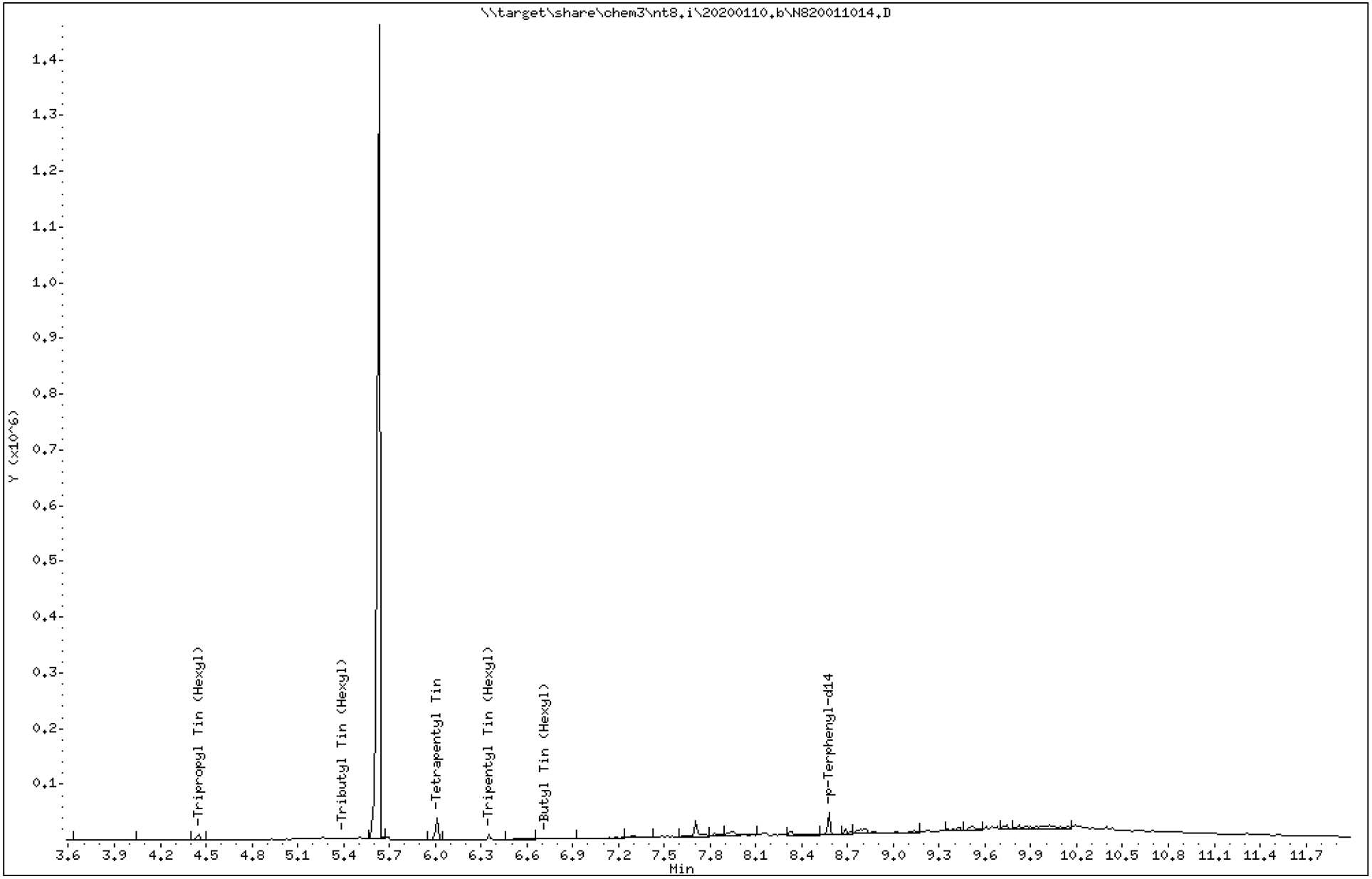
Sample Info: 19K0396-08

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011014.D

Date : 10-JAN-2020 15:08

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-08

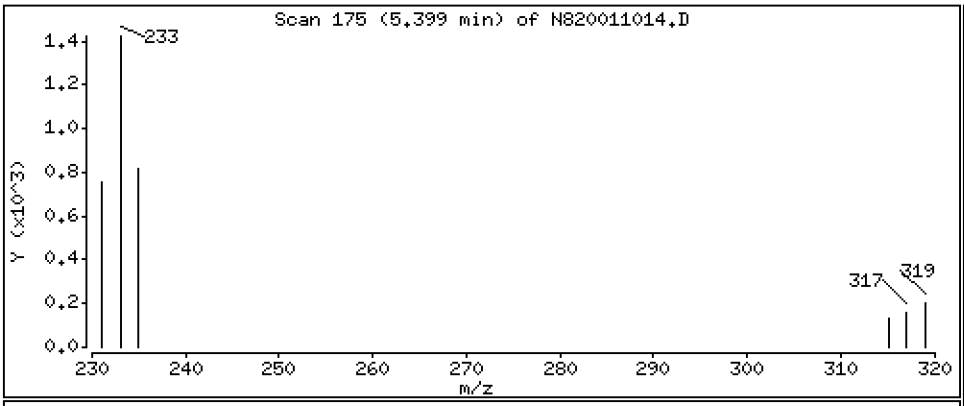
Operator: JZ

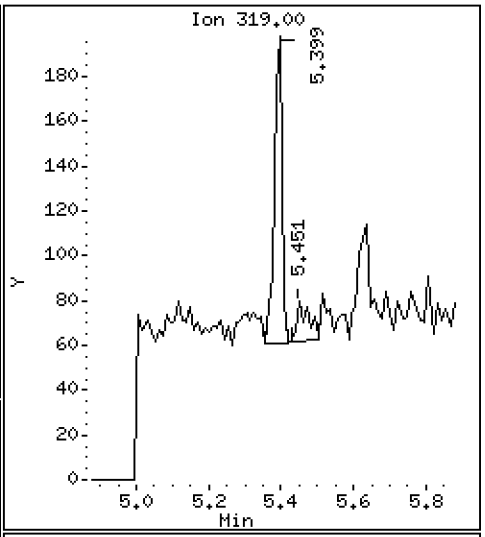
Column phase: ZB-5msi

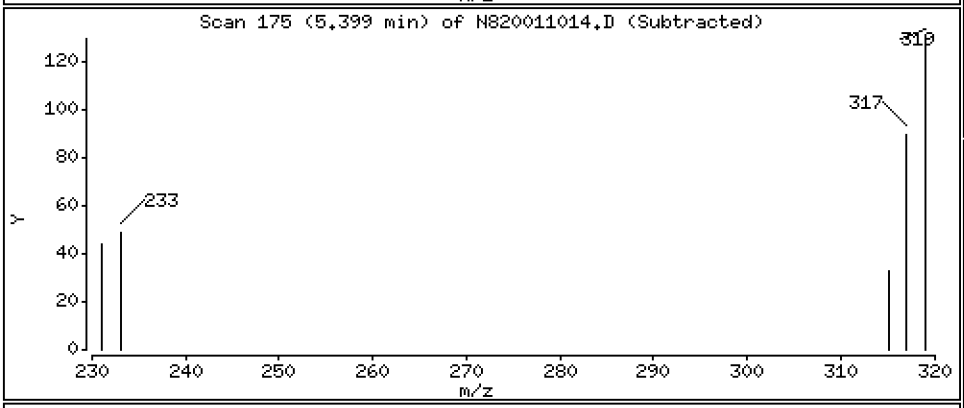
Column diameter: 0.25

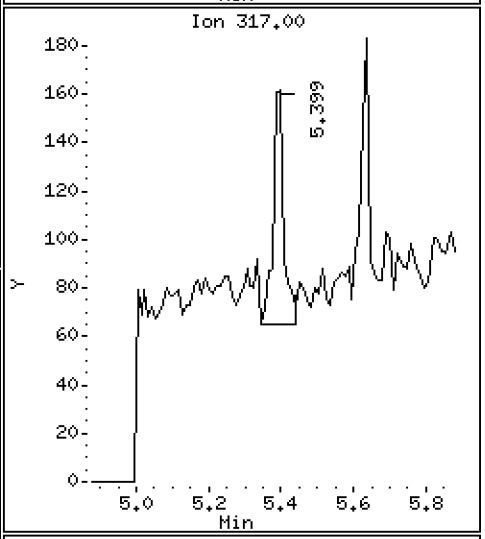
3 Tributyl Tin (Hexyl)

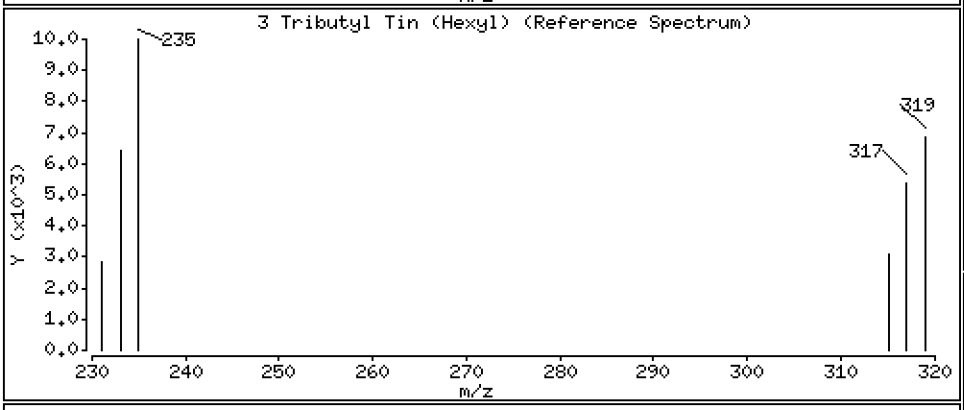
Concentration: 0.01102 ug/mL

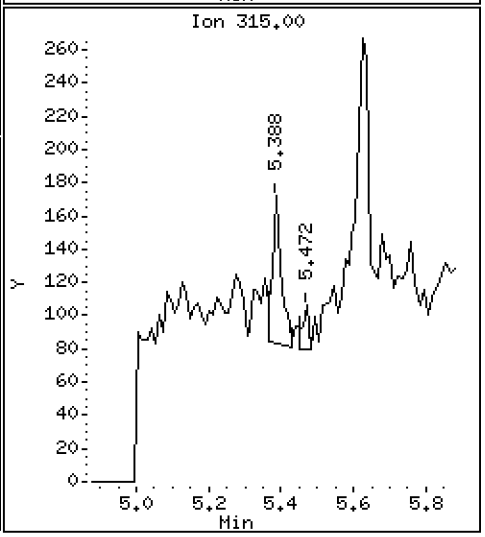


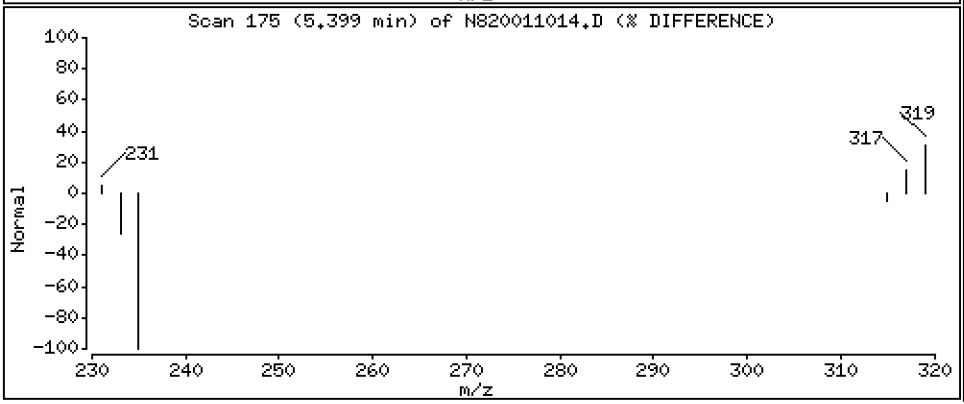



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011014.D

Date : 10-JAN-2020 15:08

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-08

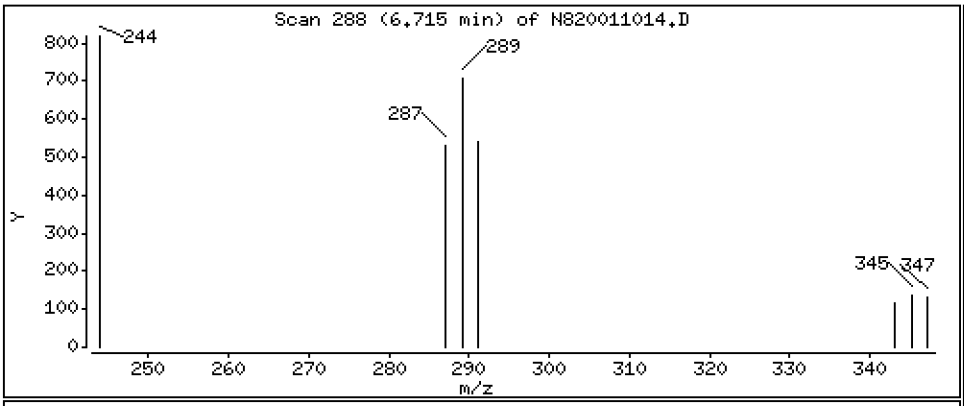
Operator: JZ

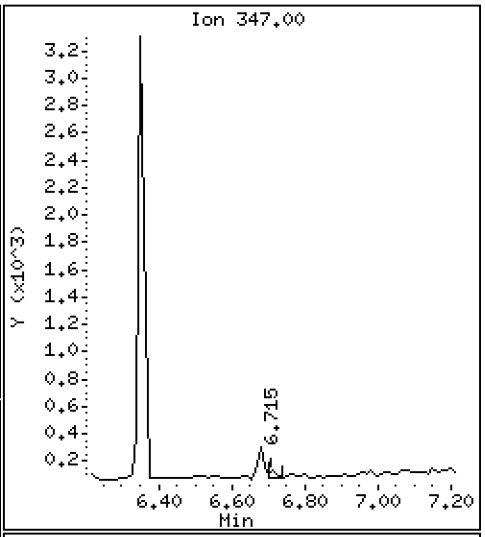
Column phase: ZB-5msi

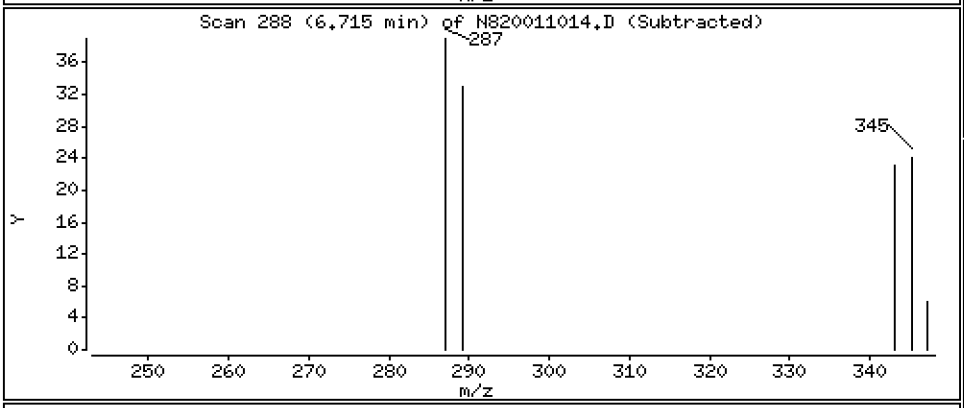
Column diameter: 0.25

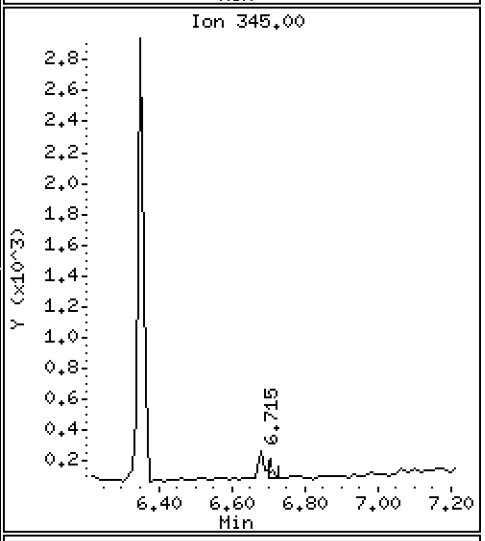
7 Butyl Tin (Hexyl)

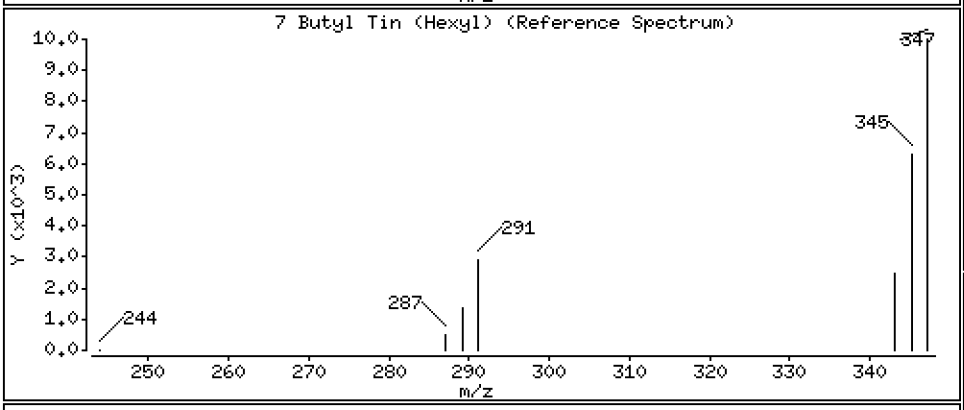
Concentration: 0.002822 ug/mL

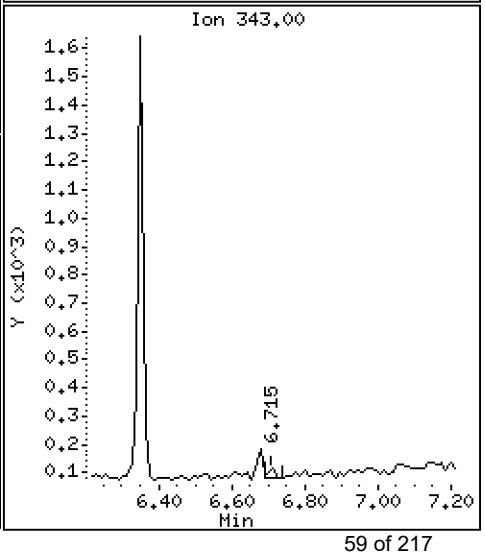


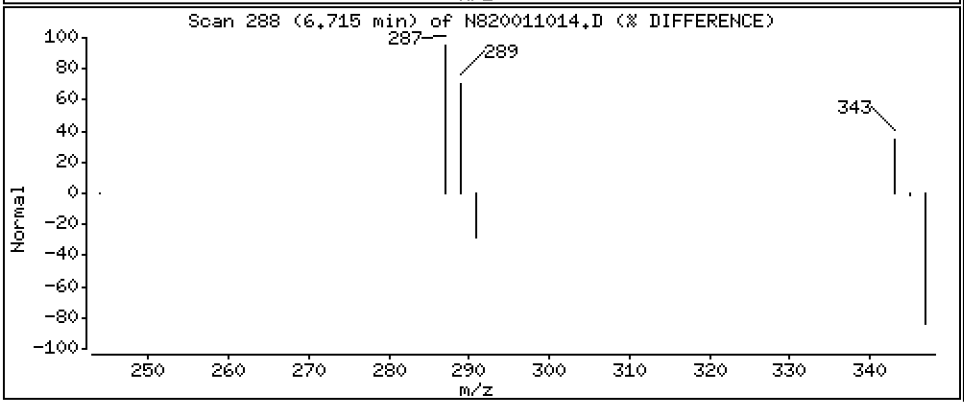



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011014.D
Lab Smp Id: 19K0396-08
Inj Date : 10-JAN-2020 15:08
Operator : JZ Inst ID: nt8.i
Smp Info : 19K0396-08
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 14
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.740) | 5052 | 0.22563 | 0.2256 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.398 | 5.377 | (0.898) | 199 | 0.01102 | 0.01102 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 42883 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.351 | (0.740) | 3457 | 0.21226 | 0.2123 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 61 | 0.00282 | 0.002822(M) |
| * | 8 p-Terphenyl-d14 | 244 | 8.578 | 8.577 | (1.000) | 35550 | 0.20000 | |

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011014.D
Lab Smp Id: 19K0396-08
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 42883 | -1.08 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 35550 | -1.68 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011014.D

Lab ID: 19K0396-08
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 15:08

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.740 | 0.735 | 0.0052 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

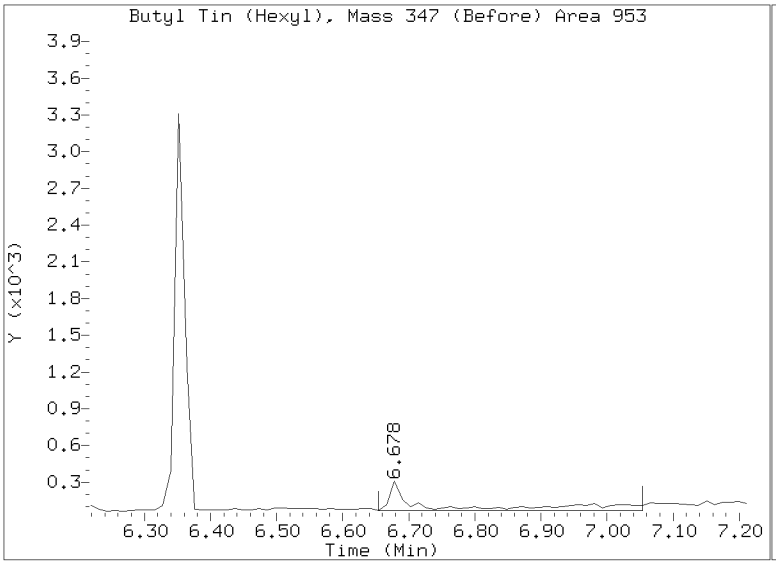
On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

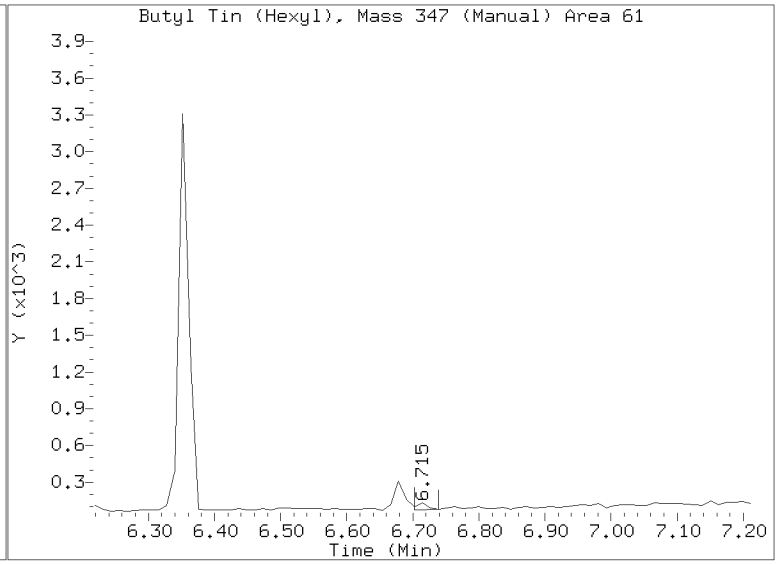
Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

# Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt8.i/20200110.b/N820011014.D
Injection Date: 10-JAN-2020 15:08
Lab ID:19K0396-08 Client ID:
Report Date: 01/10/2020 15:22



PDI-137RAB-00-10-191119

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-09 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 12:15 | Prepared: | 01/07/20 09:05 | File ID: | N820011015.D |
| % Solids: | 81.71 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 15:24 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 4.72 | U | 0.551 | 4.72 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 55.291 | 22.4 | 40.6 | 30 - 160 | |
| Tripropyltin | 53.539 | 20.4 | 38.0 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011015.D

Date : 10-JAN-2020 15:24

Client ID:

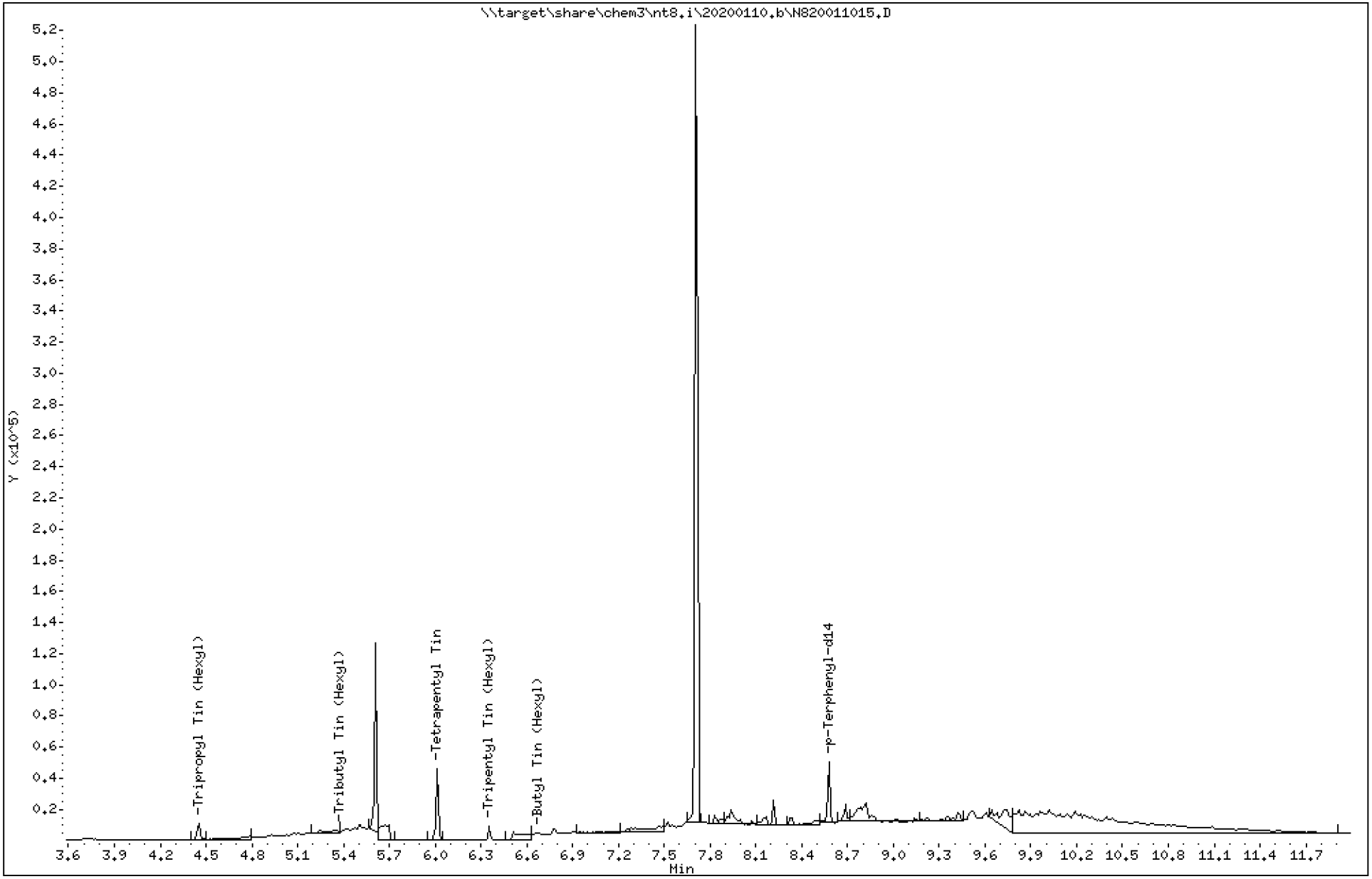
Sample Info: 19K0396-09

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011015.D

Date : 10-JAN-2020 15:24

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-09

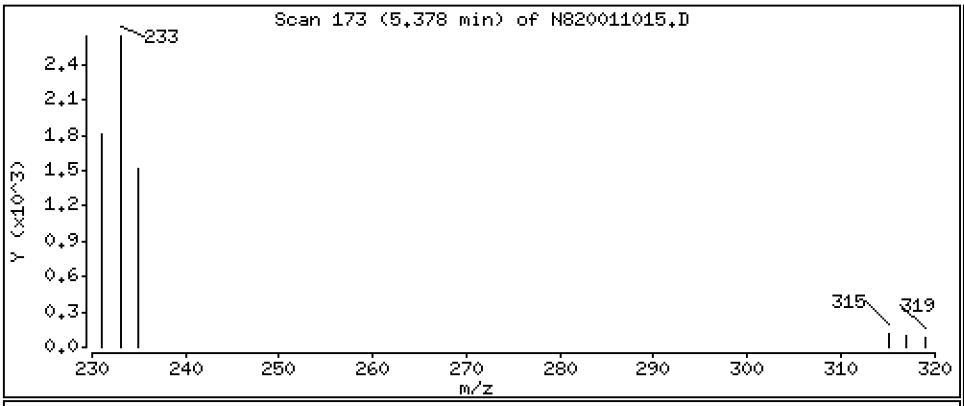
Operator: JZ

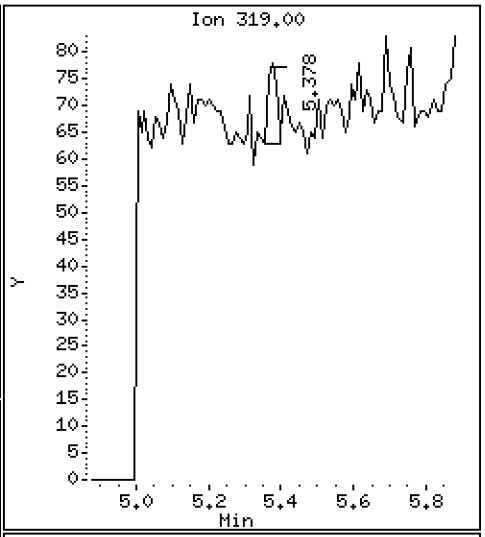
Column phase: ZB-5msi

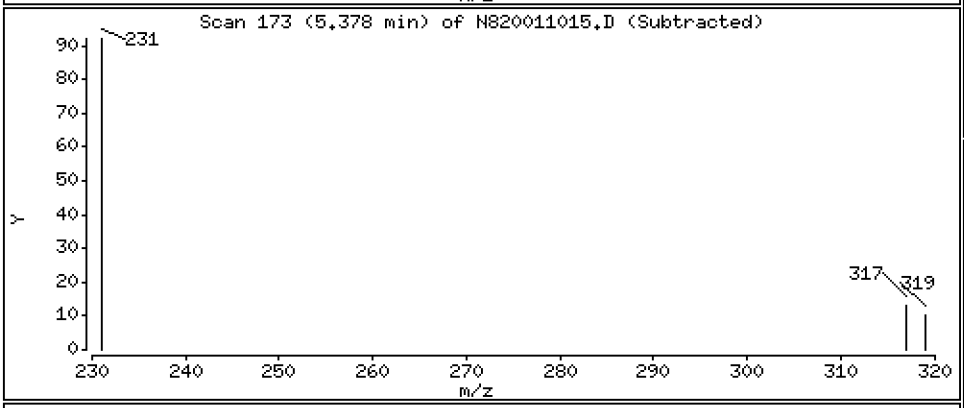
Column diameter: 0.25

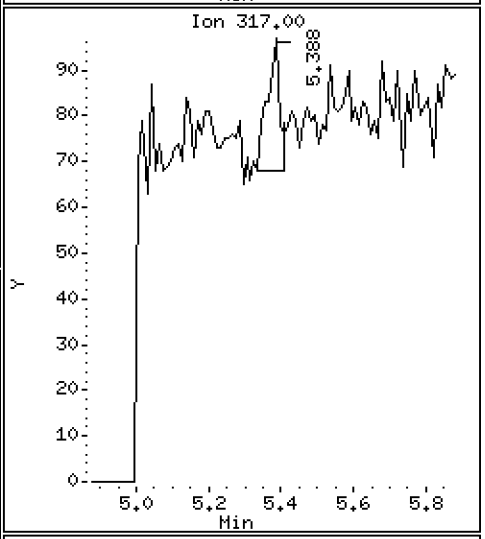
3 Tributyl Tin (Hexyl)

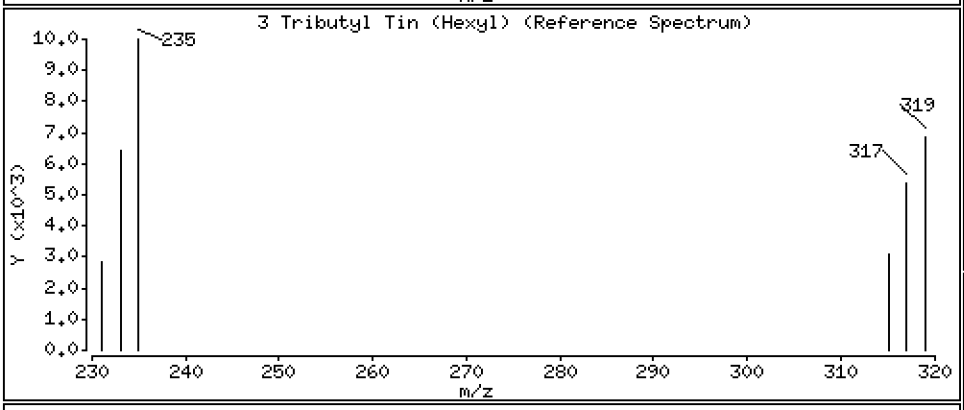
Concentration: 0.001352 ug/mL

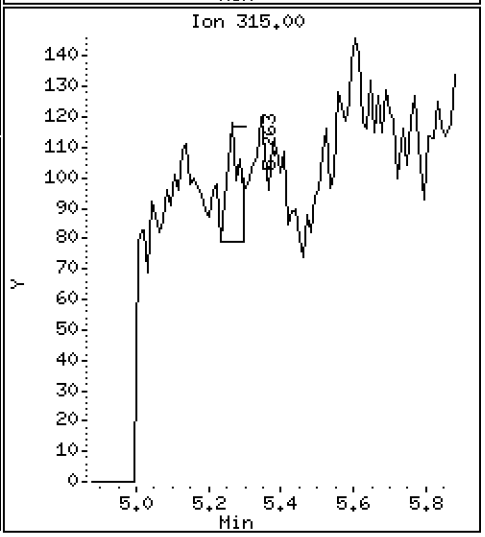


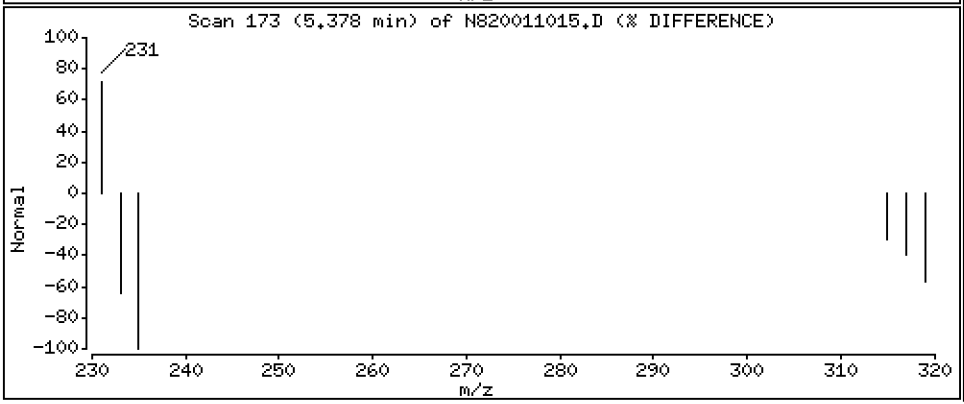



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011015.D

Date : 10-JAN-2020 15:24

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-09

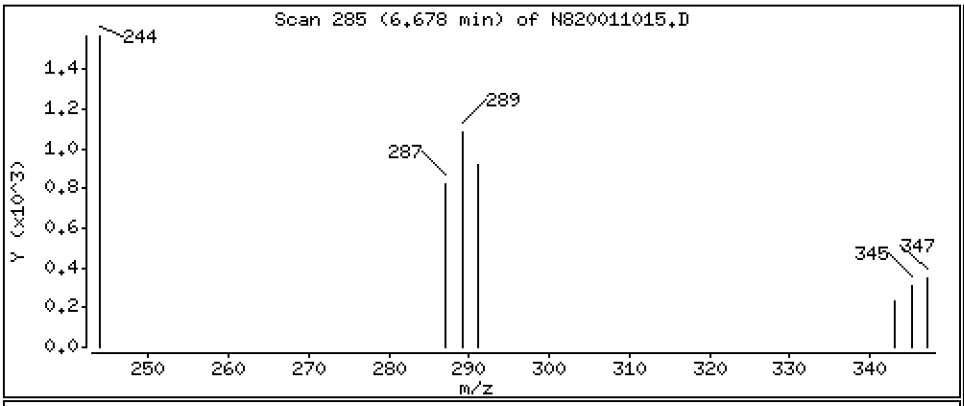
Operator: JZ

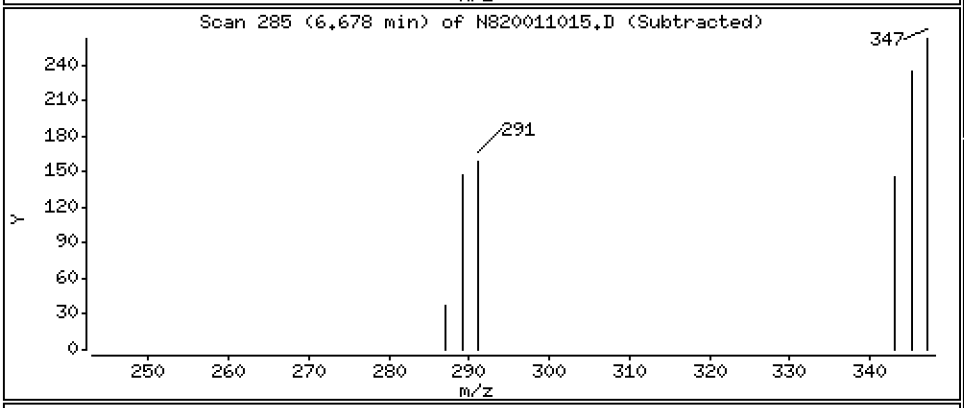
Column phase: ZB-5msi

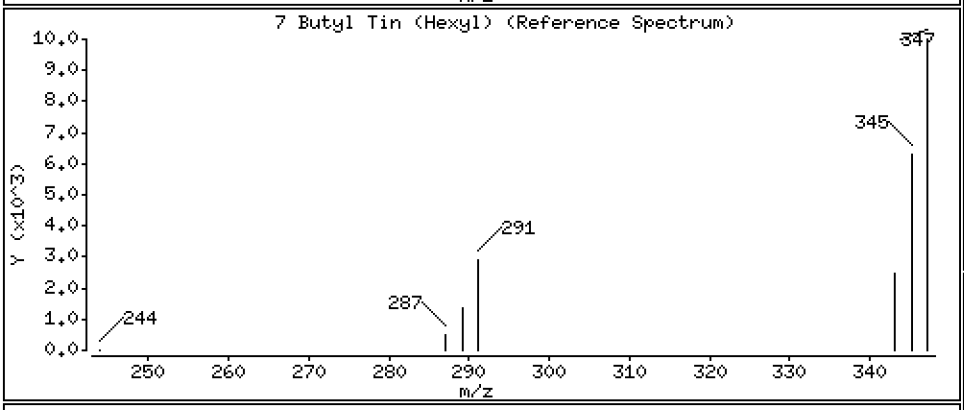
Column diameter: 0.25

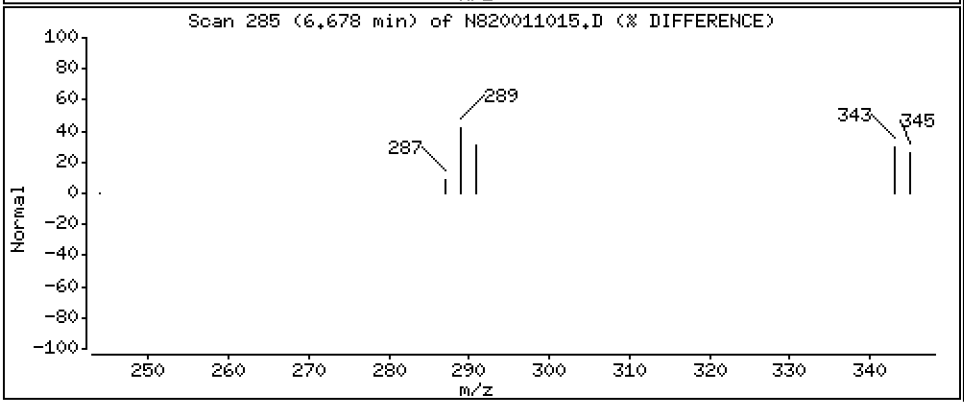
7 Butyl Tin (Hexyl)

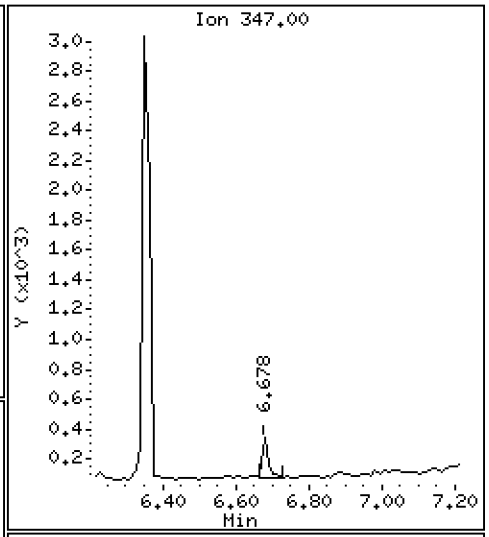
Concentration: 0.01446 ug/mL

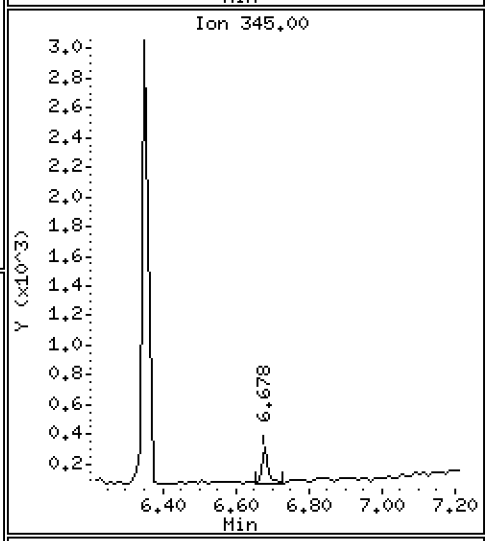


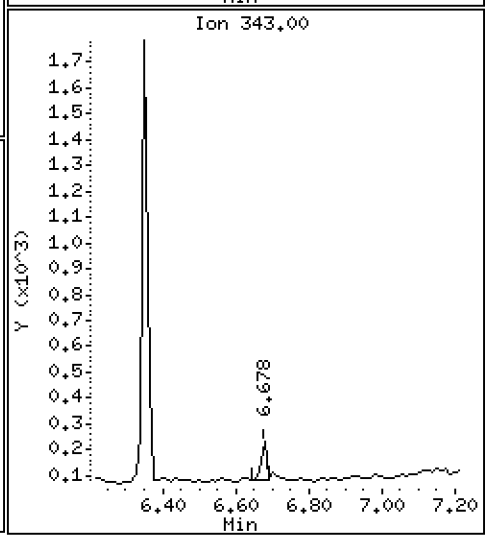



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011015.D
Lab Smp Id: 19K0396-09
Inj Date : 10-JAN-2020 15:24
Operator : JZ Inst ID: nt8.i
Smp Info : 19K0396-09
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 15
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | CONCENTRATIONS FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.740) | 5124 | 0.22345 | 0.2235 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.377 | (0.894) | 25 | 0.00135 | 0.001352 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 43919 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.351 | (0.740) | 3748 | 0.23042 | 0.2304 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.678 | 6.714 | (0.779) | 312 | 0.01446 | 0.01446 |
| * | 8 p-Terphenyl-d14 | 244 | 8.578 | 8.577 | (1.000) | 35486 | 0.20000 | |

Report Date: 10-Jan-2020 15:38

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011015.D
Lab Smp Id: 19K0396-09
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 43919 | 1.31 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 35486 | -1.85 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011015.D

Lab ID: 19K0396-09
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 15:24

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.740 | 0.735 | 0.0052 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

PDI-137RAB-10-17.7-191119

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

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-10 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 12:50 | Prepared: | 01/07/20 09:05 | File ID: | N820011016.D |
| % Solids: | 80.50 | Preparation: | EPA 3546 (Microwave) | Analyzed: | 01/10/20 15:41 |
| Batch: | BIA0051 | Sequence: | SIA0124 | Initial/Final: | 5.02 g Wet / 0.5 mL |
| Instrument: | NT8 | Column: | RXI-17Sil ms | Calibration: | DA00008 |
| Cleanups: | Silica Gel | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC: (ug/kg dry) | Q | DL | RL |
|---|---|---|---|---|---|---|
| 36643-28-4 | Tributyltin Ion | 1 | 4.78 | U | 0.557 | 4.78 |

| SURROGATES | ADDED: (ug/kg dry) | FOUND: (ug/kg dry) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 55.896 | 28.0 | 50.2 | 30 - 160 | |
| Tripropyltin | 54.124 | 18.2 | 33.6 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011016.D

