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# **Analysis of Powered Air-Purifying Respirator (PAPR) Cartridge Performance Testing on Hanford Tanks SX-101 and SX-104**

## **Volume 2 – Raw Analytical Data**

**July 2020**

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Pacific Northwest National Laboratory  
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## **Acronyms and Abbreviations**

APR	air-purifying respirator
COPC	Chemicals of Potential Concern
DL	detection limit
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PAPR	powered air-purifying respirator
RL	reporting limit
WRPS	Washington River Protection Solutions







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## 1.0 Introduction

As the Tank Operations Contractor for U.S. Department of Energy operations at the Hanford site in Washington State, Washington River Protection Solutions (WRPS) is responsible for managing highly radioactive wastes stored in tanks at Hanford. WRPS identified the need to test air-purifying respirator (APR) and powered air-purifying respirator (PAPR) chemical cartridges commonly used at Hanford tank farms. The tests were conducted to determine the period of time the cartridges would provide adequate performance for APRs and PAPRs used to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPC) from any vapors exiting headspaces in the storage tanks. Occupational Safety and Health Administration (OSHA) Standard 29 Code of the Federal Regulations (CFR) 1910.134(d)(3)(iii)(b)(2) specifies that for protection against gases and vapors, employers shall implement a schedule for cartridges to ensure that change-outs occur before the end of service life.[1-4] The change schedule can be based on objective information or data that ensures cartridge change-outs occur before the end of their service life.[2-5] The primary function of the WRPS Cartridge Test Program is to obtain objective data to determine service lives for the APR and PAPR cartridges used at Hanford Tank Farms. WRPS contracted with Pacific Northwest National Laboratory to analyze the test data and offer an independent analysis and any recommendations. This report summarizes data analysis of PAPR cartridge testing on headspace vapors from Hanford SX-101 and SX-104 single-shell tanks. Two different PAPR cartridges—one from MSA Safety Inc. (Pittsburgh, Pennsylvania) and another from 3M (Maplewood, Minnesota)—were assessed on each tank headspace source on separate days. These data represent the first PAPR cartridge testing under the recent WRPS program, as testing to date had been focused on APR cartridges.

Volume 1 of this report documents the testing, data analysis, results, conclusions, and recommendations resulting from the PAPR testing on SX-101 and SX-104 headspace vapors. Volume 2 provides an introduction to the raw data, including analytical laboratory analysis results that supported the analysis and conclusions documented in Volume 1.



## 2.0 References

1. OSHA 29 CFR 1910.134,  
[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=standards&p\\_id=12716](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=12716).
2. OSHA Respirator Change Schedules – Decision Logic Flowcharts,  
<https://www.osha.gov/SLTC/etools/respiratory/decisionlogic/flowcharti.html>.
3. OSHA Respirator Change Schedules Mathematical Modeling, and Factors that Influence Cartridge Service Life, [https://www.osha.gov/SLTC/etools/respiratory/change\\_schedule.html](https://www.osha.gov/SLTC/etools/respiratory/change_schedule.html).
4. OSHA Standard Respirator Testing Procedures,  
<http://www.cdc.gov/niosh/npptl/stps/aprespbrn.html>.
5. Wood GO. 1994. “Estimating Service Lives of Organic Vapor Cartridges.” *American Industrial Hygiene Association Journal* 55:11–15.  
DOI: 10.1202/0002-8894(1994)055<0011:ESLOOV>2.0.CO;2.



## **Appendix C**

### **Raw Analytical Data**



## C.1 Description

This appendix includes raw data of flow rate, temperature, pressure, and humidity, as well as analytical data for tanks SX-101 and SX-104 headspace data sets. Calculations using this data are given in Appendix D of Volume 1.

The raw analytical data are included only in this appendix. Washington River Protection Solutions (WRPS) converted these data into Excel data spreadsheets that were transmitted to Pacific Northwest National Laboratory. Comments on that conversion are provided below.

The analytical measurements listed in Results spreadsheet columns were transferred from entries labeled 'result' in the raw analytical .pdf files. Where a results entry was given as 'ND' in the .pdf, a '<' symbol was used. Where a detection limit (DL)/reporting limit (RL) was listed as 'n/a,' the result entry in the spreadsheet was set at the DL or RL.

The use of the RL or a DL varied among analytical laboratories. The term RL (equivalent to a limit of quantification) was used instead of a DL by ALS Environmental Salt Lake City, Columbia Basin Analytical Laboratory, and 222S–Wastren Hanford Laboratory (see Table F.1 in Appendix F of Volume 1 for a complete correlation of which Chemicals of Potential Concern used an RL or a DL). The WRPS laboratory provided a DL rather an RL. Neither RLs nor DLs were provided for tentatively identified compounds (TIC).

Chain of custody information is provided clearly in the raw analytical data .pdf files, including analyte name, sample numbers, and laboratory-assigned numbers. Chemical Abstract Service numbers were provided by the respective analytical laboratory.

The nomenclature of the sample identification (ID) is the same for every set of chemicals. It is generally composed of a survey number, tank farm ID, test location, sample line, and tube bundle ID. Descriptions of these nomenclatures are given as follows:

- 'BL' means blank measurements obtained from sorbent tubes that have not had any vapor stream passed through them. 'BA' with either 'IN' or 'EF' means measurements obtained for ambient air (i.e. fresh air not tank vapor) running through the test system from the inlet (IN) or effluent (EF) locations before initiation of tank vapor testing.
- 'SD1' designations correspond to testing with the SCOTT 7422-SD1 respirator cartridge, 'SC1' designations correspond to testing with the SCOTT 7422-SC1 respirator cartridge, 'TL1' designations correspond to testing with the MSA Optifilter TL respirator cartridge, and 'TL2' designations correspond to testing with the 3M FR-57 respirator cartridge.
- Position designations 'IN' with '1' and 'EF' with '1' correspond to the respirator cartridge inlet and outlet measurements, respectively, at 0- to 2-hour time intervals. Position designations '2' through '8' correspond to the subsequent 2-hour measurements for inlet (IN) and outlet (EF): '2' (2 to 4 hours), '3' (4 to 6 hours), '4' (6 to 8 hours), '5' (8 to 10 hours), '6' (10 to 12 hours), '7' (12 to 14 hours), and '8' (14 to 16 hours).
- The sample IDs embed the information given above. For example, sample ID 17-04569-1-TL2-IN-2 corresponds to a particular cartridge survey (17-04569) identified as the 3M FR-57 cartridge with the (TL2), sample media line 1, influent (IN) sample bundle, and the second (2 to 4 hours) sample (-2).



- The target flow rate passing through the respirator cartridge was 30 L/min for the APR tests, and 95 L/min for the PAPR tests. The sampling flow rates through the sorption tubes ranged between 30 and 200 mL/min for different chemicals that were being collected. WRPS provided these flow rates as Excel files according to Table C.1.

**Table C.1.** Filenames of Sample Media Volumes Provided by WRPS

<b>Tank</b>	<b>Cartridge</b>	<b>Filename</b>
SX-104	3M FR-57	SX-104 3M FR57 TL2 6_24_17.xlsx
SX-104	MSA-TL	SX-104 MSA-TL TL1 6_23-17.xlsx
SX-104	Scott 7422-SC1	SX-104 SCOTT SC1 6_17_17.xlsx
SX-104	Scott 7422-SD1	SX-104 SCOTT SD1 6_16_17.xlsx
SX-101	3M FR-57	SX-101 3M FR57 TL2 6_17_17.xlsx
SX-101	MSA-TL	SX-101 MSA-TL TL1 6_16_17.xlsx
SX-101	Scott 7422-SC1	SX-101 SCOTT SC1 6_24_17.xlsx
SX-101	Scott 7422-SD1	SX-101 SCOTT SD1 6_23-17.xlsx

WRPS provided the temperature and humidity information in files listed in Table C.2. The information is shown in Section C.3. Several terms used in the DRI files are described below.

- ‘Pre’ and ‘Post’ indicate the general time signature when the direct read instrument measurements were taken. ‘Pre’ refers to the beginning of the 2-hour sample duration, and ‘Post’ refers to the end of the 2-hour sample duration.
- ‘Influent’ and ‘Effluent’ indicate the location of the measurement within the test system. ‘Influent’ measurements are taken at the inlet of the system upstream of the respirator cartridge. ‘Effluent’ measurements are taken downstream of the respirator cartridge. The pressure, temperature, and humidity effluent sensors are located at the end of the test system near the vacuum pump, whereas the DRI measurements for ammonia and volatile organic compounds (VOC) are from a sampling location between the respirator cartridge and the effluent sorbent tube samples.
- The DRI measurements for ammonia and VOCs could not be taken while the test system sample pumps were operational. ‘After Sample Taken’ refers to the time signature for these direct read results (e.g., Sample A DRI measurements were taken immediately after the Sample A sorbent tubes were taken and replaced with Sample B sorbent tubes).

**Table C.2.** Files Containing Temperature, Pressure, Relative Humidity, and DRI Data

<b>Tank</b>	<b>Cartridge</b>	<b>Filename</b>
SX-101	Scott 7422-SC1	SX-101 SC1 6-24-17.xlsx
SX-101	Scott 7422-SD1	SX-101 SD1 6-23-17.xlsx
SX-101	MSA-TL	SX-101 TL1 GME 6-16-17.xlsx
SX-101	3M FR-57	SX-101 TL2 FR57 6-17-17.xlsx
SX-104	Scott 7422-SC1	SX-104 3M FR57 TL2 6_24_17.xlsx
SX-104	Scott 7422-SD1	SX-104 MSA-TL TL1 6_23-17.xlsx
SX-104	MSA-TL	SX-104 SCOTT SC1 6_17_17.xlsx
SX-104	3M FR-57	SX-104 SCOTT SD1 6_16_17.xlsx

- Prior to testing with the waste tank vapors, a 2-hour “baseline” sample is collected by running ambient outside air through the sampling system before each cartridge is installed for testing. ‘BASE’ means measurements obtained for ambient air (i.e., fresh air not tank vapor) running through the test system before initiation of tank vapor testing.
- Columns labeled Mach. Base 1 and Mach. Base 2 refer to the ‘BASE’ baseline samples for influent and effluent, respectively, to verify machine cleanliness prior to experimental measurements.



The raw analytical data for chemicals in each analyte category are summarized in Section C.4. Some analytes are measured using more than one method (primary and secondary). A crosswalk of COPC to analyte category, media, and analytical method for both primary and secondary methods is provided in Table C.3. In general, the primary method was used for cartridge performance analysis except in cases for which the secondary method provides improved quantitation for the specific COPC and its concentration range during a specific test.