Date : 10-JAN-2020 15:41

Client ID:

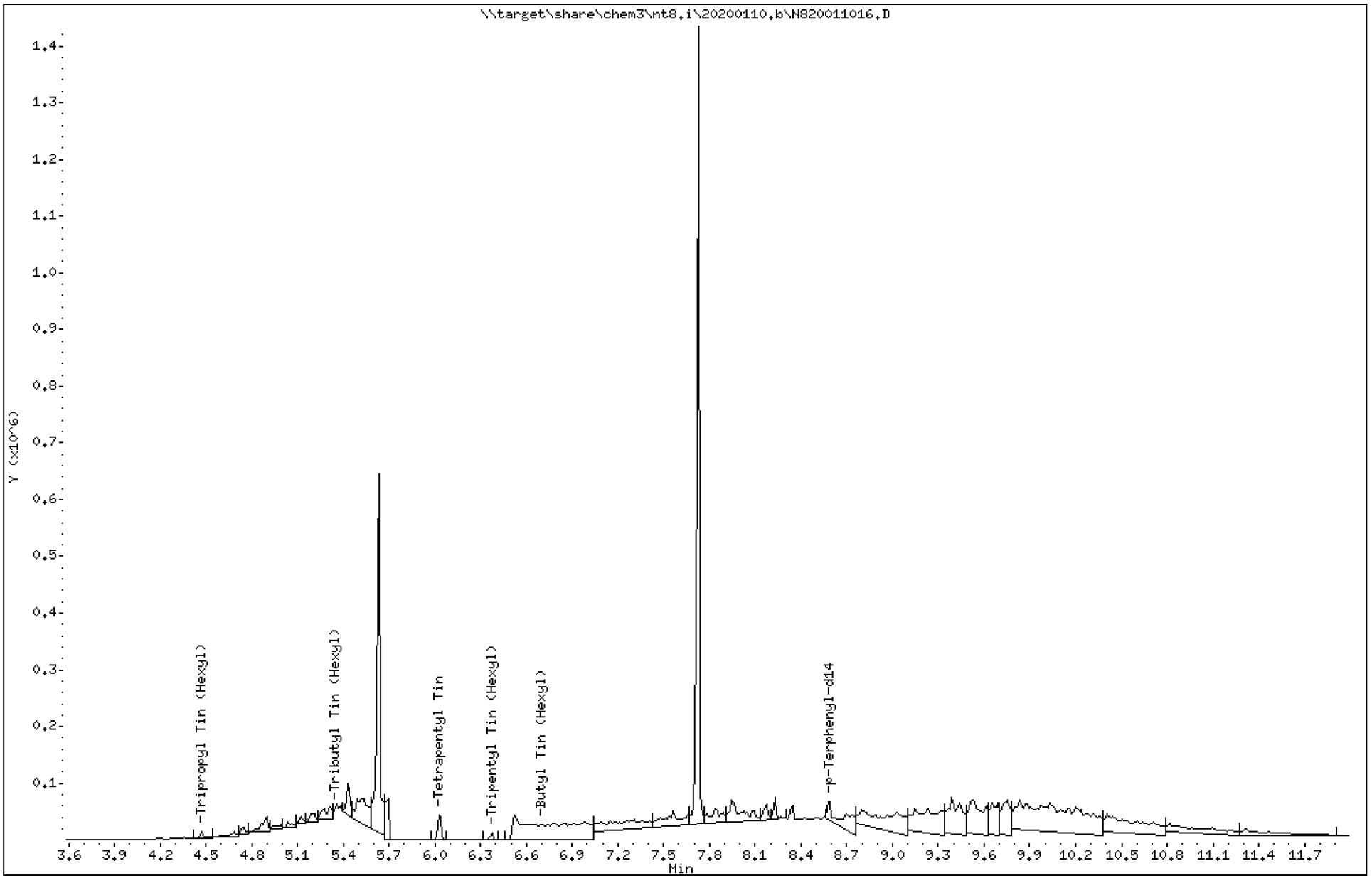
Sample Info: 19K0396-10

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011016.D

Date : 10-JAN-2020 15:41

Client ID:

Instrument: nt8.i

Sample Info: 19K0396-10

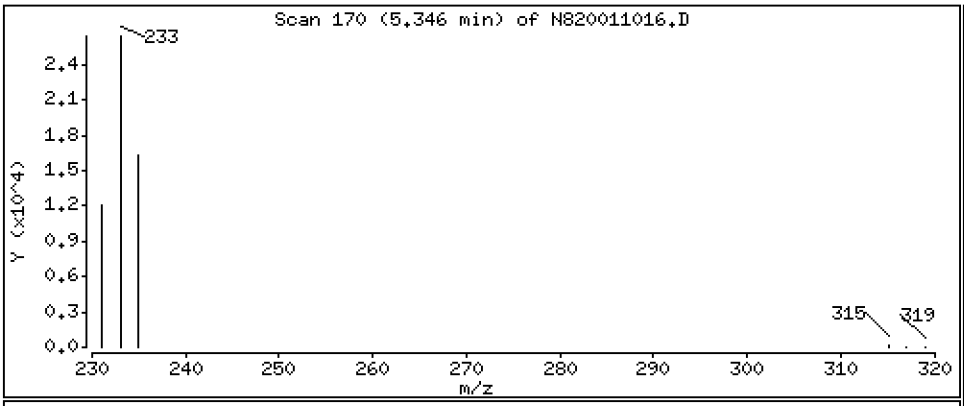
Operator: JZ

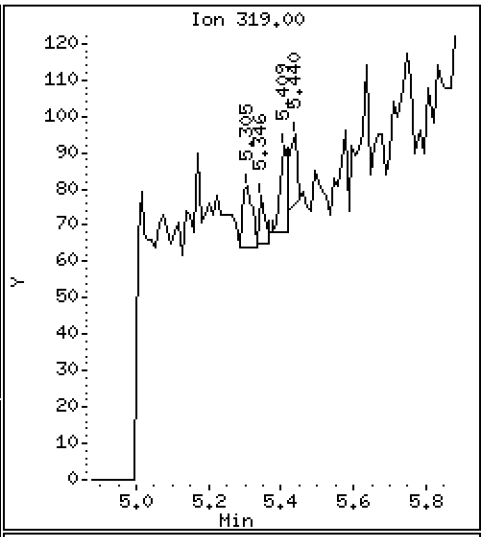
Column phase: ZB-5msi

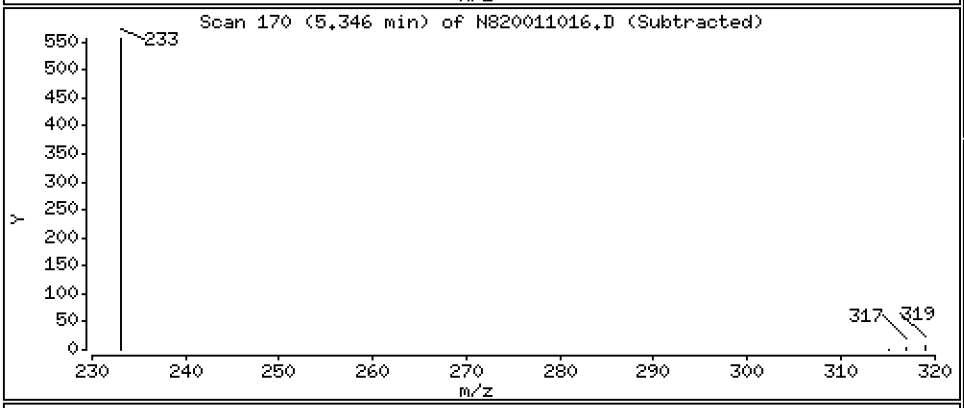
Column diameter: 0.25

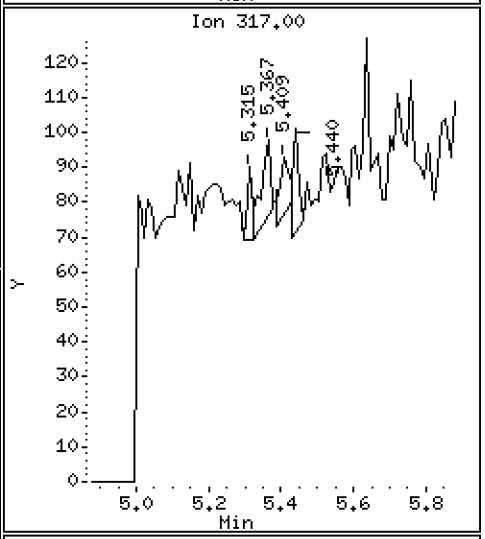
3 Tributyl Tin (Hexyl)

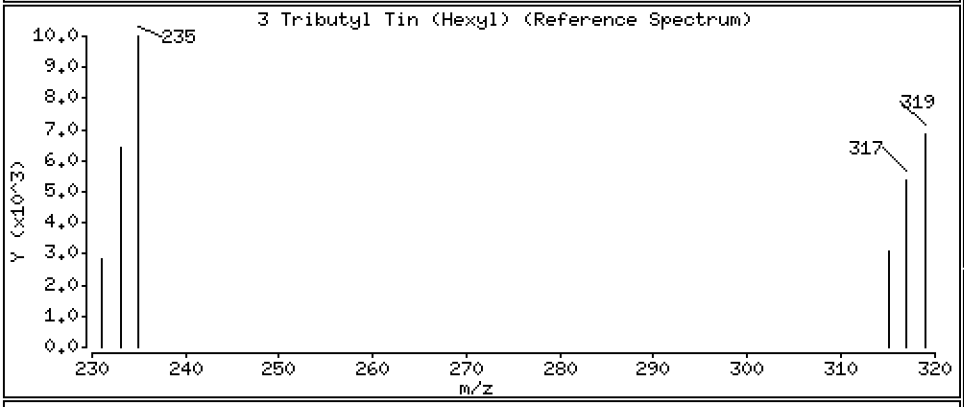
Concentration: 0.0004867 ug/mL

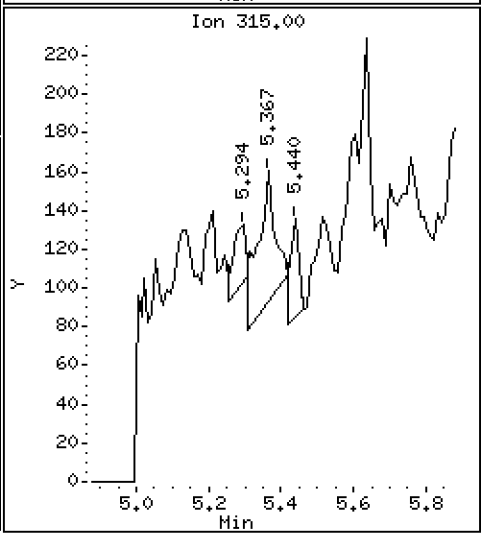


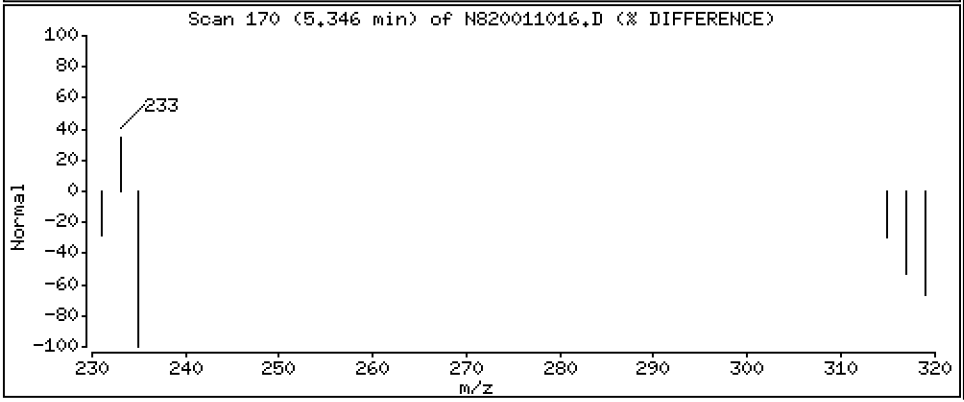



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011016.D
Lab Smp Id: 19K0396-10
Inj Date : 10-JAN-2020 15:41
Operator : JZ Inst ID: nt8.i
Smp Info : 19K0396-10
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 16
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.471 | 4.419 | (0.742) | 7036 | 0.19724 | 0.1972 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.346 | 5.377 | (0.887) | 14 | 5e-004 | 0.0004867 |
| * | 4 Tetrapentyl Tin | 333 | 6.025 | 6.013 | (1.000) | 68323 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.375 | 6.351 | (0.742) | 5748 | 0.28468 | 0.2847 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.782) | 152 | 0.00568 | 0.005684(M) |
| * | 8 p-Terphenyl-d14 | 244 | 8.590 | 8.577 | (1.000) | 43979 | 0.20000 | |

QC Flag Legend

M - Compound response manually integrated.

Report Date: 10-Jan-2020 15:58

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011016.D
Lab Smp Id: 19K0396-10
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 68323 | 57.61 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 43979 | 21.64 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.03 | 0.20 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.59 | 0.14 |

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 - N820011016.D

Lab ID: 19K0396-10
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 15:41

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.887 | 0.894 | -0.0070 | Tributyl Tin (Hexyl) |
| 0.742 | 0.735 | 0.0072 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

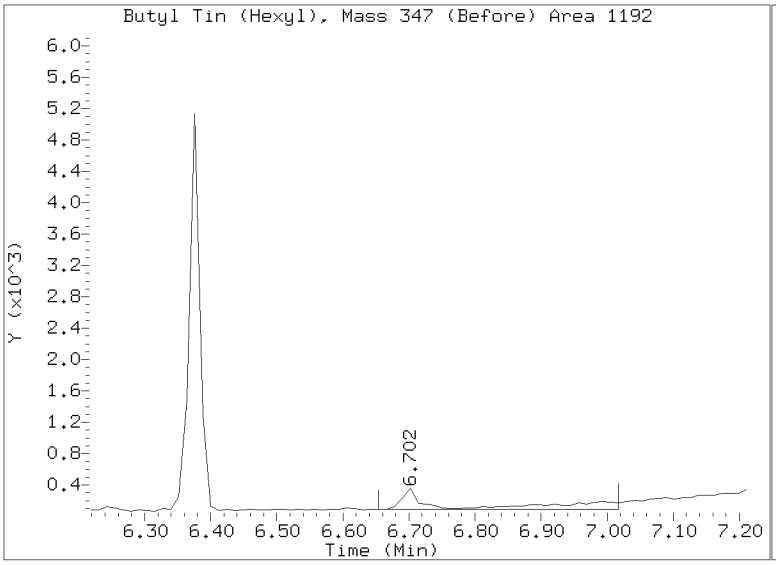
On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

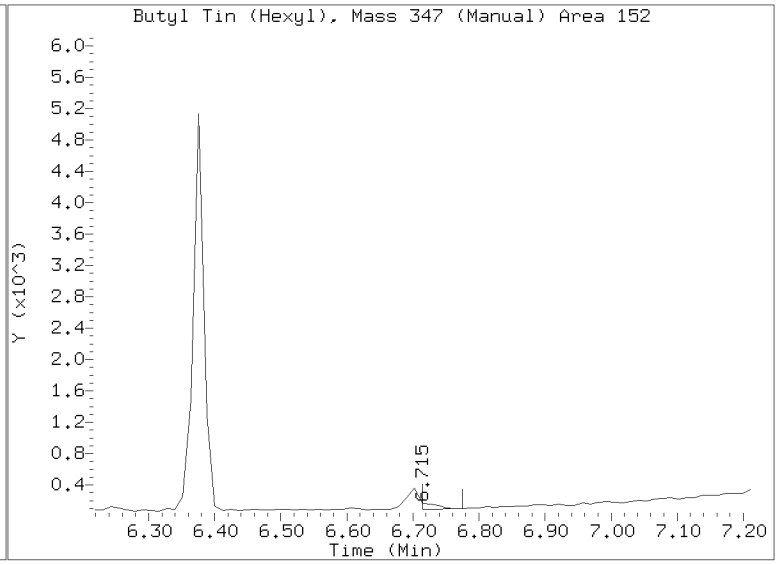
Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

# Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt8.i/20200110.b/N820011016.D
Injection Date: 10-JAN-2020 15:41
Lab ID:19K0396-10 Client ID:
Report Date: 01/10/2020 15:58



# PREPARATION BATCH SUMMARY

## EPA 8270D-SIM

Laboratory: Analytical Resources, Inc. SDG: 19K0396

Client: Anchor QEA, LLC Project: Gasco PDI

Batch: BIA0051 Batch Matrix: Solid Preparation: EPA 3546 (Microwave)

| SAMPLE NAME | LAB SAMPLE ID | LAB FILE ID | DATE PREPARED | OBSERVATIONS |
|---|---|---|---|---|
| PDI-134RAB-00-10-191120 | 19K0396-01 | N820011005.D | 01/07/20 09:05 | |
| PDI-134RAB-10-20-191120 | 19K0396-02 | N820011020.D | 01/07/20 09:05 | |
| PDI-134RAB-20-25.5-191120 | 19K0396-03 | N820011018.D | 01/07/20 09:05 | |
| PDI-135RAB-00-10-191120 | 19K0396-04 | N820011008.D | 01/07/20 09:05 | |
| PDI-135RAB-10-20-191120 | 19K0396-05 | N820011009.D | 01/07/20 09:05 | |
| PDI-135RAB-20-26.2-191120 | 19K0396-06 | N820011019.D | 01/07/20 09:05 | |
| PDI-136RAB-00-10-191119 | 19K0396-07 | N820011013.D | 01/07/20 09:05 | |
| PDI-136RAB-10-13.4-191119 | 19K0396-08 | N820011014.D | 01/07/20 09:05 | |
| PDI-137RAB-00-10-191119 | 19K0396-09 | N820011015.D | 01/07/20 09:05 | |
| PDI-137RAB-10-17.7-191119 | 19K0396-10 | N820011016.D | 01/07/20 09:05 | |
| Blank | BIA0051-BLK1 | N820011003.D | 01/07/20 09:05 | |
| LCS | BIA0051-BS1 | N820011004.D | 01/07/20 09:05 | |
| PDI-135RAB-10-20-191120 | BIA0051-MS1 | N820011010.D | 01/07/20 09:05 | |
| PDI-135RAB-10-20-191120 | BIA0051-MSD1 | N820011011.D | 01/07/20 09:05 | |

**Analytical Resources, Incorporated**
Analytical Chemists and Consultants

**ORGANICS PREPARATION BENCH SHEET**

Batch: BIA0051

**Prepared using: EPA 3546 (Microwave)**

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

**Matrix: Solid** **Date Prepared:** 01/07/20 **Balance ID:** B146462614 **Set Up By:** 1/3/2020 CTO

The following standards may be missing from this batch!

| Designator | Description |
|---|---|
| QLS 3 | QLS Spike |

Rush

**Analysis: 8270D-SIM Butyl Tins**

| Lab Number & Container | Initial (g) Target Dry: 5 (Wet) Actual | Actual Wet Wt (g) | Final Effective Vol (mL) | Vol (mL) to Lab | Extraction Comments |
|---|---|---|---|---|---|
| 19K0396-01 A | 5.00 | 5.04 | 0.5 | 0.5 | |
| 19K0396-02 A | 5.00 | 5.00 | 0.5 | 0.5 | |
| 19K0396-03 A | 5.00 | 5.02 | 0.5 | 0.5 | |
| 19K0396-04 A | 5.00 | 5.04 | 0.5 | 0.5 | |
| 19K0396-05 A | 5.00 | 5.04 | 0.5 | 0.5 | |
| 19K0396-06 A | 5.00 | 5.02 | 0.5 | 0.5 | |
| 19K0396-07 A | 5.00 | 5.03 | 0.5 | 0.5 | |
| 19K0396-08 A | 5.00 | 5.02 | 0.5 | 0.5 | |
| 19K0396-09 A | 5.00 | 5.00 | 0.5 | 0.5 | |
| 19K0396-10 A | 5.00 | 5.02 | 0.5 | 0.5 | |

**Batch QC**

| Lab Number | Initial (g) Target Dry: 5 (Wet) Actual | Actual | Final Effective Vol (mL) | Vol (mL) to Lab | Extraction Comments |
|---|---|---|---|---|---|
| BIA0051-BLK1 | 5.00 | 5.00 | 0.5 | 0.5 | |
| BIA0051-BS1 | 5.00 | 5.00 | 0.5 | 0.5 | |
| BIA0051-MS1 | 5.00 | 5.03 | 0.5 | 0.5 | Use 19K0396-05 |
| BIA0051-MSD1 | 5.00 | 5.03 | 0.5 | 0.5 | Use 19K0396-05 |

Client ID verified By 01/07/20 Date

Preparation Reviewed By CAS 1/9/20 Date

Extraction Date and Time 01/07/20 09:05



Printed: 1/3/2020 2:03:51PM

**Analytical Resources, Incorporated**
Analytical Chemists and Consultants

# ORGANICS PREPARATION BENCH SHEET

Batch: BIA0051

**Prepared using: EPA 3546 (Microwave)**

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

**Prep Steps**

**Microwave**
1 (2) 3
CT 01/07/20
CT Analyst/Date

**TurboVap Hexane Exchange (15 mL)**
(1) 2 3 4 5
SL 1/7/20
Analyst/Date

**HexMgBr Addition Vortex 45min + Sit Overnight**
(1) 2 3
SL 1/7/20
Analyst/Date

**(REQ) Hydrolisys (4mL) Vortex**
1 2 3
CT 1/9/20
Analyst/Date

**(REQ) SPE (1mL)**
CT 1/9/20
Analyst/Date

**TurboVap Post SPE**
1 2 (3) 4 5
CT 1/9/20
Analyst/Date

**Vialing**
CT 1/9/20
Analyst/Date

**Reagents Used**

| Station/Reagent | Standard ID |
|---|---|
| **Microwave** Analyst: CT Date: 01/07/20 | |
| Anhydrous Sodium Sulfate | H012424 |
| 0.10% Tropolone in Methylene Chloride | H012254 |
| Neutral Glass Wool | H011641 |
| Hexane | H012373 |
| **Vialing/HexMgBr Addition** Analyst: SL Date: 1/7/20 | |
| (Turbovap exchange): Hexane: | H012373 |
| HexylMagnesiumBromide | H011739 |
| **Hydrolysis/Silica/Final Vialing** Analyst: CT Date: 1/9/20 | |
| 1:1 HCL/DI H2O | H011994 |
| Anhydrous Sodium Sulfate | H011488 |
| Silica Gel (SPE) Dart (EPH) | H010120 |
| (Final Vialing):Hexane | H012373 |

**Surrogates & Spike Standards Used**

| Type | Vial ID / Standard ID | Vol uL | Analyst | Witness |
|---|---|---|---|---|
| **Surrogate** 2.5µg/mL | L (H012048) Exp: 12/12/2020 | 100µL | CT | |
| **Spike** 2.5µg/mL | 8 (H012047) Exp: 12/12/2020 | 100µL | CT | |

(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).

Analytical Resources, Incorporated
Analytical Chemists and Consultants

# Organic Extractions Laboratory Analyst Notes

Extraction Parameter: TBT Extraction Batch BIA0051

Total Solids Batch: N/A Work Order(s): 19K0396

| Screens: Soil/Sediment/Solid/Other: | Analyst/Date |
|---|---|
| ☒ No Anomalies (standard soil/wet sediment/sand/gravel)= ϕ4, ϕ9. | MJ ϕ1/ϕ7/2ϕ |
| ☐ Standing Water Decanted (Not shared)= | |
| ☐ Standing Water Homogenized (Shared samples)= | |
| ☐ Clay/Clumps (Difficult to homogenize)= | |
| ☒ Rocks (%+size)? 10.0% + inch = ϕ5, ϕ8, ϕ9. | MJ ϕ1/ϕ7/2ϕ |
| ☐ Organics (Leaves/sticks/grass)= | |
| ☒ Oily, obvious fuel/sulfur odors= fuel odor = ϕ1-ϕ3, 6, 7, 1ϕ. | MJ ϕ1/ϕ7/2ϕ |
| ☐ 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). | |
| - BLK1 & BS1 = added carbofluon. | MJ ϕ1/ϕ7/2ϕ |
| 19K0396-03 & 06 ran through SPE twice due to color. | dlr 1/9/20 |
| | |
| | |
| ☒ Share Samples Y / N | MJ ϕ1/ϕ7/2ϕ |
| ☒ Multiple Jars Y / N 1/7/20 = ϕ5, ϕ9 X 2. | MJ ϕ1/ϕ7/2ϕ |
| ☐ Sample Pre-Screens indicate analyte activity= | |
| ☐ Sample weights/volumes reduced based on Pre-Screen= | |

**Analytical Resources, Incorporated**
Analytical Chemists and Consultants

**ORGANICS PREPARATION BENCH SHEET**

Batch: BIA0051

**Prepared using: EPA 3546 (Microwave)**

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

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

# CLEANUP BATCH SUMMARY

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Cleanup Batch: | CIA0076 | 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-134RAB-00-10-191120 | 19K0396-01 | N820011005.D | 01/09/2020 | |
| PDI-134RAB-10-20-191120 | 19K0396-02 | N820011020.D | 01/09/2020 | |
| PDI-134RAB-20-25.5-191120 | 19K0396-03 | N820011018.D | 01/09/2020 | |
| PDI-135RAB-00-10-191120 | 19K0396-04 | N820011008.D | 01/09/2020 | |
| PDI-135RAB-10-20-191120 | 19K0396-05 | N820011009.D | 01/09/2020 | |
| PDI-135RAB-20-26.2-191120 | 19K0396-06 | N820011019.D | 01/09/2020 | |
| PDI-136RAB-00-10-191119 | 19K0396-07 | N820011013.D | 01/09/2020 | |
| PDI-136RAB-10-13.4-191119 | 19K0396-08 | N820011014.D | 01/09/2020 | |
| PDI-137RAB-00-10-191119 | 19K0396-09 | N820011015.D | 01/09/2020 | |
| PDI-137RAB-10-17.7-191119 | 19K0396-10 | N820011016.D | 01/09/2020 | |
| Blank | BIA0051-BLK1 | N820011003.D | 01/09/2020 | |
| LCS | BIA0051-BS1 | N820011004.D | 01/09/2020 | |
| Matrix Spike | BIA0051-MS1 | N820011010.D | 01/09/2020 | |
| Matrix Spike Dup | BIA0051-MSD1 | N820011011.D | 01/09/2020 | |

Analytical Resources, Incorporated
Analytical Chemists and Consultants

# CLEANUP BENCH SHEET

CIA0076

**Matrix: Solid** **Cleanup using: Organics - EPA 3630C Silica Gel Cleanup** **Printed: 1/9/2020 6:14:04PM**

| Lab Number | Sample Container | Sample Name | Extract Container | Initial (mL) | Final (mL) | Analysis | Clean Up Date | Cleaned By | Cleanup Comments |
|---|---|---|---|---|---|---|---|---|---|
| 19K0396-10 | A | PDI-137RAB-10-17.7-191119 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-09 | A | PDI-137RAB-00-10-191119 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-05 | A | PDI-135RAB-10-20-191120 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-06 | A | PDI-135RAB-20-26.2-191120 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-07 | A | PDI-136RAB-00-10-191119 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-08 | A | PDI-136RAB-10-13.4-191119 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-01 | A | PDI-134RAB-00-10-191120 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-02 | A | PDI-134RAB-10-20-191120 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-03 | A | PDI-134RAB-20-25.5-191120 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| 19K0396-04 | A | PDI-135RAB-00-10-191120 | A 01 | 0.5 | 0.5 | 8270D-SIM Butyl Tins | 1/9/2020 | CCT | |
| BIA0051-MSD1 | - | Matrix Spike Dup | - | 0.5 | 0.5 | - | 1/9/2020 | CCT | |
| BIA0051-MS1 | - | Matrix Spike | - | 0.5 | 0.5 | - | 1/9/2020 | CCT | |
| BIA0051-BS1 | - | LCS | - | 0.5 | 0.5 | - | 1/9/2020 | CCT | |
| BIA0051-BLK1 | - | Blank | - | 0.5 | 0.5 | - | 1/9/2020 | CCT | |

# Form I

## METHOD BLANK DATA SHEET

## EPA 8270D-SIM

**Blank**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | | | Project: | Gasco PDI |
| Matrix: | Solid | Laboratory ID: | BIA0051-BLK1 | File ID: | N820011003.D |
| Sampled: | N/A | Prepared: | 01/07/20 09:05 | Analyzed: | 01/10/20 11:58 |
| Solids: | | Preparation: | EPA 3546 (Microwave) | Initial/Final: | 5 g / 0.5 mL |
| Batch: | BIA0051 | Sequence: | SIA0124 | Calibration: | DA00008 |
| Instrument: | NT8 | Column: | RXI-17Sil ms | 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) | FOUND: (ug/kg wet) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Tripentyltin | 45.178 | 23.9 | 53.0 | 30 - 160 | |
| Tripropyltin | 43.746 | 25.1 | 57.5 | 30 - 160 | |

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011003.D

Date : 10-JAN-2020 11:58

Client ID:

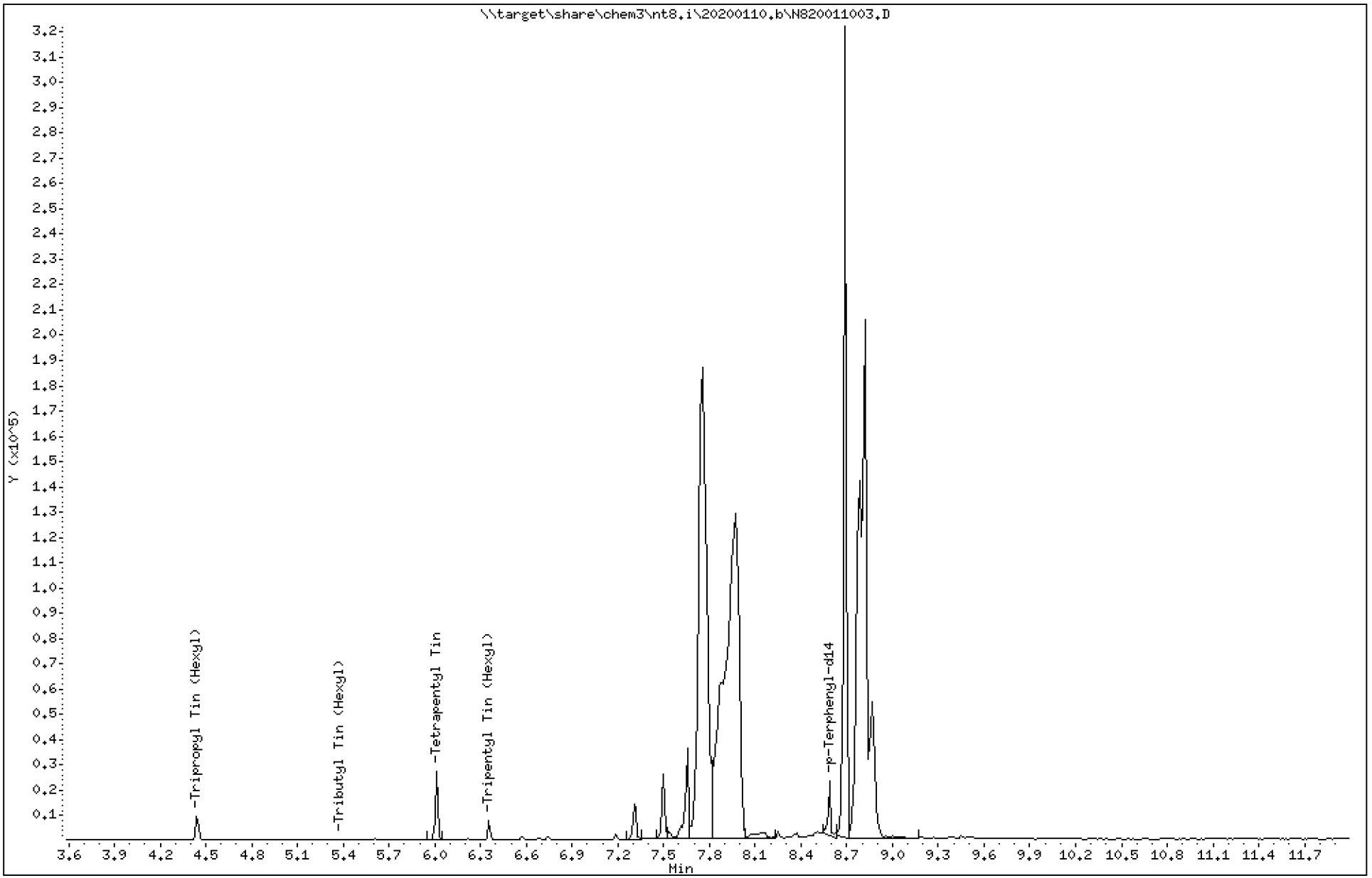
Sample Info: BIA0051-BLK1,

Column phase: ZB-5msi

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011003.D

Date : 10-JAN-2020 11:58

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-BLK1,

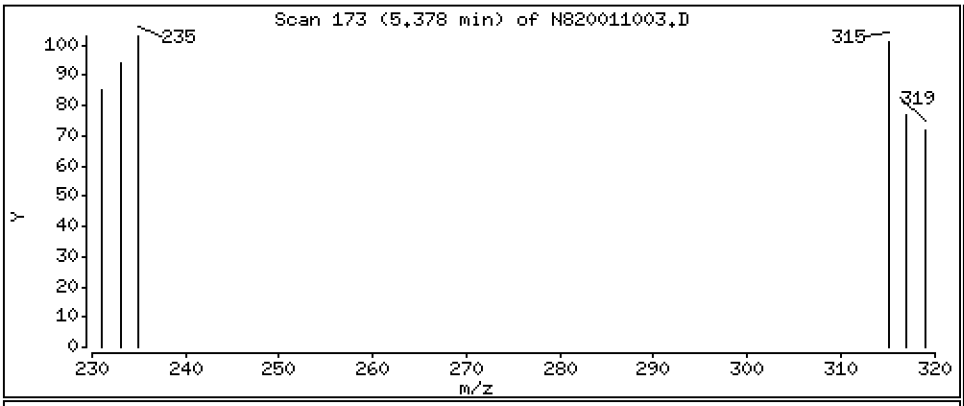
Operator: JZ

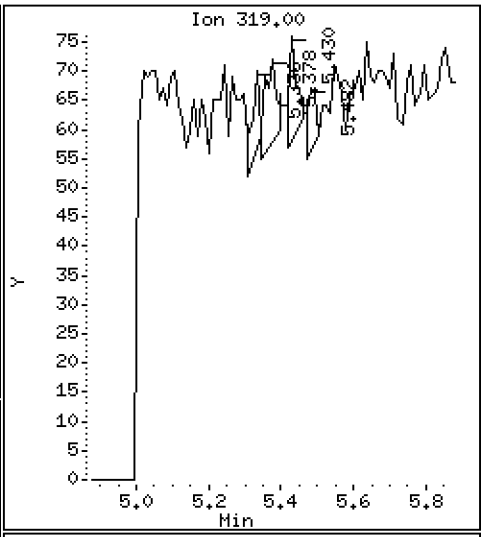
Column phase: ZB-5msi

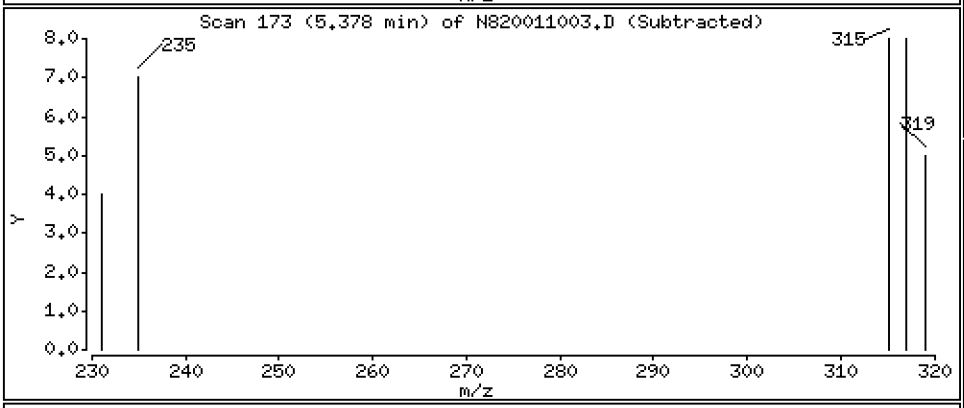
Column diameter: 0.25

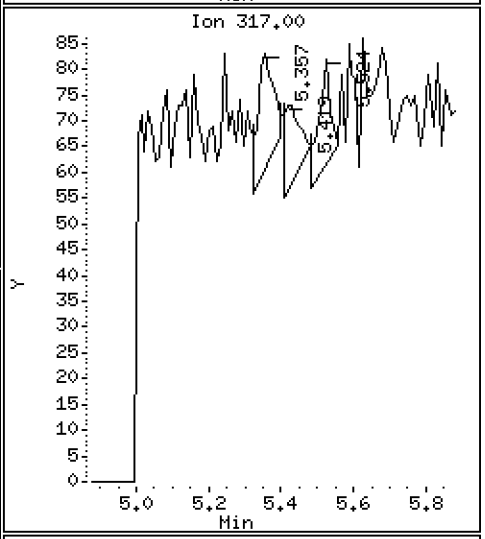
3 Tributyl Tin (Hexyl)

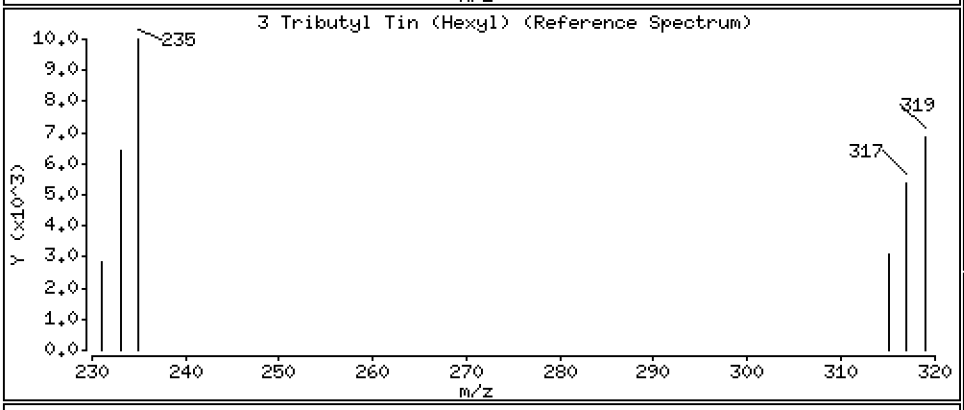
Concentration: 0.002893 ug/mL

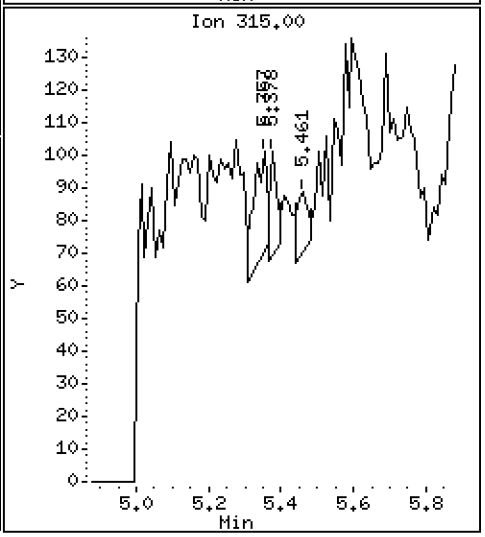


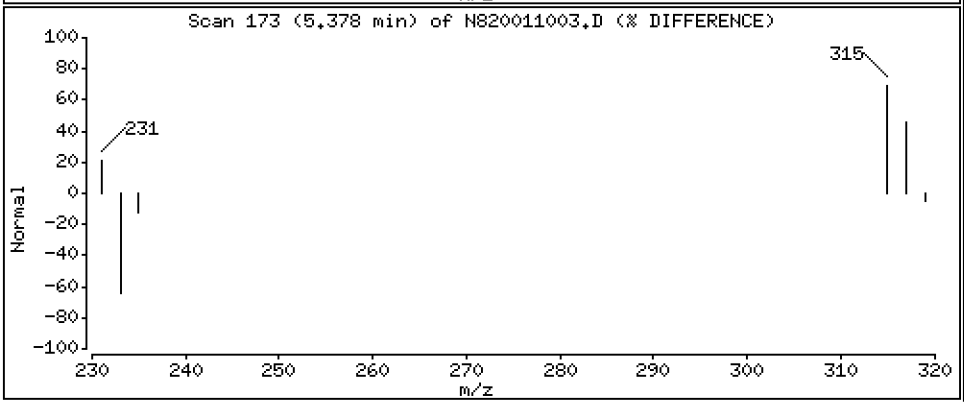



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011003.D
Lab Smp Id: BIA0051-BLK1
Inj Date  : 10-JAN-2020 11:58
Operator  : JZ  Inst ID: nt8.i
Smp Info  : BIA0051-BLK1,
Misc Info : 20-
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 3
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: sedmdl.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | CONCENTRATIONS FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.440 | 4.419 | (0.738) | 4633 | 0.33769 | 0.3377 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.377 | (0.894) | 32 | 0.00289 | 0.002893 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 26277 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.351 | (0.739) | 3104 | 0.30091 | 0.3009 |
| | 7 Butyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| * | 8 p-Terphenyl-d14 | 244 | 8.590 | 8.577 | (1.000) | 22457 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011003.D
Lab Smp Id: BIA0051-BLK1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 26277 | -39.38 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 22457 | -37.89 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.59 | 0.14 |

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 - N820011003.D

Lab ID: BIA0051-BLK1
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 11:58

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

* 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: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Matrix: | Solid | Analyzed: | 01/10/20 12:15 |
| Batch: | BIA0051 | Laboratory ID: | BIA0051-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 | 28.2 | | 63.2 | 30 - 160 |

* Indicates values outside of QC limits

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011004.D

Date : 10-JAN-2020 12:15

Client ID:

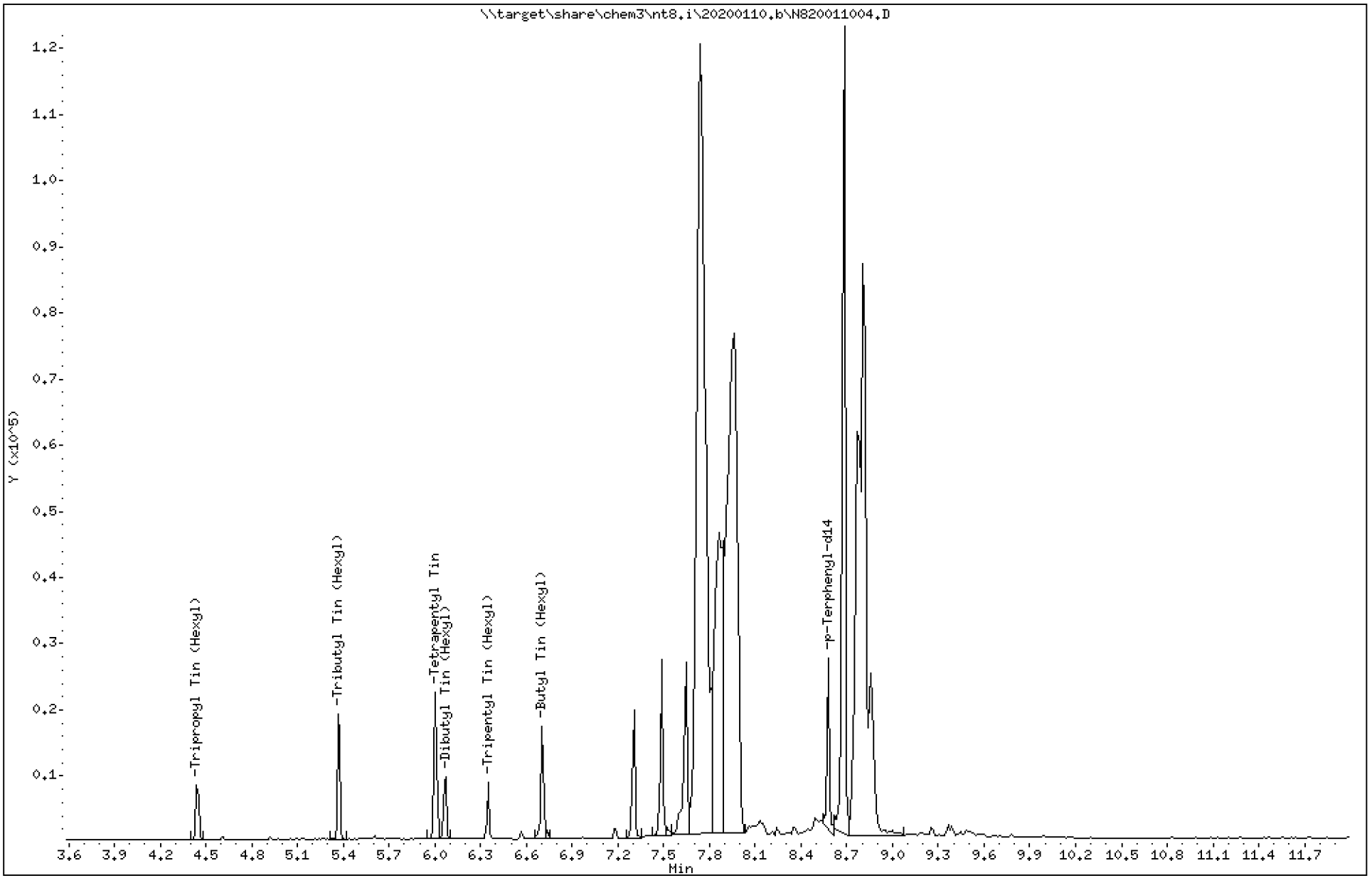
Sample Info: BIA0051-BS1,

Column phase: ZB-5msi

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011004.D

Date : 10-JAN-2020 12:15

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-BS1,

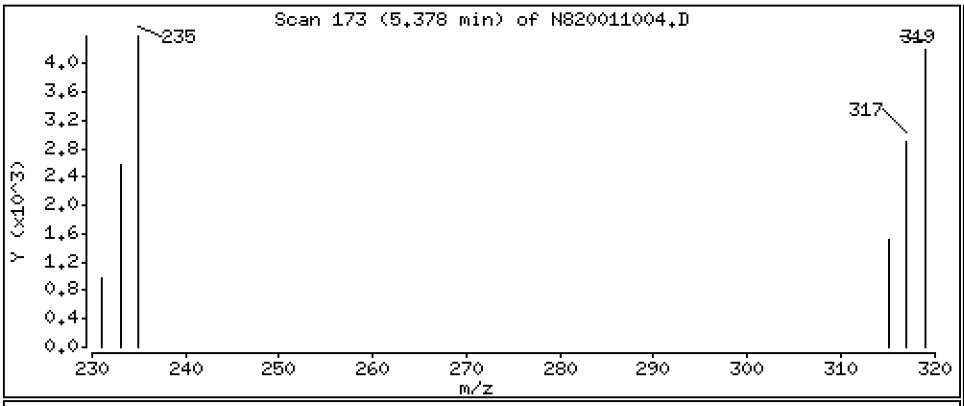
Operator: JZ

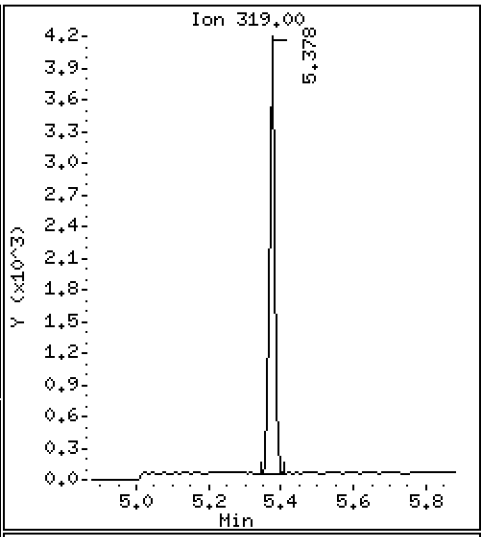
Column phase: ZB-5msi

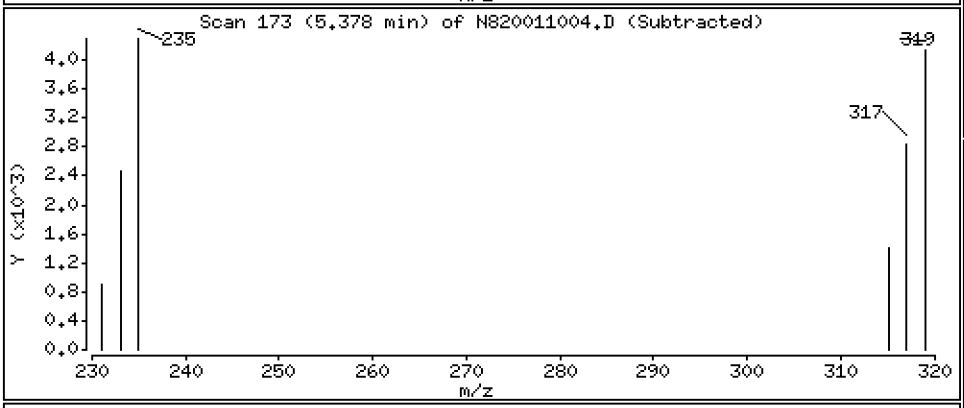
Column diameter: 0.25

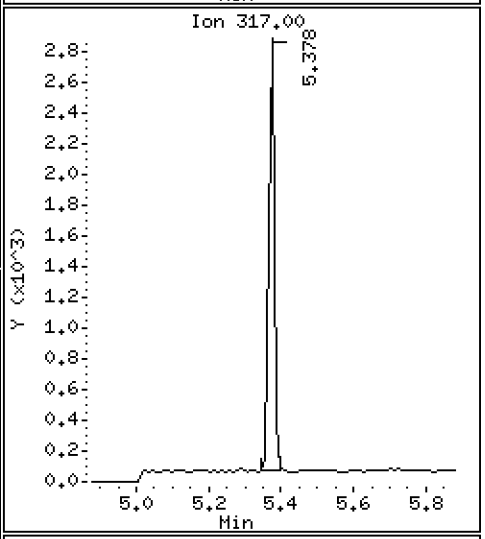
3 Tributyl Tin (Hexyl)

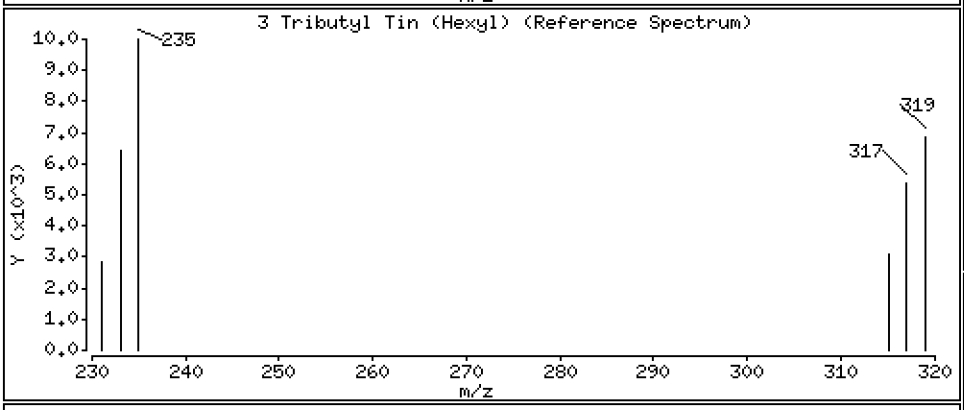
Concentration: 0.3645 ug/mL

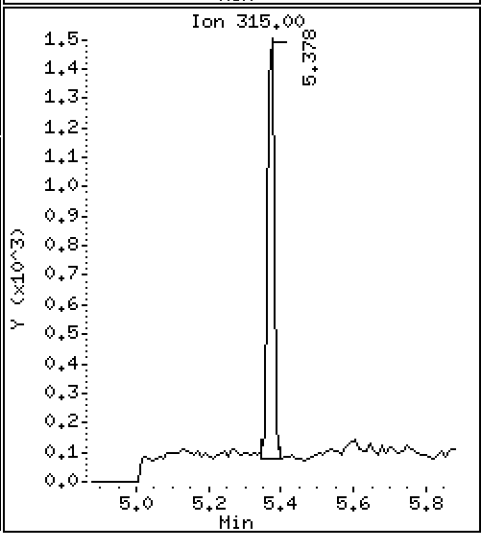


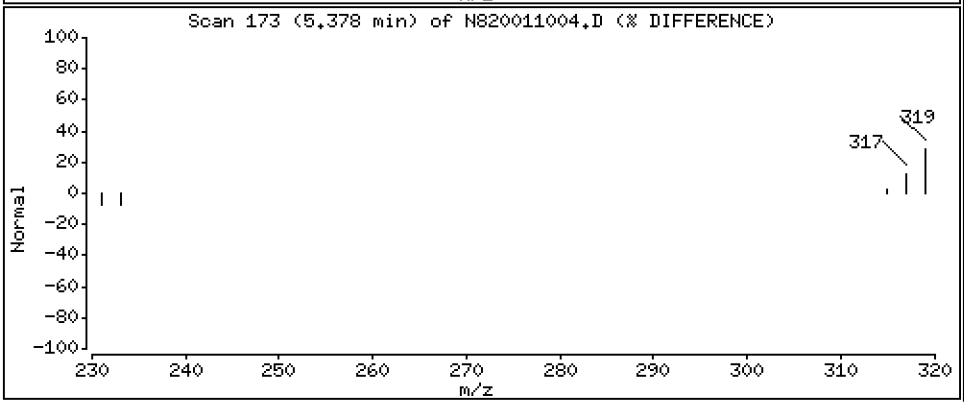



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011004.D

Date : 10-JAN-2020 12:15

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-BS1,

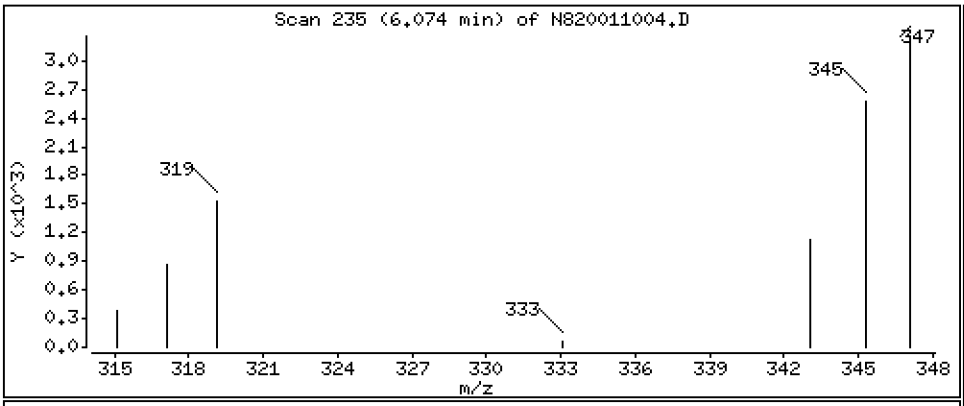
Operator: JZ

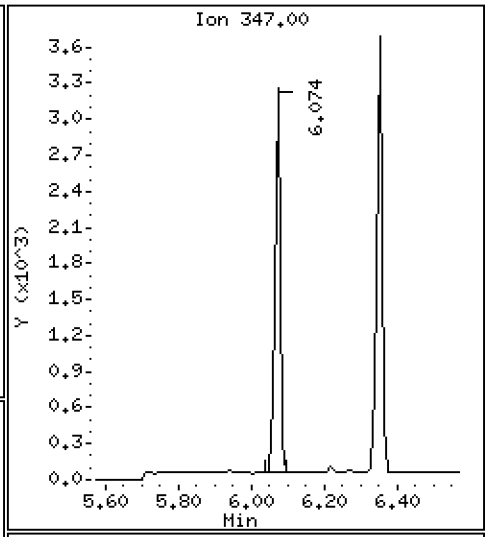
Column phase: ZB-5msi

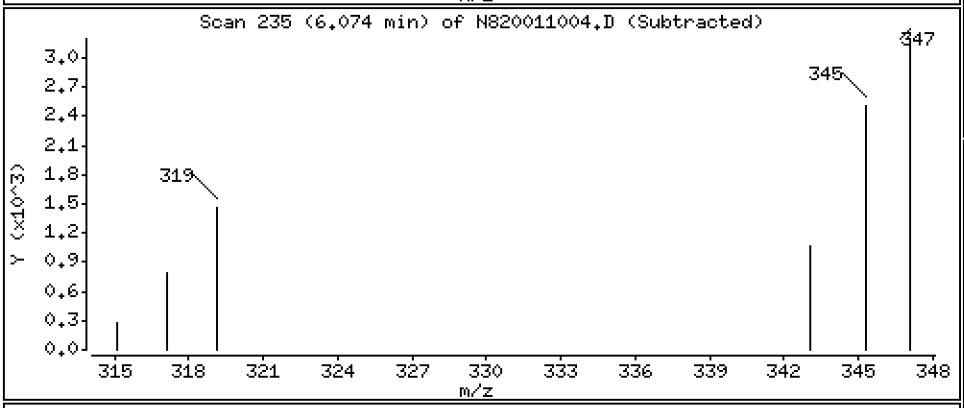
Column diameter: 0.25

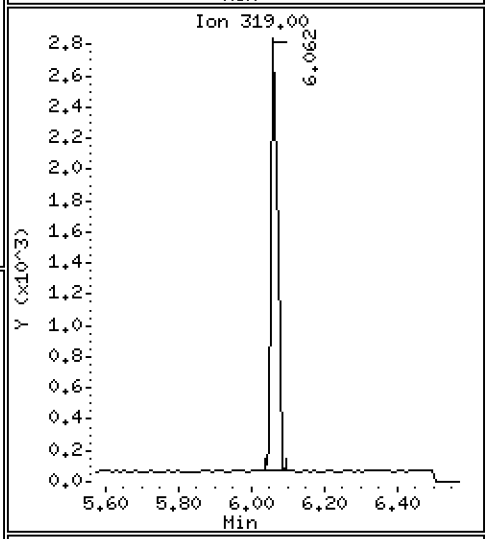
5 Dibutyl Tin (Hexyl)

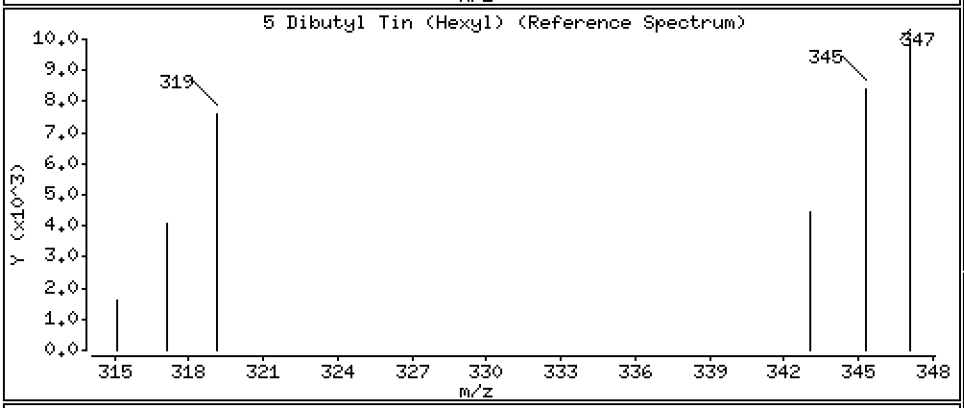
Concentration: 0.3799 ug/mL

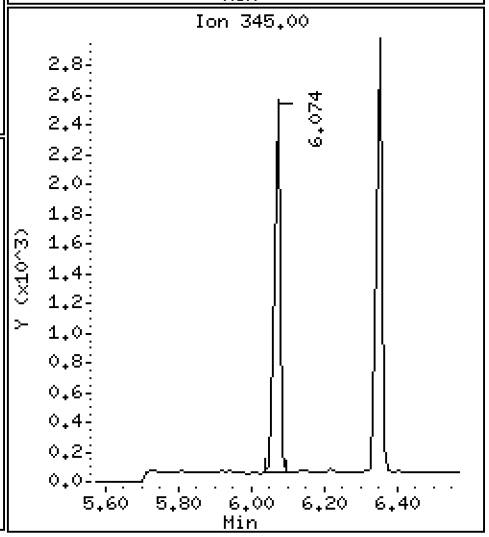


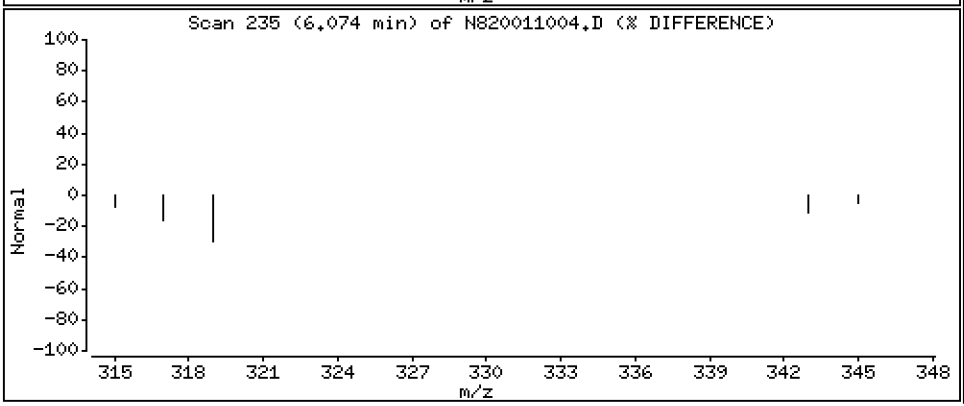



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011004.D

Date : 10-JAN-2020 12:15

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-BS1,

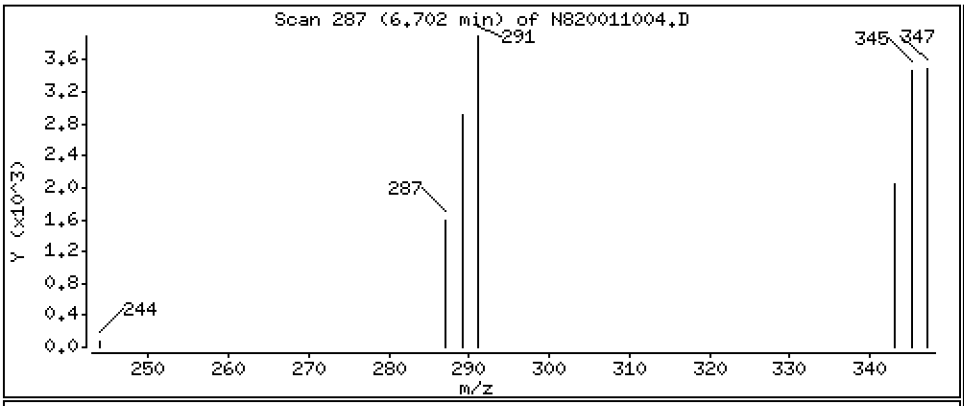
Operator: JZ

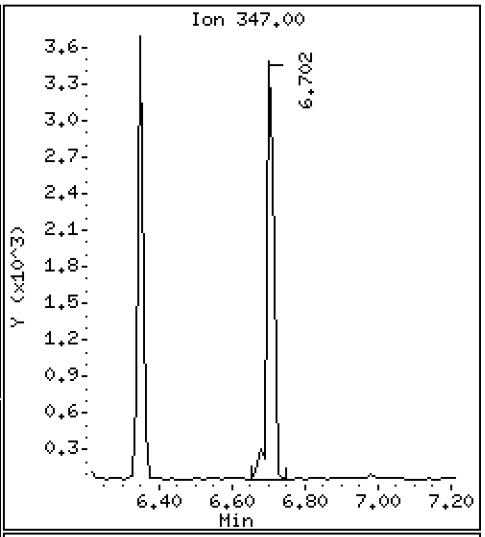
Column phase: ZB-5msi

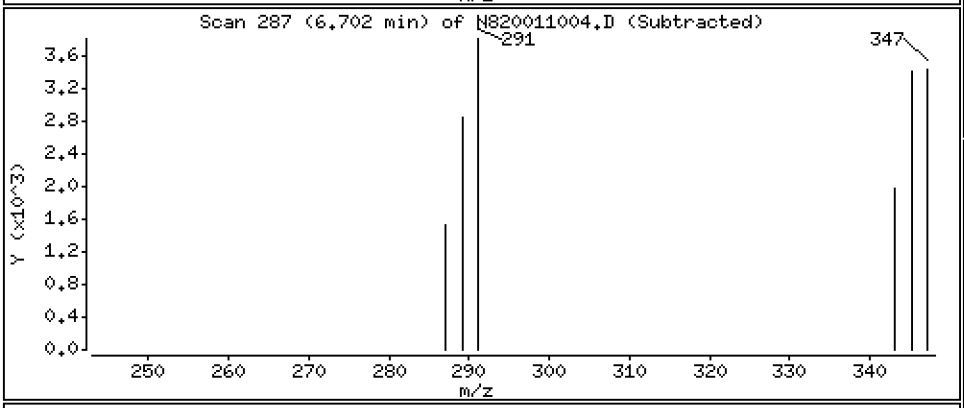
Column diameter: 0.25

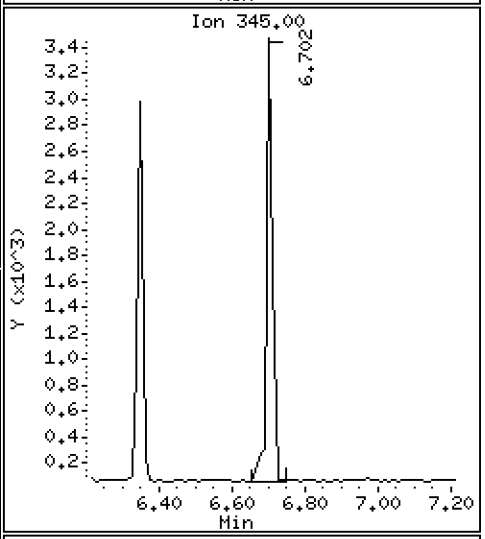
7 Butyl Tin (Hexyl)

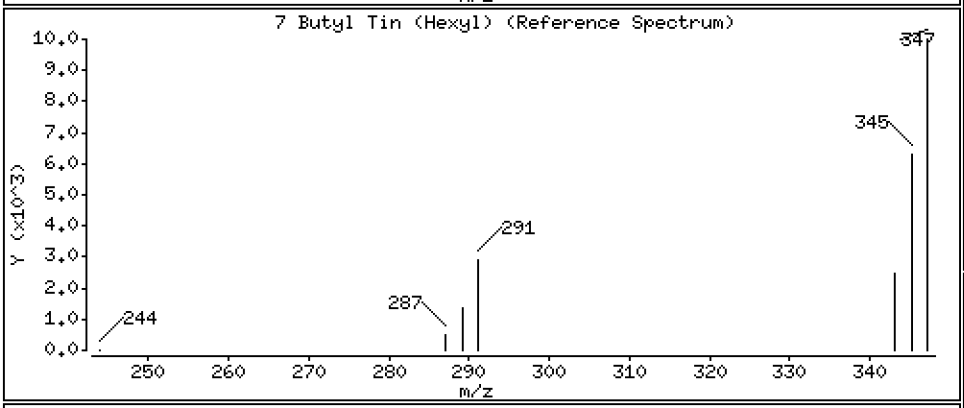
Concentration: 0.3405 ug/mL

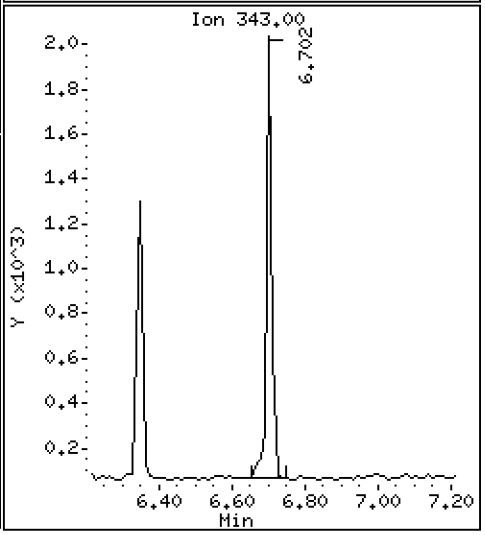


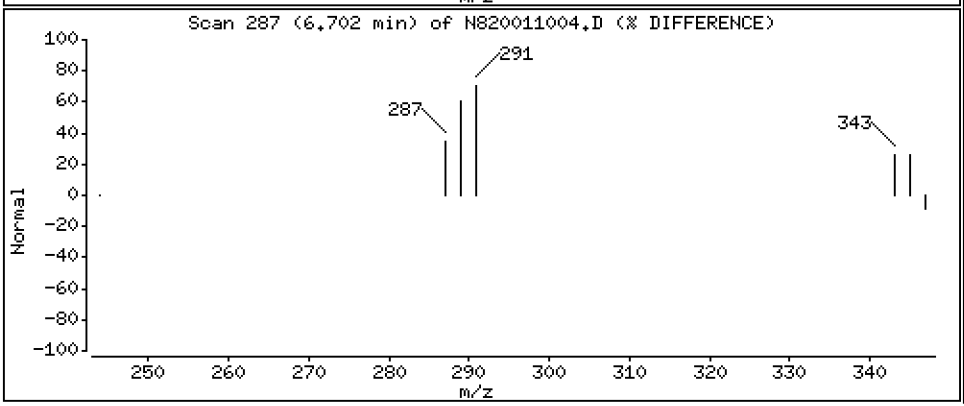



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011004.D
Lab Smp Id: BIA0051-BS1
Inj Date : 10-JAN-2020 12:15
Operator : JZ Inst ID: nt8.i
Smp Info : BIA0051-BS1,
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.742) | 4831 | 0.36000 | 0.3600 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.377 | (0.896) | 3944 | 0.36450 | 0.3645 |
| * | 4 Tetrapentyl Tin | 333 | 6.001 | 6.013 | (1.000) | 25702 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.073 | 6.073 | (0.708) | 2904 | 0.37986 | 0.3799 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.351 | (0.740) | 3407 | 0.32589 | 0.3259 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.702 | 6.714 | (0.781) | 4746 | 0.34050 | 0.3405 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 22743 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011004.D
Lab Smp Id: BIA0051-BS1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 25702 | -40.71 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 22743 | -37.10 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.00 | -0.20 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | -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 - N820011004.D

Lab ID: BIA0051-BS1
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 12:15

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.742 | 0.735 | 0.0067 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

* 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: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Matrix: | Solid | Analyzed: | 01/10/20 14:03 |
| Batch: | BIA0051 | Laboratory ID: | BIA0051-MS1 |
| Preparation: | EPA 3546 (Microwave) | Sequence Name: | Matrix Spike |
| Initial/Final: | 5 g / 0.5 mL | Source Sample: | PDI-135RAB-10-20-191120 |

| 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 | 52.7 | 0.560 | J | 25.4 | | 47.1 | 30 - 160 |

* Values outside of QC limits

# MS / MS DUPLICATE RECOVERY
## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Matrix: | Solid | Analyzed: | 01/10/20 14:19 |
| Batch: | BIA0051 | Laboratory ID: | BIA0051-MSD1 |
| Preparation: | EPA 3546 (Microwave) | Sequence Name: | Matrix Spike Dup |
| Initial/Final: | 5 g / 0.5 mL | Source Sample: | PDI-135RAB-10-20-191120 |

| COMPOUND | SPIKE ADDED (ug/kg dry) | MSD CONCENTRATION (ug/kg dry) | Q | MSD % REC. # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Tributyltin Ion | 52.7 | 24.6 | | 45.6 | 3.11 | 30 | 30 - 160 |

* Values outside of QC limits

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011010.D

Date : 10-JAN-2020 14:03

Client ID:

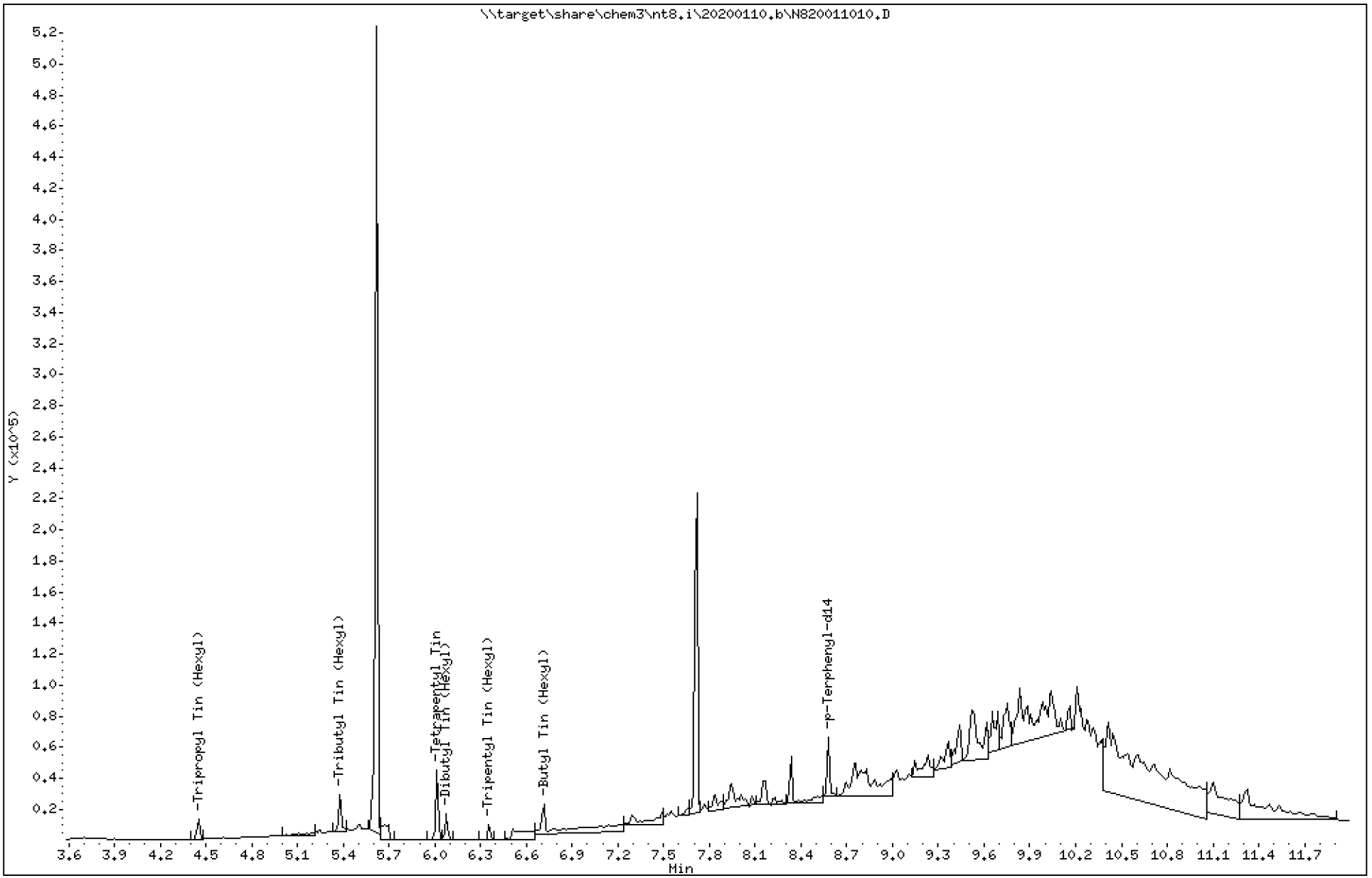
Sample Info: BIA0051-MS1,

Column phase: ZB-5msi

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011010.D

Date : 10-JAN-2020 14:03

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-MS1,

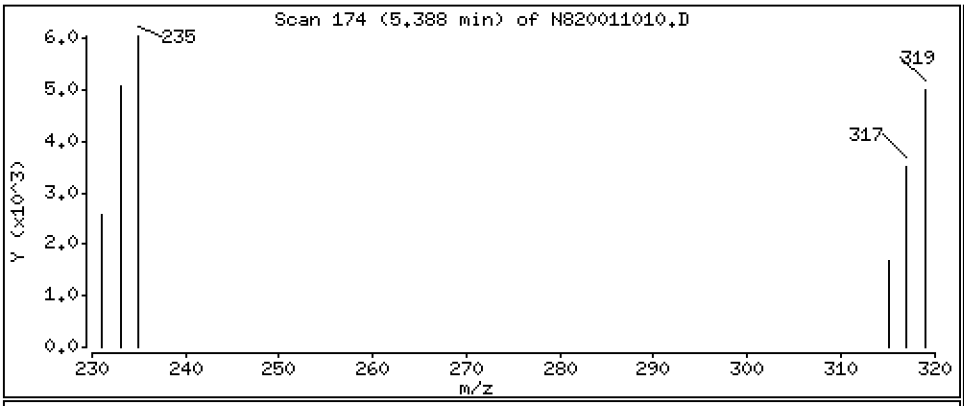
Operator: JZ

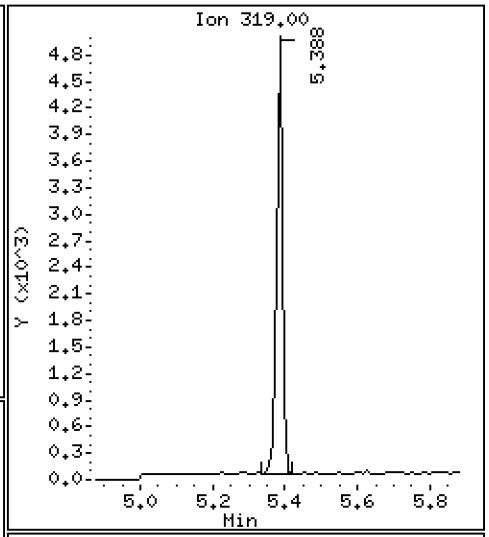
Column phase: ZB-5msi

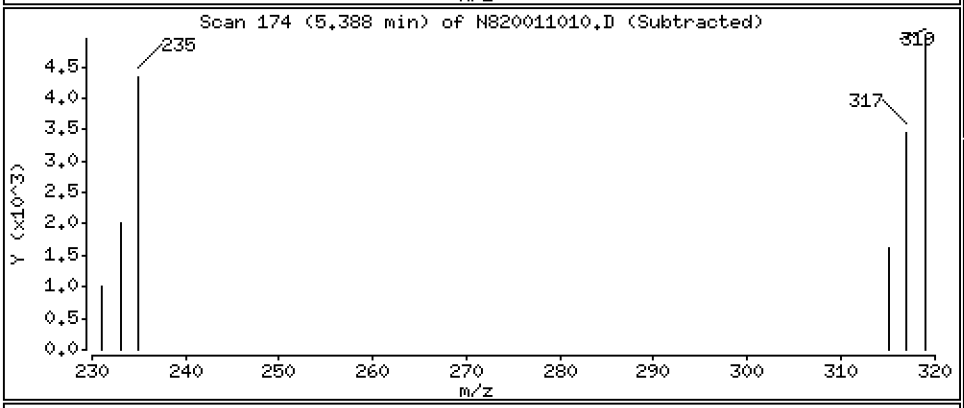
Column diameter: 0.25

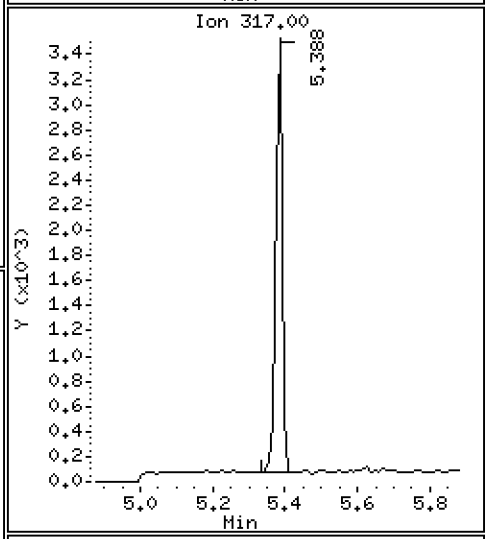
3 Tributyl Tin (Hexyl)

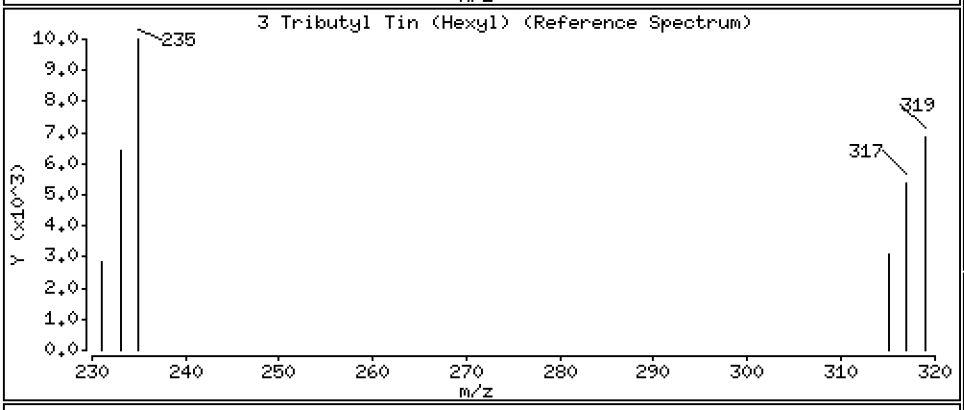
Concentration: 0.2773 ug/mL

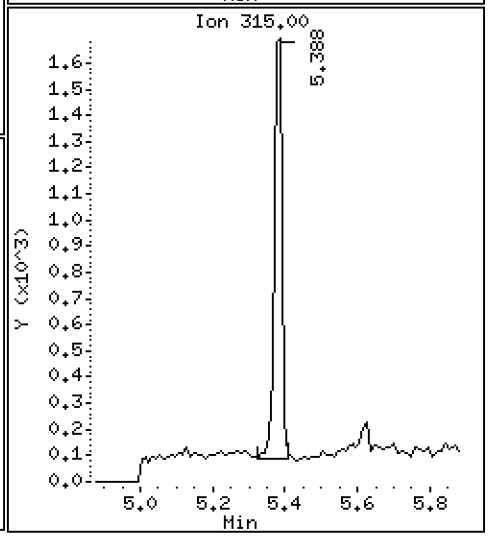


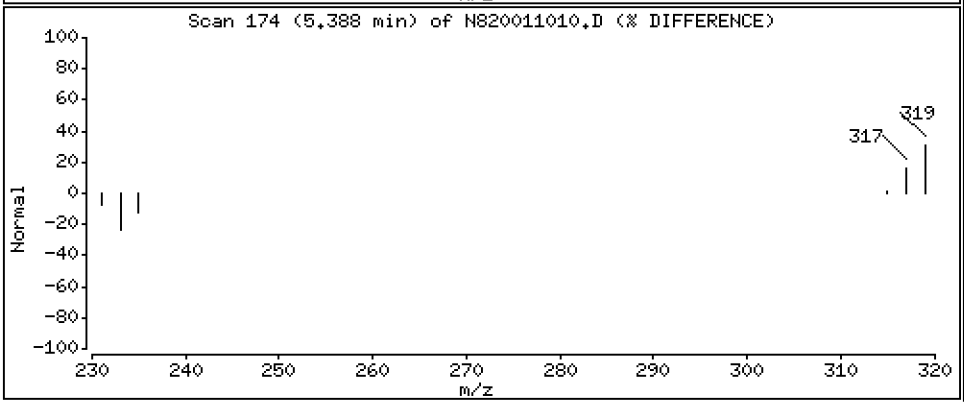



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011010.D

Date : 10-JAN-2020 14:03

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-MS1,

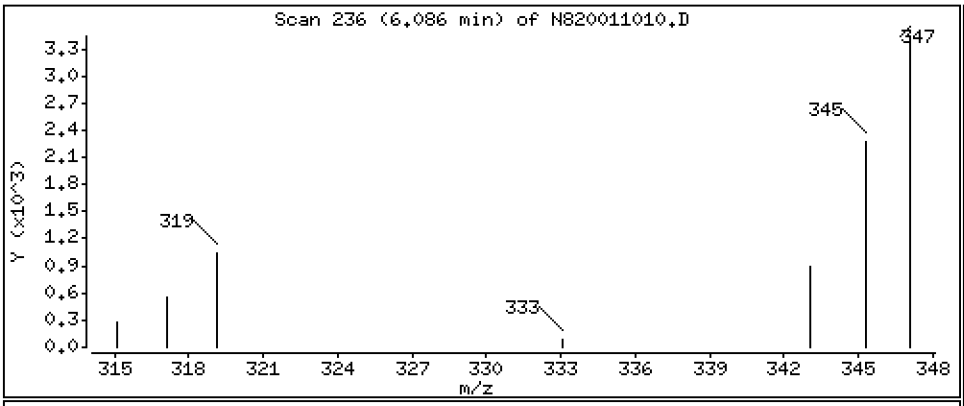
Operator: JZ

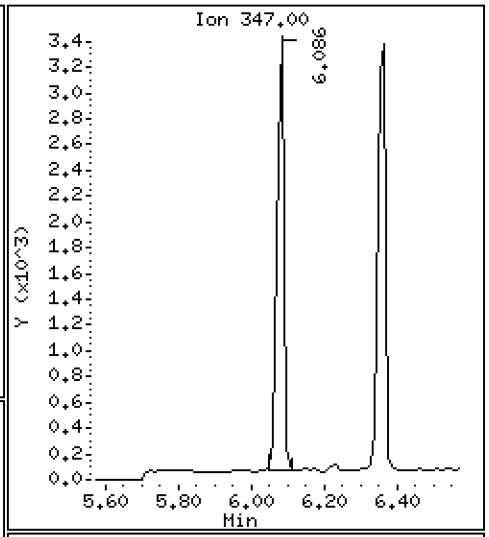
Column phase: ZB-5msi

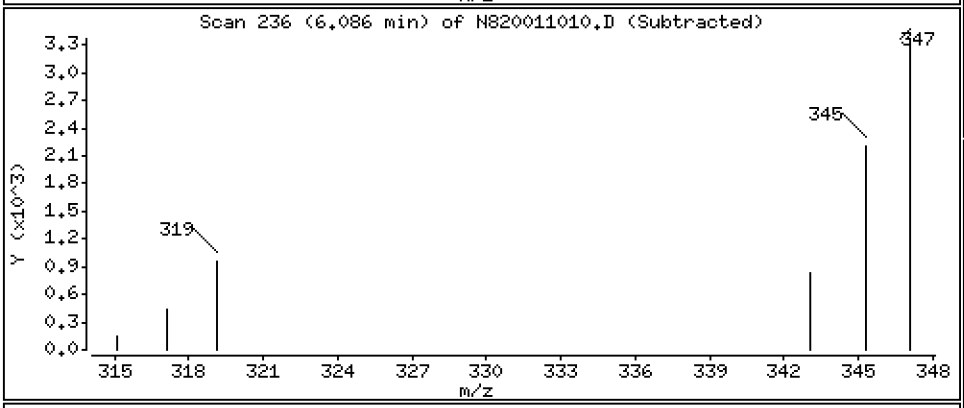
Column diameter: 0.25

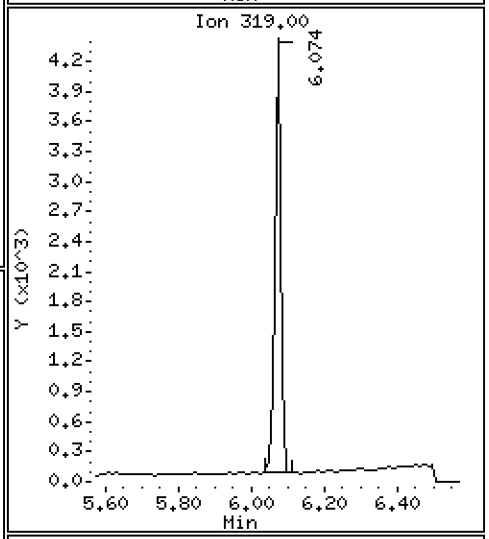
5 Dibutyl Tin (Hexyl)