**Table C.3.** Crosswalk of COPCs with Primary and Secondary Analyte Category, Media, and Analytical Method

COPC#	Analyte Name	Primary Analysis Method (Analyte Category   Media   Method)	Secondary Analysis Method (Analyte Category   Media   Method)
1	Ammonia	Ammonia   Anasorb 747   OSHA-ID-188	
2	Nitrous Oxide	Not Measured	
3	Mercury	Mercury   Anasorb C300   NIOSH-6009	
4	1,3-Butadiene	1,3-butadiene   Charcoal   NIOSH 1024	
5	Benzene	VOC   Carbotrap 300   EPA TO-17 Mod	
6	Biphenyl	SVOC   Carbotrap 150   EPA TO-17 Mod	
7	1-Butanol	VOC   Carbotrap 300   EPA TO-17 Mod	
8	Methanol	Methanol   Silica Gel   NIOSH 2000	
9	2-Hexanone	VOC   Carbotrap 300   EPA TO-17 Mod	
10	3-Methyl-3-butene-2-one	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
11	4-Methyl-2-hexanone	VOC   Carbotrap 300   EPA TO-17 Mod	
12	6-Methyl-2-heptanone	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
13	3-Buten-2-one	VOC   Carbotrap 300   EPA TO-17 Mod	
14	Formaldehyde	Aldehyde   DNPH Treated Silica Gel   EPA TO-11A	
15	Acetaldehyde	Aldehyde   DNPH Treated Silica Gel   EPA TO-11A	
16	Butanal/Butyraldehyde	VOC   Carbotrap 300   EPA TO-17 Mod	Aldehyde   DNPH Treated Silica Gel   EPA TO-11A
17	2-Methyl-2-butenal	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
18	2-Ethyl-hex-2-enal	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
New	2-Propenal/Acrolein	Aldehyde   DNPH Treated Silica Gel   EPA TO-11A	
19	Furan <sup>b</sup>	Furans   Tenax TA   EPA TO-17 Mod	VOC   Carbotrap 300   EPA TO-17 Mod
20	2,3-Dihydrofuran	Furans   Tenax TA   EPA TO-17 Mod	
21	2,5-Dihydrofuran <sup>b</sup>	Furans   Tenax TA   EPA TO-17 Mod	VOC   Carbotrap 300   EPA TO-17 Mod
22	2-Methylfuran <sup>b</sup>	Furans   Tenax TA   EPA TO-17 Mod	VOC   Carbotrap 300   EPA TO-17 Mod
23	2,5-Dimethylfuran	Furans   Tenax TA   EPA TO-17 Mod	
24	2-Ethyl-5-methylfuran	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	



COPC#	Analyte Name	Primary Analysis Method (Analyte Category   Media   Method)	Secondary Analysis Method (Analyte Category   Media   Method)
25	4-(1-Methylpropyl)-2,3-dihydrofuran	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
26	3-(1,1-Dimethylethyl)-2,3-dihydrofuran	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
27	2-Pentylfuran	Furans   Tenax TA   EPA TO-17 Mod	
28	2-Heptylfuran	Furans   Tenax TA   EPA TO-17 Mod	
29	2-Propylfuran	Furans   Tenax TA   EPA TO-17 Mod	
30	2-Octylfuran	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
31	2-(3-Oxo-3-phenylprop-1-enyl)furan	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
32	2-(2-Methyl-6-oxoheptyl)furan	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
33	Diethylphthalate	SVOC   Carbotrap 150   EPA TO-17 Mod	
34	Acetonitrile	VOC   Carbotrap 300   EPA TO-17 Mod	Acetonitrile   Charcoal   NIOSH 1606
35	Propanenitrile	VOC   Carbotrap 300   EPA TO-17 Mod	
36	Butanenitrile	VOC   Carbotrap 300   EPA TO-17 Mod	
37	Pentanenitrile	VOC   Carbotrap 300   EPA TO-17 Mod	
38	Hexanenitrile	VOC   Carbotrap 300   EPA TO-17 Mod	
39	Heptanenitrile	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
40	2-Methylene butanenitrile	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
41	2,4-Pentadienenitrile	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
42	Ethylamine	Ethylamine   XAD-7   OSHA-ID-34,36,40,41	
43	N-Nitrosodimethylamine	Nitrosamines   Thermasorb/N   NIOSH-2522 Mod	
44	N-Nitrosodiethylamine	Nitrosamines   Thermasorb/N   NIOSH-2522 Mod	
45	N-Nitrosomethylethyl-amine	Nitrosamines   Thermasorb/N   NIOSH-2522 Mod	
46	N-Nitrosomorpholine	Nitrosamines   Thermasorb/N   NIOSH-2522 Mod	
47	Tributyl phosphate	SVOC   Carbotrap 150   EPA TO-17 Mod	
48	Dibutyl butylphosphonate	SVOC   Carbotrap 150   EPA TO-17 Mod	
49	Chlorinated Biphenyls	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
50	2-Fluoropropene	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
51	Pyridine	VOC   Carbotrap 300   EPA TO-17 Mod	Pyridines   Coconut Shell Charcoal   NIOSH-1613
52	2,4-Dimethylpyridine	VOC   Carbotrap 300   EPA TO-17 Mod	Pyridines   Coconut Shell Charcoal   NIOSH-1613
53	Methyl nitrite	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
54	Butyl nitrite	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
55	Butyl nitrate	VOC   Carbotrap 300   EPA TO-17 Mod	
56	1,4-Butanediol, dinitrate	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
57	2-Nitro-2-methylpropane	VOCTIC   Carbotrap 300   EPA TO-17 Mod	
58	1,2,3-Propanetriol, 1,3-dinitrate	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
59	Methyl Isocyanate	VOCTIC <sup>a</sup>   Carbotrap 300   EPA TO-17 Mod	
New	Dimethyl Mercury	Not Measured	



<sup>a</sup> TIC indicates that a mass spectrometry “peak” not associated with calibrated compounds has been tentatively assigned to a compound based on an adequate match to the analytical methods reference library. Reference standards for the compound are not available to accurately quantify, assign an analytical DL, or definitively confirm the identity of the TIC. TICs are reported when the peak area is sufficiently large, estimated as  $\geq 5$  nanograms of TIC mass, and other analytical criteria are met. For respirator cartridge testing, this mass of TIC represents an approximate concentration of  $<1.0$  ppb, based on the average of all TICs in the COPC list. TIC compounds are measured through both the Carbotrap 300: EPA TO-17 and Carbotrap 150: EPA TO-17 modified methods. A few compounds are measured in the TIC analysis and another analytical technique. In these cases, the TIC analysis results were not retained because they are qualitative only and inferior to the other calibrated method.

<sup>b</sup> Furan, 2,5-dihydrofuran, and 2-methylfuran are quantified using the secondary method, as the primary method was determined to perform inadequately for these lower-boiling point furan compounds.

## **C.2 Miscellaneous Notes**

All analytical flags assigned by each analytical laboratory are provided in Appendix D of Volume 1. Sample lines occasionally experienced flow control issues, and these instances are documented in Appendix D with a quality flag of ‘S\*’ associated with the impacted data point.

Methanol was measured in the powered air-purifying respirator test rig only. A thirteenth sample media line was added to the new rig so methanol could be measured using a dedicated sorption tube.

## **C.3 Experimental Parameters**

### **C.3.1 Flow Rates**



# MSA Optifilter TL Cartridge (6/16/17) SX-101 Headspace

Volumes Air Collected (L)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	4.01	3.98	3.95	4.30	3.90	3.97	4.14	3.94	3.95	3.80	3.83	3.80	4.11	3.86	4.11	3.96	3.96	4.09
VOC	B	4.08	3.95	4.10	4.15	4.11	4.04	4.16	3.79	3.96	3.76	3.82	3.74	3.78	3.95	3.86	3.84	3.94	4.00
Methanol	C	3.94	3.95	4.22	4.25	4.27	3.82	4.06	3.74	4.01	3.89	3.88	3.89	3.81	3.77	3.88	3.85	3.80	3.87
Furans	D	6.02	5.91	6.50	6.24	6.29	6.19	6.16	6.10	5.98	5.68	5.88	6.29	5.79	6.07	5.82	5.89	6.13	6.27
Ethylamine	E	12.2	12.0	12.5	12.6	12.1	12.5	12.3	12.1	11.8	12.0	11.9	12.0	11.8	12.0	11.8	12.1	11.9	12.0
Acetonitrile	F	12.2	12.2	12.5	12.4	12.3	12.2	12.0	12.2	12.1	12.1	11.8	63.8	12.3	12.2	12.0	11.7	11.7	11.8
Mercury	G	30.4	30.0	30.3	30.0	30.4	30.3	30.0	30.0	30.0	29.9	30.2	30.1	30.4	30.2	30.1	30.0	29.9	29.9
Ammonia	H	24.2	24.1	24.6	24.1	24.0	23.9	24.4	24.7	23.8	24.7	23.8	24.5	24.4	24.3	23.9	24.0	24.0	23.9
Aldehyde	I	25.0	24.3	24.1	24.0	24.1	24.1	24.4	24.1	24.2	23.9	24.5	24.0	23.8	23.9	24.1	24.2	24.1	23.7
1, 3-Butadiene	J	24.3	13.3	23.8	23.8	23.6	23.6	23.9	24.3	24.3	24.4	24.5	24.6	24.3	24.0	24.3	24.0	24.2	23.9
Pyridine	K	125	125	120	120	124	120	122	121	125	126	124	127	123	124	122	123	125	124
Nitrosamines	L	244	241	240	234	237	242	235	242	244	245	241	246	242	244	245	245	242	242

Flow Rates (ml/min)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	33.45	33.2	33.0	35.8	32.5	33.1	34.5	32.9	33.0	31.7	31.9	31.7	34.2	32.2	34.2	33.0	33.0	34.1
VOC	B	34.00	32.9	34.2	34.6	34.3	33.7	34.7	31.6	33.0	31.3	31.8	31.2	31.5	32.9	32.2	32.0	32.9	33.3
Methanol	C	32.80	33.0	35.2	35.5	35.6	31.9	33.9	31.1	33.4	32.4	32.4	32.4	31.7	31.4	32.3	32.1	31.7	32.3
Furans	D	50.2	49	54	52	52	51	51	49.8	47	49	52	48.3	51	49	49	51	52	
Ethylamine	E	101.6	100	104	105	101	104	102	101	99	100	99.1	100	99	100	98	101	99	100
Acetonitrile	F	101.6	101	104	103	102	101	100	102	101	101	98	532	102	101	100	98	98	98
Mercury	G	253.1	250	252	250	254	253	250	250	250	249	251	251	253	252	251	250	249	249
Ammonia	H	201.9	201	205	201	200	199	203	206	198	206	199	204	204	202	199	200	200	199
Aldehyde	I	208.6	202	201	200	201	201	204	201	202	199	204	200	199	200	201	202	201	197
1, 3-Butadiene	J	202.3	111	199	199	197	197	199	203	202	203	204	205	202	200	202	200	201	200
Pyridine	K	1045.0	1045	1000	1000	1030	1000	1015	1010	1040	1050	1030	1060	1025	1030	1020	1025	1040	1035
Nitrosamines	L	2030	2005	2000	1950	1975	2020	1960	2020	2035	2045	2005	2050	2020	2035	2040	2040	2015	2020