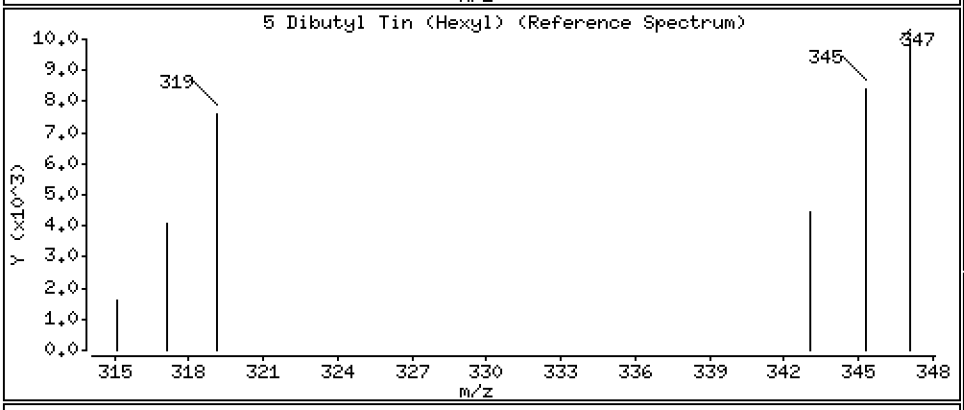
Concentration: 0.3431 ug/mL

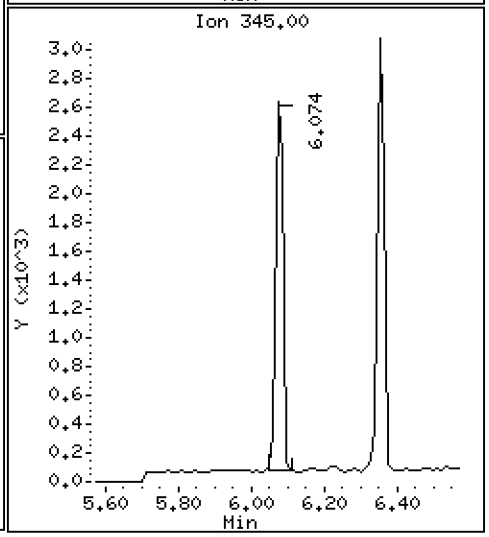


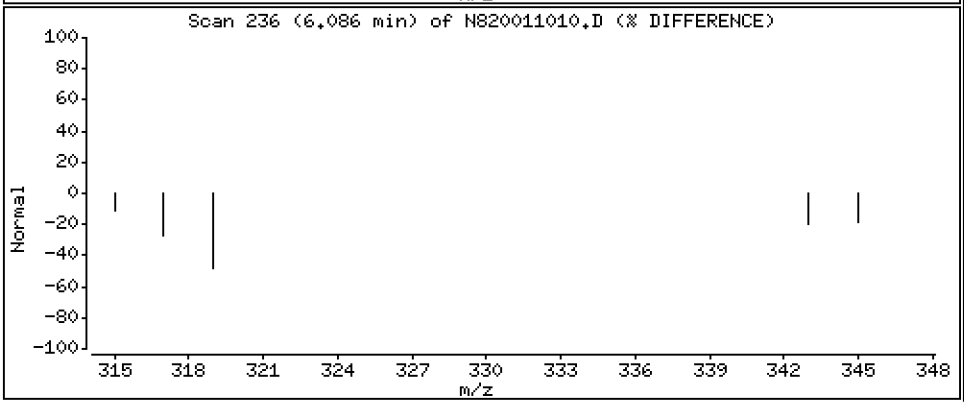



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011010.D

Date : 10-JAN-2020 14:03

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-MS1,

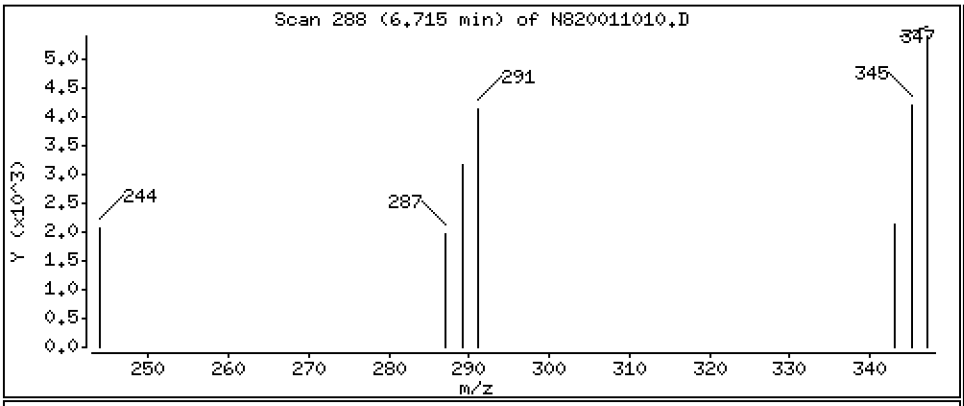
Operator: JZ

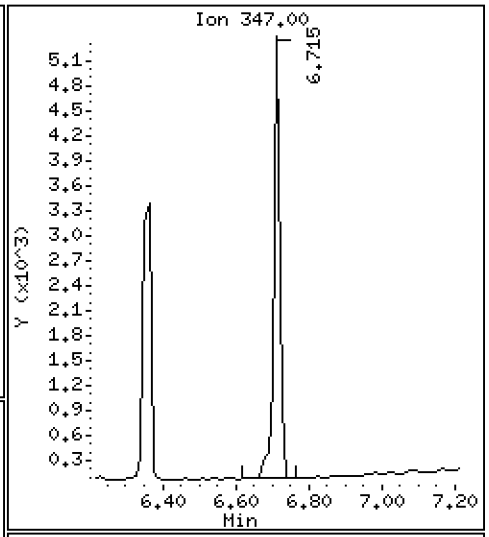
Column phase: ZB-5msi

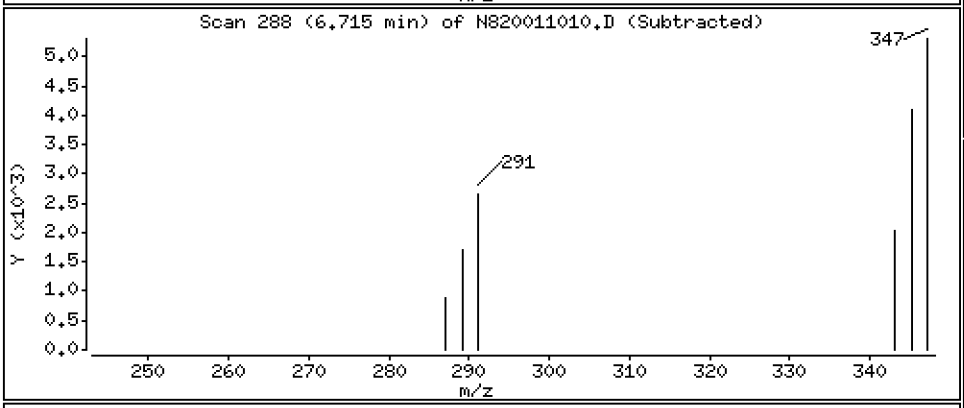
Column diameter: 0.25

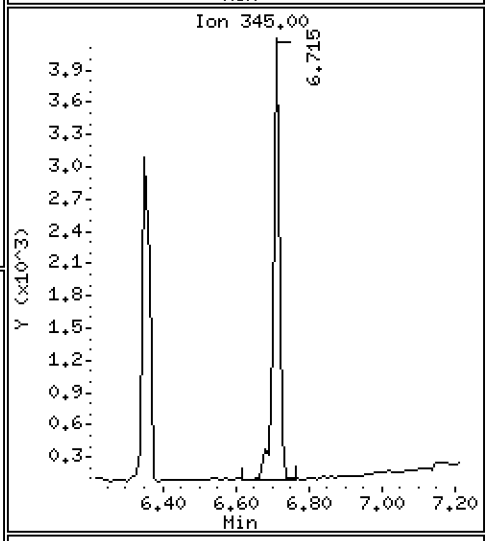
7 Butyl Tin (Hexyl)

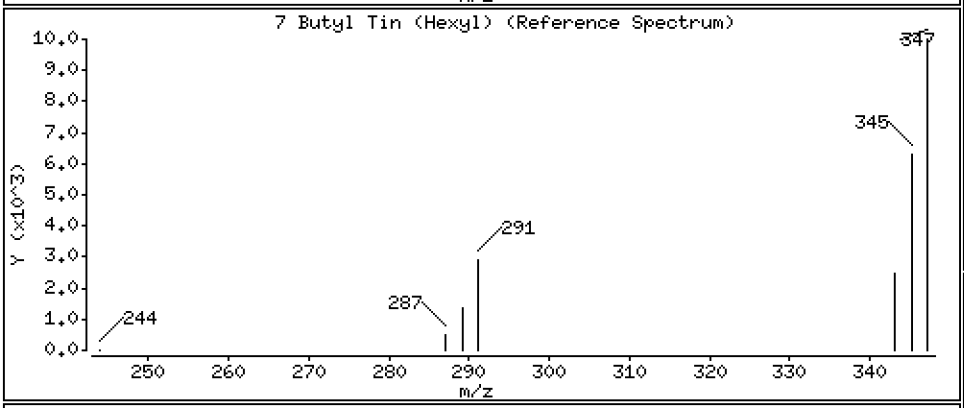
Concentration: 0.2395 ug/mL

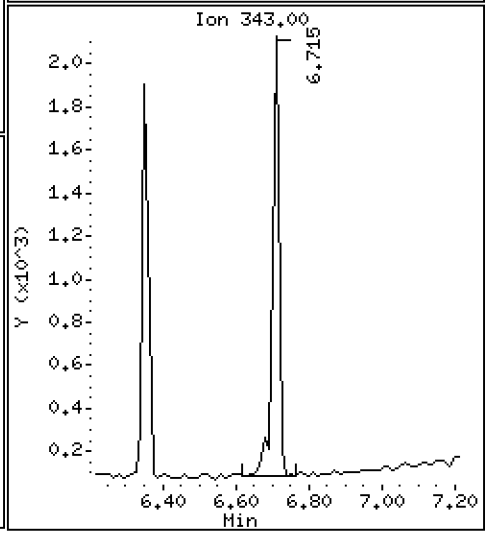


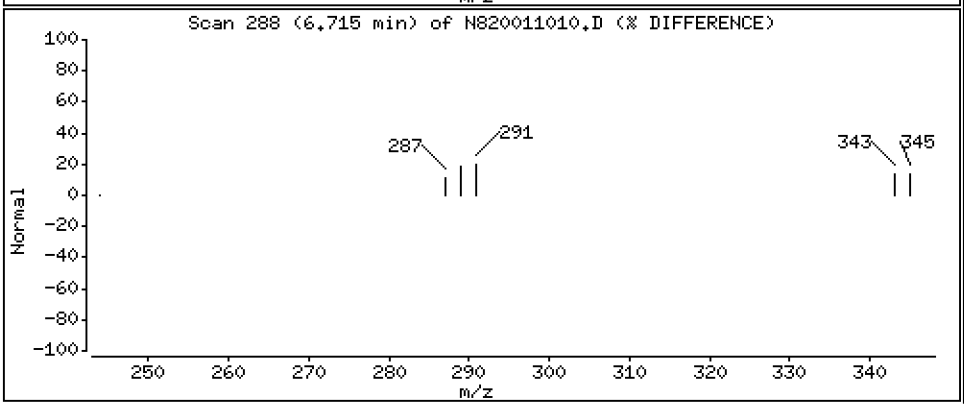



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011010.D
Lab Smp Id: BIA0051-MS1
Inj Date : 10-JAN-2020 14:03
Operator : JZ Inst ID: nt8.i
Smp Info : BIA0051-MS1,
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.450 | 4.419 | (0.740) | 6833 | 0.28401 | 0.2840 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.388 | 5.377 | (0.896) | 5380 | 0.27733 | 0.2773 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 46080 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.085 | 6.073 | (0.709) | 4536 | 0.34310 | 0.3431 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.351 | (0.742) | 4862 | 0.26907 | 0.2691 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 5765 | 0.23947 | 0.2395 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 39376 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011010.D
Lab Smp Id: BIA0051-MS1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 46080 | 6.30 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 39376 | 8.91 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011010.D

Lab ID: BIA0051-MS1
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 14:03

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.740 | 0.735 | 0.0052 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011011.D

Date : 10-JAN-2020 14:19

Client ID:

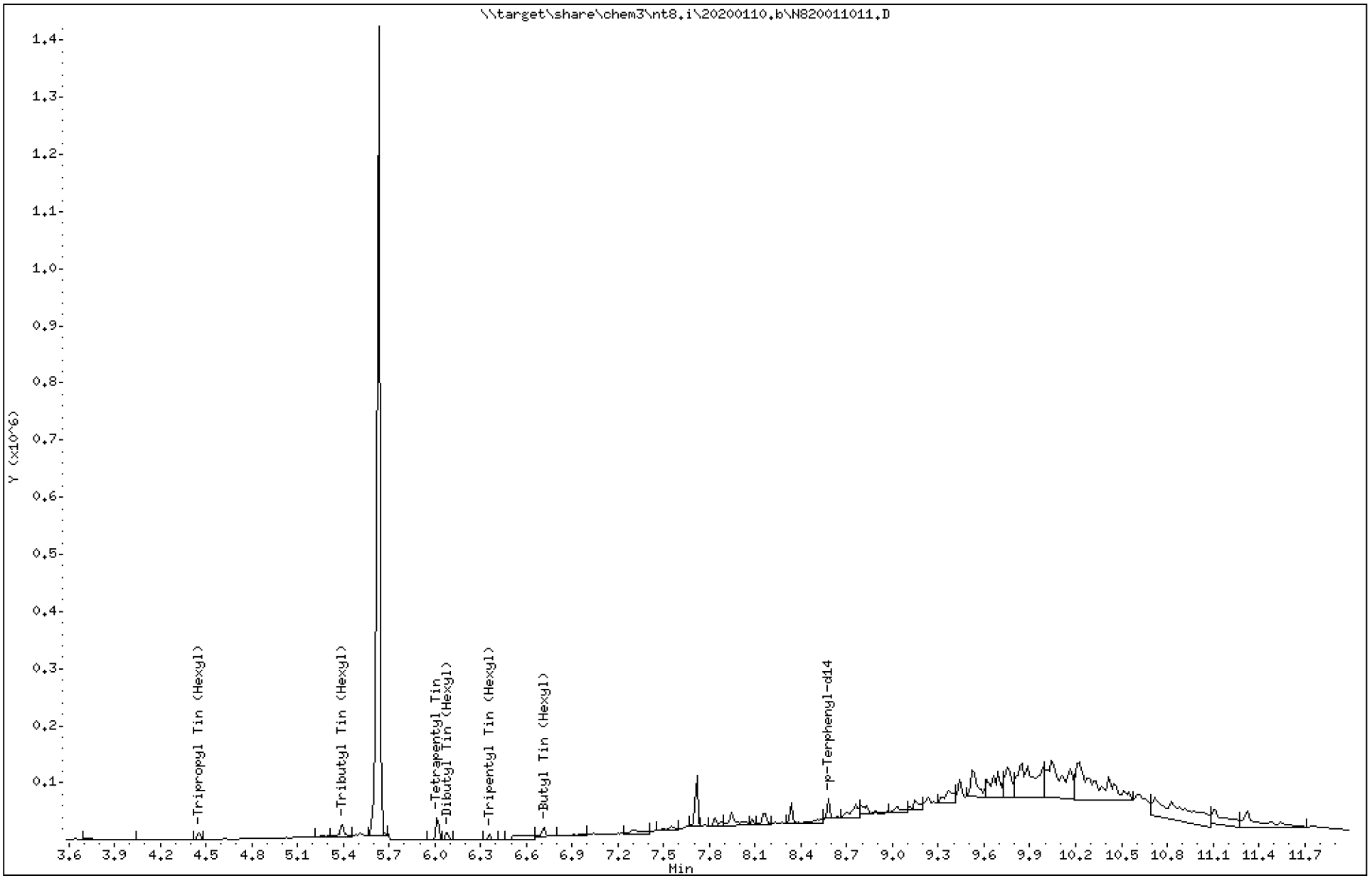
Sample Info: BIA0051-MSD1,

Column phase: ZB-5msi

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011011.D

Date : 10-JAN-2020 14:19

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-MSD1,

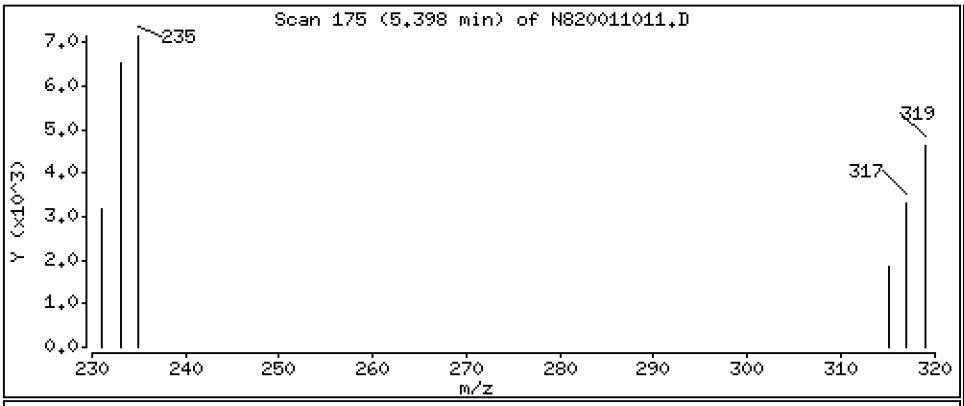
Operator: JZ

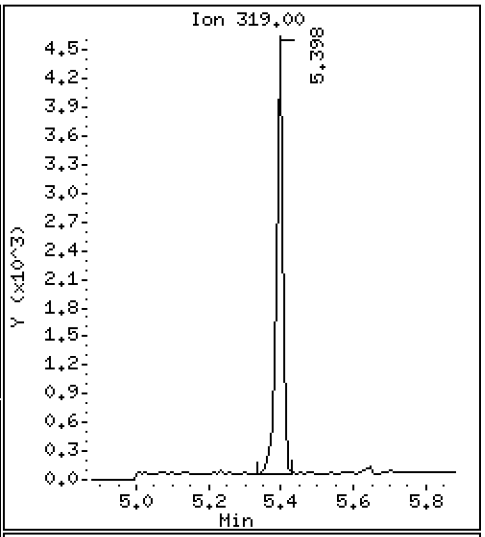
Column phase: ZB-5msi

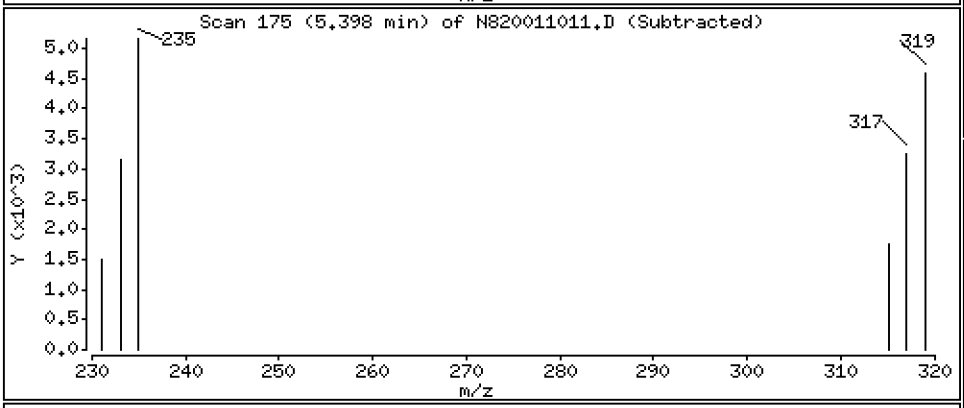
Column diameter: 0.25

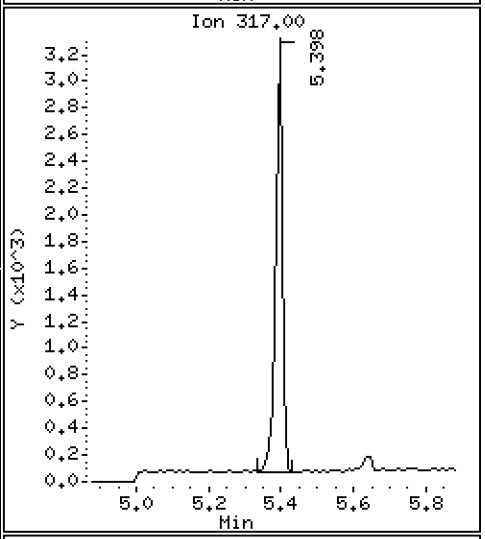
3 Tributyl Tin (Hexyl)

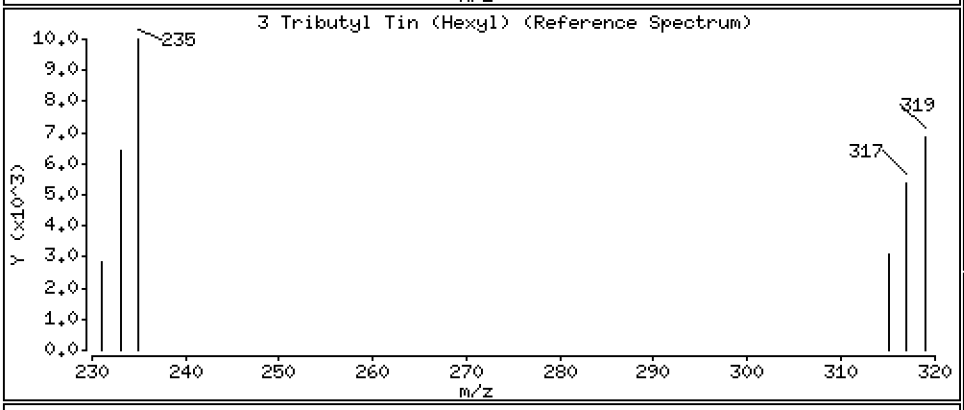
Concentration: 0.2688 ug/mL

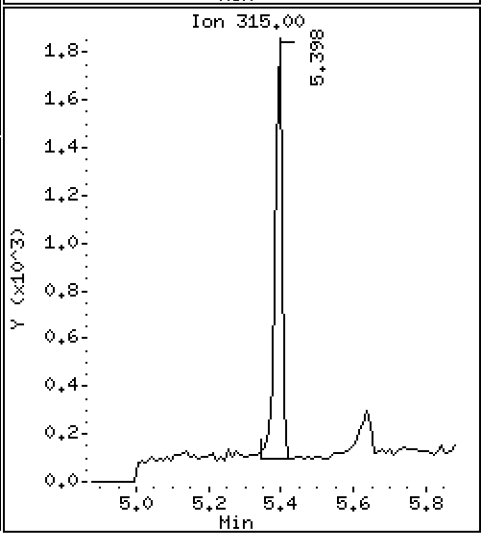


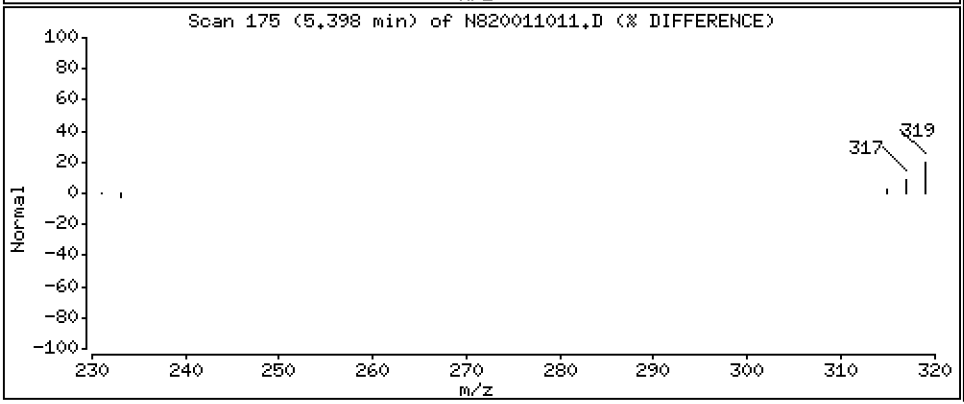



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011011.D

Date : 10-JAN-2020 14:19

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-MSD1,

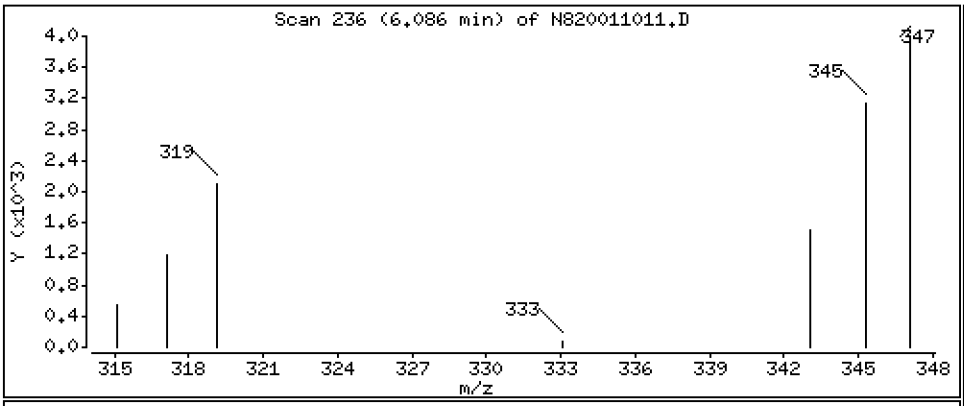
Operator: JZ

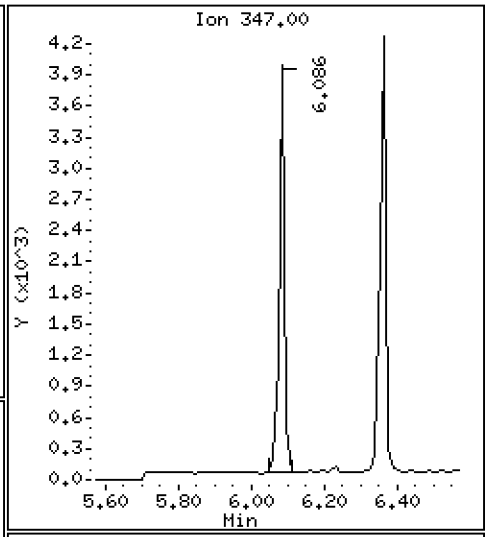
Column phase: ZB-5msi

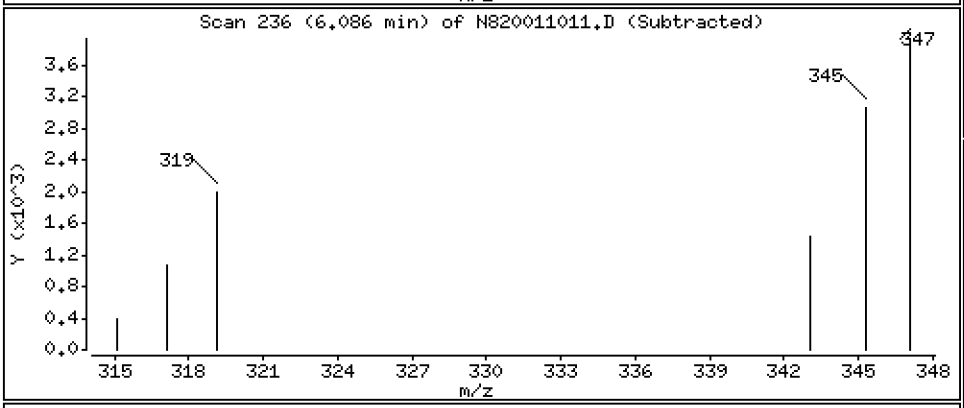
Column diameter: 0.25

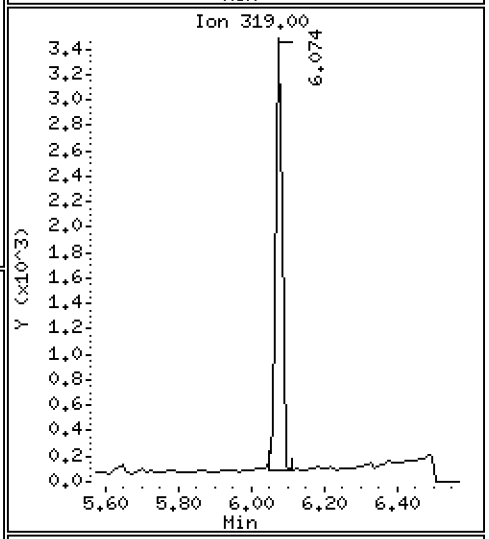
5 Dibutyl Tin (Hexyl)

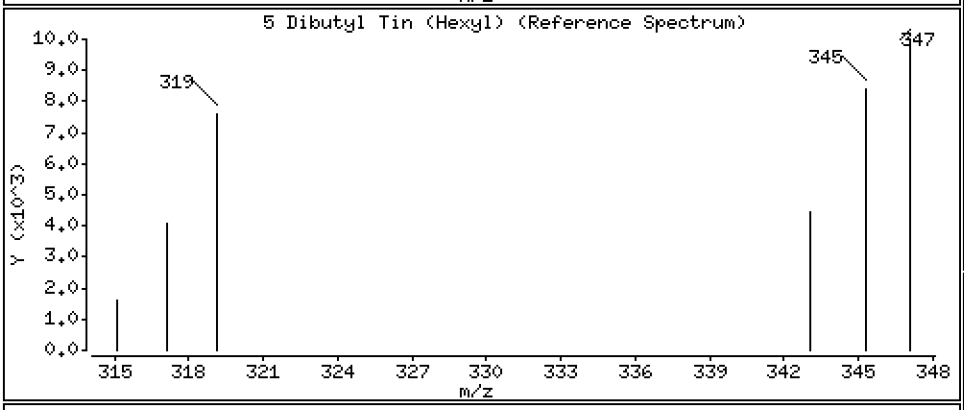
Concentration: 0.2844 ug/mL

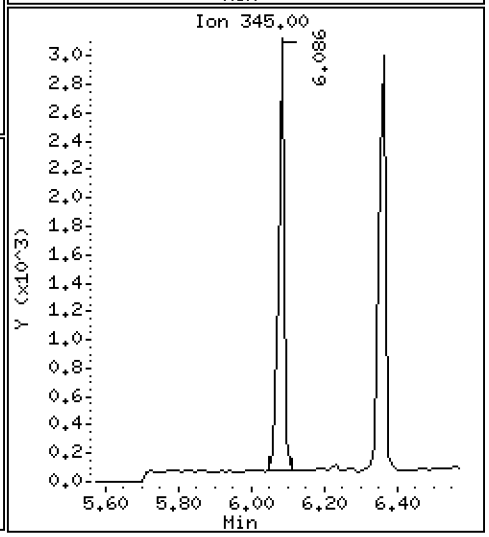


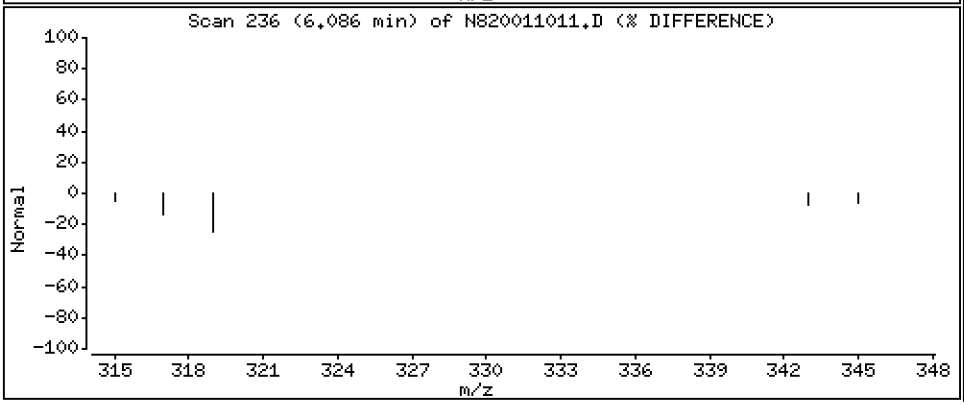



Data File: \\target\share\chem3\nt8.i\20200110.b\N820011011.D

Date : 10-JAN-2020 14:19

Client ID:

Instrument: nt8.i

Sample Info: BIA0051-MSD1,

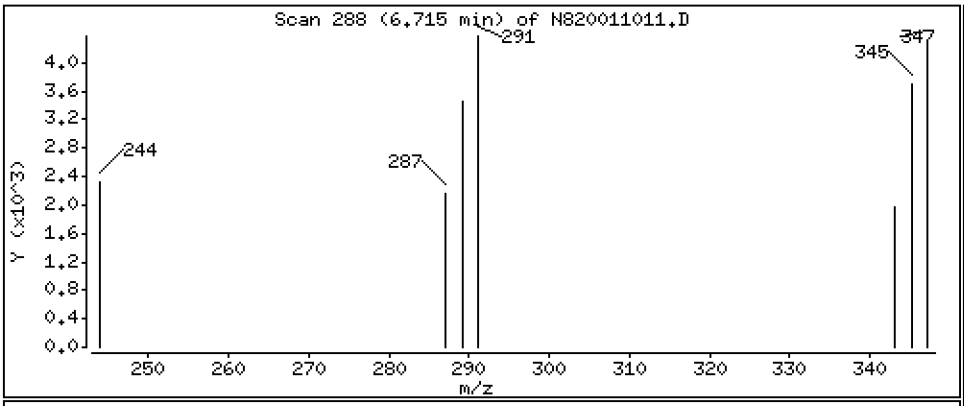
Operator: JZ

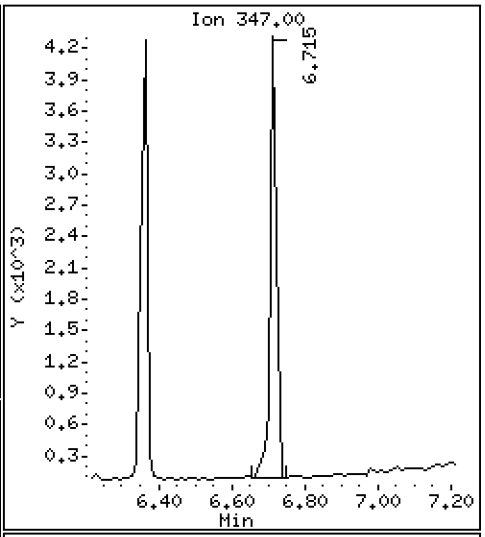
Column phase: ZB-5msi

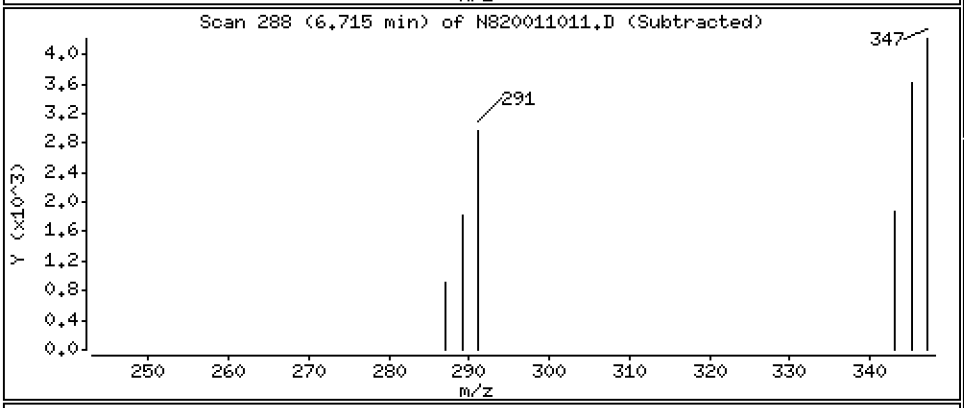
Column diameter: 0.25

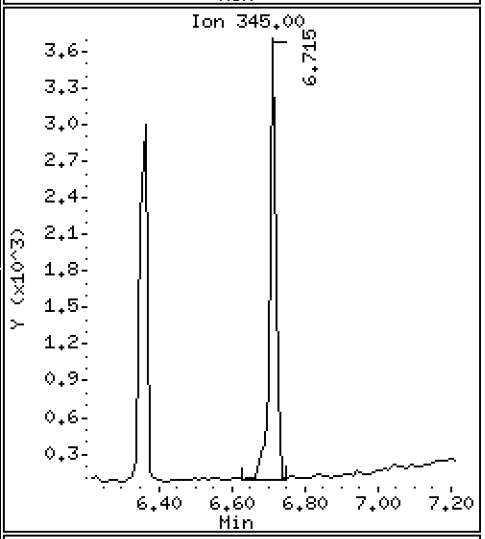
7 Butyl Tin (Hexyl)

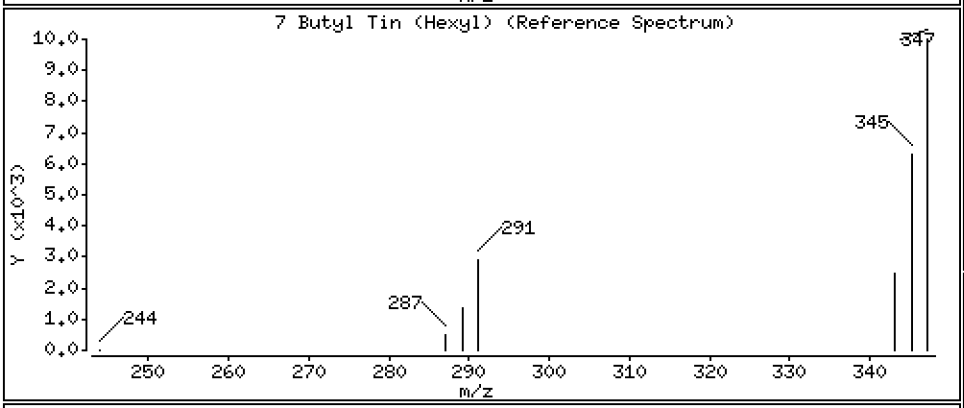
Concentration: 0.1892 ug/mL

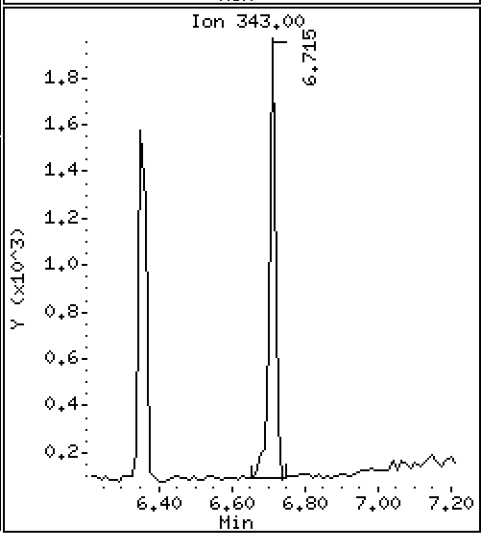


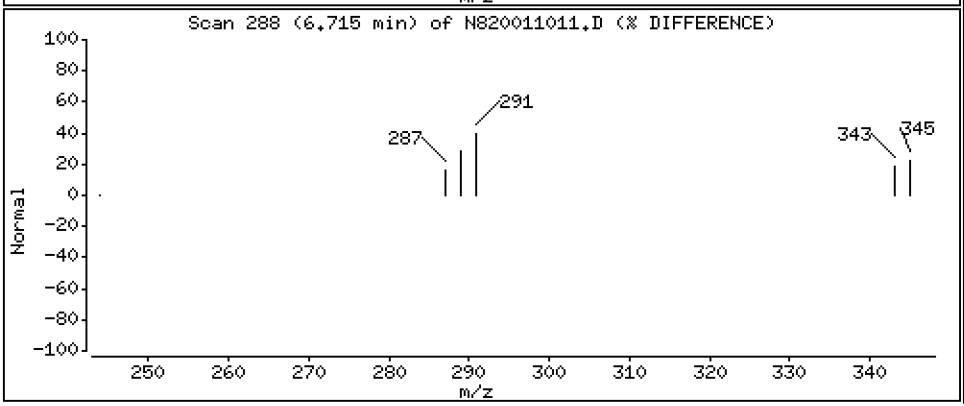



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011011.D
Lab Smp Id: BIA0051-MSD1
Inj Date : 10-JAN-2020 14:19
Operator : JZ Inst ID: nt8.i
Smp Info : BIA0051-MSD1,
Misc Info : 20-
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.461 | 4.419 | (0.742) | 6623 | 0.26744 | 0.2674 |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.398 | 5.377 | (0.898) | 5368 | 0.26883 | 0.2688 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 47430 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.085 | 6.073 | (0.709) | 4016 | 0.28440 | 0.2844 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.351 | (0.742) | 4752 | 0.24594 | 0.2459 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 4868 | 0.18920 | 0.1892 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 42134 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011011.D
Lab Smp Id: BIA0051-MSD1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 47430 | 9.41 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 42134 | 16.53 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011011.D

Lab ID: BIA0051-MSD1
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 14:19

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|
| 0.742 | 0.735 | 0.0069 | Tripropyl Tin (Hexyl) |

RRT check based on Ccal File: N820011002.D

On Column LOD for nt8.i, 20200110.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

Analytical Resources, Incorporated
Analytical Chemists and Consultants

# MASS SPECTROMETER
# INSTRUMENT PERFORMANCE CHECK
## EPA 8270D-SIM

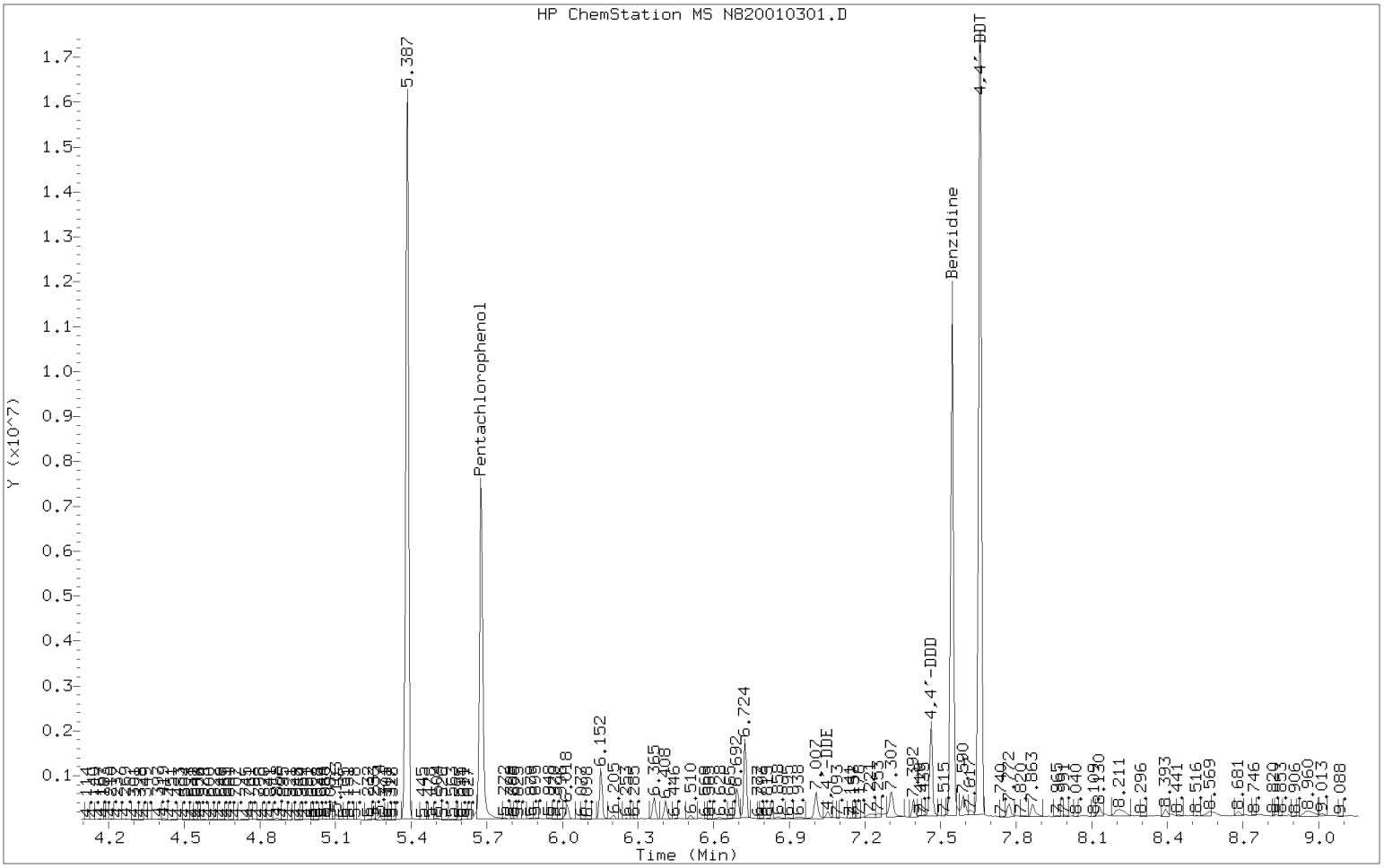
| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Lab File ID: | N820010301.D | Injection Date: | 01/03/20 |
| Instrument ID: | NT8 | Injection Time: | 10:03 |
| Sequence: | SIA0018 | Lab Sample ID: | SIA0018-TUN1 |

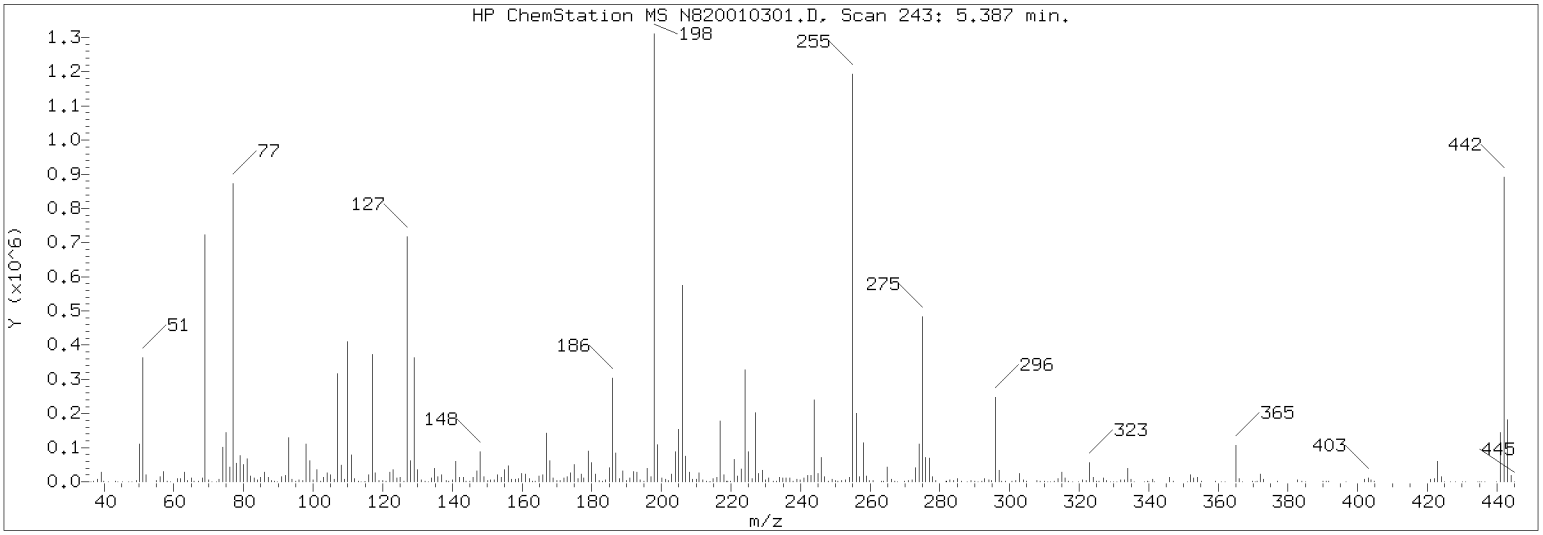
| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 51 | 10 - 80% of 198 | 31.8 | PASS |
| 68 | Less than 2% of 69 | 1.85 | PASS |
| 69 | Less than 100% of 198 | 61 | PASS |
| 70 | Less than 2% of 69 | 0.658 | PASS |
| 127 | 10 - 80% of 198 | 56.1 | PASS |
| 197 | Less than 2% of 198 | 1.27 | PASS |
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 199 | 5 - 9% of 198 | 8.09 | PASS |
| 275 | 10 - 60% of 198 | 34 | PASS |
| 365 | 1 - 100% of 198 | 7.57 | PASS |
| 441 | 0.1 - 24% of 442 | 15.4 | PASS |
| 442 | 50 - 200% of 198 | 58 | PASS |
| 443 | 15 - 24% of 442 | 20.2 | 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 | SIA0018-TUN1 | N820010301.D | 01/03/2020 | 10:03 |
| Cal Standard | SIA0018-CAL4 | N820010302.D | 01/03/2020 | 10:15 |
| Cal Standard | SIA0018-CAL1 | N820010303.D | 01/03/2020 | 10:34 |
| Cal Standard | SIA0018-CAL2 | N820010304.D | 01/03/2020 | 10:50 |
| Cal Standard | SIA0018-CAL3 | N820010305.D | 01/03/2020 | 11:06 |
| Cal Standard | SIA0018-CAL5 | N820010306.D | 01/03/2020 | 11:23 |
| Cal Standard | SIA0018-CAL6 | N820010307.D | 01/03/2020 | 11:39 |
| Secondary Cal Check | SIA0018-SCV1 | N820010308.D | 01/03/2020 | 13:23 |

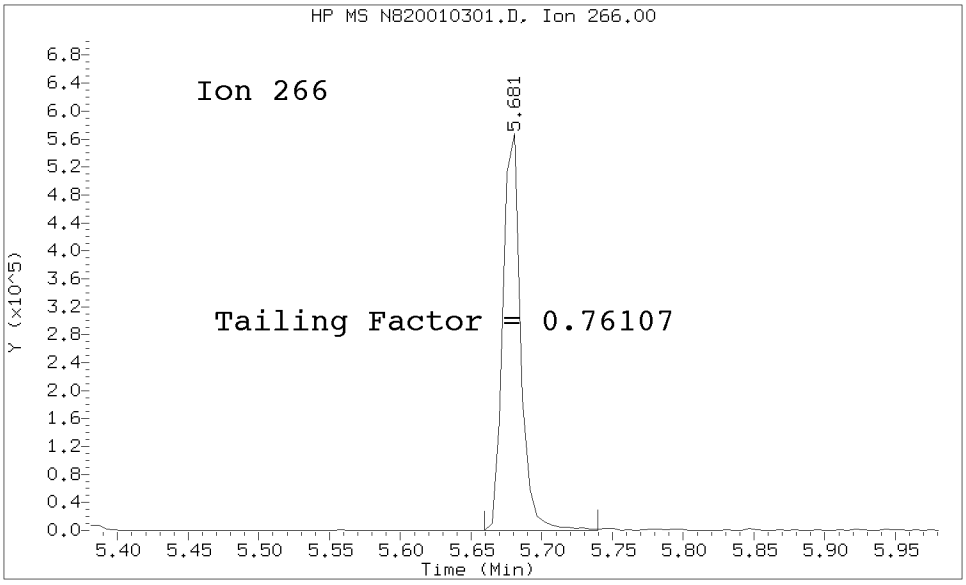
# DFTPP TAILING FACTOR AND BREAKDOWN GRAPHIC REPORT

Datafile Analyzed: /20200103.b/tune.b/N820010301.D/N820010301.D
Method Used: \20200103.b\tune.b\DFTTBT.m  Inst: nt8
Injection Date: 03-JAN-2020 10:03  Operator: JZ
Sample Info: SIA0018-TUN1  DFTPP200103
Report Date: 01/03/2020 11:55



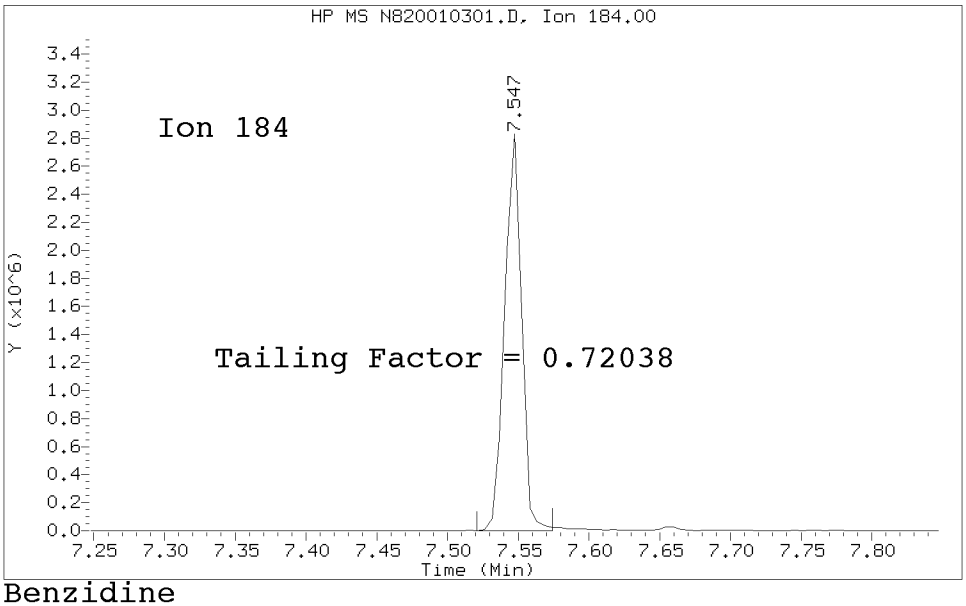



Datafile Analyzed: /20200103.b/tune.b/N820010301.D/N820010301.D
Method Used: \20200103.b\tune.b\DFTTBT.m\sw846ddt.m  Inst: nt8
Injection Date: 03-JAN-2020 10:03  Operator: JZ
Sample Info:  DFTPP200103
Report Date: 01/03/2020 11:55




Pentachlorophenol
==========
Exp. RT = 5.681
Found RT = 5.681

Tail Factor = 0.761  Maximum Allowed = 2.0




Benzidine
==========
Exp. RT = 7.547
Found RT = 7.547

Tail Factor = 0.720  Maximum Allowed = 2.0

# 8270 TAILING FACTOR/BREAKDOWN SUMMARY RESULTS

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 0.7610723 | 2.000 | PASS |
| Benzidine | 0.7203791 | 2.000 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 1708752 | | | N/A |
| 4,4-DDE | 10585 | 0.6 | 20.0 | PASS |
| 4,4-DDD | 215735 | 11.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 226320 | 11.7 | 20.0 | PASS |

Tuning Sample, /nt8.i/20200103.b/tune.b/N820010301.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 | 31.78 |
| 68 | Less than 2.00% of mass 69 | 1.13 ( 1.85) |
| 69 | Mass 69 relative abundance | 61.03 |
| 70 | Less than 2.00% of mass 69 | 0.40 ( 0.66) |
| 127 | 10.00 - 80.00% of mass 198 | 56.14 |
| 197 | Less than 2.00% of mass 198 | 1.27 |
| 199 | 5.00 - 9.00% of mass 198 | 8.09 |
| 275 | 10.00 - 60.00% of mass 198 | 34.01 |
| 365 | Greater than 1.00% of mass 198 | 7.57 |
| 441 | 0.01 - 24.00% of mass 442 | 8.93 ( 15.39) |
| 442 | 50.00 - 200.00% of mass 198 | 57.99 |
| 443 | 15.00 - 24.00% of mass 442 | 11.69 ( 20.16) |

Data File: N820010301.D
Spectrum: Avg. Scans 242-244 ( 5.39), Background Scan 236
Location of Maximum: 198.00
Number of points: 351

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 35.00 | 475 | 127.00 | 534656 | 215.00 | 6832 | 307.00 | 146 |
| 36.00 | 200 | 128.00 | 47104 | 216.00 | 9938 | 308.00 | 2360 |
| 37.00 | 850 | 129.00 | 272768 | 217.00 | 124360 | 309.00 | 1099 |
| 38.00 | 4962 | 130.00 | 28864 | 218.00 | 16600 | 310.00 | 1945 |
| 39.00 | 24888 | 131.00 | 4804 | 219.00 | 2682 | 311.00 | 202 |
| 40.00 | 1724 | 132.00 | 1895 | 220.00 | 1262 | 312.00 | 404 |
| 41.00 | 663 | 133.00 | 1535 | 221.00 | 41976 | 313.00 | 1104 |
| 43.00 | 279 | 134.00 | 9790 | 222.00 | 13682 | 314.00 | 7094 |
| 44.00 | 346 | 135.00 | 25584 | 223.00 | 25352 | 315.00 | 16424 |
| 45.00 | 346 | 136.00 | 11894 | 224.00 | 229632 | 316.00 | 7118 |
| 47.00 | 371 | 137.00 | 12582 | 225.00 | 63016 | 317.00 | 1403 |
| 48.00 | 713 | 138.00 | 2486 | 226.00 | 6126 | 318.00 | 194 |
| 49.00 | 2479 | 139.00 | 1658 | 227.00 | 138240 | 320.00 | 822 |
| 50.00 | 101104 | 140.00 | 4416 | 228.00 | 19344 | 321.00 | 3237 |
| 51.00 | 302656 | 141.00 | 44056 | 229.00 | 24344 | 322.00 | 2367 |
| 52.00 | 17744 | 142.00 | 10811 | 230.00 | 4509 | 323.00 | 37520 |
| 53.00 | 456 | 143.00 | 8317 | 231.00 | 8225 | 324.00 | 8247 |
| 55.00 | 1118 | 144.00 | 2650 | 232.00 | 1257 | 325.00 | 858 |
| 56.00 | 11919 | 145.00 | 1504 | 233.00 | 1603 | 326.00 | 1141 |
| 57.00 | 24496 | 146.00 | 9307 | 234.00 | 9336 | 327.00 | 7356 |
| 58.00 | 1210 | 147.00 | 25880 | 235.00 | 8194 | 328.00 | 3927 |
| 59.00 | 167 | 148.00 | 62152 | 236.00 | 7390 | 329.00 | 509 |
| 60.00 | 105 | 149.00 | 11901 | 237.00 | 7686 | 330.00 | 545 |
| 61.00 | 7031 | 150.00 | 2928 | 238.00 | 1427 | 331.00 | 355 |
| 62.00 | 9100 | 151.00 | 4339 | 239.00 | 5615 | 332.00 | 3712 |
| 63.00 | 23056 | 152.00 | 3799 | 240.00 | 3990 | 333.00 | 3351 |
| 64.00 | 3548 | 153.00 | 13082 | 241.00 | 7269 | 334.00 | 24288 |
| 65.00 | 10012 | 154.00 | 9125 | 242.00 | 12562 | 335.00 | 5992 |
| 66.00 | 962 | 155.00 | 24584 | 243.00 | 12491 | 336.00 | 466 |
| 67.00 | 544 | 156.00 | 31664 | 244.00 | 163712 | 339.00 | 964 |
| 68.00 | 10763 | 157.00 | 4421 | 245.00 | 20240 | 340.00 | 803 |
| 69.00 | 581184 | 158.00 | 7000 | 246.00 | 49008 | 341.00 | 4712 |
| 70.00 | 3826 | 159.00 | 5567 | 247.00 | 9951 | 342.00 | 908 |
| 71.00 | 885 | 160.00 | 14312 | 248.00 | 2550 | 343.00 | 192 |
| 73.00 | 4373 | 161.00 | 16270 | 249.00 | 5186 | 346.00 | 9145 |
| 74.00 | 80120 | 162.00 | 5587 | 250.00 | 1354 | 347.00 | 703 |
| 75.00 | 118536 | 163.00 | 1543 | 251.00 | 1392 | 348.00 | 104 |
| 76.00 | 38576 | 164.00 | 1850 | 252.00 | 2714 | 350.00 | 442 |
| 77.00 | 693632 | 165.00 | 14844 | 253.00 | 4387 | 351.00 | 1005 |
| 78.00 | 47616 | 166.00 | 13452 | 254.00 | 8140 | 352.00 | 11337 |
| 79.00 | 59240 | 167.00 | 106664 | 255.00 | 799296 | 353.00 | 6614 |
| 80.00 | 39504 | 168.00 | 50840 | 256.00 | 137920 | 354.00 | 9058 |
| 81.00 | 53632 | 169.00 | 7732 | 257.00 | 10915 | 355.00 | 2146 |
| 82.00 | 13793 | 170.00 | 3374 | 258.00 | 80656 | 359.00 | 1120 |
| 83.00 | 10520 | 171.00 | 3271 | 259.00 | 10015 | 361.00 | 256 |
| 84.00 | 2259 | 172.00 | 7797 | 260.00 | 2860 | 362.00 | 135 |
| 85.00 | 10518 | 173.00 | 10116 | 261.00 | 1146 | 365.00 | 72096 |
| 86.00 | 17168 | 174.00 | 16512 | 262.00 | 226 | 366.00 | 8651 |
| 87.00 | 8341 | 175.00 | 33824 | 263.00 | 1572 | 367.00 | 540 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 88.00 | 3822 | 176.00 | 6440 | 264.00 | 2171 | 370.00 | 1909 |
| 89.00 | 1322 | 177.00 | 14655 | 265.00 | 30792 | 371.00 | 1848 |
| 90.00 | 124 | 178.00 | 6408 | 266.00 | 5202 | 372.00 | 14108 |
| 91.00 | 12727 | 179.00 | 63624 | 267.00 | 1102 | 373.00 | 4003 |
| 92.00 | 15657 | 180.00 | 41136 | 268.00 | 198 | 383.00 | 4342 |
| 93.00 | 106400 | 181.00 | 17112 | 270.00 | 1265 | 384.00 | 475 |
| 94.00 | 6995 | 182.00 | 3232 | 271.00 | 2221 | 385.00 | 163 |
| 95.00 | 1573 | 183.00 | 1450 | 272.00 | 3427 | 390.00 | 2626 |
| 96.00 | 3407 | 184.00 | 4858 | 273.00 | 29640 | 391.00 | 640 |
| 97.00 | 1354 | 185.00 | 31272 | 274.00 | 74344 | 392.00 | 703 |
| 98.00 | 85224 | 186.00 | 221376 | 275.00 | 323904 | 393.00 | 275 |
| 99.00 | 54328 | 187.00 | 62192 | 276.00 | 46752 | 397.00 | 327 |
| 100.00 | 4280 | 188.00 | 7158 | 277.00 | 46336 | 398.00 | 152 |
| 101.00 | 28504 | 189.00 | 20288 | 278.00 | 9986 | 401.00 | 1289 |
| 102.00 | 1269 | 190.00 | 4051 | 279.00 | 1914 | 402.00 | 5155 |
| 103.00 | 10110 | 191.00 | 7880 | 280.00 | 207 | 403.00 | 5936 |
| 104.00 | 22912 | 192.00 | 20760 | 281.00 | 658 | 404.00 | 3929 |
| 105.00 | 18328 | 193.00 | 21360 | 282.00 | 3026 | 405.00 | 795 |
| 106.00 | 5989 | 194.00 | 3722 | 283.00 | 3851 | 421.00 | 5173 |
| 107.00 | 245568 | 195.00 | 2819 | 284.00 | 2736 | 422.00 | 6215 |
| 108.00 | 34736 | 196.00 | 31024 | 285.00 | 5518 | 423.00 | 32344 |
| 109.00 | 6379 | 197.00 | 12105 | 286.00 | 939 | 424.00 | 8752 |
| 110.00 | 309184 | 198.00 | 952320 | 288.00 | 408 | 425.00 | 381 |
| 111.00 | 59664 | 199.00 | 77024 | 289.00 | 2389 | 426.00 | 316 |
| 112.00 | 6096 | 200.00 | 5825 | 290.00 | 1155 | 428.00 | 295 |
| 113.00 | 2579 | 201.00 | 4627 | 291.00 | 1022 | 430.00 | 1171 |
| 114.00 | 354 | 202.00 | 1017 | 292.00 | 1159 | 431.00 | 362 |
| 115.00 | 1634 | 203.00 | 16456 | 293.00 | 8667 | 432.00 | 397 |
| 116.00 | 15991 | 204.00 | 64144 | 294.00 | 3250 | 433.00 | 83 |
| 117.00 | 284928 | 205.00 | 109432 | 295.00 | 2814 | 434.00 | 358 |
| 118.00 | 18736 | 206.00 | 398784 | 296.00 | 162816 | 435.00 | 89 |
| 119.00 | 2875 | 207.00 | 48952 | 297.00 | 20880 | 436.00 | 651 |
| 120.00 | 3430 | 208.00 | 19768 | 298.00 | 2220 | 440.00 | 142 |
| 121.00 | 1943 | 209.00 | 6346 | 299.00 | 471 | 441.00 | 85008 |
| 122.00 | 19128 | 210.00 | 7549 | 301.00 | 1445 | 442.00 | 552256 |
| 123.00 | 26344 | 211.00 | 18696 | 302.00 | 2568 | 443.00 | 111312 |
| 124.00 | 9886 | 212.00 | 1884 | 303.00 | 14333 | 444.00 | 11685 |
| 125.00 | 10332 | 213.00 | 976 | 304.00 | 3651 | 445.00 | 209 |
| 126.00 | 1258 | 214.00 | 534 | 305.00 | 954 | | |

Analytical Resources, Incorporated
Analytical Chemists and Consultants

# MASS SPECTROMETER
# INSTRUMENT PERFORMANCE CHECK
## EPA 8270D-SIM

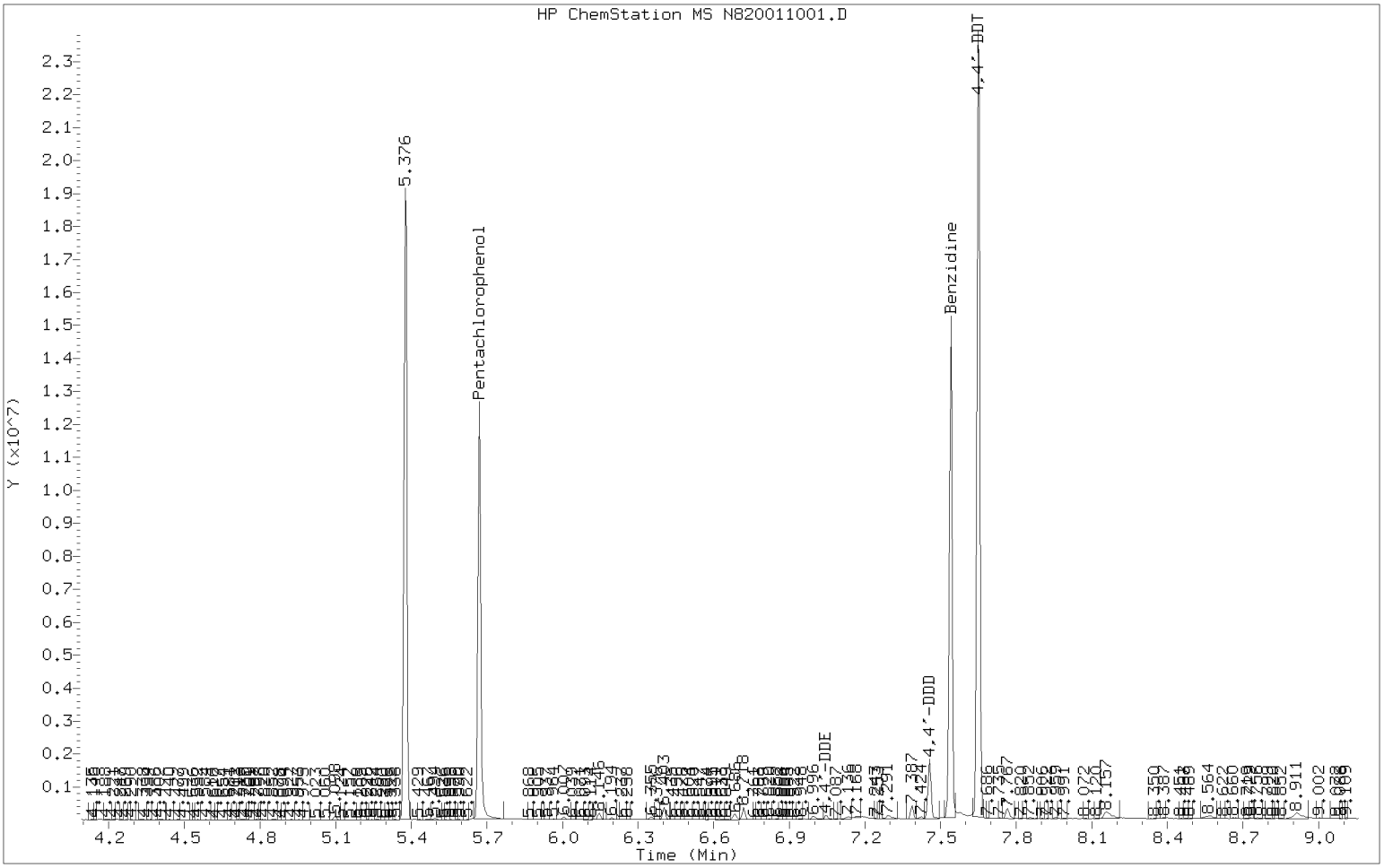
| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Lab File ID: | N820011001.D | Injection Date: | 01/10/20 |
| Instrument ID: | NT8 | Injection Time: | 10:32 |
| Sequence: | SIA0124 | Lab Sample ID: | SIA0124-TUN1 |

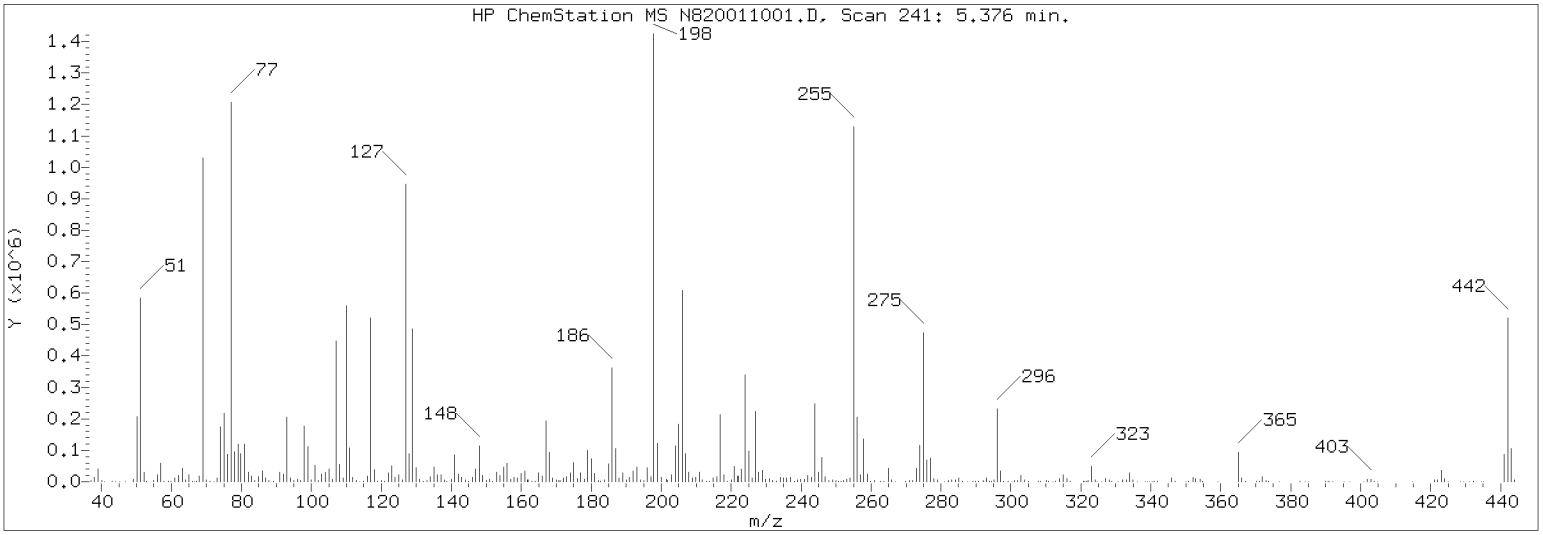
| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 51 | 10 - 80% of 198 | 39.1 | PASS |
| 68 | Less than 2% of 69 | 1.69 | PASS |
| 69 | Less than 100% of 198 | 71.3 | PASS |
| 70 | Less than 2% of 69 | 0.633 | PASS |
| 127 | 10 - 80% of 198 | 63.3 | PASS |
| 197 | Less than 2% of 198 | 1.11 | PASS |
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 199 | 5 - 9% of 198 | 8.65 | PASS |
| 275 | 10 - 60% of 198 | 34.7 | PASS |
| 365 | 1 - 100% of 198 | 7.57 | PASS |
| 441 | 0.1 - 24% of 442 | 16 | PASS |
| 442 | 50 - 200% of 198 | 52.8 | PASS |
| 443 | 15 - 24% of 442 | 21.7 | 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 | SIA0124-TUN1 | N820011001.D | 01/10/2020 | 10:32 |
| Initial Cal Check | SIA0124-ICV1 | N820011002.D | 01/10/2020 | 11:25 |
| Blank | BIA0051-BLK1 | N820011003.D | 01/10/2020 | 11:58 |
| LCS | BIA0051-BS1 | N820011004.D | 01/10/2020 | 12:15 |
| PDI-134RAB-00-10-19112( | 19K0396-01 | N820011005.D | 01/10/2020 | 12:41 |
| PDI-135RAB-00-10-19112( | 19K0396-04 | N820011008.D | 01/10/2020 | 13:30 |
| PDI-135RAB-10-20-19112( | 19K0396-05 | N820011009.D | 01/10/2020 | 13:47 |
| Matrix Spike | BIA0051-MS1 | N820011010.D | 01/10/2020 | 14:03 |
| Matrix Spike Dup | BIA0051-MSD1 | N820011011.D | 01/10/2020 | 14:19 |
| PDI-136RAB-00-10-191119 | 19K0396-07 | N820011013.D | 01/10/2020 | 14:52 |
| DI-136RAB-10-13.4-19111 | 19K0396-08 | N820011014.D | 01/10/2020 | 15:08 |
| PDI-137RAB-00-10-191119 | 19K0396-09 | N820011015.D | 01/10/2020 | 15:24 |
| DI-137RAB-10-17.7-19111 | 19K0396-10 | N820011016.D | 01/10/2020 | 15:41 |
| DI-134RAB-20-25.5-19112 | 19K0396-03 | N820011018.D | 01/10/2020 | 16:13 |
| DI-135RAB-20-26.2-19112 | 19K0396-06 | N820011019.D | 01/10/2020 | 16:30 |
| PDI-134RAB-10-20-19112( | 19K0396-02 | N820011020.D | 01/10/2020 | 16:46 |

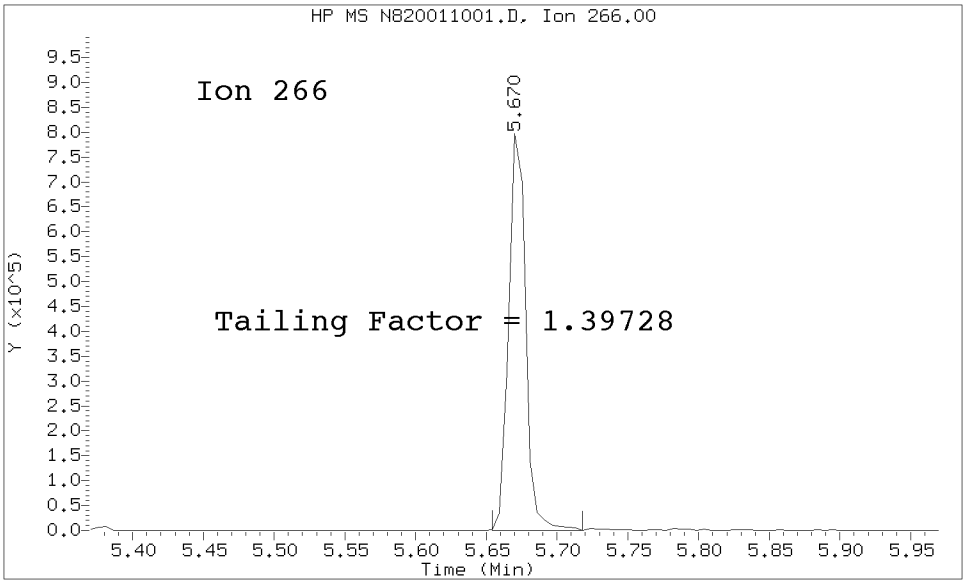
# DFTPP TAILING FACTOR AND BREAKDOWN GRAPHIC REPORT

Datafile Analyzed: /20200110.b/tune.b/N820011001.D/N820011001.D
Method Used: \20200110.b\tune.b\DFTTBT.m  Inst: nt8
Injection Date: 10-JAN-2020 10:32  Operator: JZ
Sample Info: SIA0124-TUN1  DFTPP200110
Report Date: 01/10/2020 12:15



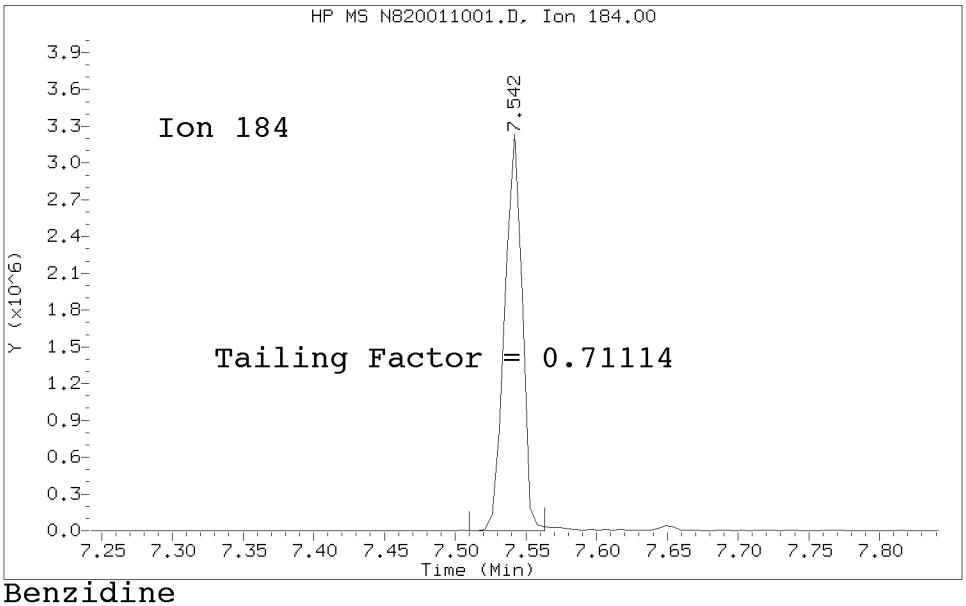



Datafile Analyzed: /20200110.b/tune.b/N820011001.D/N820011001.D
Method Used: \20200110.b\tune.b\DFTTBT.m\sw846ddt.m  Inst: nt8
Injection Date: 10-JAN-2020 10:32  Operator: JZ
Sample Info:  DFTPP200110
Report Date: 01/10/2020 12:15




Pentachlorophenol
==========
Exp. RT = 5.681
Found RT = 5.670

Tail Factor = 1.397  Maximum Allowed = 2.0




Benzidine
==========
Exp. RT = 7.547
Found RT = 7.542

Tail Factor = 0.711  Maximum Allowed = 2.0

# 8270 TAILING FACTOR/BREAKDOWN SUMMARY RESULTS

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 1.3972835 | 2.000 | PASS |
| Benzidine | 0.7111369 | 2.000 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 2102619 | | | N/A |
| 4,4-DDE | 9539 | 0.5 | 20.0 | PASS |
| 4,4-DDD | 163234 | 7.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 172773 | 7.6 | 20.0 | PASS |

Tuning Sample, /nt8.i/20200110.b/tune.b/N820011001.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 | 39.13 |
| 68 | Less than 2.00% of mass 69 | 1.21 ( 1.69) |
| 69 | Mass 69 relative abundance | 71.34 |
| 70 | Less than 2.00% of mass 69 | 0.45 ( 0.63) |
| 127 | 10.00 - 80.00% of mass 198 | 63.26 |
| 197 | Less than 2.00% of mass 198 | 1.11 |
| 199 | 5.00 - 9.00% of mass 198 | 8.65 |
| 275 | 10.00 - 60.00% of mass 198 | 34.67 |
| 365 | Greater than 1.00% of mass 198 | 7.57 |
| 441 | 0.01 - 24.00% of mass 442 | 8.44 ( 15.98) |
| 442 | 50.00 - 200.00% of mass 198 | 52.84 |
| 443 | 15.00 - 24.00% of mass 442 | 11.48 ( 21.73) |

Data File: N820011001.D
Spectrum: Avg. Scans 240-242 ( 5.38), Background Scan 236
Location of Maximum: 198.00
Number of points: 355

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 37.00 | 2014 | 131.00 | 6576 | 220.00 | 4462 | 311.00 | 484 |
| 38.00 | 8530 | 132.00 | 2470 | 221.00 | 43256 | 312.00 | 213 |
| 39.00 | 31056 | 133.00 | 1582 | 222.00 | 24064 | 313.00 | 1617 |
| 40.00 | 1990 | 134.00 | 12372 | 223.00 | 32032 | 314.00 | 8366 |
| 41.00 | 178 | 135.00 | 31704 | 224.00 | 284736 | 315.00 | 19848 |
| 43.00 | 666 | 136.00 | 14977 | 225.00 | 78288 | 316.00 | 9442 |
| 44.00 | 518 | 137.00 | 16632 | 226.00 | 8238 | 317.00 | 2309 |
| 45.00 | 467 | 138.00 | 4610 | 227.00 | 185920 | 321.00 | 5534 |
| 48.00 | 170 | 139.00 | 1777 | 228.00 | 26360 | 322.00 | 3372 |
| 49.00 | 6602 | 140.00 | 6485 | 229.00 | 28832 | 323.00 | 41712 |
| 50.00 | 148608 | 141.00 | 64976 | 230.00 | 3373 | 324.00 | 6060 |
| 51.00 | 435968 | 142.00 | 16576 | 231.00 | 8396 | 325.00 | 662 |
| 52.00 | 21264 | 143.00 | 11745 | 232.00 | 2774 | 326.00 | 1621 |
| 53.00 | 1535 | 144.00 | 3709 | 233.00 | 1530 | 327.00 | 9976 |
| 55.00 | 3046 | 145.00 | 2673 | 234.00 | 12486 | 328.00 | 5112 |
| 56.00 | 15466 | 146.00 | 11593 | 235.00 | 9773 | 329.00 | 1084 |
| 57.00 | 35000 | 147.00 | 28304 | 236.00 | 9752 | 330.00 | 441 |
| 58.00 | 959 | 148.00 | 85856 | 237.00 | 11364 | 332.00 | 4521 |
| 59.00 | 923 | 149.00 | 16664 | 238.00 | 2119 | 333.00 | 4358 |
| 60.00 | 608 | 150.00 | 4018 | 239.00 | 7336 | 334.00 | 27408 |
| 61.00 | 8946 | 151.00 | 7115 | 240.00 | 4540 | 335.00 | 6040 |
| 62.00 | 15619 | 152.00 | 1899 | 241.00 | 6695 | 336.00 | 625 |
| 63.00 | 30888 | 153.00 | 21544 | 242.00 | 17720 | 337.00 | 141 |
| 64.00 | 4057 | 154.00 | 11993 | 243.00 | 14440 | 338.00 | 160 |
| 65.00 | 13804 | 155.00 | 32800 | 244.00 | 196672 | 339.00 | 488 |
| 66.00 | 856 | 156.00 | 42656 | 245.00 | 28072 | 340.00 | 644 |
| 67.00 | 1703 | 157.00 | 5688 | 246.00 | 61120 | 341.00 | 4038 |
| 68.00 | 13465 | 158.00 | 11741 | 247.00 | 13043 | 342.00 | 1823 |
| 69.00 | 794816 | 159.00 | 8061 | 248.00 | 3492 | 345.00 | 302 |
| 70.00 | 5028 | 160.00 | 15467 | 249.00 | 7082 | 346.00 | 11223 |
| 71.00 | 709 | 161.00 | 24440 | 250.00 | 2098 | 347.00 | 2134 |
| 72.00 | 306 | 162.00 | 8101 | 251.00 | 3170 | 348.00 | 183 |
| 73.00 | 8253 | 163.00 | 2004 | 252.00 | 4084 | 350.00 | 545 |
| 74.00 | 127968 | 164.00 | 1643 | 253.00 | 6204 | 351.00 | 1522 |
| 75.00 | 166272 | 165.00 | 20016 | 254.00 | 8225 | 352.00 | 14770 |
| 76.00 | 61784 | 166.00 | 14478 | 255.00 | 940160 | 353.00 | 10095 |
| 77.00 | 935424 | 167.00 | 149184 | 256.00 | 170496 | 354.00 | 11203 |
| 78.00 | 74408 | 168.00 | 71880 | 257.00 | 13953 | 355.00 | 2043 |
| 79.00 | 83224 | 169.00 | 8729 | 258.00 | 102344 | 358.00 | 301 |
| 80.00 | 63424 | 170.00 | 3934 | 259.00 | 16568 | 359.00 | 673 |
| 81.00 | 83616 | 171.00 | 5803 | 260.00 | 1817 | 361.00 | 114 |
| 82.00 | 21424 | 172.00 | 11033 | 261.00 | 2130 | 363.00 | 105 |
| 83.00 | 14652 | 173.00 | 11350 | 262.00 | 397 | 365.00 | 84320 |
| 84.00 | 349 | 174.00 | 22440 | 263.00 | 1171 | 366.00 | 12071 |
| 85.00 | 12020 | 175.00 | 45952 | 264.00 | 1847 | 367.00 | 1370 |
| 86.00 | 25728 | 176.00 | 8223 | 265.00 | 38064 | 369.00 | 473 |
| 87.00 | 9903 | 177.00 | 19816 | 266.00 | 5402 | 370.00 | 747 |
| 88.00 | 3950 | 178.00 | 8619 | 267.00 | 365 | 371.00 | 3357 |
| 89.00 | 1656 | 179.00 | 86168 | 268.00 | 568 | 372.00 | 17056 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 91.00 | 20096 | 180.00 | 56776 | 270.00 | 1460 | 373.00 | 3551 |
| 92.00 | 17864 | 181.00 | 21560 | 271.00 | 3847 | 374.00 | 483 |
| 93.00 | 151424 | 182.00 | 3664 | 272.00 | 4721 | 375.00 | 195 |
| 94.00 | 8808 | 183.00 | 1055 | 273.00 | 36160 | 377.00 | 353 |
| 95.00 | 2703 | 184.00 | 6896 | 274.00 | 94368 | 383.00 | 5379 |
| 96.00 | 5788 | 185.00 | 41536 | 275.00 | 386240 | 384.00 | 1226 |
| 97.00 | 2134 | 186.00 | 284544 | 276.00 | 57464 | 385.00 | 746 |
| 98.00 | 132544 | 187.00 | 82504 | 277.00 | 65064 | 390.00 | 3400 |
| 99.00 | 82024 | 188.00 | 9128 | 278.00 | 9118 | 391.00 | 1226 |
| 100.00 | 5814 | 189.00 | 22696 | 279.00 | 2648 | 392.00 | 1003 |
| 101.00 | 38472 | 190.00 | 3475 | 280.00 | 364 | 395.00 | 275 |
| 102.00 | 2267 | 191.00 | 9439 | 281.00 | 731 | 397.00 | 462 |
| 103.00 | 14168 | 192.00 | 25408 | 282.00 | 1530 | 401.00 | 957 |
| 104.00 | 25192 | 193.00 | 32200 | 283.00 | 7108 | 402.00 | 7204 |
| 105.00 | 28880 | 194.00 | 5552 | 284.00 | 3906 | 403.00 | 6976 |
| 106.00 | 8356 | 195.00 | 1902 | 285.00 | 10256 | 404.00 | 3537 |
| 107.00 | 325248 | 196.00 | 37968 | 286.00 | 1575 | 405.00 | 1056 |
| 108.00 | 45400 | 197.00 | 12334 | 287.00 | 396 | 415.00 | 448 |
| 109.00 | 8685 | 198.00 | 1114112 | 288.00 | 971 | 421.00 | 6077 |
| 110.00 | 406272 | 199.00 | 96368 | 289.00 | 2655 | 422.00 | 5617 |
| 111.00 | 81920 | 200.00 | 10028 | 290.00 | 1343 | 423.00 | 37840 |
| 112.00 | 11738 | 201.00 | 6757 | 291.00 | 1520 | 424.00 | 9204 |
| 113.00 | 2799 | 202.00 | 3568 | 292.00 | 2983 | 425.00 | 1006 |
| 114.00 | 696 | 203.00 | 16190 | 293.00 | 9314 | 426.00 | 88 |
| 115.00 | 1135 | 204.00 | 82400 | 294.00 | 2087 | 427.00 | 272 |
| 116.00 | 15572 | 205.00 | 137536 | 295.00 | 3518 | 428.00 | 342 |
| 117.00 | 400576 | 206.00 | 483840 | 296.00 | 199872 | 429.00 | 565 |
| 118.00 | 28008 | 207.00 | 68240 | 297.00 | 28848 | 430.00 | 230 |
| 119.00 | 2047 | 208.00 | 23640 | 298.00 | 2531 | 431.00 | 957 |
| 120.00 | 3705 | 209.00 | 8256 | 299.00 | 700 | 432.00 | 591 |
| 121.00 | 1349 | 210.00 | 9871 | 300.00 | 455 | 433.00 | 563 |
| 122.00 | 20264 | 211.00 | 23400 | 301.00 | 2639 | 434.00 | 451 |
| 123.00 | 33208 | 212.00 | 2947 | 302.00 | 3664 | 435.00 | 289 |
| 124.00 | 13528 | 213.00 | 1691 | 303.00 | 19648 | 437.00 | 104 |
| 125.00 | 14136 | 214.00 | 1357 | 304.00 | 4272 | 441.00 | 94048 |
| 126.00 | 4418 | 215.00 | 7698 | 305.00 | 1142 | 442.00 | 588672 |
| 127.00 | 704832 | 216.00 | 13492 | 307.00 | 284 | 443.00 | 127920 |
| 128.00 | 61608 | 217.00 | 165632 | 308.00 | 3495 | 444.00 | 9557 |
| 129.00 | 355712 | 218.00 | 19896 | 309.00 | 415 | 445.00 | 158 |
| 130.00 | 33064 | 219.00 | 2285 | 310.00 | 2404 | | |

# INITIAL CALIBRATION DATA

## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Calibration: | DA00008 | Instrument: | NT8 |
| Calibration Date: | 01/03/2020 | Column (1): | RXI-17Sil ms |

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RRF | | **RRF** | | **RRF** | | **RRF** | | **RRF** | | **RRF** |
| Tributyltin Ion | 0.03865 | 1.283962 | 0.1546 | 0.8177456 | 0.3865 | 0.9300383 | 0.773 | 0.7758708 | 1.546 | 0.8403752 | 3.092 | 0.8446295 |
| Tripentyltin | 0.07959 | 0.1487247 | 0.31836 | 8.760048E-02 | 0.7959 | 0.101864 | 1.5918 | 9.675295E-02 | 3.1836 | 0.104324 | 6.3672 | 0.1436724 |
| Tripropyltin | 0.037215 | 1.640932 | 0.14886 | 1.082091 | 0.37215 | 1.239587 | 0.7443 | 1.054717 | 1.4886 | 1.082334 | 2.9772 | 1.029643 |

# INITIAL CALIBRATION DATA

## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Calibration: | DA00008 | Instrument: | NT8 |
| Calibration Date: | 01/03/2020 | Column (1): | RXI-17Sil ms |

| COMPOUND | Mean RRF | RRF RSD | Linear COD | Quad COD | Limit Type & Limit | Q |
|---|---|---|---|---|---|---|
| Tributyltin Ion | 0.9154369 | 20.5 | 0.9991 | | LCOD (0.99) | |
| Tripentyltin | 0.1138231 | 22.6 | | 0.9997 | QCOD (0.99) | |
| Tripropyltin | 1.188217 | 19.7 | 0.9984 | | LCOD (0.99) | |