**MSA Optifilter TL Cartridge (6/23/17) SX-104 Headspace**
**Volumes Air Collected (L)**

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	3.72	3.93	3.94	3.98	3.96	3.99	4.09	4.01	4.01	3.89	3.78	4.00	3.89	4.75	3.82	3.73	3.71	3.82
VOC	B	3.66	4.04	4.15	3.98	4.11	4.00	3.91	3.94	3.90	3.86	3.86	3.99	3.74	3.95	3.95	3.76	3.95	3.80
Methanol	C	3.69	3.99	4.18	3.99	4.05	3.84	4.00	3.81	3.98	3.70	3.96	3.76	3.74	3.65	3.98	3.78	3.77	3.86
Furans	D	5.90	5.96	6.31	6.41	6.14	6.17	6.45	6.34	6.26	6.38	6.00	6.25	5.77	6.14	5.99	5.98	6.02	5.90
Ethylamine	E	11.5	11.9	12.5	12.0	12.7	12.0	12.5	12.6	12.5	12.6	12.2	12.0	12.2	11.6	12.1	12.1	12.0	12.0
Acetonitrile	F	11.9	11.5	12.4	12.2	11.9	12.0	11.9	12.1	11.8	11.5	12.8	11.7	11.9	12.2	12.1	12.0	12.1	12.0
Mercury	G	29.0	29.9	30.6	30.3	29.6	29.6	30.0	27.6	30.7	30.9	30.1	30.4	29.6	30.6	30.2	30.8	30.1	30.5
Ammonia	H	21.9	24.1	24.5	24.4	24.3	23.7	24.5	23.7	24.3	23.7	24.1	24.6	24.5	24.5	24.3	24.7	24.1	24.7
Aldehyde	I	23.6	23.4	24.5	83.8	24.0	23.5	24.2	24.1	24.1	24.0	24.6	24.2	24.5	24.3	41.9	24.2	23.7	24.0
1, 3-Butadiene	J	23.9	23.8	24.5	23.8	24.0	22.5	24.2	24.2	24.1	24.4	24.4	24.5	24.8	24.5	23.9	24.6	24.0	24.5
Pyridine	K	119	120	122	125	121	126	121	121	125	121	130	125	39	128	148	128	124	130
Nitrosamines	L	241	238	258	242	244	247	245	239	241	245	242	263	264	266	257	263	266	264

**Flow Rates (ml/min)**

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	31.5	33.3	32.9	33.2	33.2	33.5	34.1	33.4	33.5	32.4	31.5	33.3	32.5	39.6	31.8	31.1	31.0	31.8
VOC	B	31.0	34.3	34.6	33.2	34.5	33.7	32.6	32.8	32.5	32.2	32.1	33.3	31.2	33.0	32.9	31.3	32.9	31.7
Methanol	C	31.3	33.8	34.8	33.3	34.1	32.3	33.4	31.7	33.2	30.8	33.0	31.3	31.2	30.4	33.2	31.5	31.4	32.2
Furans	D	50.0	51	53	53	52	52	54	53	52.2	53	50	52	48.1	51	50	50	50	49
Ethylamine	E	97.5	100	104	100	107	101	104	105	104	105	102	100	101	97	101	101	100	100
Acetonitrile	F	101	98	104	102	100	101	99	101	99	96	107	97	99	101	101	100	101	100
Mercury	G	245	253	255	253	249	249	250	230	256	258	251	253	247	255	251	256	251	254
Ammonia	H	185	205	204	203	204	199	204	198	203	198	201	205	204	204	203	206	201	206
Aldehyde	I	200	198	204	698	202	197	202	201	201	200	205	202	204	203	349	202	198	200
1, 3-Butadiene	J	203	202	204	198	202	189	202	202	201	203	204	204	207	204	199	205	200	204
Pyridine	K	1010	1015	1020	1045	1015	1061	1006	1010	1045	1005	1085	1040	326	1070	1237	1070	1035	1080
Nitrosamines	L	2045	2015	2150	2015	2050	2075	2040	1995	2010	2040	2020	2195	2200	2215	2140	2190	2220	2200



### 3M FR57 Cartridge (6/17/17) SX-101 Headspace

Volumes Air Collected (L)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	3.79	4.12	4.15	4.28	4.31	4.27	4.03	4.19	3.91	3.92	3.73	4.01	3.96	4.14	3.91	4.11	4.09	4.03
VOC	B	3.81	4.11	3.99	4.28	4.00	3.93	3.87	4.16	4.05	4.15	4.17	3.87	4.07	4.17	3.83	4.24	3.92	4.07
Methanol	C	3.81	4.05	4.54	3.83	4.20	3.89	3.73	4.02	4.05	3.87	3.98	3.86	3.85	3.86	3.72	3.89	3.91	3.86
Furans	D	5.81	6.17	6.37	6.59	6.15	6.40	5.89	6.14	5.95	6.10	5.91	6.08	5.84	6.01	6.16	6.00	6.14	5.97
Ethylamine	E	12.1	12.2	12.5	12.9	12.0	12.2	12.4	11.8	12.3	12.4	12.6	12.5	12.7	12.6	12.4	12.6	12.4	12.6
Acetonitrile	F	12.1	11.9	12.4	12.5	11.9	12.0	11.8	12.1	12.3	12.2	11.9	11.8	11.9	12.3	12.3	12.8	12.3	11.5
Mercury	G	30.3	30.0	30.4	29.5	30.3	30.3	30.4	30.5	30.2	30.6	30.4	30.7	30.7	30.4	30.5	29.8	30.5	29.8
Ammonia	H	23.8	24.3	25.5	24.4	24.1	24.4	24.1	23.9	24.0	24.3	23.9	24.5	23.6	24.6	23.7	24.8	23.7	25.0
Aldehyde	I	24.2	23.9	25.0	24.1	23.8	24.2	24.3	24.0	24.2	24.4	24.2	24.6	24.5	24.6	23.9	24.3	24.1	24.0
1, 3-Butadiene	J	24.0	23.9	24.3	24.1	24.1	23.8	24.3	24.3	24.4	24.5	24.5	24.9	24.7	24.8	23.8	24.5	23.6	24.6
Pyridine	K	124	128	60	118	127	127	120	120	121	121	122	123	128	121	123	128	127	125
Nitrosamines	L	242	238	244	239	250	247	254	233	254	236	261	252	259	240	262	245	264	253

Flow Rates (ml/min)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	31.6	34.3	34.6	35.6	35.9	35.6	33.6	34.9	32.6	32.7	30.8	33.2	33	34.5	32.6	34.3	34.1	33.6
VOC	B	31.8	34.2	33.3	35.6	33.3	32.8	32.3	34.7	33.8	34.6	34.5	32.0	33.9	34.7	31.9	35.4	32.7	33.9
Methanol	C	31.7	33.8	37.9	32.0	35.0	32.5	31.1	33.5	33.7	32.2	32.9	31.9	32.1	32.1	31.0	32.5	32.6	32.2
Furans	D	48	51.4	53	55	51	53	49	51	49.6	51	48.9	50.2	49	50.1	51	50	51	49.8
Ethylamine	E	101	101.6	104	107	100	102	104	99	103	103	104	103	106	105	103	105	104	105
Acetonitrile	F	101	99	103	104	99	100	99	101	103	101	98	98	99	103	103	107	102	96
Mercury	G	252	250	254	246	253	253	253	254	252	255	251	253	256	253	255	248	254	249
Ammonia	H	198	203	212	203	200	203	200	199	200	202	197	203	197	205	198	207	198	209
Aldehyde	I	202	199	208	201	199	202	202	200	202	203	200	203	204	205	199	202	201	200
1, 3-Butadiene	J	200	200	203	201	201	198	203	203	203	204	203	206	206	207	199	204	197	205
Pyridine	K	1030	1070	500	985	1055	1060	1000	1000	1010	1005	1010	1015	1065	1010	1025	1065	1060	1045
Nitrosamines	L	2015	1985	2030	1988	2080	2060	2115	1945	2115	1970	2160	2080	2155	2000	2185	2045	2200	2105



### 3M FR57 Cartridge (6/24/17) SX-104 Headspace

Volumes Air Collected (L)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	3.98	4.09	4.06	4.30	3.90	3.90	3.79	4.14	0.95	4.19	4.00	3.87	3.91	4.15	3.93	4.17	3.84	3.91
VOC	B	4.00	4.07	3.92	4.20	4.19	4.10	4.06	4.01	4.20	3.93	4.12	3.90	3.90	4.06	4.12	4.03	3.83	3.89
Methanol	C	4.14	4.11	4.27	4.16	4.07	4.19	3.81	4.03	4.02	3.81	3.89	3.71	3.80	3.71	4.23	3.91	4.12	3.88
Furans	D	6.25	6.54	6.35	6.47	6.28	6.09	6.09	5.93	6.46	5.94	6.11	6.10	6.36	5.97	6.01	5.79	5.98	6.12
Ethylamine	E	11.9	12.9	12.5	12.9	12.9	12.5	12.1	11.6	12.1	11.7	12.1	12.3	12.3	12.3	12.5	12.3	12.3	12.1
Acetonitrile	F	12.5	12.4	12.7	12.5	12.6	13.3	12.2	11.8	12.3	11.8	12.2	12.2	12.1	11.9	12.1	12.0	12.1	12.2
Mercury	G	30.1	30.1	30.5	30.0	30.1	26.4	30.4	29.3	30.5	31.2	30.2	30.3	29.9	30.6	30.1	29.8	29.7	29.7
Ammonia	H	24.9	24.0	23.7	23.5	24.5	24.4	23.6	24.6	23.8	24.5	24.0	24.5	24.0	24.6	24.0	24.4	24.3	23.9
Aldehyde	I	23.5	23.8	24.8	23.5	23.9	24.5	24.0	23.0	24.0	23.5	24.6	24.4	23.8	24.1	24.1	24.6	24.0	24.1
1, 3-Butadiene	J	24.6	23.9	24.7	23.4	23.7	24.3	25.1	23.0	25.1	23.0	24.0	24.3	24.3	24.2	24.4	24.3	24.2	24.3
Pyridine	K	119	123	115	119	118	118	118	121	114	116	117	121	120	121	122	124	124	124
Nitrosamines	L	242	236	241	242	240	260	243	236	253	247	244	244	247	246	247	244	238	240

Flow Rates (ml/min)