Printed: 1/3/2020 2:19:48PM

# ANALYSIS SEQUENCE

**SIA0018**

Instrument: NT8 Element Column ID: H004092
Calibration ID: DA00008 Tune File: 191025.U
EM Voltage: 2118

| Lab Number | Sample Name | Analysis | Container | Order | STD ID | ISTD ID | Comments |
|---|---|---|---|---|---|---|---|
| SIA0018-TUN1 | MS Tune | QC | | 1 | H010226 | | |
| SIA0018-CAL1 | TBT Cal 1 | QC | | 2 | I000064 | H004622 | |
| SIA0018-CAL2 | TBT Cal 2 | QC | | 3 | I000065 | H004622 | |
| SIA0018-CAL3 | TBT Cal 3 | QC | | 4 | I000066 | H004622 | |
| SIA0018-CAL4 | TBT Cal 4 | QC | | 5 | I000067 | H004622 | |
| SIA0018-CAL5 | TBT Cal 5 | QC | | 6 | I000068 | H004622 | |
| SIA0018-CAL6 | TBT Cal 6 | QC | | 7 | I000069 | H004622 | |
| SIA0018-SCV1 | Secondary Cal Check | QC | | 8 | I000096 | H004622 | |

# INTERNAL STANDARD SUMMARY FOR DATABATCH - \\target\share\chem3\nt8.i\20200103.b

| | Time | Filename | LabID | ClientId | DF | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1003 | N820010301.D | SIA0018-TUN1 | | 1 | NO ISTDS FOUND | | | |
| 2 | 1015 | N820010302.D | SIA0018-CAL4 | | 1 | 6.01 | 43350 | 8.58 | 36156 |
| 3 | 1034 | N820010303.D | SIA0018-CAL1 | | 1 | 6.01 | 35297 | 8.59 | 30580 |
| 4 | 1050 | N820010304.D | SIA0018-CAL2 | | 1 | 6.01 | 34803 | 8.58 | 31227 |
| 5 | 1106 | N820010305.D | SIA0018-CAL3 | | 1 | 6.01 | 34476 | 8.58 | 29989 |
| 6 | 1123 | N820010306.D | SIA0018-CAL5 | | 1 | 6.01 | 36874 | 8.58 | 29614 |
| 7 | 1139 | N820010307.D | SIA0018-CAL6 | | 1 | 6.01 | 39335 | 8.58 | 29071 |
| 8 | 1323 | N820010308.D | SIA0018-SCV1 | | 1 | 6.01 | 30619 | 8.59 | 26292 |

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem3\nt8.i\20200103.b

ARI Job No.: SIA0  Method: TBT200103.m  Instrument: nt8.i  Date: 03-JAN-2020

| Time | Filename | LabID | ClientId | DF | Manually Integrated Compounds |
|---|---|---|---|---|---|
| 1015 | N820010302.D | SIA0018-CAL4 | | 1 | NO MANUAL INTEGRATION |
| 1034 | N820010303.D | SIA0018-CAL1 | | 1 | NO MANUAL INTEGRATION |
| 1050 | N820010304.D | SIA0018-CAL2 | | 1 | NO MANUAL INTEGRATION |
| 1106 | N820010305.D | SIA0018-CAL3 | | 1 | NO MANUAL INTEGRATION |
| 1123 | N820010306.D | SIA0018-CAL5 | | 1 | NO MANUAL INTEGRATION |
| 1139 | N820010307.D | SIA0018-CAL6 | | 1 | NO MANUAL INTEGRATION |
| 1323 | N820010308.D | SIA0018-SCV1 | | 1 | NO MANUAL INTEGRATION |

Security Status Report

Date: 03-Jan-2020 14:30

| | | |
|---|---|---|
| N820010301.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010302.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010303.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010304.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010305.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010306.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010307.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010308.D | Data Locked | jianqing, 03-Jan-2020 14:30 |

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 03-JAN-2020 10:15
End Cal Date : 03-JAN-2020 11:39
Quant Method : ISTD
Origin : Force
Target Version : 4.14
Integrator : HP RTE
Method file : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Last Edit : 03-Jan-2020 11:54 jianqing

Calibration File Names:
Level 1: \\target\share\chem3\nt8.i\20200103.b\N820010303.D
Level 2: \\target\share\chem3\nt8.i\20200103.b\N820010304.D
Level 3: \\target\share\chem3\nt8.i\20200103.b\N820010305.D
Level 4: \\target\share\chem3\nt8.i\20200103.b\N820010302.D
Level 5: \\target\share\chem3\nt8.i\20200103.b\N820010306.D
Level 6: \\target\share\chem3\nt8.i\20200103.b\N820010307.D

| Compound | 0.0500000 Level 1 | 0.2000000 Level 2 | 0.5000000 Level 3 | 1.0000 Level 4 | 2.0000 Level 5 | 4.0000 Level 6 | Curve | Coefficients b | m1 | m2 | %RSD or R^2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 Tetrabutyl Tin | 1441 | 3743 | 10247 | 20920 | 37818 | 80017 | LINR | 0.000e+000 | 1.01900 | | 0.99903 |
| 3 Tributyl Tin (Hexyl) | 1133 | 2846 | 8016 | 16817 | 30988 | 66447 | LINR | 0.000e+000 | 0.84199 | | 0.99913 |
| 5 Dibutyl Tin (Hexyl) | 1688 | 4011 | 11406 | 23463 | 46540 | 132032 | QUAD | 0.000e+000 | 15.05023 | -1.37544 | 0.99902 |
| 7 Butyl Tin (Hexyl) | 2641 | 6138 | 18706 | 40061 | 83888 | 187091 | QUAD | 0.000e+000 | 8.22423 | -0.31483 | 0.99802 |
| $ 1 Tripropyl Tin (Hexyl) | 1448 | 3766 | 10684 | 22861 | 39910 | 81002 | LINR | 0.000e+000 | 1.04425 | | 0.99839 |
| $ 6 Tripentyl Tin (Hexyl) | 2274 | 5471 | 15274 | 34982 | 61789 | 167068 | QUAD | 0.000e+000 | 10.98194 | -0.69935 | 0.99980 |

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 03-JAN-2020 10:15
End Cal Date : 03-JAN-2020 11:39
Quant Method : ISTD
Origin : Force
Target Version : 4.14
Integrator : HP RTE
Method file : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Last Edit : 03-Jan-2020 11:54 jianqing

| Curve | Formula | Units |
|---|---|---|
| Linear | Amt = b + Rsp/m1 | Response |
| Quad | Amt = b + m1*Rsp + m2*Rsp^2 | Response |

# ARI Labs, Inc.
## RETENTION TIME SUMMARY REPORT

Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Batch File: \\target\share\chem3\nt8.i\20200103.b
Inst ID: nt8.i

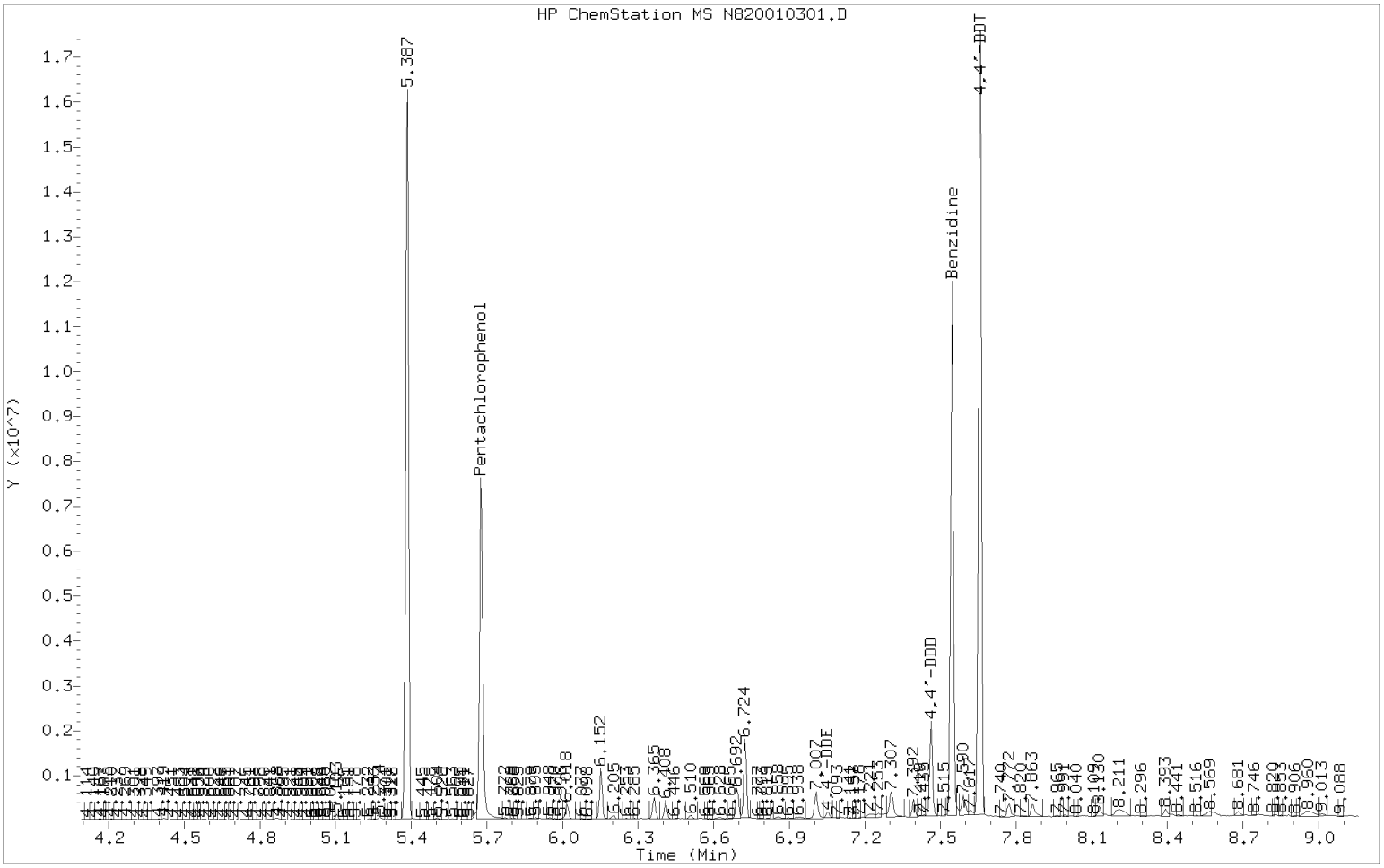
| ID: | RT01 | RT02 | RT03 | RT04 | RT05 | RT06 |
|---|---|---|---|---|---|---|
| FILENAME: | N820010302 | N820010303 | N820010304 | N820010305 | N820010306 | N820010307 |
| INJ.DATE: | 03-JAN-2020 | 03-JAN-2020 | 03-JAN-2020 | 03-JAN-2020 | 03-JAN-2020 | 03-JAN-2020 |
| INJ.TIME: | 10:15 | 10:34 | 10:50 | 11:06 | 11:23 | 11:39 |

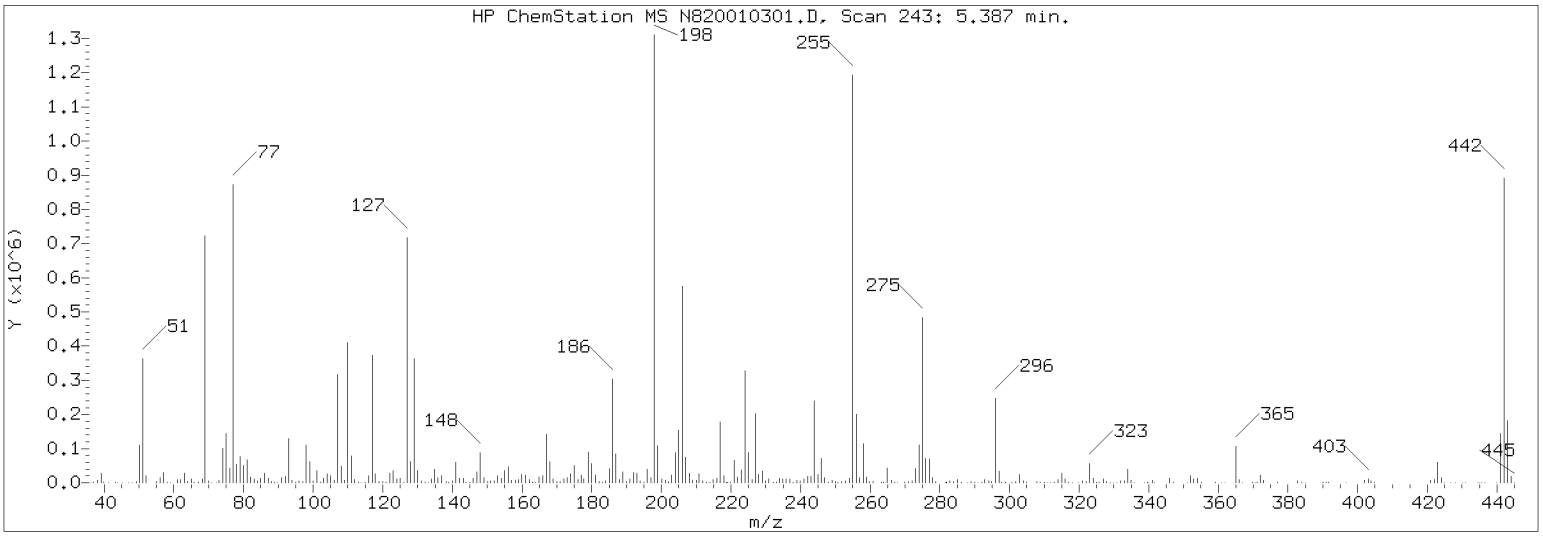
| Compound | RT01 | RT02 | RT03 | RT04 | RT05 | RT06 | EXPEC RT | RT WINDOW | AVG RT | STD DEV |
|---|---|---|---|---|---|---|---|---|---|---|
| $ 1 Tripropyl Tin (Hexyl) | 4.420 | 4.430 | 4.420 | 4.419 | 4.420 | 4.419 | 4.420 | 4.332-4.508 | 4.421 | 0.004 |
| 2 Tetrabutyl Tin | 4.597 | 4.607 | 4.597 | 4.596 | 4.597 | 4.596 | 4.597 | 4.505-4.689 | 4.598 | 0.004 |
| 3 Tributyl Tin (Hexyl) | 5.378 | 5.378 | 5.378 | 5.378 | 5.378 | 5.378 | 5.378 | 5.270-5.486 | 5.378 | 0.000 |
| * 4 Tetrapentyl Tin | 6.013 | 6.013 | 6.013 | 6.013 | 6.013 | 6.013 | 6.013 | 5.893-6.133 | 6.013 | 0.000 |
| 5 Dibutyl Tin (Hexyl) | 6.074 | 6.086 | 6.074 | 6.074 | 6.074 | 6.086 | 6.074 | 5.953-6.195 | 6.078 | 0.006 |
| $ 6 Tripentyl Tin (Hexyl) | 6.352 | 6.364 | 6.352 | 6.352 | 6.352 | 6.364 | 6.352 | 6.225-6.479 | 6.356 | 0.006 |
| 7 Butyl Tin (Hexyl) | 6.715 | 6.715 | 6.715 | 6.714 | 6.714 | 6.714 | 6.715 | 6.581-6.849 | 6.714 | 0.000 |
| * 8 p-Terphenyl-d14 | 8.578 | 8.590 | 8.578 | 8.578 | 8.578 | 8.578 | 8.578 | 8.406-8.750 | 8.580 | 0.005 |

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

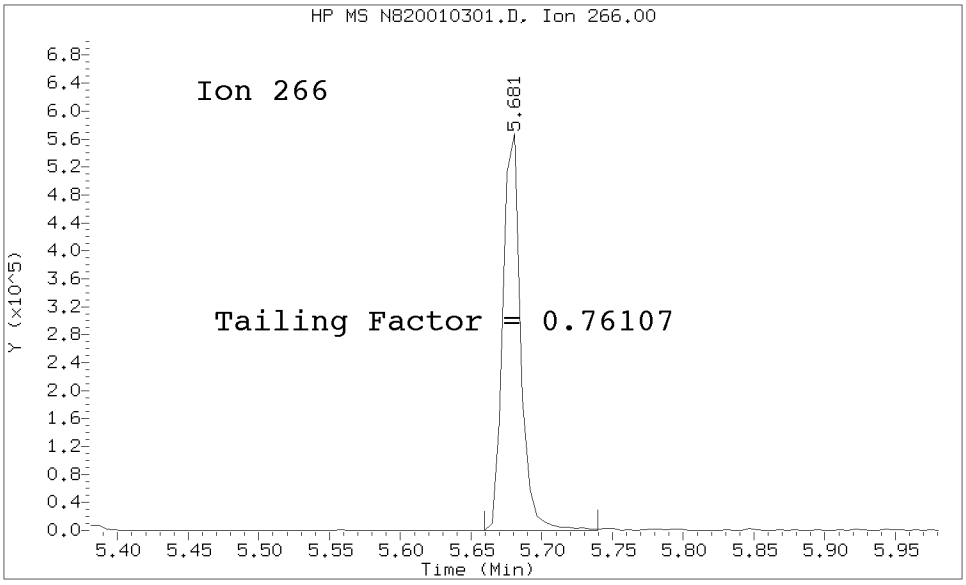
# DFTPP TAILING FACTOR AND BREAKDOWN GRAPHIC REPORT

Datafile Analyzed: /20200103.b/tune.b/N820010301.D/N820010301.D
Method Used: \20200103.b\tune.b\DFTTBT.m  Inst: nt8
Injection Date: 03-JAN-2020 10:03  Operator: JZ
Sample Info: SIA0018-TUN1  DFTPP200103
Report Date: 01/03/2020 14:27



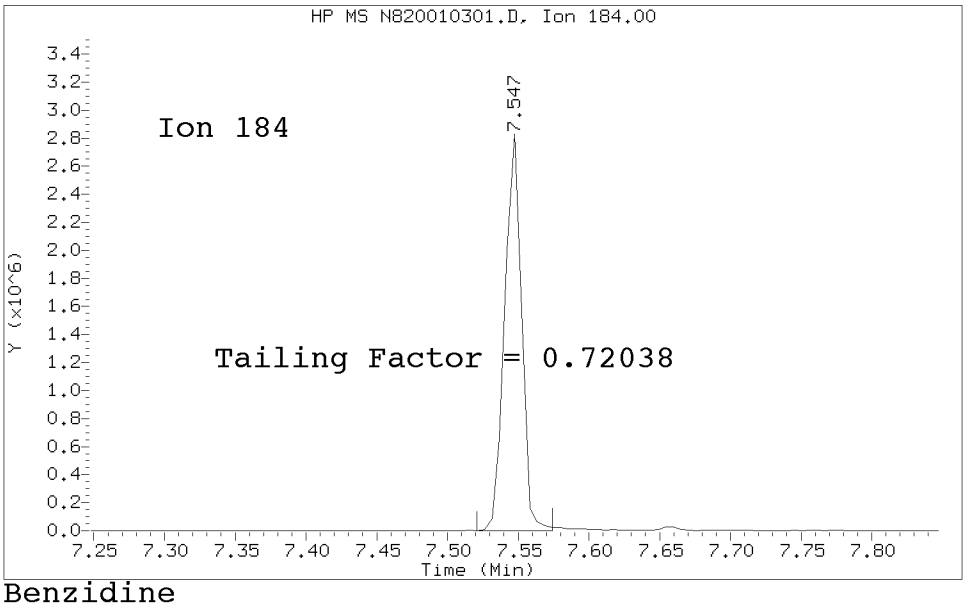



Datafile Analyzed: /20200103.b/tune.b/N820010301.D/N820010301.D
Method Used: \20200103.b\tune.b\DFTTBT.m\sw846ddt.m  Inst: nt8
Injection Date: 03-JAN-2020 10:03  Operator: JZ
Sample Info:  DFTPP200103
Report Date: 01/03/2020 14:27




Pentachlorophenol
==========
Exp. RT = 5.681
Found RT = 5.681

Tail Factor = 0.761  Maximum Allowed = 2.0




Benzidine
==========
Exp. RT = 7.547
Found RT = 7.547

Tail Factor = 0.720  Maximum Allowed = 2.0

# 8270 TAILING FACTOR/BREAKDOWN SUMMARY RESULTS

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 0.7610723 | 2.000 | PASS |
| Benzidine | 0.7203791 | 2.000 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 1708752 | | | N/A |
| 4,4-DDE | 10585 | 0.6 | 20.0 | PASS |
| 4,4-DDD | 215735 | 11.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 226320 | 11.7 | 20.0 | PASS |

Tuning Sample, /nt8.i/20200103.b/tune.b/N820010301.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 | 31.78 |
| 68 | Less than 2.00% of mass 69 | 1.13 ( 1.85) |
| 69 | Mass 69 relative abundance | 61.03 |
| 70 | Less than 2.00% of mass 69 | 0.40 ( 0.66) |
| 127 | 10.00 - 80.00% of mass 198 | 56.14 |
| 197 | Less than 2.00% of mass 198 | 1.27 |
| 199 | 5.00 - 9.00% of mass 198 | 8.09 |
| 275 | 10.00 - 60.00% of mass 198 | 34.01 |
| 365 | Greater than 1.00% of mass 198 | 7.57 |
| 441 | 0.01 - 24.00% of mass 442 | 8.93 ( 15.39) |
| 442 | 50.00 - 200.00% of mass 198 | 57.99 |
| 443 | 15.00 - 24.00% of mass 442 | 11.69 ( 20.16) |

Data File: N820010301.D
Spectrum: Avg. Scans 242-244 ( 5.39), Background Scan 236
Location of Maximum: 198.00
Number of points: 351

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 35.00 | 475 | 127.00 | 534656 | 215.00 | 6832 | 307.00 | 146 |
| 36.00 | 200 | 128.00 | 47104 | 216.00 | 9938 | 308.00 | 2360 |
| 37.00 | 850 | 129.00 | 272768 | 217.00 | 124360 | 309.00 | 1099 |
| 38.00 | 4962 | 130.00 | 28864 | 218.00 | 16600 | 310.00 | 1945 |
| 39.00 | 24888 | 131.00 | 4804 | 219.00 | 2682 | 311.00 | 202 |
| 40.00 | 1724 | 132.00 | 1895 | 220.00 | 1262 | 312.00 | 404 |
| 41.00 | 663 | 133.00 | 1535 | 221.00 | 41976 | 313.00 | 1104 |
| 43.00 | 279 | 134.00 | 9790 | 222.00 | 13682 | 314.00 | 7094 |
| 44.00 | 346 | 135.00 | 25584 | 223.00 | 25352 | 315.00 | 16424 |
| 45.00 | 346 | 136.00 | 11894 | 224.00 | 229632 | 316.00 | 7118 |
| 47.00 | 371 | 137.00 | 12582 | 225.00 | 63016 | 317.00 | 1403 |
| 48.00 | 713 | 138.00 | 2486 | 226.00 | 6126 | 318.00 | 194 |
| 49.00 | 2479 | 139.00 | 1658 | 227.00 | 138240 | 320.00 | 822 |
| 50.00 | 101104 | 140.00 | 4416 | 228.00 | 19344 | 321.00 | 3237 |
| 51.00 | 302656 | 141.00 | 44056 | 229.00 | 24344 | 322.00 | 2367 |
| 52.00 | 17744 | 142.00 | 10811 | 230.00 | 4509 | 323.00 | 37520 |
| 53.00 | 456 | 143.00 | 8317 | 231.00 | 8225 | 324.00 | 8247 |
| 55.00 | 1118 | 144.00 | 2650 | 232.00 | 1257 | 325.00 | 858 |
| 56.00 | 11919 | 145.00 | 1504 | 233.00 | 1603 | 326.00 | 1141 |
| 57.00 | 24496 | 146.00 | 9307 | 234.00 | 9336 | 327.00 | 7356 |
| 58.00 | 1210 | 147.00 | 25880 | 235.00 | 8194 | 328.00 | 3927 |
| 59.00 | 167 | 148.00 | 62152 | 236.00 | 7390 | 329.00 | 509 |
| 60.00 | 105 | 149.00 | 11901 | 237.00 | 7686 | 330.00 | 545 |
| 61.00 | 7031 | 150.00 | 2928 | 238.00 | 1427 | 331.00 | 355 |
| 62.00 | 9100 | 151.00 | 4339 | 239.00 | 5615 | 332.00 | 3712 |
| 63.00 | 23056 | 152.00 | 3799 | 240.00 | 3990 | 333.00 | 3351 |
| 64.00 | 3548 | 153.00 | 13082 | 241.00 | 7269 | 334.00 | 24288 |
| 65.00 | 10012 | 154.00 | 9125 | 242.00 | 12562 | 335.00 | 5992 |
| 66.00 | 962 | 155.00 | 24584 | 243.00 | 12491 | 336.00 | 466 |
| 67.00 | 544 | 156.00 | 31664 | 244.00 | 163712 | 339.00 | 964 |
| 68.00 | 10763 | 157.00 | 4421 | 245.00 | 20240 | 340.00 | 803 |
| 69.00 | 581184 | 158.00 | 7000 | 246.00 | 49008 | 341.00 | 4712 |
| 70.00 | 3826 | 159.00 | 5567 | 247.00 | 9951 | 342.00 | 908 |
| 71.00 | 885 | 160.00 | 14312 | 248.00 | 2550 | 343.00 | 192 |
| 73.00 | 4373 | 161.00 | 16270 | 249.00 | 5186 | 346.00 | 9145 |
| 74.00 | 80120 | 162.00 | 5587 | 250.00 | 1354 | 347.00 | 703 |
| 75.00 | 118536 | 163.00 | 1543 | 251.00 | 1392 | 348.00 | 104 |
| 76.00 | 38576 | 164.00 | 1850 | 252.00 | 2714 | 350.00 | 442 |
| 77.00 | 693632 | 165.00 | 14844 | 253.00 | 4387 | 351.00 | 1005 |
| 78.00 | 47616 | 166.00 | 13452 | 254.00 | 8140 | 352.00 | 11337 |
| 79.00 | 59240 | 167.00 | 106664 | 255.00 | 799296 | 353.00 | 6614 |
| 80.00 | 39504 | 168.00 | 50840 | 256.00 | 137920 | 354.00 | 9058 |
| 81.00 | 53632 | 169.00 | 7732 | 257.00 | 10915 | 355.00 | 2146 |
| 82.00 | 13793 | 170.00 | 3374 | 258.00 | 80656 | 359.00 | 1120 |
| 83.00 | 10520 | 171.00 | 3271 | 259.00 | 10015 | 361.00 | 256 |
| 84.00 | 2259 | 172.00 | 7797 | 260.00 | 2860 | 362.00 | 135 |
| 85.00 | 10518 | 173.00 | 10116 | 261.00 | 1146 | 365.00 | 72096 |
| 86.00 | 17168 | 174.00 | 16512 | 262.00 | 226 | 366.00 | 8651 |
| 87.00 | 8341 | 175.00 | 33824 | 263.00 | 1572 | 367.00 | 540 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 88.00 | 3822 | 176.00 | 6440 | 264.00 | 2171 | 370.00 | 1909 |
| 89.00 | 1322 | 177.00 | 14655 | 265.00 | 30792 | 371.00 | 1848 |
| 90.00 | 124 | 178.00 | 6408 | 266.00 | 5202 | 372.00 | 14108 |
| 91.00 | 12727 | 179.00 | 63624 | 267.00 | 1102 | 373.00 | 4003 |
| 92.00 | 15657 | 180.00 | 41136 | 268.00 | 198 | 383.00 | 4342 |
| 93.00 | 106400 | 181.00 | 17112 | 270.00 | 1265 | 384.00 | 475 |
| 94.00 | 6995 | 182.00 | 3232 | 271.00 | 2221 | 385.00 | 163 |
| 95.00 | 1573 | 183.00 | 1450 | 272.00 | 3427 | 390.00 | 2626 |
| 96.00 | 3407 | 184.00 | 4858 | 273.00 | 29640 | 391.00 | 640 |
| 97.00 | 1354 | 185.00 | 31272 | 274.00 | 74344 | 392.00 | 703 |
| 98.00 | 85224 | 186.00 | 221376 | 275.00 | 323904 | 393.00 | 275 |
| 99.00 | 54328 | 187.00 | 62192 | 276.00 | 46752 | 397.00 | 327 |
| 100.00 | 4280 | 188.00 | 7158 | 277.00 | 46336 | 398.00 | 152 |
| 101.00 | 28504 | 189.00 | 20288 | 278.00 | 9986 | 401.00 | 1289 |
| 102.00 | 1269 | 190.00 | 4051 | 279.00 | 1914 | 402.00 | 5155 |
| 103.00 | 10110 | 191.00 | 7880 | 280.00 | 207 | 403.00 | 5936 |
| 104.00 | 22912 | 192.00 | 20760 | 281.00 | 658 | 404.00 | 3929 |
| 105.00 | 18328 | 193.00 | 21360 | 282.00 | 3026 | 405.00 | 795 |
| 106.00 | 5989 | 194.00 | 3722 | 283.00 | 3851 | 421.00 | 5173 |
| 107.00 | 245568 | 195.00 | 2819 | 284.00 | 2736 | 422.00 | 6215 |
| 108.00 | 34736 | 196.00 | 31024 | 285.00 | 5518 | 423.00 | 32344 |
| 109.00 | 6379 | 197.00 | 12105 | 286.00 | 939 | 424.00 | 8752 |
| 110.00 | 309184 | 198.00 | 952320 | 288.00 | 408 | 425.00 | 381 |
| 111.00 | 59664 | 199.00 | 77024 | 289.00 | 2389 | 426.00 | 316 |
| 112.00 | 6096 | 200.00 | 5825 | 290.00 | 1155 | 428.00 | 295 |
| 113.00 | 2579 | 201.00 | 4627 | 291.00 | 1022 | 430.00 | 1171 |
| 114.00 | 354 | 202.00 | 1017 | 292.00 | 1159 | 431.00 | 362 |
| 115.00 | 1634 | 203.00 | 16456 | 293.00 | 8667 | 432.00 | 397 |
| 116.00 | 15991 | 204.00 | 64144 | 294.00 | 3250 | 433.00 | 83 |
| 117.00 | 284928 | 205.00 | 109432 | 295.00 | 2814 | 434.00 | 358 |
| 118.00 | 18736 | 206.00 | 398784 | 296.00 | 162816 | 435.00 | 89 |
| 119.00 | 2875 | 207.00 | 48952 | 297.00 | 20880 | 436.00 | 651 |
| 120.00 | 3430 | 208.00 | 19768 | 298.00 | 2220 | 440.00 | 142 |
| 121.00 | 1943 | 209.00 | 6346 | 299.00 | 471 | 441.00 | 85008 |
| 122.00 | 19128 | 210.00 | 7549 | 301.00 | 1445 | 442.00 | 552256 |
| 123.00 | 26344 | 211.00 | 18696 | 302.00 | 2568 | 443.00 | 111312 |
| 124.00 | 9886 | 212.00 | 1884 | 303.00 | 14333 | 444.00 | 11685 |
| 125.00 | 10332 | 213.00 | 976 | 304.00 | 3651 | 445.00 | 209 |
| 126.00 | 1258 | 214.00 | 534 | 305.00 | 954 | | |

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010302.D

Date : 03-JAN-2020 10:15

Client ID:

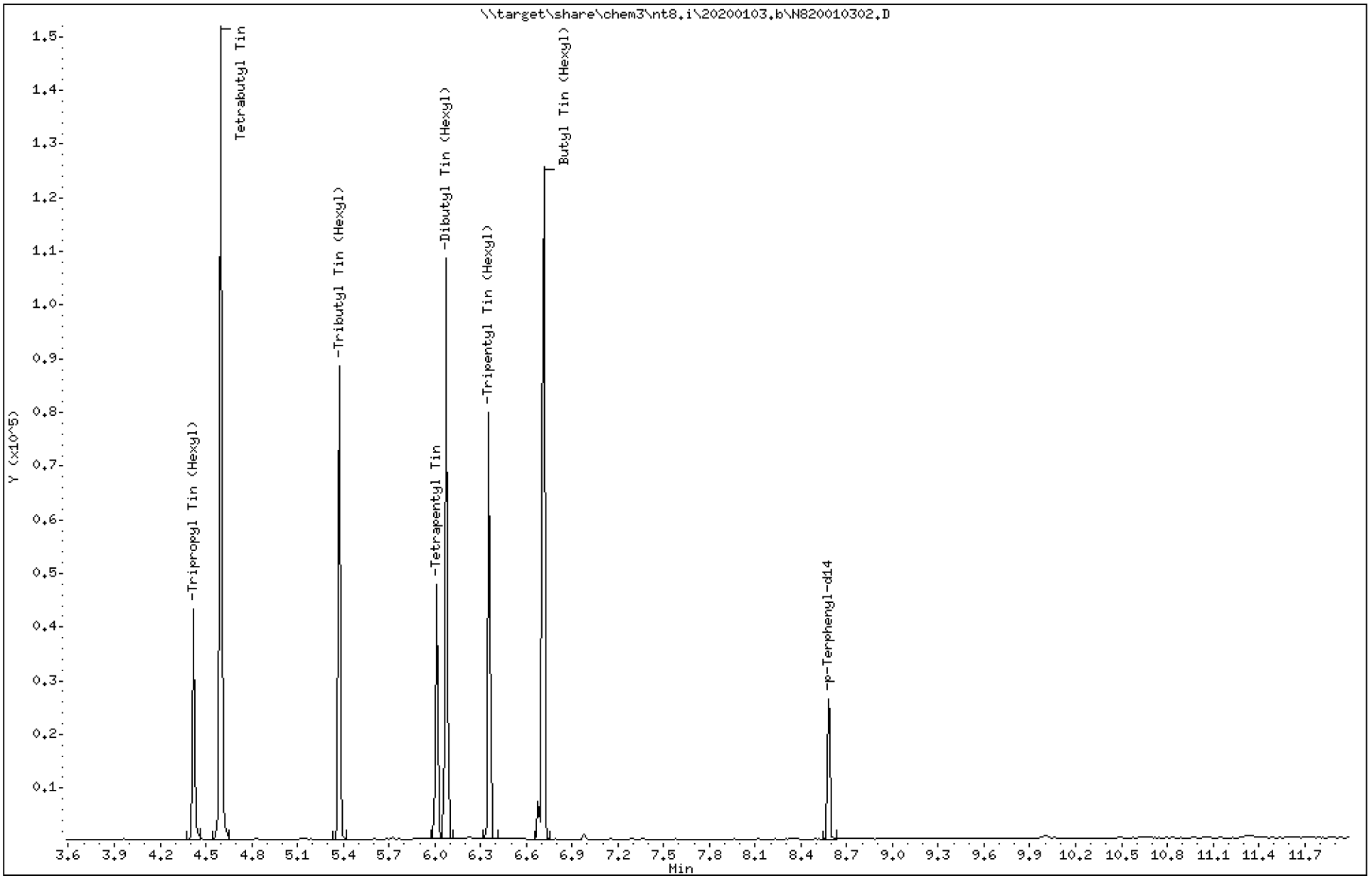
Sample Info: IC1200103

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010302.D
Lab Smp Id: SIA0018-CAL4
Inj Date : 03-JAN-2020 10:15
Operator : JZ Inst ID: nt8.i
Smp Info : IC1200103
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 2 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: ICAL.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT (ug/mL) | ON-COL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.419 | 4.420 | (0.735) | 22861 | 1.00000 | 1.010 |
| | 2 Tetrabutyl Tin | 289 | 4.596 | 4.597 | (0.764) | 20920 | 1.00000 | 0.9472 |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 16817 | 1.00000 | 0.9215 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 43350 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.073 | 6.074 | (0.708) | 23463 | 2.00000 | 1.837 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.352 | (0.740) | 34982 | 2.00000 | 1.994 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.715 | (0.783) | 40061 | 2.00000 | 1.745 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 36156 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010302.D
Lab Smp Id: SIA0018-CAL4
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 43350 | 0.00 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 36156 | 0.00 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820010302.D

Lab ID: SIA0018-CAL4
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 10:15

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, ICAL.sub =  0.0000

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

Q-FLAG SUMMARY FOR DATABATCH - \\target\share\chem3\nt8.i\20200103.b

Instrument: nt8.i  Date: 03-JAN-2020  Method: 20200103.b\TBT200103.m

INITIAL CAL: 02-JAN-2020

| Compound | %RSD or R^2 |
|---|---|
| NO Q-FLAGS | |

ICV CAL: N820010302.D  03-JAN-2020 10:15

| Compound | %D |
|---|---|
| NO Q-FLAGS | |

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010303.D

Date : 03-JAN-2020 10:34

Client ID:

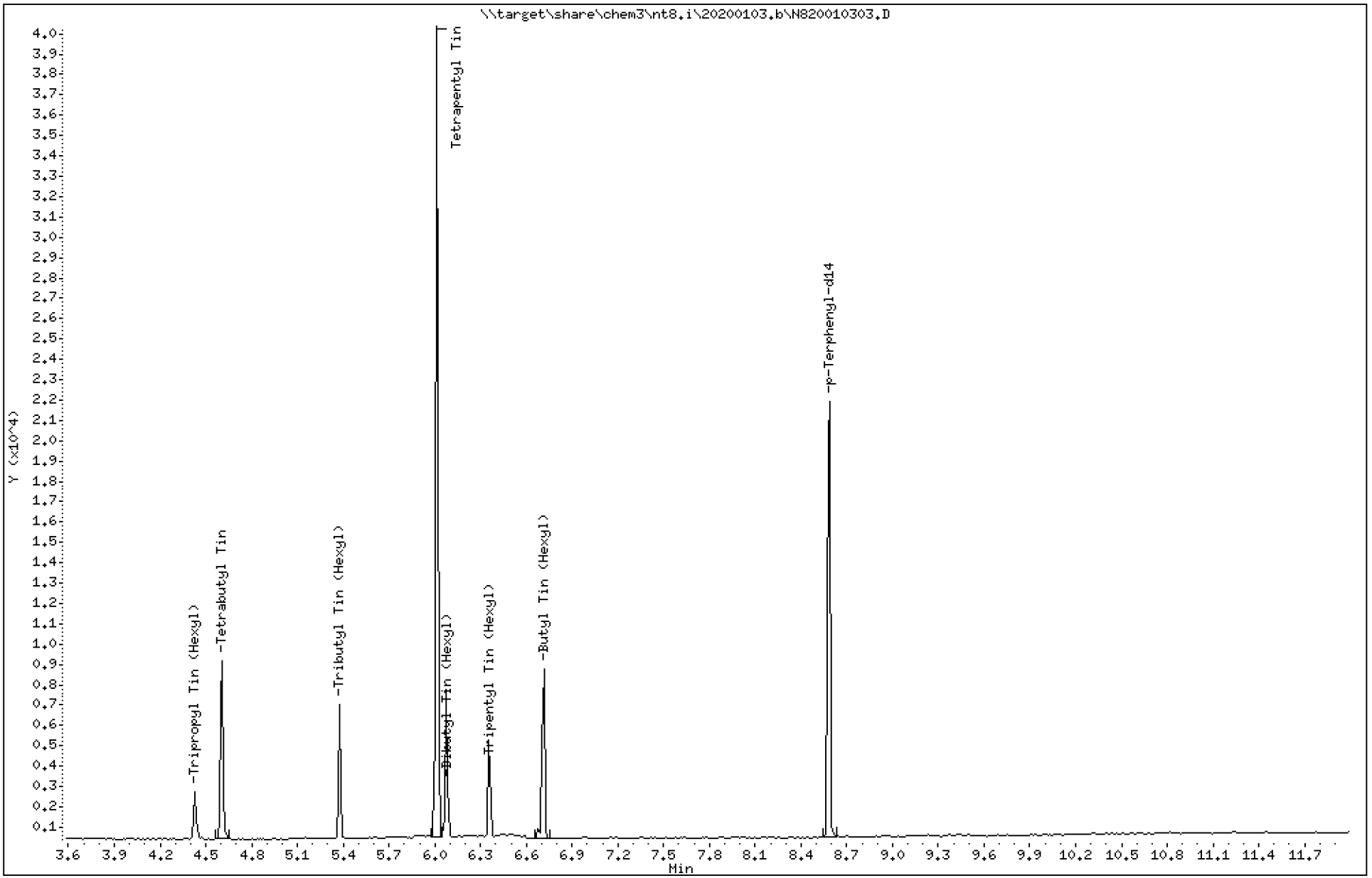
Sample Info: IC005200103

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010303.D
Lab Smp Id: SIA0018-CAL1
Inj Date  : 03-JAN-2020 10:34
Operator  : JZ  Inst ID: nt8.i
Smp Info  : IC005200103
Misc Info :
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 3  Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: sedmdl.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | 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 | 4.430 | 4.420 | (0.737) | 1448 | 0.05000 | 0.07857 |
| | 2 Tetrabutyl Tin | 289 | 4.607 | 4.597 | (0.766) | 1441 | 0.05000 | 0.08013 |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 1133 | 0.05000 | 0.07625 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 35297 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.085 | 6.074 | (0.708) | 1688 | 0.10000 | 0.1653 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.352 | (0.741) | 2274 | 0.10000 | 0.1626 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.715 | (0.782) | 2641 | 0.10000 | 0.1416 |
| * | 8 p-Terphenyl-d14 | 244 | 8.589 | 8.577 | (1.000) | 30580 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010303.D
Lab Smp Id: SIA0018-CAL1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 35297 | -18.58 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 30580 | -15.42 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.59 | 0.14 |

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 - N820010303.D

Lab ID: SIA0018-CAL1
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 10:34

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010304.D

Date : 03-JAN-2020 10:50

Client ID:

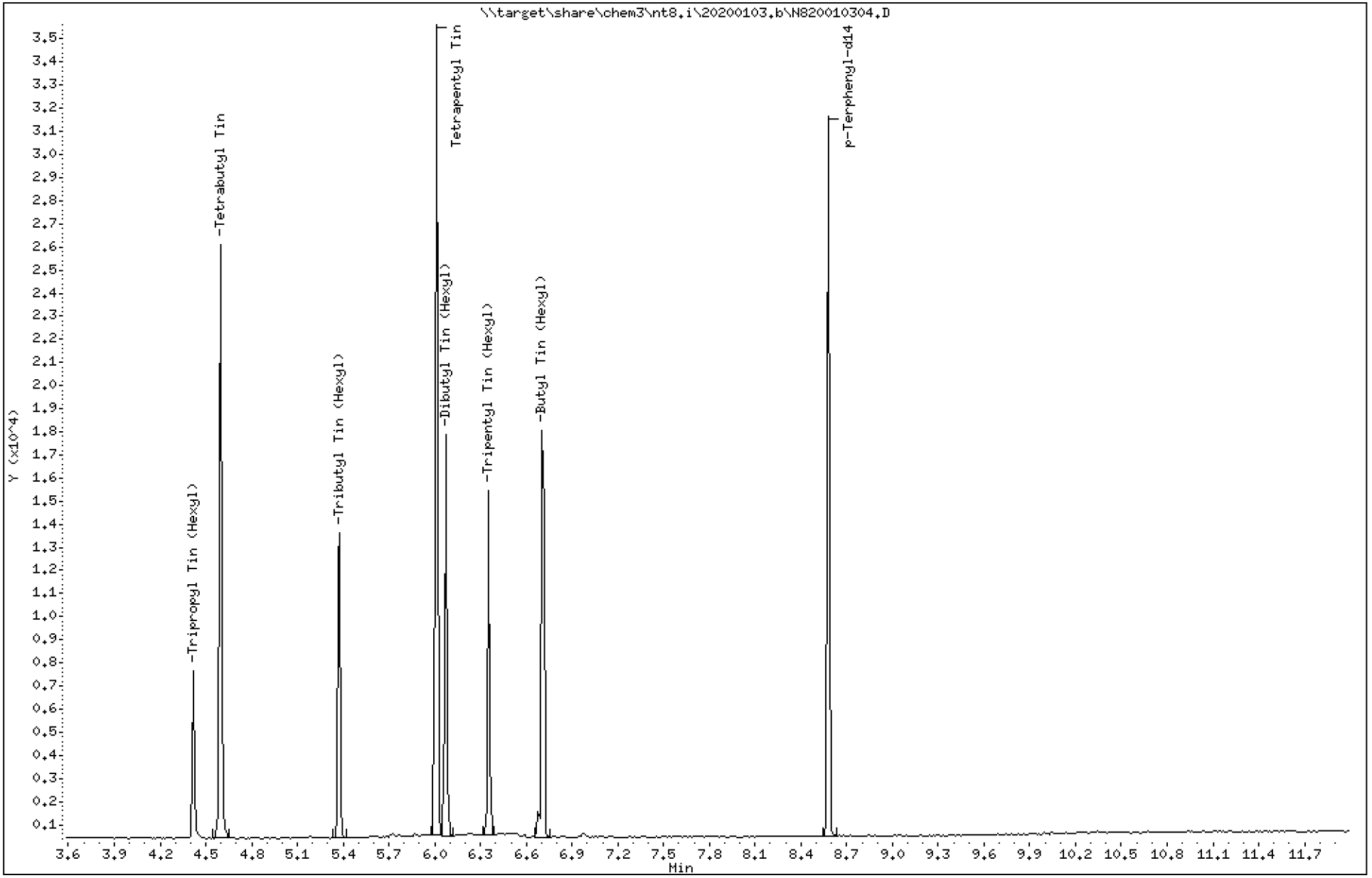
Sample Info: IC02200103

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010304.D
Lab Smp Id: SIA0018-CAL2
Inj Date  : 03-JAN-2020 10:50
Operator  : JZ  Inst ID: nt8.i
Smp Info  : IC02200103
Misc Info :
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 4  Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: sedmdl.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | 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 | 4.419 | 4.420 | (0.735) | 3766 | 0.20000 | 0.2072 |
| | 2 Tetrabutyl Tin | 289 | 4.596 | 4.597 | (0.764) | 3743 | 0.20000 | 0.2111 |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 2846 | 0.20000 | 0.1942 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 34803 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.073 | 6.074 | (0.708) | 4011 | 0.40000 | 0.3821 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.352 | (0.740) | 5471 | 0.40000 | 0.3805 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.715 | (0.783) | 6138 | 0.40000 | 0.3209 |
| * | 8 p-Terphenyl-d14 | 244 | 8.578 | 8.577 | (1.000) | 31227 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010304.D
Lab Smp Id: SIA0018-CAL2
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 34803 | -19.72 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 31227 | -13.63 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820010304.D