Sample Box Number		Mach.	Mach.	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
Analyte	Line	Base 1	Base 2																
SVOC	A	33.2	34.1	33.8	35.8	32.8	32.8	31.6	34.5	7.9	35.0	33.3	32.3	32.6	34.6	32.8	34.8	32.0	32.6
VOC	B	33.3	33.9	32.7	35.0	35.2	34.4	33.9	33.4	35.0	32.7	34.3	32.5	32.5	33.8	34.3	33.6	31.9	32.4
Methanol	C	34.5	34.2	35.5	34.7	34.2	35.3	31.8	33.5	33.5	31.7	32.4	30.9	31.7	30.9	35.2	32.6	34.3	32.4
Furans	D	52.1	54	53	54	53	51	51	49	53.8	50	51	51	53.0	50	50	48	50	51
Ethylamine	E	98.9	107	104	108	109	105	101	97	101	98	101	102	103	102	105	102	102	101
Acetonitrile	F	104	103	106	104	106	112	102	98	103	98	101	102	101	99	101	100	101	102
Mercury	G	251	251	254	250	253	222	253	244	254	260	252	253	249	255	250	249	247	247
Ammonia	H	207	200	198	196	206	205	197	205	199	204	200	204	200	205	200	203	202	199
Aldehyde	I	196	199	207	196	201	206	200	192	200	196	205	204	199	201	201	205	200	201
1, 3-Butadiene	J	205	199	206	195	199	205	209	191	209	192	200	203	203	202	203	202	202	203
Pyridine	K	995	1025	960	989	990	994	980	1010	950	965	975	1005	1000	1010	1020	1030	1035	1035
Nitrosamines	L	2015	1970	2005	2020	2020	2181	2025	1965	2105	2055	2035	2035	2055	2050	2055	2035	1980	2000



### C.3.2 Temperature, Pressure, and Relative Humidity

#### MSA Optifilter TL Cartridge (6/16/17) SX-101 Headspace

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	64.1	84.6	77.9	70.3	78.3	81.4	81.5	78.4	79.3
Temperature	°F	68.7	70.7	78.5	82.8	77.1	72	65.3	62.5	58.5
Pressure	Torr	549.5	673.1	701.1	646.5	678.8	677.2	680.3	681.5	679.8
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	68.5	79.3	72.7	82.1	86.4	82.1	81.8	81.1	81.7
Temperature	°F	70.3	76.9	81.1	74.6	70.3	64.2	61.8	57.7	55.2
Pressure	Torr	703.8	677.5	674.6	679.6	677.4	678.8	680.1	682.1	680
NH3	ppm		99							
VOC	ppm		23.2							

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	38.5	48.8	49.9	52.3	56.5	57.3	61.5	63.2	62.1
Temperature	°F	68	72.4	81.3	82.1	79.5	75.4	67.1	63.3	59.6
Pressure	Torr	545.8	669.8	699.1	674.2	675.4	673.7	676.6	678.1	676.2
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	41.1	48.6	54.9	55.9	59.8	61.5	63.2	62.8	63.5
Temperature	°F	73	82	81.2	78.8	74.9	66.5	63.3	59.2	56.7
Pressure	Torr	700.4	674.1	671.1	676.1	674	675.4	676.7	678.8	676.7
NH3	ppm			1	0	99				
VOC	ppm			0.38	0.62	4.6				



**MSA Optifilter TL Cartridge (6/23/17) SX-104 Headspace**

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	35.8	37.4	56.5	48.4	47.5	57	66	65.3	63.7
Temperature	°F	82	85	93.4	99.9	99.5	89.1	77.9	74.4	71.4
Pressure	Torr	705.3	667.1	666.8	667.6	667	670.8	673.6	672.2	671.1
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	35.3	55.9	48.3	45.9	51.5	63.2	66.8	66.1	64.8
Temperature	°F	82.8	93.1	99.2	101	95.2	82.2	74.2	70.3	67.6
Pressure	Torr	706.7	667	666.8	667.5	668.9	672.6	673.9	672.3	671.9
NH3	ppm		33							
VOC	ppm		9.3							

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	35.8	37.9	53.4	46.4	42.1	45.7	51.2	54.3	56.6
Temperature	°F	79.9	88.8	93.1	97.9	99.7	93.2	83.4	77.6	72.9
Pressure	Torr	701.8	663.4	663.2	664.2	663.9	667.3	670.1	668.8	667.6
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	26.9	52.3	46	41.6	44.7	50	54	56.4	57.5
Temperature	°F	88.6	92.3	96.9	100.3	96.6	87.2	78.3	73.2	69.3
Pressure	Torr	703.2	663	663.3	664.6	665.4	669.2	670.3	669.1	668.5
NH3	ppm		0	0						
VOC	ppm		0.21	0.51						



**3M FR57 Cartridge (6/17/17) SX-101 Headspace**

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	41.2	84.7	77.9	67.4	68.6	78.6	90	89.9	88.1
Temperature	°F	98	83.2	91.6	90.7	85.6	78.4	71.6	68.6	68.2
Pressure	Torr	703.8	669.3	699	672.9	671.3	668.1	672	673.6	673.7
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	16.3	76.3	68.7	69.6	79.8	87.3	88.9	88.1	89.8
Temperature	°F	92.7	86	88.9	85.2	80.4	73.7	68.7	68.2	66.5
Pressure	Torr	703.5	670.2	699.1	672.2	743.4	671.3	672.6	673.7	673.9
NH3	ppm									
VOC	ppm		6.1							

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	26.8	48.1	51.9	48.5	48.6	55.1	59.3	63.6	70.6
Temperature	°F	83.9	89.9	92.6	90.4	87.3	83	78.5	73.6	69.1
Pressure	Torr	702.2	665.4	696.7	669.1	667.7	666.1	668.1	669.7	670
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	46.7	50.8	51.1	48.3	58.2	58.1	61.6	70.6	72.3
Temperature	°F	80.1	90.5	89.3	87.1	83.6	80	74.2	69.1	68.8
Pressure	Torr	705.2	666.3	696.7	667.2	743.4	667.5	668.9	670	670.2
NH3	ppm									
VOC	ppm		6.1							



### 3M FR57 Cartridge (6/24/17) SX-104 Headspace

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	36.6	68.4	57.7	47.6	55.8	46.8	58.6	61.3	66.1
Temperature	°F	81.2	93.7	99.4	102.2	101.1	98.3	87	79.4	74.4
Pressure	Torr	724.4	669	667.2	668.5	667.9	667.4	669.8	670.1	668.1
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	28.7	53.1	45.4	40.9	43	55.8	65.1	63.7	71.5
Temperature	°F	92.6	98.4	104	104.7	101	90.1	79.8	74.5	72.4
Pressure	Torr	725.4	669.8	678.2	667.6	669.5	669.3	670.5	670.4	667.2
NH3	ppm									
VOC	ppm									

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	36.8	46	59.9	45.5	39.7	37.6	45	52.1	55.8
Temperature	°F	79	97.2	96.5	100.6	101.5	101.6	92.6	82.3	77.2
Pressure	Torr	720.3	665.2	663.3	664.7	663.6	663.6	666	666.4	664.4
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	26	56.3	45.5	37.9	21	27	52.1	54.4	58.7
Temperature	°F	90.4	94.1	100	102.5	104.9	95.7	84.3	77.3	76
Pressure	Torr	721.3	666	675	663.8	456.9	455.7	666.7	666.6	663.5
NH3	ppm									
VOC	ppm		17.5							



## C.4 Raw Data

### C.4.1 SVOC and SVOCTIC

31 - Aug - 2017 9:21:23  
DSR-HardcopyWOLimits 3.0.13a  
DSR-Jar v. 3.0.13a

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*Janet Hoffman*  
8-31-17

#### 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172159

SDG Number:

Customer Sample ID: 17-03269-1-TL1-BA-EF

Customer Sample ID: 17-03269-1-TL1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022207			3891-98-3	2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022207			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022207			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022207			92-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022207			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022207			34-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022207			112-40-3	Dodecane	NGS	92	<0.60	56	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022207			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022207			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022207			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022207			629-50-5	Tridecane	NGS	93	<1.6	9.2	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022207			629-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022207			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-BA-IN  
Customer Sample ID: 17-03269-1-TL1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022208		3891-98-3		2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022208		95-48-7		2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022208		108-39-4M		Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022208		82-52-4		Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022208		78-46-6		Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022208		84-66-2		Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022208		112-40-3		Dodecane	NGS	92	<0.60	4.9	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022208		544-76-3		Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022208		629-59-4		Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022208		126-73-8		Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022208		629-50-5		Tridecane	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022208		629-76-7		Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022208		629-62-9		Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-BL-EF  
Customer Sample ID: 17-03269-1-TL1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022209			3891-98-3	2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022209			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022209			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022209			92-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022209			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022209			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022209			112-40-3	Dodecane	NGS	92	<0.60	2.5	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022209			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022209			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022209			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022209			629-50-5	Tridecane	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022209			629-75-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022209			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-BL-IN  
Customer Sample ID: 17-03269-1-TL1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022210		3891-98-3		2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022210		95-48-7		2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022210		108-39-4M		Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022210		92-52-4		Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022210		78-46-6		Dibutyl butylphosphonate	NGS	96	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022210		84-66-2		Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022210		112-40-3		Dodecane	NGS	92	<0.60	57	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022210		544-76-3		Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022210		829-59-4		Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022210		126-73-8		Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022210		629-50-5		Tridecane	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022210		629-78-7		Heptadecane	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022210		629-62-9		Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-IN-2  
Customer Sample ID: 17-03269-1-TL1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022211			8891-98-3	2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022211			85-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022211			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022211			82-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022211			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022211			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022211			112-40-3	Dodecane	NGS	92	<0.60	59	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022211			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022211			829-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022211			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022211			829-50-5	Tridecane	NGS	93	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022211			829-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022211			829-82-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-IN-3  
Customer Sample ID: 17-03269-1-TL1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022212			3891-98-3	2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022212			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022212			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022212			92-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022212			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022212			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022212			112-40-3	Dodecane	NGS	92	<0.60	73	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022212			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022212			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022212			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022212			629-50-5	Tridecane	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022212			629-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022212			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-IN-4  
Customer Sample ID: 17-03269-1-TL1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022213			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	n/a	n/a	U
S17T022213			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	n/a	n/a	U
S17T022213			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	n/a	n/a	U
S17T022213			92-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	n/a	n/a	U
S17T022213			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	n/a	n/a	U
S17T022213			94-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	n/a	n/a	U
S17T022213			112-40-3	Dodecane	NGS	92	<0.60	40	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022213			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022213			629-59-4	Tetradecane	NGS	100	<3.9	5.1	n/a	n/a	n/a	n/a	3.9	n/a	
S17T022213			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022213			629-50-5	Tridecane	NGS	93	<1.6	8.2	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022213			629-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022213			629-62-9	Pentadecane	NGS	100	<3.0	4.9	n/a	n/a	n/a	n/a	3.0	n/a	

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159

SDG Number:

Customer Sample ID: 17-03269-1-TL1-IN-5

Customer Sample ID: 17-03269-1-TL1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022214			3891-98-3	2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022214			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022214			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022214			92-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022214			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022214			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022214			112-40-3	Dodecane	NGS	92	<0.60	65	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022214			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022214			829-69-4	Tetradecane	NGS	100	<3.9	4.5	n/a	n/a	n/a	n/a	3.9	n/a	
S17T022214			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022214			629-50-5	Tridecane	NGS	93	<1.6	7.8	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022214			829-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022214			629-62-9	Pentadecane	NGS	100	<3.0	3.6	n/a	n/a	n/a	n/a	3.0	n/a	

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-IN-6  
Customer Sample ID: 17-03269-1-TL1-IN-6