Lab ID: SIA0018-CAL2
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 10:50

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010305.D

Date : 03-JAN-2020 11:06

Client ID:

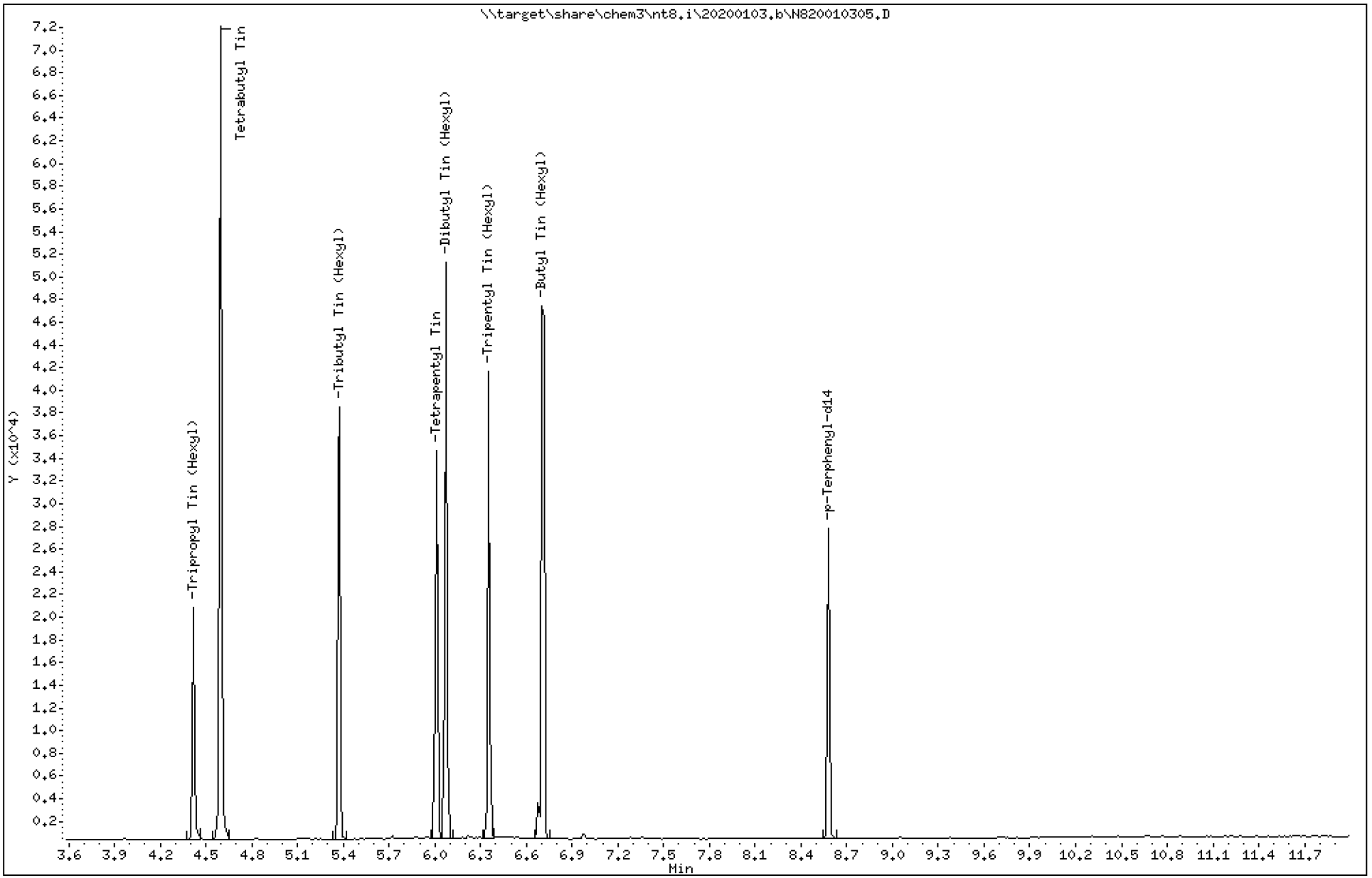
Sample Info: IC05200103

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010305.D
Lab Smp Id: SIA0018-CAL3
Inj Date : 03-JAN-2020 11:06
Operator : JZ Inst ID: nt8.i
Smp Info : IC05200103
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT (ug/mL) | ON-COL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.419 | 4.420 | (0.735) | 10684 | 0.50000 | 0.5935 |
| | 2 Tetrabutyl Tin | 289 | 4.596 | 4.597 | (0.764) | 10247 | 0.50000 | 0.5834 |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 8016 | 0.50000 | 0.5523 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 34476 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.073 | 6.074 | (0.708) | 11406 | 1.00000 | 1.105 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.352 | (0.740) | 15274 | 1.00000 | 1.082 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.715 | (0.783) | 18706 | 1.00000 | 1.001 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 29989 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010305.D
Lab Smp Id: SIA0018-CAL3
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 34476 | -20.47 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 29989 | -17.06 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | -0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | -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 - N820010305.D

Lab ID: SIA0018-CAL3
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 11:06

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010306.D

Date : 03-JAN-2020 11:23

Client ID:

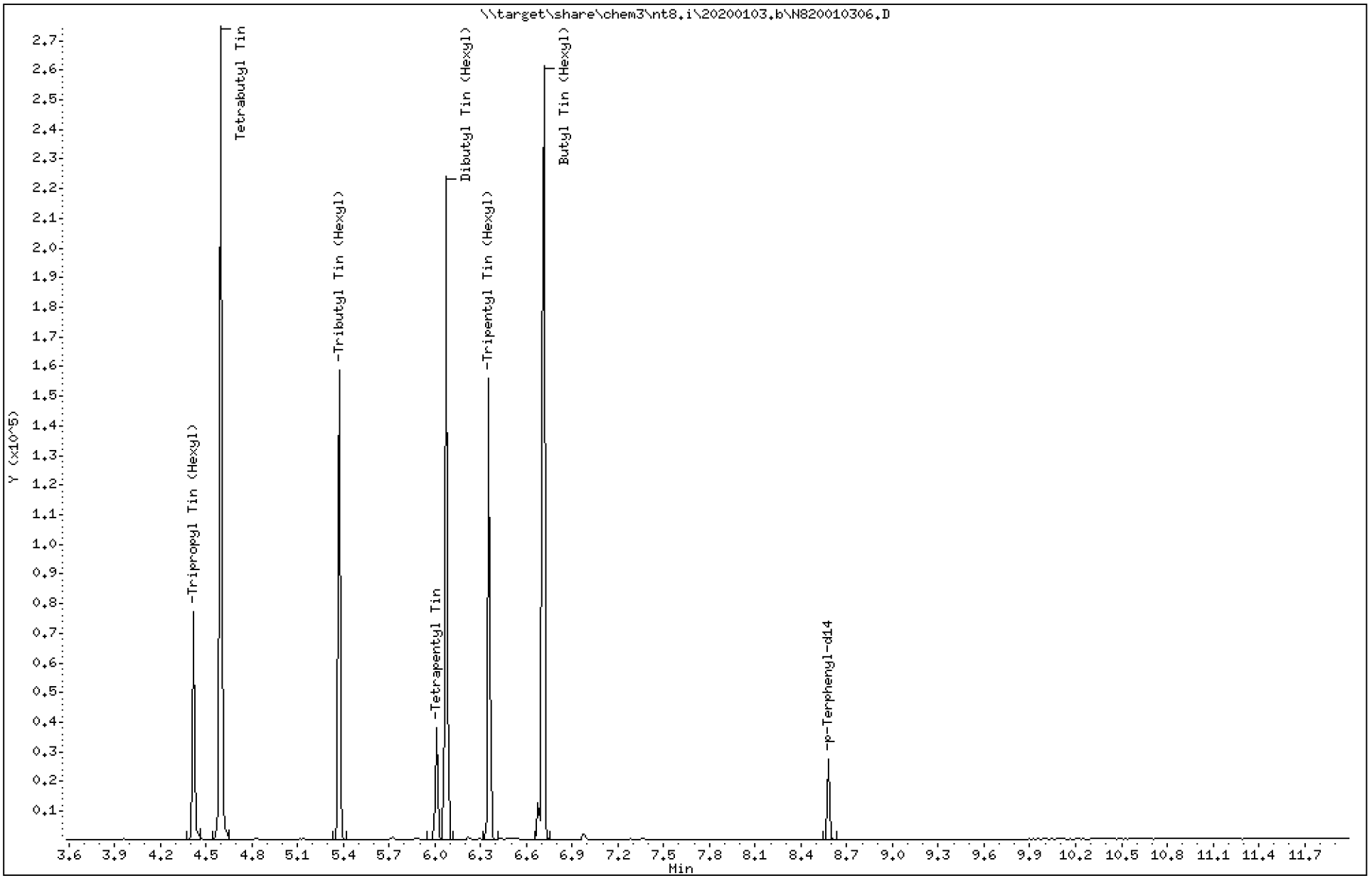
Sample Info: IC2200103

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010306.D
Lab Smp Id: SIA0018-CAL5
Inj Date : 03-JAN-2020 11:23
Operator : JZ Inst ID: nt8.i
Smp Info : IC2200103
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT (ug/mL) | ON-COL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.419 | 4.420 | (0.735) | 39910 | 2.00000 | 2.073 |
| | 2 Tetrabutyl Tin | 289 | 4.596 | 4.597 | (0.764) | 37818 | 2.00000 | 2.013 |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 30988 | 2.00000 | 1.996 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 36874 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.073 | 6.074 | (0.708) | 46540 | 4.00000 | 4.051 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.352 | (0.740) | 61789 | 4.00000 | 3.974 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.715 | (0.783) | 83888 | 4.00000 | 4.154 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 29614 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010306.D
Lab Smp Id: SIA0018-CAL5
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 36874 | -14.94 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 29614 | -18.09 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | -0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | -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 - N820010306.D

Lab ID: SIA0018-CAL5
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 11:23

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010307.D

Date : 03-JAN-2020 11:39

Client ID:

Sample Info: IC4200103

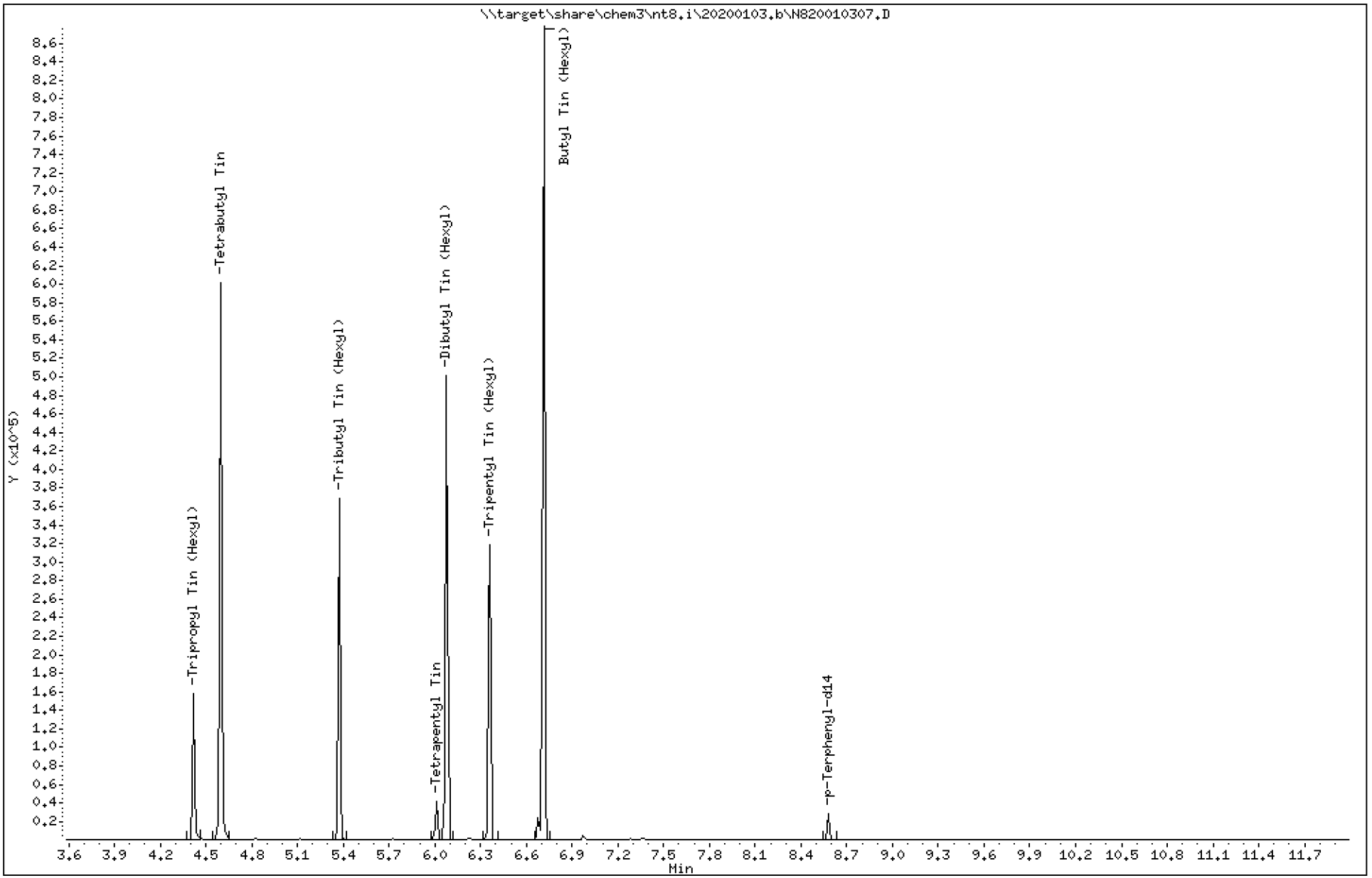
Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25





ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010307.D
Lab Smp Id: SIA0018-CAL6
Inj Date : 03-JAN-2020 11:39
Operator : JZ Inst ID: nt8.i
Smp Info : IC4200103
Misc Info :
Comment : 2 ul Injection
Method : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing Quant Type: ISTD
Cal Date : 03-JAN-2020 11:39 Cal File: N820010307.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: sedmdl.sub
Target Version: 4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT (ug/mL) | ON-COL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.419 | 4.420 | (0.735) | 81002 | 4.00000 | 3.944 |
| | 2 Tetrabutyl Tin | 289 | 4.596 | 4.597 | (0.764) | 80017 | 4.00000 | 3.993 |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 66447 | 4.00000 | 4.013 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 39335 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.085 | 6.074 | (0.709) | 132032 | 8.00000 | 7.996 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.352 | (0.742) | 167068 | 8.00000 | 8.003 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.715 | (0.783) | 187091 | 8.00000 | 7.978 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 29071 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010307.D
Lab Smp Id: SIA0018-CAL6
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 39335 | -9.26 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 29071 | -19.60 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | -0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | -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 - N820010307.D

Lab ID: SIA0018-CAL6
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 11:39

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, sedmdl.sub =  0.0000

Exception: Tripropyl Tin (Hexyl) (Surr) 0.0010

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

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010308.D

Date : 03-JAN-2020 13:23

Client ID:

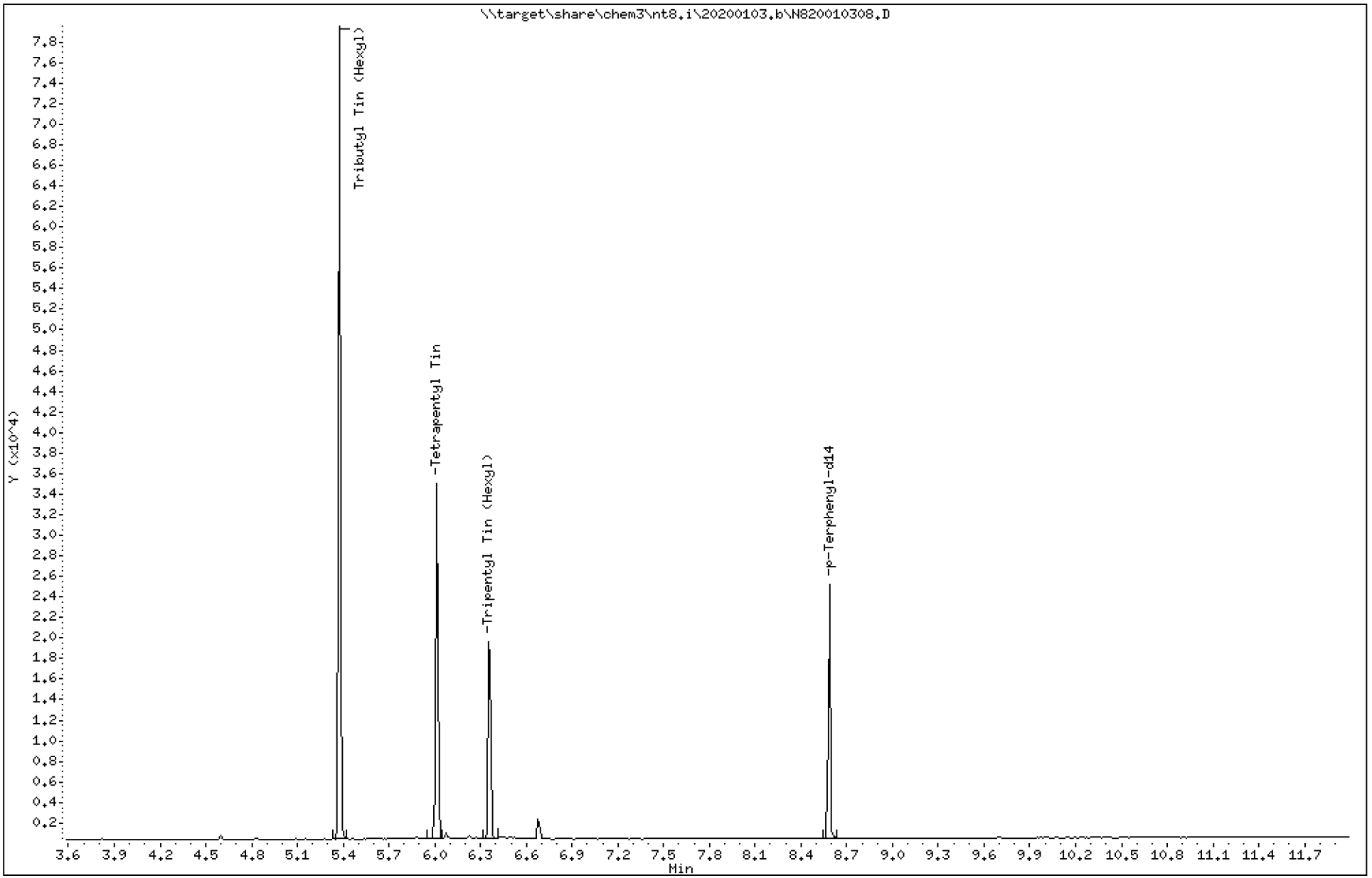
Sample Info: SCV200103

Column phase: ZB-5msi

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200103.b\N820010308.D

Date : 03-JAN-2020 13:23

Client ID:

Instrument: nt8.i

Sample Info: SCV200103

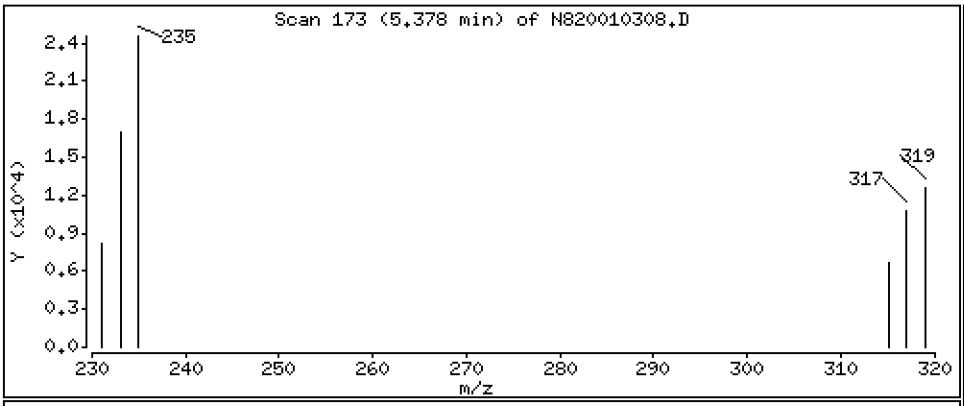
Operator: JZ

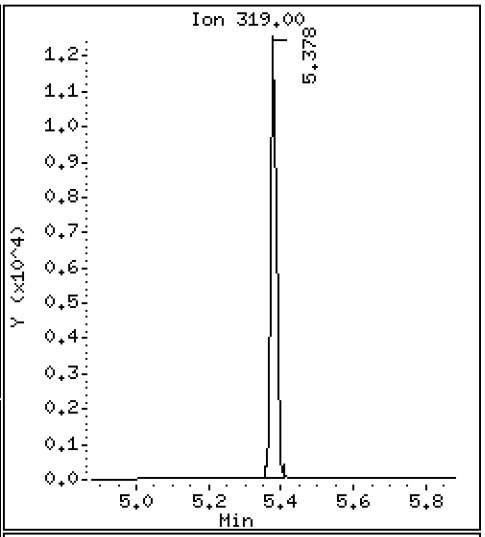
Column phase: ZB-5msi

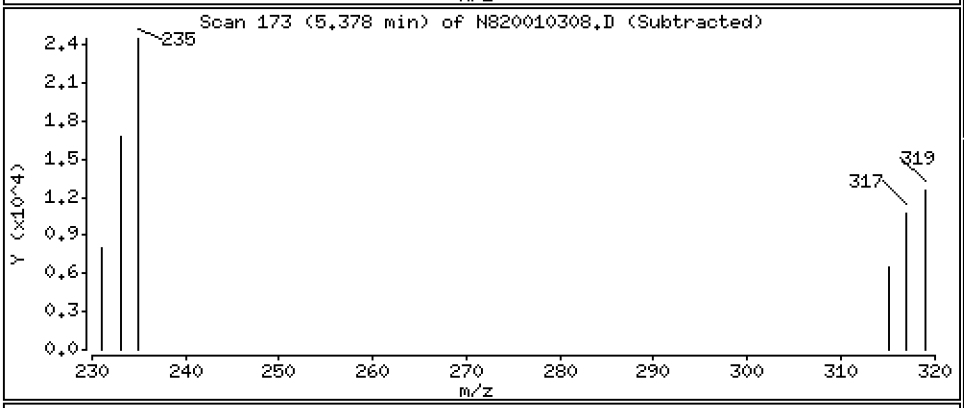
Column diameter: 0.25

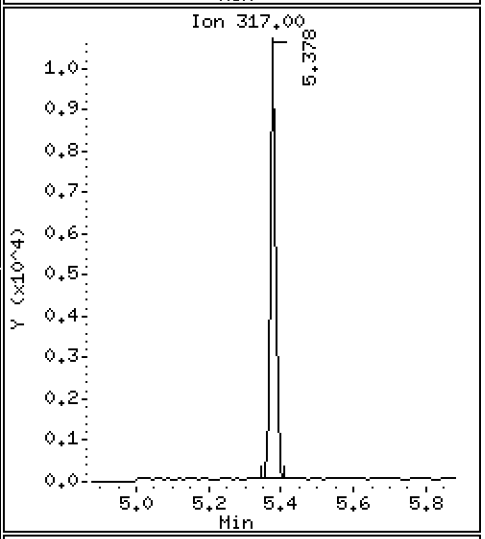
3 Tributyl Tin (Hexyl)

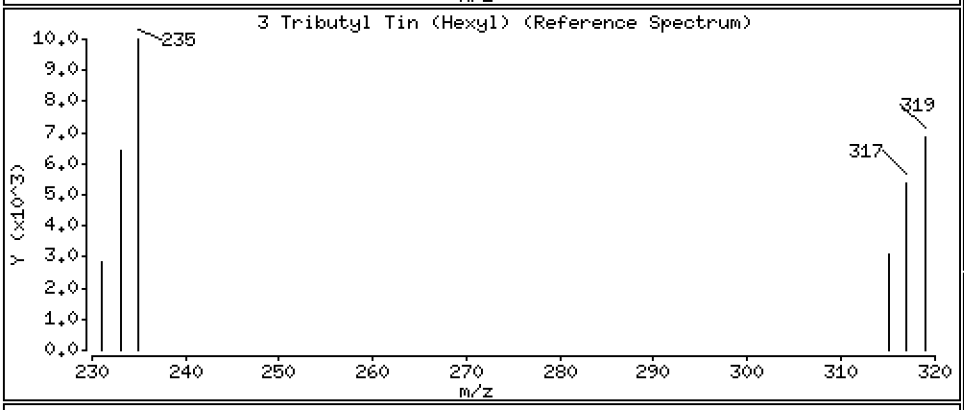
Concentration: 1.048 ug/mL

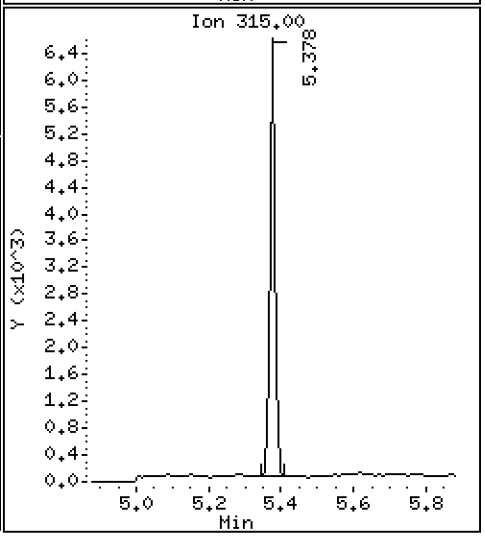


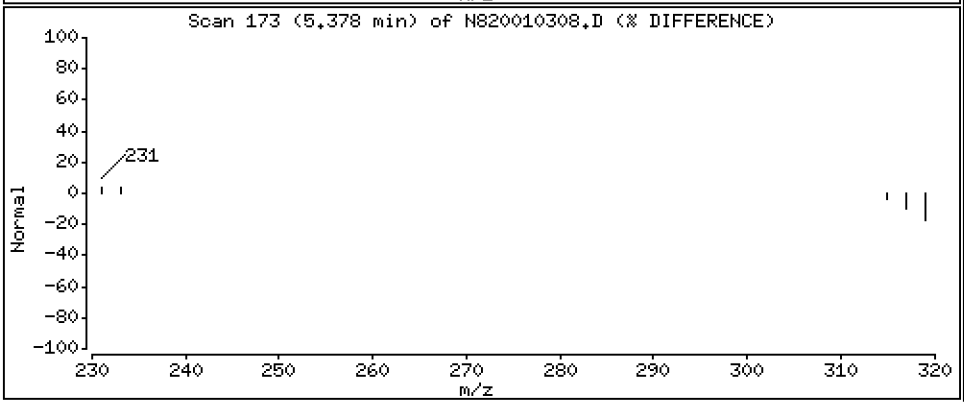



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010308.D
Lab Smp Id: SIA0018-SCV1
Inj Date  : 03-JAN-2020 13:23
Operator  : JZ  Inst ID: nt8.i
Smp Info  : SCV200103
Misc Info :
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: ICAL.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | CONCENTRATIONS FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | Compound Not Detected. | | | | | |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 13505 | 1.04767 | 1.048 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 30619 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.352 | (0.741) | 10605 | 0.86317 | 0.8632 |
| | 7 Butyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| * | 8 p-Terphenyl-d14 | 244 | 8.590 | 8.577 | (1.000) | 26292 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010308.D
Lab Smp Id: SIA0018-SCV1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 30619 | -29.37 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 26292 | -27.28 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.59 | 0.14 |

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 - N820010308.D

Lab ID: SIA0018-SCV1
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 13:23

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

** FIRST SURROGATE NOT FOUND. ICAL Check not performed **

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, ICAL.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:** 19K0396
**Client:** Anchor QEA, LLC
**Project:** Gasco PDI
**Calibration:** DA00008
**Laboratory ID:** SIA0018-SCV1
**Sequence:** SIA0018
**Sequence Name:** Secondary Cal Check
**Standard ID:** I000096

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Tributyltin Ion | 0.77300 | 0.810 | 4.8 | 20.00 |
| Tripentyltin | 0.79590 | 0.687 | -13.7 | 20.00 |

* Indicates values outside of QC limits

Data File: \\target\share\chem3\nt8.i\20200103.b\N820010308.D

Date : 03-JAN-2020 13:23

Client ID:

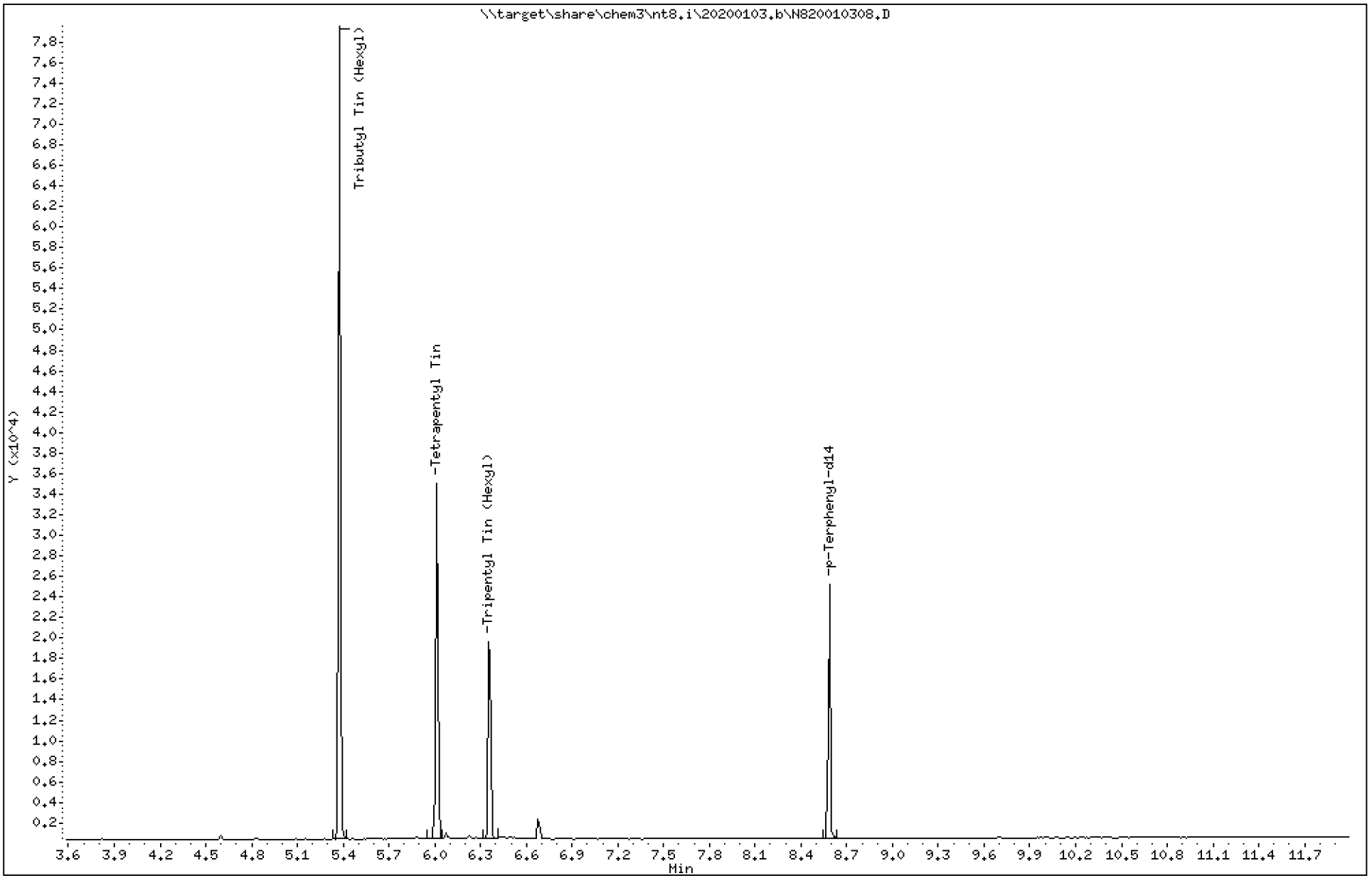
Sample Info: SCV200103

Column phase: ZB-5msi

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25



Data File: \\target\share\chem3\nt8.i\20200103.b\N820010308.D

Date : 03-JAN-2020 13:23

Client ID:

Instrument: nt8.i

Sample Info: SCV200103

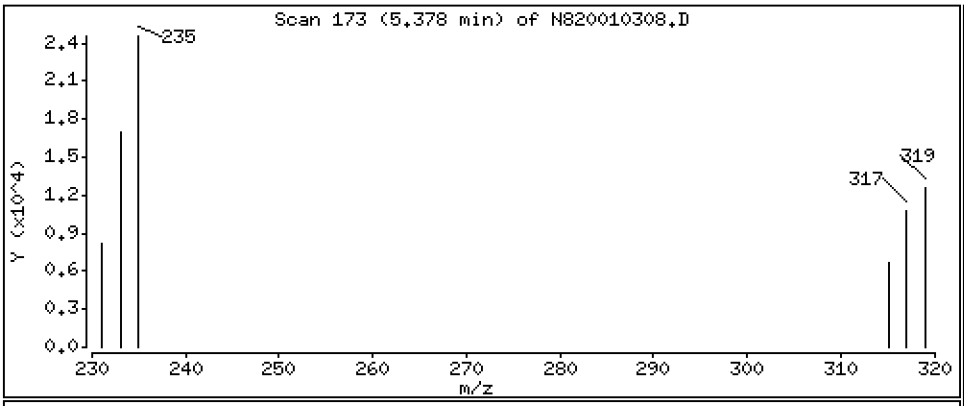
Operator: JZ

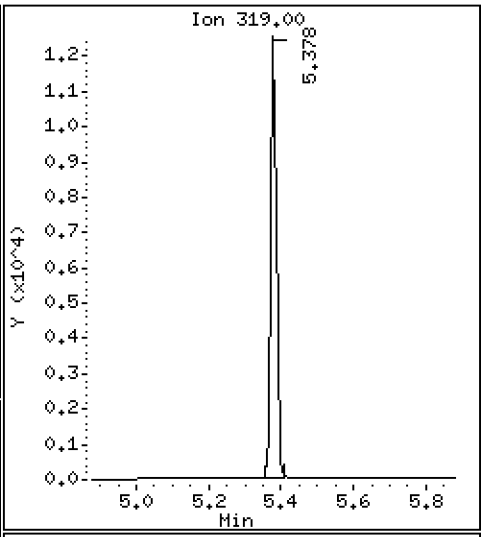
Column phase: ZB-5msi

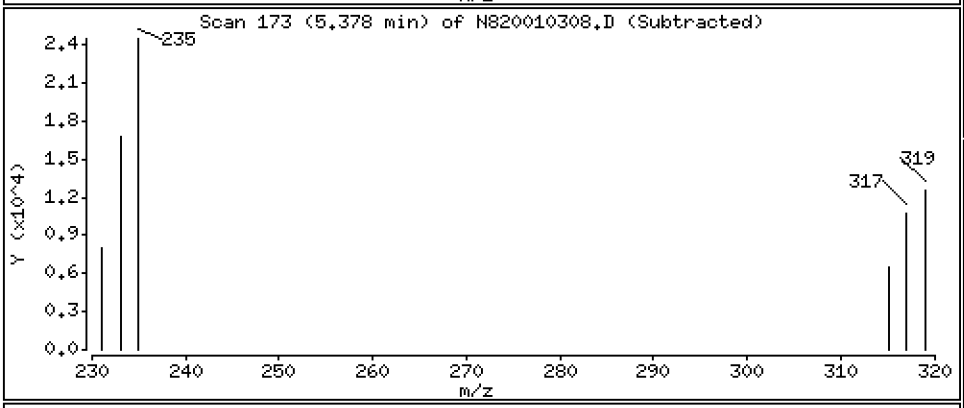
Column diameter: 0.25

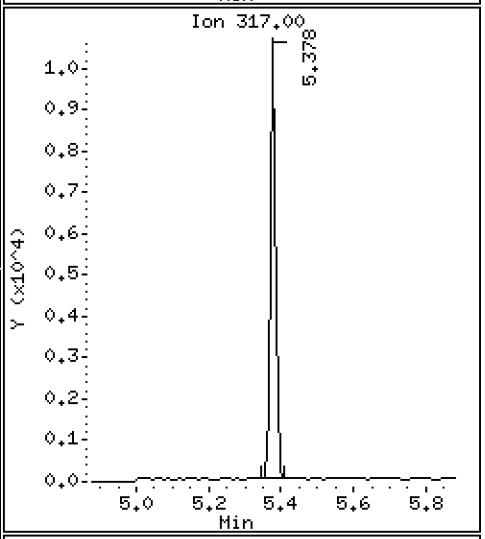
3 Tributyl Tin (Hexyl)

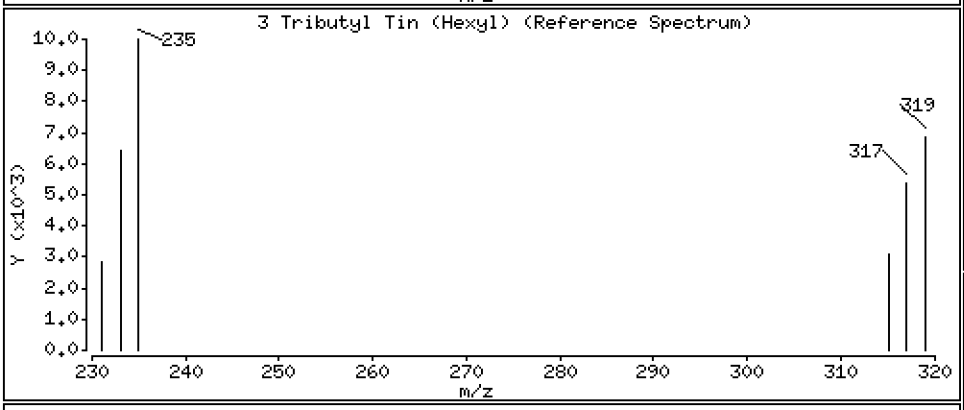
Concentration: 1.048 ug/mL

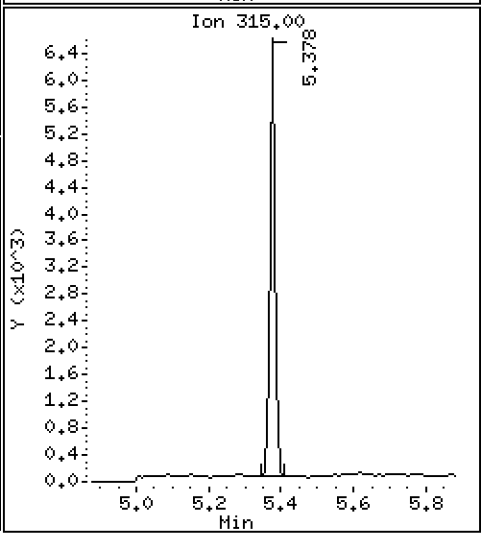


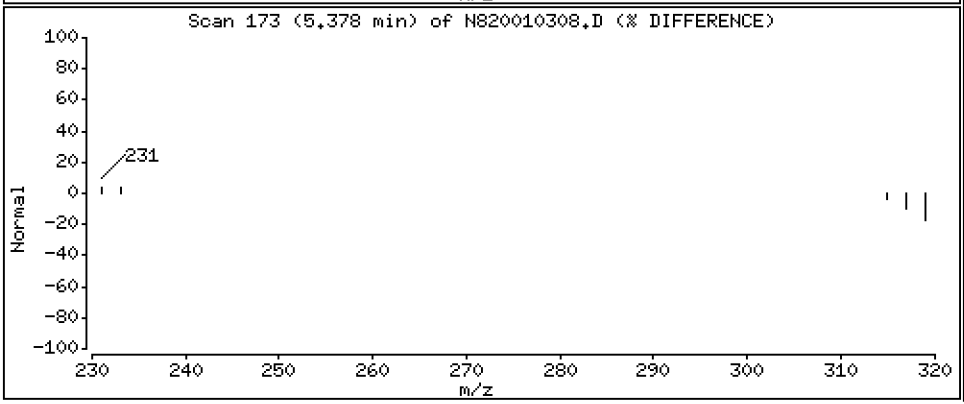



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200103.b\N820010308.D
Lab Smp Id: SIA0018-SCV1
Inj Date  : 03-JAN-2020 13:23
Operator  : JZ  Inst ID: nt8.i
Smp Info  : SCV200103
Misc Info :
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Meth Date : 03-Jan-2020 11:57 jianqing  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: ICAL.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN (ug/mL) | CONCENTRATIONS FINAL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | Compound Not Detected. | | | | | |
| | 2 Tetrabutyl Tin | 289 | Compound Not Detected. | | | | | |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.378 | (0.894) | 13505 | 1.04767 | 1.048 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 30619 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.363 | 6.352 | (0.741) | 10605 | 0.86317 | 0.8632 |
| | 7 Butyl Tin (Hexyl) | 347 | Compound Not Detected. | | | | | |
| * | 8 p-Terphenyl-d14 | 244 | 8.590 | 8.577 | (1.000) | 26292 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820010308.D
Lab Smp Id: SIA0018-SCV1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200103.b\TBT200103.m
Misc Info:

Calibration Date: 03-JAN-2020
Calibration Time: 10:15
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 30619 | -29.37 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 26292 | -27.28 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.59 | 0.14 |

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 - N820010308.D

Lab ID: SIA0018-SCV1
nt8.i,  20200103.b\TBT200103.m,    03-JAN-2020 13:23

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

** FIRST SURROGATE NOT FOUND. ICAL Check not performed **

RRT CHECK

| RRT | CCV RRT | DELTA | COMPOUND |
|---|---|---|---|

NONE

RRT check based on Ccal File: N820010307.D

On Column LOD for nt8.i, 20200103.b\TBT200103.m, ICAL.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: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Instrument ID: | NT8 | Calibration: | DA00008 |
| Lab File ID: | N820011002.D | Calibration Date: | 01/03/2020 |
| Sequence: | SIA0124 | Injection Date: | 01/10/20 |
| Lab Sample ID: | SIA0124-ICV1 | Injection Time: | 11:25 |
| Sequence Name: | Initial Cal Check | | |

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DRIFT/DIFF | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | ICV | ICAL | ICV | MIN | ICV | LIMIT |
| Tributyltin Ion | A | 0.77300 | 0.714 | 0.9154369 | 0.7775391 | 0.01 | -7.7 | +/-20 |
| Tripentyltin | A | 1.5918 | 1.63 | 0.1138231 | 0.0992525 | 0.01 | 2.1 | +/-20 |
| Tripropyltin | A | 0.74430 | 0.739 | 1.1882170 | 1.0369370 | 0.01 | -0.7 | +/-20 |
| Tetrapentyltin | A | 2.0000 | 2.00 | 18677.9200 | 1.0000 | | 0.0 | |
| p-Terphenyl-d14 | A | 0.20000 | 0.200 | 155530.8000 | 1.0000 | | 0.0 | |

* Values outside of QC limits

Data File: \\target\share\chem3\nt8.i\20200110.b\N820011002.D

Date : 10-JAN-2020 11:25

Client ID:

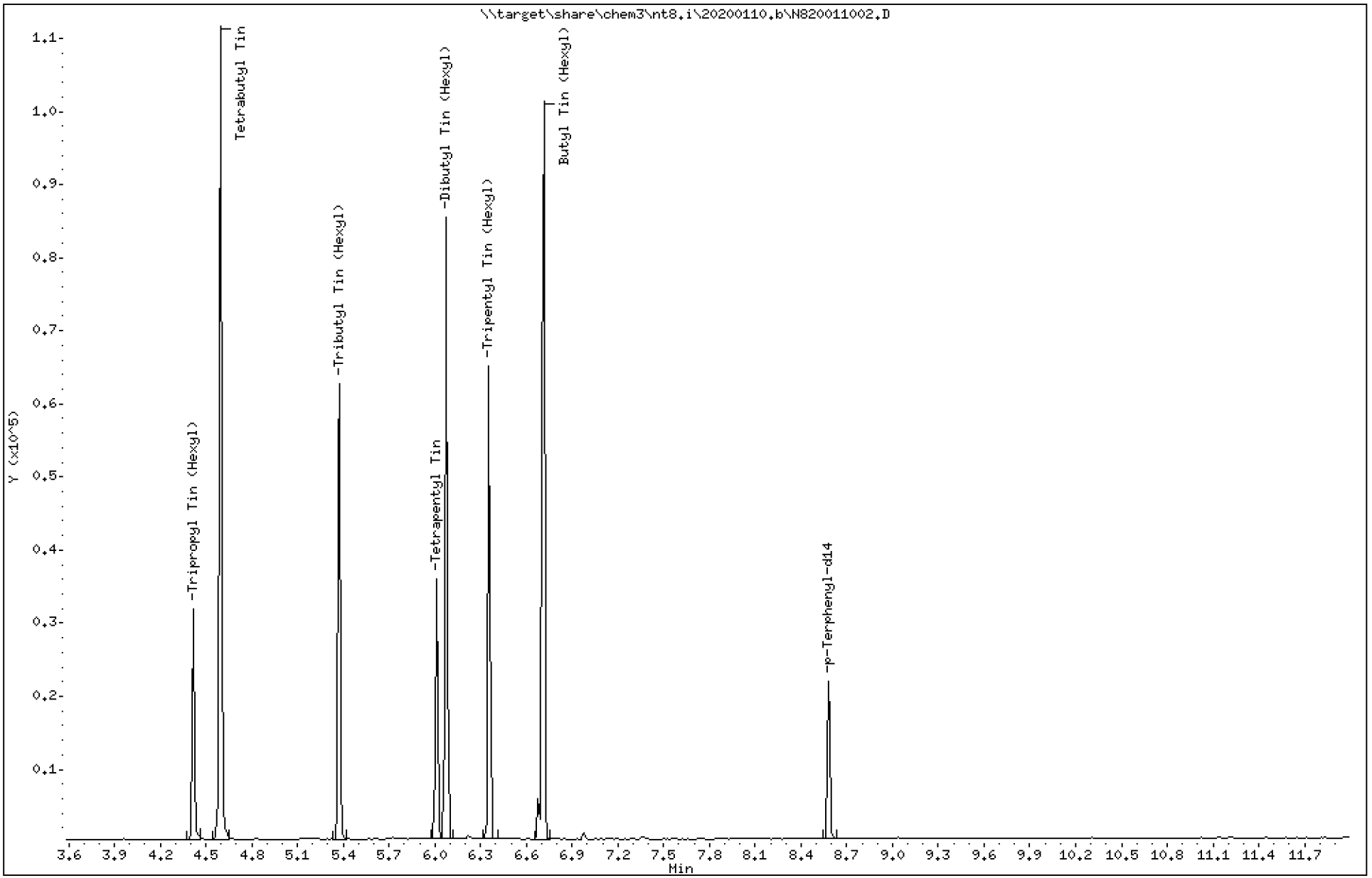
Sample Info: ICV200110

Instrument: nt8.i

Operator: JZ

Column phase: ZB-5msi

Column diameter: 0.25



ARI Labs, Inc.