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022215			3891-98-3	2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a
S17T022215			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	n/a
S17T022215			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S17T022215			92-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	n/a
S17T022215			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T022215			94-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	n/a
S17T022215			112-40-3	Dodecane	NGS	92	<0.60	29	n/a	n/a	n/a	n/a	0.55	n/a	n/a
S17T022215			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a
S17T022215			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a
S17T022215			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S17T022215			629-50-5	Tridecane	NGS	93	<1.6	4.9	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S17T022215			629-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T022215			629-82-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-IN-7  
Customer Sample ID: 17-03269-1-TL1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022216			3891-98-3	2,6,10-Trimethyldecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022216			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022216			108-39-4M	Cresol (m & p)	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022216			92-52-4	Biphenyl	NGS	94	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022216			78-46-6	Dibutyl butylphosphonate	NGS	95	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022216			84-86-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022216			112-40-3	Dodecane	NGS	92	<0.60	21	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022216			544-76-3	Hexadecane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022216			829-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022216			126-73-8	Tributyl phosphate	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022216			829-50-5	Tridecane	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022216			829-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022216			829-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-BA-IN  
Customer Sample ID: 17-03273-1-TL2-BA-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022218			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022218			95-48-7	2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022218			108-39-4M	Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022218			92-52-4	Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022218			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022218			84-66-2	Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022218			112-40-3	Dodecane	NGS	95	<0.60	63	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022218			544-76-3	Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022218			629-59-4	Tetradecane	NGS	94	<3.9	4.8	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022218			126-73-8	Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022218			629-50-5	Tridecane	NGS	95	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022218			629-78-7	Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022218			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-BL-EF  
Customer Sample ID: 17-03273-1-TL2-BL-EF

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022219			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a U
S17T022219			95-48-7	2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	n/a U
S17T022219			108-39-4M	Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a U
S17T022219			92-52-4	Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	n/a U
S17T022219			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a U
S17T022219			84-66-2	Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	n/a U
S17T022219			112-40-3	Dodecane	NGS	95	<0.60	1.2	n/a	n/a	n/a	n/a	0.55	n/a	n/a J
S17T022219			544-76-3	Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a U
S17T022219			629-59-4	Tetradecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a U
S17T022219			126-73-8	Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a U
S17T022219			629-50-5	Tridecane	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a U
S17T022219			629-78-7	Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a U
S17T022219			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-BL-IN  
Customer Sample ID: 17-03273-1-TL2-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022220			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022220			95-48-7	2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022220			108-39-4M	Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022220			82-52-4	Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022220			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022220			84-66-2	Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022220			112-40-3	Dodecane	NGS	95	<0.60	9.3	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T022220			544-76-3	Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022220			629-59-4	Tetradecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022220			126-73-8	Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022220			629-50-5	Tridecane	NGS	95	<1.6	4.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022220			629-78-7	Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022220			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-2  
Customer Sample ID: 17-03273-1-TL2-IN-2

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022221		3891-98-3		2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a/U
S17T022221		95-48-7		2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	n/a/U
S17T022221		108-39-4M		Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a/U
S17T022221		92-52-4		Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	n/a/U
S17T022221		78-46-6		Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a/U
S17T022221		84-66-2		Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	n/a/U
S17T022221		112-40-3		Dodecane	NGS	95	<0.60	78	n/a	n/a	n/a	n/a	0.55	n/a	n/a/E
S17T022221		544-76-3		Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a/U
S17T022221		629-59-4		Tetradecane	NGS	94	<3.9	6.3	n/a	n/a	n/a	n/a	3.9	n/a	n/a/J
S17T022221		126-73-8		Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a/U
S17T022221		629-50-5		Tridecane	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a/U
S17T022221		629-78-7		Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a/U
S17T022221		629-62-9		Pentadecane	NGS	96	<3.0	3.1	n/a	n/a	n/a	n/a	3.0	n/a	n/a/J

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-3  
Customer Sample ID: 17-03273-1-TL2-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022222		3891-98-3		2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022222		95-48-7		2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022222		108-39-4M		Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022222		92-52-4		Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022222		78-46-6		Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022222		84-66-2		Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022222		112-40-3		Dodecane	NGS	95	<0.60	84	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022222		544-76-3		Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022222		629-59-4		Tetradecane	NGS	94	<3.9	7.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022222		126-73-8		Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022222		629-50-5		Tridecane	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022222		629-78-7		Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022222		629-62-9		Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-4  
Customer Sample ID: 17-03273-1-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022223			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022223			95-48-7	2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022223			108-39-4M	Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022223			82-52-4	Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022223			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022223			94-66-2	Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022223			112-40-3	Dodecane	NGS	95	<0.60	48	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022223			544-76-3	Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022223			829-59-4	Tetradecane	NGS	94	<3.9	5.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022223			126-73-8	Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022223			629-50-5	Tridecane	NGS	95	<1.6	9.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022223			829-78-7	Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022223			829-82-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-5  
Customer Sample ID: 17-03273-1-TL2-IN-5

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022224			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022224			95-48-7	2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022224			108-39-4M	Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022224			92-52-4	Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022224			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022224			84-66-2	Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022224			112-40-3	Dodecane	NGS	95	<0.60	67	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022224			544-76-3	Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022224			629-59-4	Tetradecane	NGS	94	<3.9	5.3	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022224			126-73-8	Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022224			629-50-5	Tridecane	NGS	95	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022224			629-78-7	Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022224			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-6  
Customer Sample ID: 17-03273-1-TL2-IN-6

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022225			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022225			95-48-7	2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022225			108-39-4M	Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022225			92-52-4	Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022225			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022225			84-66-2	Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022225			112-40-3	Dodecane	NGS	95	<0.60	49	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022225			544-76-3	Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022225			629-59-4	Tetradecane	NGS	94	<3.9	4.0	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022225			126-73-8	Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022225			629-50-5	Tridecane	NGS	95	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022225			629-78-7	Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022225			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172159  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-7  
Customer Sample ID: 17-03273-1-TL2-IN-7

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022226			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022226			95-48-7	2-Methylphenol	NGS	94	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022226			108-39-4M	Cresol (m & p)	NGS	95	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022226			92-52-4	Biphenyl	NGS	87	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022226			78-46-6	Dibutyl butylphosphonate	NGS	86	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022226			84-66-2	Diethylphthalate	NGS	84	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022226			112-40-3	Dodecane	NGS	95	<0.60	37	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022226			544-76-3	Hexadecane	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022226			529-59-4	Tetradecane	NGS	94	<3.9	4.0	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022226			126-73-8	Tributyl phosphate	NGS	82	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022226			629-50-5	Tridecane	NGS	95	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022226			629-78-7	Heptadecane	NGS	92	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022226			629-82-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

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8-3-17

Sample Group: 20172271

SDG Number:

Customer Sample ID: 17-04568-1-TL1-BA-EF  
Customer Sample ID: 17-04568-1-TL1-BA-EF

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023973			3891-98-3	2,6,10-Trimethylidodecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023973			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023973			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023973			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023973			78-48-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023973			94-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023973			112-40-3	Dodecane	NGS	120	<0.60	77	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023973			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023973			629-59-4	Tetradecane	NGS	120	<3.9	7.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023973			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023973			629-50-5	Tridecane	NGS	120	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023973			629-76-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023973			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment

Q - Qualitative  
U - Less Than Detection Limit

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271

SDG Number:

Customer Sample ID: 17-04568-1-TL1-BA-IN

Customer Sample ID: 17-04568-1-TL1-BA-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023974			3891-98-3	2,6,10-Trimethyldodecane	NGS	120	<3.9	6.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023974			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023974			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023974			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023974			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023974			64-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023974			112-40-3	Dodecane	NGS	120	<0.60	95	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023974			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023974			629-59-4	Tetradecane	NGS	120	<3.9	10	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023974			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023974			629-50-5	Tridecane	NGS	120	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023974			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023974			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment

Q - Qualitative  
U - Less Than Detection Limit

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-BL-EF  
Customer Sample ID: 17-04568-1-TL1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023975			3891-98-3	2,6,10-Trimethyldodecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023975			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023975			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023975			82-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023975			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023975			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023975			112-40-3	Dodecane	NGS	120	<0.60	1.0	n/a	n/a	n/a	n/a	0.55	n/a	U
S17T023975			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023975			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023975			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023975			629-50-5	Tridecane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023975			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023975			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
U - Less Than Detection Limit

N - Named TIC  
Y - Comment



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-BL-IN  
Customer Sample ID: 17-04568-1-TL1-BL-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023976			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023976			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023976			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023976			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023976			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023976			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023976			112-40-3	Dodecane	NGS	120	<0.60	1.5	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T023976			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023976			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023976			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023976			629-50-5	Tridecane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023976			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023976			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
U - Less Than Detection Limit

N - Named TIC  
Y - Comment



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172271

SDG Number:

Customer Sample ID: 17-04568-1-TL1-IN-2

Customer Sample ID: 17-04568-1-TL1-IN-2

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023977			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	8.3	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023977			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023977			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023977			52-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023977			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023977			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023977			112-40-3	Dodecane	NGS	120	<0.60	98	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023977			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023977			629-59-4	Tetradecane	NGS	120	<3.9	11	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023977			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023977			629-50-5	Tridecane	NGS	120	<1.6	26	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023977			629-76-7	Heptadecane	NGS	120	<2.4	2.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023977			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
 L - LLS Outside Range  
 T - Tentatively Identified Compound

J - Estimated  
 E - Outside Calibration Range

Q - Qualitative  
 U - Less Than Detection Limit

N - Named TIC  
 Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271

SDG Number:

Customer Sample ID: 17-04568-1-TL1-IN-3

Customer Sample ID: 17-04568-1-TL1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023978			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	12	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023978			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023978			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023978			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023978			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023978			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023978			112-40-3	Dodecane	NGS	120	<0.60	110	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023978			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023978			629-59-4	Tetradecane	NGS	120	<3.9	13	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023978			126-73-8	Tributyl phosphata	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023978			629-50-5	Tridecane	NGS	120	<1.6	26	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023978			629-78-7	Heptadecane	NGS	120	<2.4	3.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023978			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
U - Less Than Detection Limit

N - Named TIC  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-IN-4  
Customer Sample ID: 17-04568-1-TL1-IN-4

Sample#	R	IA#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023979			3891-98-3	2,6,10-Trimethylidodecane	NGS	120	<3.9	13	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023979			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023979			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023979			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023979			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023979			84-56-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023979			112-40-3	Dodecane	NGS	120	<0.60	68	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T023979			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023979			629-59-4	Tetradecane	NGS	120	<3.9	11	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023979			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023979			629-50-5	Tridecane	NGS	120	<1.6	21	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023979			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023979			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment

Q - Qualitative  
U - Less Than Detection Limit

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-IN-5  
Customer Sample ID: 17-04568-1-TL1-IN-5

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S177023980			3891-88-3	2,6,10-Trimethyldodecane	NGS	120	<3.9	11	n/a	n/a	n/a	n/a	3.9	n/a	
S177023980			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S177023980			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S177023980			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S177023980			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023980			94-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S177023980			112-40-3	Dodecane	NGS	120	<0.60	94	n/a	n/a	n/a	n/a	0.55	n/a	EY
S177023980			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023980			629-59-4	Tetradecane	NGS	120	<3.9	14	n/a	n/a	n/a	n/a	3.9	n/a	U
S177023980			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S177023980			629-50-5	Tridecane	NGS	120	<1.6	24	n/a	n/a	n/a	n/a	1.6	n/a	
S177023980			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S177023980			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment  
Q - Qualitative  
U - Less Than Detection Limit  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-IN-6  
Customer Sample ID: 17-04568-1-TL1-IN-6

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023981			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	5.7	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023981			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023981			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023981			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023981			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023981			84-56-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023981			112-40-3	Dodecane	NGS	120	<0.60	47	n/a	n/a	n/a	n/a	0.55	n/a	
S17T023981			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023981			629-59-4	Tetradecane	NGS	120	<3.9	5.0	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023981			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023981			629-50-5	Tridecane	NGS	120	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023981			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023981			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment  
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U - Less Than Detection Limit  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-IN-7  
Customer Sample ID: 17-04568-1-TL1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023982			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	6.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023982			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023982			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023982			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023982			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023982			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023982			112-40-3	Dodecane	NGS	120	<0.60	27	n/a	n/a	n/a	n/a	0.55	n/a	
S17T023982			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023982			629-59-4	Tetradecane	NGS	120	<3.9	6.0	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023982			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023982			629-50-5	Tridecane	NGS	120	<1.6	9.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023982			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023982			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit  
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E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271

SDG Number:

Customer Sample ID: 17-04569-1-TL2-BA-EF  
Customer Sample ID: 17-04569-1-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023983			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	6.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023983			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023983			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023983			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023983			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023983			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023983			112-40-3	Dodecane	NGS	120	<0.60	89	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T023983			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023983			629-59-4	Tetradecane	NGS	120	<3.9	9.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023983			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023983			629-50-5	Tridecane	NGS	120	<1.6	16	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023983			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023983			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
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 E - Outside Calibration Range  
 NA = Not Analyzed, ND = Not Detected  
 L - LLS Outside Range  
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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-BA-IN  
Customer Sample ID: 17-04569-1-TL2-BA-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023984			3891-98-3	2,6,10-Trimethyldodecane	NGS	120	<3.9	4.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023984			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023984			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023984			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023984			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023984			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023984			112-40-3	Dodecane	NGS	120	<0.60	64	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T023984			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023984			629-59-4	Tetradecane	NGS	120	<3.9	6.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023984			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023984			629-50-5	Tridecane	NGS	120	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023984			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023984			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
U - Less Than Detection Limit

N - Named TIC  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-BL-EF  
Customer Sample ID: 17-04569-1-TL2-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023985			3891-98-3	2,6,10-Trimethyldodecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023985			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023985			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023985			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023985			78-48-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023985			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023985			112-40-3	Dodecane	NGS	120	<0.60	<0.60	n/a	n/a	n/a	n/a	0.60	n/a	U
S17T023985			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023985			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023985			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023985			629-50-5	Tridecane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023985			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023985			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment  
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U - Less Than Detection Limit  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-BL-IN  
Customer Sample ID: 17-04569-1-TL2-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023986			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023986			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023986			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023986			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023986			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023986			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023986			112-40-3	Dodecane	NGS	120	<0.60	1.6	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T023986			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023986			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023986			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023986			629-50-5	Tridecane	NGS	120	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023986			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023986			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment

Q - Qualitative  
U - Less Than Detection Limit

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-IN-2  
Customer Sample ID: 17-04569-1-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023987			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	8.4	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023987			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023987			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023987			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023987			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023987			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S17T023987			112-40-3	Dodecane	NGS	120	<0.60	120	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023987			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023987			629-59-4	Tetradecane	NGS	120	<3.9	14	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023987			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023987			629-50-5	Tridecane	NGS	120	<1.6	33	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023987			629-78-7	Heptadecane	NGS	120	<2.4	4.0	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023987			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment

Q - Qualitative  
U - Less Than Detection Limit

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-IN-3  
Customer Sample ID: 17-04569-1-TL2-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S177023988			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	10	n/a	n/a	n/a	n/a	3.9	n/a	
S177023988			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S177023988			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S177023988			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S177023988			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023988			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S177023988			112-40-3	Dodecane	NGS	120	<0.60	130	n/a	n/a	n/a	n/a	0.55	n/a	EY
S177023988			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023988			629-59-4	Tetradecane	NGS	120	<3.9	15	n/a	n/a	n/a	n/a	3.9	n/a	
S177023988			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S177023988			629-50-5	Tridecane	NGS	120	<1.6	32	n/a	n/a	n/a	n/a	1.6	n/a	
S177023988			629-78-7	Heptadecane	NGS	120	<2.4	5.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S177023988			629-62-9	Pentadecane	NGS	120	<3.0	3.3	n/a	n/a	n/a	n/a	3.0	n/a	J

N - Named TIC  
 Y - Comment  
 Q - Qualitative  
 U - Less Than Detection Limit  
 J - Estimated  
 E - Outside Calibration Range  
 NA = Not Analyzed, ND = Not Detected  
 L - LLS Outside Range  
 T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-IN-4  
Customer Sample ID: 17-04569-1-TL2-IN-4

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S177023989			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S177023989			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S177023989			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S177023989			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S177023989			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023989			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	LU
S177023989			112-40-3	Dodecane	NGS	120	<0.60	20	n/a	n/a	n/a	n/a	0.55	n/a	
S177023989			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023989			529-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S177023989			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S177023989			629-50-5	Tridecane	NGS	120	<1.6	5.8	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023989			529-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S177023989			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
U - Less Than Detection Limit

N - Named TIC  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-IN-5  
Customer Sample ID: 17-04569-1-TL2-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023990			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	12	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023990			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023990			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023990			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023990			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023990			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023990			112-40-3	Dodecane	NGS	120	<0.60	120	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023990			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023990			629-59-4	Tetradecane	NGS	120	<3.9	16	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023990			126-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023990			629-50-5	Tridecane	NGS	120	<1.6	30	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023990			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023990			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

N - Named TIC  
Y - Comment

Q - Qualitative  
U - Less Than Detection Limit

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
L - ILS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172271  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-IN-7  
Customer Sample ID: 17-04569-1-TL2-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVQA #2															
S17T023992			3891-98-3	2,6,10-Trimethyldecane	NGS	120	<3.9	7.6	n/a	n/a	n/a	n/a	3.9		n/a J
S17T023992			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T023992			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023992			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T023992			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023992			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T023992			112-40-3	Dodecane	NGS	120	<0.60	56	n/a	n/a	n/a	n/a	0.55		n/a E
S17T023992			544-76-3	Hexadecane	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023992			629-59-4	Tetradecane	NGS	120	<3.9	7.0	n/a	n/a	n/a	n/a	3.9		n/a U
S17T023992			128-73-8	Tributyl phosphate	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023992			629-50-5	Tridecane	NGS	120	<1.6	15	n/a	n/a	n/a	n/a	1.6		n/a
S17T023992			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023992			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U

N - Named TIC  
Y - Comment  
Q - Qualitative  
U - Less Than Detection Limit  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
L - LLS Outside Range  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

*James P. Hannon*  
8-31-17

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-EF-1  
Customer Sample ID: 17-04568-1-TL1-EF-1

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023933			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a
S17T023933			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	n/a
S17T023933			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S17T023933			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	n/a
S17T023933			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T023933			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	n/a
S17T023933			112-40-3	Dodecane	NGS	120	<0.80	83	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023933			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a
S17T023933			529-59-4	Tetradecane	NGS	130	<3.9	8.1	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023933			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S17T023933			529-50-5	Tridecane	NGS	120	<1.6	16	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S17T023933			529-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023933			529-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-EF-2  
Customer Sample ID: 17-04568-1-TL1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023934			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	QU
S17T023934			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	QU
S17T023934			108-39-4M	Cresol (m & p)	NGS	110	<5.6	9.1	n/a	n/a	n/a	n/a	5.6	n/a	JQ
S17T023934			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	QU
S17T023934			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	QU
S17T023934			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	QU
S17T023934			112-40-3	Dodecane	NGS	120	<0.60	86	n/a	n/a	n/a	n/a	0.55	n/a	EQY
S17T023934			544-76-3	Hexadecane	NGS	130	<3.3	6.1	n/a	n/a	n/a	n/a	3.3	n/a	JQ
S17T023934			629-59-4	Tetradecane	NGS	130	<3.9	12	n/a	n/a	n/a	n/a	3.9	n/a	Q
S17T023934			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023934			629-50-5	Tridecane	NGS	120	<1.6	17	n/a	n/a	n/a	n/a	1.6	n/a	Q
S17T023934			629-78-7	Heptadecane	NGS	120	<2.4	2.8	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023934			629-62-9	Pentadecane	NGS	130	<3.0	11	n/a	n/a	n/a	n/a	3.0	n/a	Q

J - Estimated  
T - Tentatively Identified Compound  
U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
H - Missed Holdtime  
NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-EF-3  
Customer Sample ID: 17-04568-1-TL1-EF-3

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023935			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023935			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023935			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023935			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023935			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023935			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023935			112-40-3	Dodecane	NGS	120	<0.60	110	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023935			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023935			629-59-4	Tetradecane	NGS	130	<3.9	12	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023935			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023935			629-50-5	Tridecane	NGS	120	<1.6	26	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023935			629-78-7	Heptadecane	NGS	120	<2.4	3.2	n/a	n/a	n/a	n/a	2.4	n/a	JQ
S17T023935			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-EF-4  
Customer Sample ID: 17-04568-1-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023936			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T023936			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T023936			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023936			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T023936			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023936			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T023936			112-40-3	Dodecane	NGS	120	<0.60	92	n/a	n/a	n/a	n/a	0.55		n/a EY
S17T023936			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023936			629-59-4	Tetradecane	NGS	130	<3.9	12	n/a	n/a	n/a	n/a	3.9		n/a
S17T023936			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023936			629-50-5	Tridecane	NGS	120	<1.6	24	n/a	n/a	n/a	n/a	1.6		n/a
S17T023936			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023936			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-EF-5  
Customer Sample ID: 17-04568-1-TL1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023937			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023937			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023937			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023937			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023937			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023937			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023937			112-40-3	Dodecane	NGS	120	<0.60	82	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023937			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023937			629-59-4	Tetradecane	NGS	130	<3.9	11	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023937			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023937			629-50-5	Tridecane	NGS	120	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023937			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023937			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172269  
 SDG Number:  
 Customer Sample ID: 17-04568-1-TL1-EF-6  
 Customer Sample ID: 17-04568-1-TL1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spit Rec %	Det Limit	Ont Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023938			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	7.3	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023938			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023938			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023938			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023938			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023938			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023938			112-40-3	Dodecane	NGS	120	<0.60	40	n/a	n/a	n/a	n/a	0.55	n/a	
S17T023938			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023938			629-59-4	Tetradecane	NGS	130	<3.9	5.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023938			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023938			629-50-5	Tridecane	NGS	120	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023938			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023938			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
 T - Tentatively Identified Compound