Krone1989/8270D-SIM

Data file : \\target\share\chem3\nt8.i\20200110.b\N820011002.D
Lab Smp Id: SIA0124-ICV1
Inj Date  : 10-JAN-2020 11:25
Operator  : JZ  Inst ID: nt8.i
Smp Info  : ICV200110
Misc Info : 20-
Comment   : 2 ul Injection
Method    : \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Meth Date : 10-Jan-2020 12:18 nt8.i  Quant Type: ISTD
Cal Date  : 03-JAN-2020 11:39  Cal File: N820010307.D
Als bottle: 2  Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: ICAL.sub
Target Version:  4.14
Processing Host: ORGDATA22

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT (ug/mL) | ON-COL (ug/mL) |
|---|---|---|---|---|---|---|---|---|
| $ | 1 Tripropyl Tin (Hexyl) | 291 | 4.419 | 4.419 | (0.735) | 17377 | 1.00000 | 0.9930 |
| | 2 Tetrabutyl Tin | 289 | 4.596 | 4.596 | (0.764) | 15852 | 1.00000 | 0.9283 |
| | 3 Tributyl Tin (Hexyl) | 319 | 5.377 | 5.377 | (0.894) | 13030 | 1.00000 | 0.9235 |
| * | 4 Tetrapentyl Tin | 333 | 6.013 | 6.013 | (1.000) | 33516 | 2.00000 | |
| | 5 Dibutyl Tin (Hexyl) | 347 | 6.073 | 6.073 | (0.708) | 18742 | 2.00000 | 1.869 |
| $ | 6 Tripentyl Tin (Hexyl) | 347 | 6.351 | 6.351 | (0.740) | 28150 | 2.00000 | 2.042 |
| | 7 Butyl Tin (Hexyl) | 347 | 6.714 | 6.714 | (0.783) | 31906 | 2.00000 | 1.771 |
| * | 8 p-Terphenyl-d14 | 244 | 8.577 | 8.577 | (1.000) | 28362 | 0.20000 | |

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt8.i
Lab File ID: N820011002.D
Lab Smp Id: SIA0124-ICV1
Analysis Type: SV
Quant Type: ISTD
Operator: JZ
Method File: \\target\share\chem3\nt8.i\20200110.b\TBT200103.m
Misc Info: 20-

Calibration Date: 10-JAN-2020
Calibration Time: 11:25
Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

| | | AREA LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 43350 | 21675 | 86700 | 33516 | -22.69 |
| 8 p-Terphenyl-d14 | 36156 | 18078 | 72312 | 28362 | -21.56 |

| | | RT LIMIT | | | |
|---|---|---|---|---|---|
| COMPOUND | STANDARD | LOWER | UPPER | SAMPLE | %DIFF |
| 4 Tetrapentyl Tin | 6.01 | 5.51 | 6.51 | 6.01 | 0.00 |
| 8 p-Terphenyl-d14 | 8.58 | 8.08 | 9.08 | 8.58 | 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 - N820011002.D

Lab ID: SIA0124-ICV1
nt8.i,  20200110.b\TBT200103.m,    10-JAN-2020 11:25

| RT | CO-ELUTION COMPOUNDS |
|---|---|

NO CO-ELUTIONS

Quant Method: ICAL

No RRT check.  Ccal file.

On Column LOD for nt8.i, 20200110.b\TBT200103.m, ICAL.sub =  0.0000

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

Q-FLAG SUMMARY FOR DATABATCH - \\target\share\chem3\nt8.i\20200110.b

Instrument: nt8.i  Date: 10-JAN-2020  Method: 20200110.b\TBT200103.m

INITIAL CAL: 03-JAN-2020

| Compound | %RSD or R^2 |
|---|---|
| NO Q-FLAGS | |

ICV CAL: N820011002.D  10-JAN-2020 11:25

| Compound | %D |
|---|---|
| NO Q-FLAGS | |

# ANALYSIS BATCH (SEQUENCE) SUMMARY

## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Sequence: | SIA0018 | Instrument: | NT8 |
| | | Calibration: | DA00008 |

| Sample Name | Lab Sample ID | Lab File ID | Matrix | Analysis Date/Time |
|---|---|---|---|---|
| MS Tune | SIA0018-TUN1 | N820010301.D | NA | 01/03/20 10:03 |
| TBT Cal 4 | SIA0018-CAL4 | N820010302.D | NA | 01/03/20 10:15 |
| TBT Cal 1 | SIA0018-CAL1 | N820010303.D | NA | 01/03/20 10:34 |
| TBT Cal 2 | SIA0018-CAL2 | N820010304.D | NA | 01/03/20 10:50 |
| TBT Cal 3 | SIA0018-CAL3 | N820010305.D | NA | 01/03/20 11:06 |
| TBT Cal 5 | SIA0018-CAL5 | N820010306.D | NA | 01/03/20 11:23 |
| TBT Cal 6 | SIA0018-CAL6 | N820010307.D | NA | 01/03/20 11:39 |
| Secondary Cal Check | SIA0018-SCV1 | N820010308.D | NA | 01/03/20 13:23 |

Printed: 1/3/2020 2:19:48PM

# ANALYSIS SEQUENCE

**SIA0018**

Instrument: NT8 Element Column ID: H004092
Calibration ID: DA00008 Tune File: 191025.U
EM Voltage: 2118

| Lab Number | Sample Name | Analysis | Container | Order | STD ID | ISTD ID | Comments |
|---|---|---|---|---|---|---|---|
| SIA0018-TUN1 | MS Tune | QC | | 1 | H010226 | | |
| SIA0018-CAL1 | TBT Cal 1 | QC | | 2 | I000064 | H004622 | |
| SIA0018-CAL2 | TBT Cal 2 | QC | | 3 | I000065 | H004622 | |
| SIA0018-CAL3 | TBT Cal 3 | QC | | 4 | I000066 | H004622 | |
| SIA0018-CAL4 | TBT Cal 4 | QC | | 5 | I000067 | H004622 | |
| SIA0018-CAL5 | TBT Cal 5 | QC | | 6 | I000068 | H004622 | |
| SIA0018-CAL6 | TBT Cal 6 | QC | | 7 | I000069 | H004622 | |
| SIA0018-SCV1 | Secondary Cal Check | QC | | 8 | I000096 | H004622 | |

# INTERNAL STANDARD SUMMARY FOR DATABATCH - \\target\share\chem3\nt8.i\20200103.b

| | Time | Filename | LabID | ClientId | DF | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1003 | N820010301.D | SIA0018-TUN1 | | 1 | NO ISTDS FOUND | | | |
| 2 | 1015 | N820010302.D | SIA0018-CAL4 | | 1 | 6.01 | 43350 | 8.58 | 36156 |
| 3 | 1034 | N820010303.D | SIA0018-CAL1 | | 1 | 6.01 | 35297 | 8.59 | 30580 |
| 4 | 1050 | N820010304.D | SIA0018-CAL2 | | 1 | 6.01 | 34803 | 8.58 | 31227 |
| 5 | 1106 | N820010305.D | SIA0018-CAL3 | | 1 | 6.01 | 34476 | 8.58 | 29989 |
| 6 | 1123 | N820010306.D | SIA0018-CAL5 | | 1 | 6.01 | 36874 | 8.58 | 29614 |
| 7 | 1139 | N820010307.D | SIA0018-CAL6 | | 1 | 6.01 | 39335 | 8.58 | 29071 |
| 8 | 1323 | N820010308.D | SIA0018-SCV1 | | 1 | 6.01 | 30619 | 8.59 | 26292 |

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem3\nt8.i\20200103.b

ARI Job No.: SIA0  Method: TBT200103.m  Instrument: nt8.i  Date: 03-JAN-2020

| Time | Filename | LabID | ClientId | DF | Manually Integrated Compounds |
|---|---|---|---|---|---|
| 1015 | N820010302.D | SIA0018-CAL4 | | 1 | NO MANUAL INTEGRATION |
| 1034 | N820010303.D | SIA0018-CAL1 | | 1 | NO MANUAL INTEGRATION |
| 1050 | N820010304.D | SIA0018-CAL2 | | 1 | NO MANUAL INTEGRATION |
| 1106 | N820010305.D | SIA0018-CAL3 | | 1 | NO MANUAL INTEGRATION |
| 1123 | N820010306.D | SIA0018-CAL5 | | 1 | NO MANUAL INTEGRATION |
| 1139 | N820010307.D | SIA0018-CAL6 | | 1 | NO MANUAL INTEGRATION |
| 1323 | N820010308.D | SIA0018-SCV1 | | 1 | NO MANUAL INTEGRATION |

Security Status Report

Date: 03-Jan-2020 14:30

| | | |
|---|---|---|
| N820010301.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010302.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010303.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010304.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010305.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010306.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010307.D | Data Locked | jianqing, 03-Jan-2020 14:30 |
| N820010308.D | Data Locked | jianqing, 03-Jan-2020 14:30 |

# ANALYSIS BATCH (SEQUENCE) SUMMARY

## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Sequence: | SIA0124 | Instrument: | NT8 |
| | | Calibration: | DA00008 |

| Sample Name | Lab Sample ID | Lab File ID | Matrix | Analysis Date/Time |
|---|---|---|---|---|
| MS Tune | SIA0124-TUN1 | N820011001.D | NA | 01/10/20 10:32 |
| Initial Cal Check | SIA0124-ICV1 | N820011002.D | NA | 01/10/20 11:25 |
| Blank | BIA0051-BLK1 | N820011003.D | Solid | 01/10/20 11:58 |
| LCS | BIA0051-BS1 | N820011004.D | Solid | 01/10/20 12:15 |
| PDI-134RAB-00-10-191120 | 19K0396-01 | N820011005.D | Solid | 01/10/20 12:41 |
| PDI-135RAB-00-10-191120 | 19K0396-04 | N820011008.D | Solid | 01/10/20 13:30 |
| PDI-135RAB-10-20-191120 | 19K0396-05 | N820011009.D | Solid | 01/10/20 13:47 |
| PDI-135RAB-10-20-191120 | BIA0051-MS1 | N820011010.D | Solid | 01/10/20 14:03 |
| PDI-135RAB-10-20-191120 | BIA0051-MSD1 | N820011011.D | Solid | 01/10/20 14:19 |
| PDI-136RAB-00-10-191119 | 19K0396-07 | N820011013.D | Solid | 01/10/20 14:52 |
| PDI-136RAB-10-13.4-191119 | 19K0396-08 | N820011014.D | Solid | 01/10/20 15:08 |
| PDI-137RAB-00-10-191119 | 19K0396-09 | N820011015.D | Solid | 01/10/20 15:24 |
| PDI-137RAB-10-17.7-191119 | 19K0396-10 | N820011016.D | Solid | 01/10/20 15:41 |
| PDI-134RAB-20-25.5-191120 | 19K0396-03 | N820011018.D | Solid | 01/10/20 16:13 |
| PDI-135RAB-20-26.2-191120 | 19K0396-06 | N820011019.D | Solid | 01/10/20 16:30 |
| PDI-134RAB-10-20-191120 | 19K0396-02 | N820011020.D | Solid | 01/10/20 16:46 |

**Work Order(s):** 19K0396

## Checklist for SEQUENCE SIA0124

## Checklist: Analyst Checklist-SVOA(rev4)

| # | Checklist Item | Response | | Analyst Initials | Date |
|---|---|---|---|---|---|
| 1 | Instrument maintenance is recorded in Element | YES | | JZ | 01/10/2020 |
| 2 | DFTPP abundance and time criteria met (8270D only) | YES | | JZ | 01/10/2020 |
| 3 | DDT Breakdown <20% and Peak Tailing <=2 (8270D only) | YES | | JZ | 01/10/2020 |
| 4 | Narrate all Internal Standard areas not within 50-200% for all affected Workorders | NA | | JZ | 01/10/2020 |
| 5 | Retention times within windows and Coelution summary checked for all Workorders | YES | | JZ | 01/10/2020 |
| 6 | Rationale provided for all manual integrations not done for baseline correction per SOP 1021s | YES | | JZ | 01/10/2020 |
| 7 | Narrate any Workorders where the Project specific requirements have not been met | NA | | JZ | 01/10/2020 |
| 8 | Extraction basis, cleanups, and total solids are correctly entered | YES | | JZ | 01/10/2020 |
| 9 | An extract dilution bench sheet is attached to the sequence PDF for all dilutions performed | NA | | JZ | 01/10/2020 |
| 10 | AUTOCHECK: Blank checked for exceedence of criteria | YES | * | JZ | 01/10/2020 |
| 11 | AUTOCHECK: Check blank spike recovery | YES | * | JZ | 01/10/2020 |
| 12 | AUTOCHECK: Check blank spike/blank spike duplicate RPD. If exceeded include outliers in exception report. | NA | * | JZ | 01/10/2020 |
| 13 | AUTOCHECK: Compounds in method designated as blank spike compounds are present | YES | * | JZ | 01/10/2020 |
| 14 | AUTOCHECK: Check %RPD between sample and sample duplicate | NA | * | JZ | 01/10/2020 |
| 15 | AUTOCHECK: Matrix spike recoveries within limits | NA | * | JZ | 01/10/2020 |
| 16 | AUTOCHECK: Matrix spike/matrix spike duplicate RPD within limits | NA | * | JZ | 01/10/2020 |
| 17 | AUTOCHECK: List of compounds listed as spiked are present | NA | * | JZ | 01/10/2020 |
| 18 | AUTOCHECK: Check SRM limits for exceedance | NA | * | JZ | 01/10/2020 |
| 19 | AUTOCHECK: Check Surrogate recoveries | YES | * | JZ | 01/10/2020 |
| 20 | AUTOCHECK: Checks Surrogate spike list against Analysis | YES | * | JZ | 01/10/2020 |
| 21 | Data locked, checklist completed and status is analyzed (REVIEWER) | | | | 12/30/1899 |
| 22 | Color warnings have been addressed, narrated and (or) qualified (REVIEWER) | | | | 12/30/1899 |
| 23 | rev_DilutionCheck.rpt and rev_DilutionCheck.exe was run to verify multiple sample results are consistent (REVIEWER) | | | | 12/30/1899 |
| 24 | List samples by workorder or batch QC to be reanalyzed-verify rebatch created (ANALYST) | | | | 12/30/1899 |
| 25 | List samples by workorder or batch QC reanalyzed and samples reported from two or more analyses (ANALYST) | | | | 12/30/1899 |
| 26 | Additional Notes (ANALYST and REVIEWER) | NO | | JZ | 01/10/2020 |

Comments:
*Batch BIA0051: Reported to the MDL. Sample 19K0396-10: IS recoveries OK (if against the curve). Samples 19K0396-02 run with 15 X dilution (@ 1 X dilution IS recoveries out of QC limits, NR. @ 3 X dilution SS recoveries out of QC limits, NR). Sample 19L0396-03 run with 3 X dilution (@ 1 X dilution, IS recovery out of QC limit, NR).*

* = Indicates Automated Response from Element DataSyst

# SURROGATE RECOVERY AND RT SUMMARY

## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG/WO: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Sequence: | SIA0018 | Instrument: | NT8 |
| Calibration: | DA00008 | Calibration Date: | 01/03/2020 |

| Surrogate Compound | Spike Level ug/mL | % Recovery | Recovery Limits | RT | Calibration Mean RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|
| **SIA0018-SCV1 (Water)** | | | Lab File ID: N820010308.D | | | Analyzed: 01/03/20 13:23 | | |
| Tripentyltin | 0.79590 | 86.3 | 80 - 120 | 6.363 | 6.355 | 0.0080 | N/A | |

# SURROGATE RECOVERY AND RT SUMMARY

## EPA 8270D-SIM

Laboratory: Analytical Resources, Inc.
SDG/WO: 19K0396
Client: Anchor QEA, LLC
Project: Gasco PDI
Sequence: SIA0124
Instrument: NT8
Calibration: DA00008
Calibration Date: 01/03/2020

| Surrogate Compound | Spike Level ug/mL | % Recovery | Recovery Limits | RT | Calibration Mean RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|
| **SIA0124-ICV1 (Solid)** | | | | Lab File ID: N820011002.D | | | Analyzed: 01/10/20 11:25 | |
| Tripentyltin | 1.5918 | 102 | 80 - 120 | 6.351 | 6.355 | -0.0040 | N/A | |
| Tripropyltin | 0.74430 | 99.3 | 80 - 120 | 4.419 | 4.420833 | -0.0018 | N/A | |
| **BIA0051-BLK1 (Solid)** | | | | Lab File ID: N820011003.D | | | Analyzed: 01/10/20 11:58 | |
| Tripentyltin | 45.178 | 53.0 | 30 - 160 | 6.351 | 6.355 | -0.0040 | N/A | |
| Tripropyltin | 43.746 | 57.5 | 30 - 160 | 4.44 | 4.420833 | 0.0192 | N/A | |
| **BIA0051-BS1 (Solid)** | | | | Lab File ID: N820011004.D | | | Analyzed: 01/10/20 12:15 | |
| Tripentyltin | 45.178 | 57.4 | 30 - 160 | 6.351 | 6.355 | -0.0040 | N/A | |
| Tripropyltin | 43.746 | 61.3 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **19K0396-01 (Solid)** | | | | Lab File ID: N820011005.D | | | Analyzed: 01/10/20 12:41 | |
| Tripentyltin | 54.417 | 32.2 | 30 - 160 | 6.363 | 6.355 | 0.0080 | N/A | |
| Tripropyltin | 52.692 | 37.5 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **19K0396-04 (Solid)** | | | | Lab File ID: N820011008.D | | | Analyzed: 01/10/20 13:30 | |
| Tripentyltin | 53.103 | 36.7 | 30 - 160 | 6.363 | 6.355 | 0.0080 | N/A | |
| Tripropyltin | 51.420 | 39.1 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **19K0396-05 (Solid)** | | | | Lab File ID: N820011009.D | | | Analyzed: 01/10/20 13:47 | |
| Tripentyltin | 53.051 | 43.7 | 30 - 160 | 6.351 | 6.355 | -0.0040 | N/A | |
| Tripropyltin | 51.369 | 45.6 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **BIA0051-MS1 (Solid)** | | | | Lab File ID: N820011010.D | | | Analyzed: 01/10/20 14:03 | |
| Tripentyltin | 53.475 | 47.4 | 30 - 160 | 6.363 | 6.355 | 0.0080 | N/A | |
| Tripropyltin | 51.780 | 48.3 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **BIA0051-MSD1 (Solid)** | | | | Lab File ID: N820011011.D | | | Analyzed: 01/10/20 14:19 | |
| Tripentyltin | 53.475 | 43.3 | 30 - 160 | 6.363 | 6.355 | 0.0080 | N/A | |
| Tripropyltin | 51.780 | 45.5 | 30 - 160 | 4.461 | 4.420833 | 0.0402 | N/A | |
| **19K0396-07 (Solid)** | | | | Lab File ID: N820011013.D | | | Analyzed: 01/10/20 14:52 | |
| Tripentyltin | 53.812 | 38.5 | 30 - 160 | 6.351 | 6.355 | -0.0040 | N/A | |
| Tripropyltin | 52.106 | 42.2 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **19K0396-08 (Solid)** | | | | Lab File ID: N820011014.D | | | Analyzed: 01/10/20 15:08 | |
| Tripentyltin | 53.010 | 37.4 | 30 - 160 | 6.351 | 6.355 | -0.0040 | N/A | |
| Tripropyltin | 51.329 | 38.4 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |

# SURROGATE RECOVERY AND RT SUMMARY

## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG/WO: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Sequence: | SIA0124 | Instrument: | NT8 |
| Calibration: | DA00008 | Calibration Date: | 01/03/2020 |

| Surrogate Compound | Spike Level ug/kg dry | % Recovery | Recovery Limits | RT | Calibration Mean RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|
| **19K0396-09 (Solid)** | | | | Lab File ID: N820011015.D | | | Analyzed: 01/10/20 15:24 | |
| Tripentyltin | 55.291 | 40.6 | 30 - 160 | 6.351 | 6.355 | -0.0040 | N/A | |
| Tripropyltin | 53.539 | 38.0 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **19K0396-10 (Solid)** | | | | Lab File ID: N820011016.D | | | Analyzed: 01/10/20 15:41 | |
| Tripentyltin | 55.896 | 50.2 | 30 - 160 | 6.375 | 6.355 | 0.0200 | N/A | |
| Tripropyltin | 54.124 | 33.6 | 30 - 160 | 4.471 | 4.420833 | 0.0502 | N/A | |
| **19K0396-03 (Solid)** | | | | Lab File ID: N820011018.D | | | Analyzed: 01/10/20 16:13 | |
| Tripentyltin | 60.359 | 43.8 | 30 - 160 | 6.376 | 6.355 | 0.0210 | N/A | |
| Tripropyltin | 58.446 | 31.9 | 30 - 160 | 4.461 | 4.420833 | 0.0402 | N/A | |
| **19K0396-06 (Solid)** | | | | Lab File ID: N820011019.D | | | Analyzed: 01/10/20 16:30 | |
| Tripentyltin | 55.730 | 31.4 | 30 - 160 | 6.363 | 6.355 | 0.0080 | N/A | |
| Tripropyltin | 53.964 | 32.1 | 30 - 160 | 4.45 | 4.420833 | 0.0292 | N/A | |
| **19K0396-02 (Solid)** | | | | Lab File ID: N820011020.D | | | Analyzed: 01/10/20 16:46 | |
| Tripentyltin | 58.752 | 39.4 | 30 - 160 | 6.363 | 6.355 | 0.0080 | N/A | |
| Tripropyltin | 56.889 | 34.0 | 30 - 160 | 4.44 | 4.420833 | 0.0192 | N/A | |

# INTERNAL STANDARD AREA AND RT SUMMARY

## EPA 8270D-SIM

| | | | |
|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | SDG: | 19K0396 |
| Client: | Anchor QEA, LLC | Project: | Gasco PDI |
| Sequence: | SIA0018 | Instrument: | NT8 |
| | | Calibration: | DA00008 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (SIA0018-SCV1 )** | | (Water) | | Lab File ID: N820010308.D | | | | Analyzed: 01/03/20 13:23 | |
| Tetrapentyltin | 30619 | 6.013 | 43350 | 6.013 | 71 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 26292 | 8.59 | 36156 | 8.577 | 73 | 50 - 200 | 0.013 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY

## EPA 8270D-SIM

Laboratory: Analytical Resources, Inc.
SDG: 19K0396
Client: Anchor QEA, LLC
Project: Gasco PDI
Sequence: SIA0124
Instrument: NT8
Calibration: DA00008

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (SIA0124-ICV1 )** | | (Solid) | | Lab File ID: N820011002.D | | | | Analyzed: 01/10/20 11:25 | |
| Tetrapentyltin | 33516 | 6.013 | 33516 | 6.013 | 100 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 28362 | 8.577 | 28362 | 8.577 | 100 | 50 - 200 | 0.000 | +/-0.50 | |
| **Blank (BIA0051-BLK1 )** | | (Solid) | | Lab File ID: N820011003.D | | | | Analyzed: 01/10/20 11:58 | |
| Tetrapentyltin | 26277 | 6.013 | 33516 | 6.013 | 78 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 22457 | 8.59 | 28362 | 8.577 | 79 | 50 - 200 | 0.013 | +/-0.50 | |
| **LCS (BIA0051-BS1 )** | | (Solid) | | Lab File ID: N820011004.D | | | | Analyzed: 01/10/20 12:15 | |
| Tetrapentyltin | 25702 | 6.001 | 33516 | 6.013 | 77 | 50 - 200 | -0.012 | +/-0.50 | |
| p-Terphenyl-d14 | 22743 | 8.577 | 28362 | 8.577 | 80 | 50 - 200 | 0.000 | +/-0.50 | |
| **PDI-134RAB-00-10-191120 (19K0396-01 )** | | (Solid) | | Lab File ID: N820011005.D | | | | Analyzed: 01/10/20 12:41 | |
| Tetrapentyltin | 38570 | 6.025 | 33516 | 6.013 | 115 | 50 - 200 | 0.012 | +/-0.50 | |
| p-Terphenyl-d14 | 36845 | 8.59 | 28362 | 8.577 | 130 | 50 - 200 | 0.013 | +/-0.50 | |
| **PDI-135RAB-00-10-191120 (19K0396-04 )** | | (Solid) | | Lab File ID: N820011008.D | | | | Analyzed: 01/10/20 13:30 | |
| Tetrapentyltin | 48495 | 6.013 | 33516 | 6.013 | 145 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 44257 | 8.578 | 28362 | 8.577 | 156 | 50 - 200 | 0.001 | +/-0.50 | |
| **PDI-135RAB-10-20-191120 (19K0396-05 )** | | (Solid) | | Lab File ID: N820011009.D | | | | Analyzed: 01/10/20 13:47 | |
| Tetrapentyltin | 43897 | 6.013 | 33516 | 6.013 | 131 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 36817 | 8.577 | 28362 | 8.577 | 130 | 50 - 200 | 0.000 | +/-0.50 | |
| **Matrix Spike (BIA0051-MS1 )** | | (Solid) | | Lab File ID: N820011010.D | | | | Analyzed: 01/10/20 14:03 | |
| Tetrapentyltin | 46080 | 6.013 | 33516 | 6.013 | 137 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 39376 | 8.577 | 28362 | 8.577 | 139 | 50 - 200 | 0.000 | +/-0.50 | |
| **Matrix Spike Dup (BIA0051-MSD1 )** | | (Solid) | | Lab File ID: N820011011.D | | | | Analyzed: 01/10/20 14:19 | |
| Tetrapentyltin | 47430 | 6.013 | 33516 | 6.013 | 142 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 42134 | 8.577 | 28362 | 8.577 | 149 | 50 - 200 | 0.000 | +/-0.50 | |
| **PDI-136RAB-00-10-191119 (19K0396-07 )** | | (Solid) | | Lab File ID: N820011013.D | | | | Analyzed: 01/10/20 14:52 | |
| Tetrapentyltin | 43993 | 6.013 | 33516 | 6.013 | 131 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 41634 | 8.577 | 28362 | 8.577 | 147 | 50 - 200 | 0.000 | +/-0.50 | |
| **PDI-136RAB-10-13.4-191119 (19K0396-08 )** | | (Solid) | | Lab File ID: N820011014.D | | | | Analyzed: 01/10/20 15:08 | |
| Tetrapentyltin | 42883 | 6.013 | 33516 | 6.013 | 128 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 35550 | 8.578 | 28362 | 8.577 | 125 | 50 - 200 | 0.001 | +/-0.50 | |
| **PDI-137RAB-00-10-191119 (19K0396-09 )** | | (Solid) | | Lab File ID: N820011015.D | | | | Analyzed: 01/10/20 15:24 | |
| Tetrapentyltin | 43919 | 6.013 | 33516 | 6.013 | 131 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 35486 | 8.578 | 28362 | 8.577 | 125 | 50 - 200 | 0.001 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY

## EPA 8270D-SIM

Laboratory: Analytical Resources, Inc.
SDG: 19K0396
Client: Anchor QEA, LLC
Project: Gasco PDI
Sequence: SIA0124
Instrument: NT8
Calibration: DA00008

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **PDI-137RAB-10-17.7-191119 (19K0396-10 )** | | (Solid) | | Lab File ID: N820011016.D | | | | Analyzed: 01/10/20 15:41 | |
| Tetrapentyltin | 68323 | 6.025 | 33516 | 6.013 | 204 | 50 - 200 | 0.012 | +/-0.50 | * |
| p-Terphenyl-d14 | 43979 | 8.59 | 28362 | 8.577 | 155 | 50 - 200 | 0.013 | +/-0.50 | |
| **PDI-134RAB-20-25.5-191120 (19K0396-03 )** | | (Solid) | | Lab File ID: N820011018.D | | | | Analyzed: 01/10/20 16:13 | |
| Tetrapentyltin | 65454 | 6.037 | 33516 | 6.013 | 195 | 50 - 200 | 0.024 | +/-0.50 | |
| p-Terphenyl-d14 | 42218 | 8.578 | 28362 | 8.577 | 149 | 50 - 200 | 0.001 | +/-0.50 | |
| **PDI-135RAB-20-26.2-191120 (19K0396-06 )** | | (Solid) | | Lab File ID: N820011019.D | | | | Analyzed: 01/10/20 16:30 | |
| Tetrapentyltin | 47190 | 6.013 | 33516 | 6.013 | 141 | 50 - 200 | 0.000 | +/-0.50 | |
| p-Terphenyl-d14 | 41549 | 8.577 | 28362 | 8.577 | 146 | 50 - 200 | 0.000 | +/-0.50 | |
| **PDI-134RAB-10-20-191120 (19K0396-02 )** | | (Solid) | | Lab File ID: N820011020.D | | | | Analyzed: 01/10/20 16:46 | |
| Tetrapentyltin | 61973 | 6.025 | 33516 | 6.013 | 185 | 50 - 200 | 0.012 | +/-0.50 | |
| p-Terphenyl-d14 | 41063 | 8.577 | 28362 | 8.577 | 145 | 50 - 200 | 0.000 | +/-0.50 | |

# HOLDING TIME SUMMARY

**Analysis: EPA 8270D-SIM**

Laboratory: Analytical Resources, Inc. SDG: 19K0396

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-134RAB-00-10-191120<br>19K0396-01 | 11/20/19<br>14:45 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>12:41 | 3 | 40 | |
| PDI-134RAB-10-20-191120<br>19K0396-02 | 11/20/19<br>15:30 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>16:46 | 3 | 40 | |
| PDI-134RAB-20-25.5-191120<br>19K0396-03 | 11/20/19<br>15:55 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>16:13 | 3 | 40 | |
| PDI-135RAB-00-10-191120<br>19K0396-04 | 11/20/19<br>09:20 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>13:30 | 3 | 40 | |
| PDI-135RAB-10-20-191120<br>19K0396-05 | 11/20/19<br>09:55 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>13:47 | 3 | 40 | |
| PDI-135RAB-20-26.2-191120<br>19K0396-06 | 11/20/19<br>11:00 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>16:30 | 3 | 40 | |
| PDI-136RAB-00-10-191119<br>19K0396-07 | 11/19/19<br>09:20 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 48 | 365 | 01/10/20<br>14:52 | 3 | 40 | |
| PDI-136RAB-10-13.4-191119<br>19K0396-08 | 11/19/19<br>10:00 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 48 | 365 | 01/10/20<br>15:08 | 3 | 40 | |
| PDI-137RAB-00-10-191119<br>19K0396-09 | 11/19/19<br>12:15 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 48 | 365 | 01/10/20<br>15:24 | 3 | 40 | |
| PDI-137RAB-10-17.7-191119<br>19K0396-10 | 11/19/19<br>12:50 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 48 | 365 | 01/10/20<br>15:41 | 3 | 40 | |
| Matrix Spike<br>BIA0051-MS1 | 11/20/19<br>09:55 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>14:03 | 3 | 40 | |
| Matrix Spike Dup<br>BIA0051-MSD1 | 11/20/19<br>09:55 | 11/26/19<br>10:22 | 01/07/20<br>09:05 | 47 | 365 | 01/10/20<br>14:19 | 3 | 40 | |

* Indicates hold time exceedance.

# METHOD DETECTION AND REPORTING LIMITS

## EPA 8270D-SIM

Laboratory: Analytical Resources, Inc. SDG: 19K0396

Client: Anchor QEA, LLC Project: Gasco PDI

Matrix: Solid Instrument: NT8

| 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: 19K0396

Client: Anchor QEA, LLC Project: Gasco PDI

Matrix: Water Instrument: NT8

| 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-134RAB-00-10-191120**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-01 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 14:45 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 82.36 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 82.36 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-134RAB-10-20-191120**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-02 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 15:30 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 76.90 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 76.90 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-134RAB-20-25.5-191120**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-03 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 15:55 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 74.55 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 74.55 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-135RAB-00-10-191120**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-04 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 09:20 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 84.40 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 84.40 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-135RAB-10-20-191120**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-05 B | SDG: | 19K0396 |
| Sampled: | 11/20/19 09:55 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 84.48 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 84.48 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-135RAB-20-26.2-191120**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-06 A | SDG: | 19K0396 |
| Sampled: | 11/20/19 11:00 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 80.74 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 80.74 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-136RAB-00-10-191119**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-07 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 09:20 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 83.46 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 83.46 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-136RAB-10-13.4-191119**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-08 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 10:00 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 84.89 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 84.89 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-137RAB-00-10-191119**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-09 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 12:15 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 81.71 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 81.71 | 1 | 0.04 | 0.04 | |

# Form I
# INORGANIC ANALYSIS DATA SHEET
# SM 2540 G-97

**PDI-137RAB-10-17.7-191119**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Analytical Resources, Inc. | | | | |
| Client: | Anchor QEA, LLC | | | | |
| Project: | Gasco PDI | | | | |
| Matrix: | Solid | Laboratory ID: | 19K0396-10 A | SDG: | 19K0396 |
| Sampled: | 11/19/19 12:50 | Prepared: | 12/03/19 21:25 | File ID: | |
| % Solids: | 80.50 | Preparation: | No Prep Wet Chem | Analyzed: | 12/03/19 22:34 |
| Batch: | BHL0068 | Sequence: | | Initial/Final: | 10 g Wet / 10 g |
| Instrument: | BAL2 | | | Calibration: | |

| CAS NO. | Analyte | Concentration (%) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| | Total Solids | 80.50 | 1 | 0.04 | 0.04 | |

# PREPARATION BATCH SUMMARY

## SM 2540 G-97

Laboratory: Analytical Resources, Inc. SDG: 19K0396

Client: Anchor QEA, LLC Project: Gasco PDI

Batch: BHL0068 Batch Matrix: Solid Preparation: No Prep Wet Chem

| SAMPLE NAME | LAB SAMPLE ID | LAB FILE ID | DATE PREPARED | OBSERVATIONS |
|---|---|---|---|---|
| PDI-134RAB-00-10-191120 | 19K0396-01 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-134RAB-10-20-191120 | 19K0396-02 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-134RAB-20-25.5-191120 | 19K0396-03 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-135RAB-00-10-191120 | 19K0396-04 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-135RAB-10-20-191120 | 19K0396-05 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-135RAB-20-26.2-191120 | 19K0396-06 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-136RAB-00-10-191119 | 19K0396-07 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-136RAB-10-13.4-191119 | 19K0396-08 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-137RAB-00-10-191119 | 19K0396-09 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| PDI-137RAB-10-17.7-191119 | 19K0396-10 | | 12/03/19 21:25 | Use instead of PSEP %TS |
| Blank | BHL0068-BLK1 | | 12/03/19 21:25 | |
| PDI-135RAB-10-20-191120 | BHL0068-DUP2 | | 12/03/19 21:25 | |

**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:** | BHL0068 |
| **Date:** | 12/3/2019 22:34 |
| **Analyst:** | KLE |

**Instrumentation**

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

**Batch drying time**

record times as mm/dd/yy hh:mm

**date/time in oven:** 12/3/2019 22:34

**date/time out:** 12/4/2019 17:06

**elapsed hrs =** 18.5 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:** | 12/3/19 21:52 | 12/3/19 22:02 | 12/4/19 17:24 | | | | | | |
| **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) | (%) | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BHL0068-BLK1 | 1 | 1.1690 | 0.0000 | 1.1690 | | | 0.0000 | 0.00% | | | | | | | | |
| 19K0394-03 | 2 | 0.7794 | 7.7615 | 6.8043 | | | 6.0249 | 86.29% | | | | | | | | |
| 19K0394-04 | 3 | 0.7992 | 8.2924 | 7.1568 | | | 6.3576 | 84.84% | | | | | | | | |
| 19K0394-05 | 4 | 0.7985 | 9.0430 | 7.3235 | | | 6.5250 | 79.14% | | | | | | | | |
| 19K0394-06 | 5 | 0.7956 | 8.7677 | 7.2337 | | | 6.4381 | 80.76% | | | | | | | | |
| 19K0394-07 | 6 | 1.1149 | 7.9137 | 6.2419 | | | 5.1270 | 75.41% | | | | | | | | |
| 19K0394-08 | 7 | 0.7926 | 8.6580 | 6.7201 | | | 5.9275 | 75.36% | | | | | | | | |
| 19K0394-09 | 8 | 0.7993 | 7.0666 | 6.4839 | | | 5.6846 | 90.70% | | | | | | | | |
| BHL0068-DUP1 | 9 | 0.7948 | 7.4718 | 6.8258 | | | 6.0310 | 90.32% | RPD=0.4 | | | | | | | |
| 19K0394-10 | 10 | 0.7949 | 8.1311 | 7.5162 | | | 6.7213 | 91.62% | | | | | | | | |
| 19K0394-11 | 11 | 1.0870 | 7.9616 | 7.4059 | | | 6.3189 | 91.92% | | | | | | | | |
| 19K0396-01 | 12 | 1.1534 | 7.4963 | 6.3776 | | | 5.2242 | 82.36% | | | | | | | | |
| 19K0396-02 | 13 | 1.1260 | 6.8182 | 5.5031 | | | 4.3771 | 76.90% | | | | | | | | |
| 19K0396-03 | 14 | 1.1183 | 7.6002 | 5.9506 | | | 4.8323 | 74.55% | | | | | | | | |
| 19K0396-04 | 15 | 1.1051 | 6.8129 | 5.9225 | | | 4.8174 | 84.40% | | | | | | | | |
| 19K0396-05 | 16 | 1.1357 | 7.2489 | 6.3004 | | | 5.1647 | 84.48% | | | | | | | | |
| BHL0068-DUP2 | 17 | 1.1168 | 7.2794 | 6.3149 | | | 5.1981 | 84.35% | RSD=0.1 | | | | | | | |
| 19K0396-06 | 18 | 1.0695 | 6.3589 | 5.3403 | | | 4.2708 | 80.74% | | | | | | | | |
| 19K0396-07 | 19 | 0.7909 | 6.6392 | 5.6716 | | | 4.8807 | 83.46% | | | | | | | | |
| 19K0396-08 | 20 | 1.0504 | 7.1761 | 6.2503 | | | 5.1999 | 84.89% | | | | | | | | |
| 19K0396-09 | 21 | 0.7927 | 9.1859 | 7.6507 | | | 6.8580 | 81.71% | | | | | | | | |
| 19K0396-10 | 22 | 1.0449 | 6.9019 | 5.7600 | | | 4.7151 | 80.50% | | | | | | | | |

# Form I

## METHOD BLANK DATA SHEET

## SM 2540 G-97

TotalAnalytes

**Blank**

Laboratory: Analytical Resources, Inc.
SDG: 19K0396
Client: Anchor QEA, LLC
Project: Gasco PDI
Batch: BHL0068
Laboratory ID: BHL0068-BLK1
Prepared: 12/03/19 21:25
Matrix: Solid
Preparation: No Prep Wet Chem
Analyzed: 12/03/19 22:34
Sequence:
Calibration:
Instrument: BAL2

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

PDI-135RAB-10-20-191120

# DUPLICATES

## SM 2540 G-97

Laboratory: Analytical Resources, Inc.
SDG: 19K0396
Client: Anchor QEA, LLC
Project: Gasco PDI
Matrix: Solid
Laboratory ID: BHL0068-DUP2
Batch: BHL0068
Lab Source ID: 19K0396-05
Preparation: No Prep Wet Chem
Initial/Final: 10 g / 10 g
Source Sample Name: PDI-135RAB-10-20-191120
% Solids: 84.48

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (%) | C | DUPLICATE CONCENTRATION (%) | C | RPD % | Q |
|---|---|---|---|---|---|---|---|
| Total Solids | 20 | 84.48 | | 84.35 | | 0.160 | |

*: Values outside of QC limits
L: Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to Dup = +/- RL instead of 20% RPD

# HOLDING TIME SUMMARY

**Analysis: SM 2540 G-97**

Laboratory: Analytical Resources, Inc. SDG: 19K0396

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-134RAB-00-10-191120<br>19K0396-01 | 11/20/19<br>14:45 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 13 | 28 | 12/03/19<br>22:34 | 13 | 28 | |
| PDI-134RAB-10-20-191120<br>19K0396-02 | 11/20/19<br>15:30 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 13 | 28 | 12/03/19<br>22:34 | 13 | 28 | |
| PDI-134RAB-20-25.5-191120<br>19K0396-03 | 11/20/19<br>15:55 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 13 | 28 | 12/03/19<br>22:34 | 13 | 28 | |
| PDI-135RAB-00-10-191120<br>19K0396-04 | 11/20/19<br>09:20 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 13 | 28 | 12/03/19<br>22:34 | 14 | 28 | |
| PDI-135RAB-10-20-191120<br>19K0396-05 | 11/20/19<br>09:55 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 13 | 28 | 12/03/19<br>22:34 | 14 | 28 | |
| PDI-135RAB-20-26.2-191120<br>19K0396-06 | 11/20/19<br>11:00 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 13 | 28 | 12/03/19<br>22:34 | 13 | 28 | |
| PDI-136RAB-00-10-191119<br>19K0396-07 | 11/19/19<br>09:20 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 14 | 28 | 12/03/19<br>22:34 | 15 | 28 | |
| PDI-136RAB-10-13.4-191119<br>19K0396-08 | 11/19/19<br>10:00 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 14 | 28 | 12/03/19<br>22:34 | 15 | 28 | |
| PDI-137RAB-00-10-191119<br>19K0396-09 | 11/19/19<br>12:15 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 14 | 28 | 12/03/19<br>22:34 | 14 | 28 | |
| PDI-137RAB-10-17.7-191119<br>19K0396-10 | 11/19/19<br>12:50 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 14 | 28 | 12/03/19<br>22:34 | 14 | 28 | |
| Duplicate<br>BHL0068-DUP2 | 11/20/19<br>09:55 | 11/26/19<br>10:22 | 12/03/19<br>21:25 | 13 | 28 | 12/03/19<br>22:34 | 14 | 28 | |

* Indicates hold time exceedance.

# METHOD DETECTION AND REPORTING LIMITS

## SM 2540 G-97

Laboratory: Analytical Resources, Inc. SDG: 19K0396

Client: Anchor QEA, LLC Project: Gasco PDI

Matrix: Solid Instrument:

| Analyte | MDL | RL | Units |
|---|---|---|---|
| Total Solids | 0.04 | 0.04 | % |