U - Less Than Detection Limit  
 N - Named TIC

E - Outside Calibration Range  
 H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
 Q - Qualitative  
 Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-EF-7  
Customer Sample ID: 17-04568-1-TL1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023939			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023939			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023939			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023939			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023939			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023939			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023939			112-40-3	Dodecane	NGS	120	<0.60	33	n/a	n/a	n/a	n/a	0.55	n/a	
S17T023939			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023939			629-59-4	Tetradecane	NGS	130	<3.9	5.1	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023939			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023939			629-50-5	Tridecane	NGS	120	<1.6	8.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023939			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023939			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound  
U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
H - Missed Holdtime  
NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-EF-8  
Customer Sample ID: 17-04568-1-TL1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023940			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T023940			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T023940			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023940			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T023940			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023940			84-86-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T023940			112-40-3	Dodecane	NGS	120	<0.60	35	n/a	n/a	n/a	n/a	0.55		n/a
S17T023940			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023940			629-59-4	Tetradecane	NGS	130	<3.9	5.0	n/a	n/a	n/a	n/a	3.9		n/a J
S17T023940			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a QU
S17T023940			629-50-5	Tridecane	NGS	120	<1.6	7.8	n/a	n/a	n/a	n/a	1.6		n/a J
S17T023940			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a QU
S17T023940			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U

J - Estimated  
T - Tentatively Identified Compound  
U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
H - Missed Holdtime  
NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-IN-1

Customer Sample ID: 17-04568-1-TL1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023941			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T023941			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T023941			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023941			92-62-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T023941			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023941			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T023941			112-40-3	Dodecane	NGS	120	<0.60	90	n/a	n/a	n/a	n/a	0.55		n/a EY
S17T023941			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023941			629-59-4	Tetradecane	NGS	130	<3.9	12	n/a	n/a	n/a	n/a	3.9		n/a
S17T023941			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023941			629-50-5	Tridecane	NGS	120	<1.6	22	n/a	n/a	n/a	n/a	1.6		n/a
S17T023941			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023941			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04568-1-TL1-IN-8  
Customer Sample ID: 17-04568-1-TL1-IN-8

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023942			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	4.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023942			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023942			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023942			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023942			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023942			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023942			112-40-3	Dodecane	NGS	120	<0.60	30	n/a	n/a	n/a	n/a	0.55	n/a	
S17T023942			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023942			629-59-4	Tetradecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023942			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023942			629-50-5	Tridecane	NGS	120	<1.6	7.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023942			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023942			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound  
U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
H - Missed Holdtime  
NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-EF-1  
Customer Sample ID: 17-04569-1-TL2-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023943			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T023943			96-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T023943			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023943			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T023943			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023943			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T023943			112-40-3	Dodecane	NGS	120	<0.60	100	n/a	n/a	n/a	n/a	0.55		n/a EY
S17T023943			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023943			829-59-4	Tetradecane	NGS	130	<3.9	11	n/a	n/a	n/a	n/a	3.9		n/a
S17T023943			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023943			629-50-5	Tridecane	NGS	120	<1.6	19	n/a	n/a	n/a	n/a	1.6		n/a
S17T023943			629-78-7	Heptadecane	NGS	120	<2.4	3.6	n/a	n/a	n/a	n/a	2.4		n/a J
S17T023943			629-62-9	Pentadecane	NGS	130	<3.0	3.5	n/a	n/a	n/a	n/a	3.0		n/a J

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-EF-2  
Customer Sample ID: 17-04569-1-TL2-EF-2

Sample#	R	A#	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023944			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023944			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	QU
S17T023944			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023944			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	QU
S17T023944			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023944			84-86-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023944			112-40-3	Dodecane	NGS	120	<0.60	110	n/a	n/a	n/a	n/a	0.55	n/a	EQY
S17T023944			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023944			629-59-4	Tetradecane	NGS	130	<3.9	23	n/a	n/a	n/a	n/a	3.9	n/a	
S17T023944			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023944			629-50-5	Tridecane	NGS	120	<1.6	22	n/a	n/a	n/a	n/a	1.6	n/a	QU
S17T023944			629-78-7	Heptadecane	NGS	120	<2.4	53	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023944			629-62-9	Pentadecane	NGS	130	<3.0	3.4	n/a	n/a	n/a	n/a	3.0	n/a	J

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Q - Qualitative  
Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-EF-3  
Customer Sample ID: 17-04569-1-TL2-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023945			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T023945			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T023945			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023945			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T023945			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023945			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T023945			112-40-3	Dodecane	NGS	120	<0.60	130	n/a	n/a	n/a	n/a	0.55		n/a EY
S17T023945			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023945			629-59-4	Tetradecane	NGS	130	<3.9	16	n/a	n/a	n/a	n/a	3.9		n/a
S17T023945			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023945			629-50-5	Tridecane	NGS	120	<1.6	23	n/a	n/a	n/a	n/a	1.6		n/a
S17T023945			629-78-7	Heptadecane	NGS	120	<2.4	4.4	n/a	n/a	n/a	n/a	2.4		n/a J
S17T023945			629-62-9	Pentadecane	NGS	130	<3.0	4.4	n/a	n/a	n/a	n/a	3.0		n/a J

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Q - Qualitative  
Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-EF-4  
Customer Sample ID: 17-04569-1-TL2-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023946			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a U
S17T023946			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	n/a U
S17T023946			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a U
S17T023946			92-52-4	Biphenyl	NGS	120	<4.0	4.7	n/a	n/a	n/a	n/a	4.0	n/a	n/a J
S17T023946			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a U
S17T023946			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	n/a U
S17T023946			112-40-3	Dodecane	NGS	120	<0.60	97	n/a	n/a	n/a	n/a	0.55	n/a	n/a EY
S17T023946			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a U
S17T023946			629-59-4	Tetradecane	NGS	130	<3.9	18	n/a	n/a	n/a	n/a	3.9	n/a	n/a
S17T023946			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a U
S17T023946			629-50-5	Tridecane	NGS	120	<1.6	31	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S17T023946			629-78-7	Heptadecane	NGS	120	<2.4	4.3	n/a	n/a	n/a	n/a	2.4	n/a	n/a J
S17T023946			629-62-9	Pentadecane	NGS	130	<3.0	3.6	n/a	n/a	n/a	n/a	3.0	n/a	n/a J

J - Estimated  
T - Tentatively Identified Compound  
U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
H - Missed Holdtime  
NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-EF-5  
Customer Sample ID: 17-04569-1-TL2-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023947			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023947			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023947			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023947			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023947			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023947			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023947			112-40-3	Dodecane	NGS	120	<0.60	100	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023947			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023947			629-59-4	Tetradecane	NGS	130	<3.9	15	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023947			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023947			629-50-5	Tridecane	NGS	120	<1.6	24	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023947			629-78-7	Heptadecane	NGS	120	<2.4	2.6	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023947			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-EF-6  
Customer Sample ID: 17-04569-1-TL2-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spl. Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023948			3891-98-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T023948			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T023948			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T023948			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T023948			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023948			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T023948			112-40-3	Dodecane	NGS	120	<0.60	55	n/a	n/a	n/a	n/a	0.55		n/a E
S17T023948			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023948			629-59-4	Tetradecane	NGS	130	<3.9	8.6	n/a	n/a	n/a	n/a	3.9		n/a J
S17T023948			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a QU
S17T023948			629-50-5	Tridecane	NGS	120	<1.6	15	n/a	n/a	n/a	n/a	1.6		n/a
S17T023948			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a QU
S17T023948			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U

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Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172269  
 SDG Number:  
 Customer Sample ID: 17-04569-1-TL2-EF-7  
 Customer Sample ID: 17-04569-1-TL2-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023949			3881-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023949			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023949			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023949			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023949			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023949			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023949			112-40-3	Dodecane	NGS	120	<0.60	38	n/a	n/a	n/a	n/a	0.55	n/a	
S17T023949			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023949			529-59-4	Tetradecane	NGS	130	<3.9	6.4	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023949			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023949			529-50-5	Tridecane	NGS	120	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023949			529-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023949			529-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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 U - Less Than Detection Limit  
 N - Named TIC  
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 H - Missed Holdtime  
 NA = Not Analyzed, ND = Not Detected  
 Q - Qualitative  
 Y - Comment



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172269**  
**SDG Number:**  
**Customer Sample ID: 17-04569-1-TL2-EF-8**  
**Customer Sample ID: 17-04569-1-TL2-EF-8**

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023950			3891-58-3	2,6,10-Trimethyldecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023950			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023950			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023950			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023950			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023950			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023950			112-40-3	Dodecane	NGS	120	<0.80	42	n/a	n/a	n/a	n/a	0.55	n/a	
S17T023950			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023950			629-59-4	Tetradecane	NGS	130	<3.9	5.4	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T023950			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	QU
S17T023950			629-50-5	Tridecane	NGS	120	<1.6	8.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023950			629-78-7	Heptadecane	NGS	120	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	QU
S17T023950			629-62-9	Pentadecane	NGS	130	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-IN-1

Customer Sample ID: 17-04569-1-TL2-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023951			3891-98-3	2,6,10-Trimethyldodecane	NGS	130	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023951			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T023951			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023951			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T023951			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023951			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T023951			112-40-3	Dodecane	NGS	120	<0.60	100	n/a	n/a	n/a	n/a	0.55	n/a	EY
S17T023951			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023951			629-59-4	Tetradecane	NGS	130	<3.9	14	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T023951			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T023951			629-50-5	Tridecane	NGS	120	<1.6	23	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023951			629-78-7	Heptadecane	NGS	120	<2.4	2.7	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023951			629-62-9	Pentadecane	NGS	130	<3.0	4.1	n/a	n/a	n/a	n/a	3.0	n/a	J

J - Estimated

T - Tentatively Identified Compound

U - Less Than Detection Limit

N - Named TIC

E - Outside Calibration Range

H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected

Q - Qualitative

Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-IN-8  
Customer Sample ID: 17-04569-1-TL2-IN-8

Sample#	R	Al#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T023952			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	4.5	n/a	n/a	n/a	n/a	3.9	n/a	HJ
S17T023952			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	HJ
S17T023952			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	HJ
S17T023952			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	HJ
S17T023952			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	HJ
S17T023952			84-66-2	Diethylphthalate	NGS	110	<7.0	8.4	n/a	n/a	n/a	n/a	7.0	n/a	HJ
S17T023952			112-40-3	Dodecane	NGS	110	<0.60	31	n/a	n/a	n/a	n/a	0.55	n/a	H
S17T023952			544-76-3	Hexadecane	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	HJ
S17T023952			629-59-4	Tetradecane	NGS	110	<3.9	4.0	n/a	n/a	n/a	n/a	3.9	n/a	HJ
S17T023952			126-73-8	Tributyl phosphate	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	HJ
S17T023952			629-50-5	Tridecane	NGS	110	<1.6	8.9	n/a	n/a	n/a	n/a	1.6	n/a	HJ
S17T023952			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	HJ
S17T023952			629-62-9	Pentadecane	NGS	110	<3.0	3.6	n/a	n/a	n/a	n/a	3.0	n/a	HJ

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment

E - Outside Calibration Range  
H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

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8-31-17

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-EF-1

Customer Sample ID: 17-04568-1-TL1-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023933				Cyclotetrasiloxane, octamethyl	556-67-2	4.37	NGS	76	JNT
S17T023933				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	140	JNT
S17T023933				Decane, 2,4,6-trimethyl-	62108-27-4	4.98	NGS	21	JNT
S17T023933				Undecane, 4,6-dimethyl-	17312-82-2	5.06	NGS	150	JNT
S17T023933				Decane, 3,7-dimethyl-	17312-54-8	5.11	NGS	66	JNT
S17T023933				2,2,7,7-Tetramethyloctane	1071-31-4	5.14	NGS	40	JNT
S17T023933				2-Hexyl-1-octanol	19780-79-1	5.19	NGS	44	JNT
S17T023933				2,6-Dimethyldecane	13150-81-7	5.34	NGS	34	JNT
S17T023933				2,3-Dimethyldecane	17312-44-6	5.39	NGS	50	JNT
S17T023933				Undecane	1120-21-4	5.47	NGS	140	JNT
S17T023933				Undecane, 4,7-dimethyl-	17301-32-5	5.51	NGS	31	JNT
S17T023933				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	35	JNT
S17T023933				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.33	NGS	16	JNT
S17T023933				Dodecane, 2,6,10-trimethyl-	3891-98-3	7.40	NGS	36	JNT

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-EF-2

Customer Sample ID: 17-04568-1-TL1-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023934				Cyclotrisiloxane, hexamethyl-	541-05-9	2.87	NGS	48	JNT
S17T023934				Benzaldehyde	100-52-7	4.25	NGS	30	JNT
S17T023934				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	47	JNT
S17T023934				4-Vinyl-imidazole	3718-04-5	4.42	NGS	53	JNT
S17T023934				Unknown-1		4.46	NGS	44	JT
S17T023934				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	4.84	NGS	33	JNT
S17T023934				Decane, 2,4,6-trimethyl-	62108-27-4	5.04	NGS	30	JNT
S17T023934				Ethanone, 2,2-dihydroxy-1-phen	1075-06-5	5.18	NGS	51	JNT
S17T023934				2,6-Dimethyldecane	13150-81-7	5.44	NGS	78	JNT
S17T023934				Ethanol, 2-(hexyloxy)-	112-25-4	5.50	NGS	62	JNT
S17T023934				Decamethylcyclopentasiloxane	541-02-6	5.70	NGS	88	JNT
S17T023934				Heptanoic acid, 2-ethyl-	3274-29-1	5.80	NGS	140	JNT
S17T023934				Octanoic Acid	124-07-2	6.13	NGS	25	JNT
S17T023934				1,2-Benzisothiazole	272-16-2	6.58	NGS	50	JNT
S17T023934				Formamide, N-cyclohexyl-	766-93-8	6.84	NGS	45	JNT
S17T023934				Decane, 2,3,5,8-tetramethyl-	192823-15-7	6.88	NGS	59	JNT
S17T023934				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.95	NGS	28	JNT
S17T023934				Dodecamethylcyclohexasiloxane	540-97-6	7.06	NGS	77	JNT
S17T023934				Dodecane, 2,6,10-trimethyl-	3891-98-3	8.47	NGS	33	JNT
S17T023934				Benzoic acid, 4-ethoxy-, ethyl	23676-09-7	8.75	NGS	66	JNT
S17T023934				Tetradecane, 2-methyl-	1560-95-8	8.78	NGS	34	JNT

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-EF-3

Customer Sample ID: 17-04568-1-TL1-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023935				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	54 JNT	
S17T023935				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	120 JNT	
S17T023935				Decane, 3,7-dimethyl-	17312-54-8	5.05	NGS	110 JNT	
S17T023935				Octane, 2,3,6,7-tetramethyl-	52670-34-5	5.10	NGS	45 JNT	
S17T023935				2-Hexyl-1-octanol	19780-79-1	5.19	NGS	45 JNT	
S17T023935				1-Octanol, 2-butyl-	3913-02-8	5.24	NGS	47 JNT	
S17T023935				2,3-Dimethyldecane	17312-44-6	5.39	NGS	38 JNT	
S17T023935				Undecane	1120-21-4	5.46	NGS	140 JNT	
S17T023935				Decane, 2,4,6-trimethyl-	62108-27-4	5.51	NGS	36 JNT	
S17T023935				Undecane, 2,6-dimethyl-	17301-23-4	6.41	NGS	13 JNT	
S17T023935				1,2-Benzisothiazole	272-16-2	6.62	NGS	47 JNT	
S17T023935				2-Propenoic acid, octyl ester	2499-59-4	6.65	NGS	28 JNT	
S17T023935				Unknown-1	--	6.68	NGS	43 JT	
S17T023935				Ethylene diacrylate	2274-11-5	6.72	NGS	28 JNT	
S17T023935				Acetic acid, trifluoro-, 3,7-d	28746-07-5	6.80	NGS	27 JNT	
S17T023935				Dodecane, 4,6-dimethyl	61141-72-8	6.91	NGS	58 JNT	
S17T023935				Decane, 2,3,5,8-tetramethyl-	192823-15-7	7.27	NGS	42 JNT	
S17T023935				2,6-Dimethyldecane	13150-81-7	7.34	NGS	34 JNT	
S17T023935				Dodecane, 2,7,10-trimethyl-	74645-98-0	7.41	NGS	41 JNT	

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-EF-4

Customer Sample ID: 17-04568-1-TL1-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023936				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	35 JNT	
S17T023936				D-Limonene	5989-27-5	4.85	NGS	85 JNT	
S17T023936				Undecane, 4,7-dimethyl-	17301-32-5	5.05	NGS	91 JNT	
S17T023936				Decane, 2,4,6-trimethyl-	52108-27-4	5.10	NGS	41 JNT	
S17T023936				2-Hexyl-1-octanol	19780-79-1	5.19	NGS	34 JNT	
S17T023936				Acetic acid, trifluoro-, 3,7-d	28745-07-5	5.24	NGS	27 JNT	
S17T023936				2,3-Dimethyldecane	17312-44-6	5.38	NGS	43 JNT	
S17T023936				Undecane	1120-21-4	5.46	NGS	120 JNT	
S17T023936				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	29 JNT	
S17T023936				Undecane, 2,6-dimethyl-	17301-23-4	6.41	NGS	16 JNT	
S17T023936				1,2-Benzisothiazole	272-16-2	6.62	NGS	50 JNT	
S17T023936				Unknown-1	-	6.68	NGS	37 JT	
S17T023936				2,2,7,7-Tetramethyloctane	1071-31-4	6.85	NGS	28 JNT	
S17T023936				Decane, 2,3,5,8-tetramethyl-	192823-15-7	6.91	NGS	43 JNT	
S17T023936				Dodecane, 4,6-dimethyl	61141-72-8	7.27	NGS	32 JNT	
S17T023936				Dodecane, 2,7,10-trimethyl-	74645-98-0	7.41	NGS	40 JNT	
S17T023936				Decane, 2,6,8-trimethyl-	52108-26-3	7.58	NGS	26 JNT	

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-EF-5

Customer Sample ID: 17-04568-1-TL1-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023937				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	37 JNT	
S17T023937				2,5,6-Trimethyldecane	62108-23-0	4.55	NGS	27 JNT	
S17T023937				D-Limonene	5989-27-5	4.85	NGS	140 JNT	
S17T023937				Undecane, 4,7-dimethyl-	17301-32-5	5.06	NGS	120 JNT	
S17T023937				Decane, 2,4,6-trimethyl-	62108-27-4	5.10	NGS	58 JNT	
S17T023937				1-Octanol, 2-butyl-	3913-02-8	5.24	NGS	36 JNT	
S17T023937				2,3-Dimethyldecane	17312-44-6	5.39	NGS	54 JNT	
S17T023937				Undecane	1120-21-4	5.46	NGS	140 JNT	
S17T023937				2,6-Dimethyldecane	13150-81-7	5.51	NGS	33 JNT	
S17T023937				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	36 JNT	
S17T023937				Undecane, 2,6-dimethyl-	17301-23-4	6.40	NGS	13 JNT	
S17T023937				1,2-Benzisothiazole	272-16-2	6.61	NGS	45 JNT	
S17T023937				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.90	NGS	41 JNT	
S17T023937				Decane, 2,3,5,8-tetramethyl-	192823-15-7	7.26	NGS	26 JNT	
S17T023937				Dodecane, 2,7,10-trimethyl-	74645-98-0	7.40	NGS	33 JNT	

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172269**

**SDG Number:**

**Customer Sample ID: 17-04568-1-TL1-EF-6**

**Customer Sample ID: 17-04568-1-TL1-EF-6**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023938				Cyclotetrasiloxane, octamethyl	556-87-2	4.35	NGS	34	JNT
S17T023938				D-Limonene	5989-27-5	4.85	NGS	120	JNT
S17T023938				Undecane, 4,7-dimethyl-	17301-32-5	5.05	NGS	78	JNT
S17T023938				Decane, 2,4,6-trimethyl-	62108-27-4	5.10	NGS	28	JNT
S17T023938				2,2,7,7-Tetramethyloctane	1071-31-4	5.13	NGS	26	JNT
S17T023938				1-Octanol, 2-butyl-	3913-02-8	5.24	NGS	26	JNT
S17T023938				2,6-Dimethyldecane	13150-81-7	5.32	NGS	29	JNT
S17T023938				2,3-Dimethyldecane	17312-44-6	5.38	NGS	28	JNT
S17T023938				Undecane	1120-21-4	5.45	NGS	78	JNT
S17T023938				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	22	JNT
S17T023938				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	39	JNT
S17T023938				1,2-Benzisothiazole	272-16-2	6.59	NGS	34	JNT
S17T023938				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.89	NGS	31	JNT
S17T023938				Dodecane, 2,6,10-trimethyl-	3891-98-3	6.96	NGS	14	JNT

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



**2017 Cartridge Evaluation  
Data Summary of All Results**

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-EF-7

Customer Sample ID: 17-04568-1-TL1-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023939				Cyclotetrasiloxane, octamethyl	556-87-2	4.35	NGS	32 JNT	
S17T023939				D-Limonene	5989-27-5	4.85	NGS	69 JNT	
S17T023939				Decane, 2,4,6-trimethyl-	62108-27-4	5.04	NGS	51 JNT	
S17T023939				Undecane	1120-21-4	5.44	NGS	57 JNT	
S17T023939				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	35 JNT	
S17T023939				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.89	NGS	29 JNT	
S17T023939				Dodecane, 2,6,10-trimethyl-	3891-98-3	6.96	NGS	12 JNT	
S17T023939				Undecane, 2-methyl-	7045-71-8	7.25	NGS	19 JNT	

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-EF-8

Customer Sample ID: 17-04568-1-TL1-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023940				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	36	JNT
S17T023940				D-Limonene	5989-27-5	4.85	NGS	97	JNT
S17T023940				Decane, 3,7-dimethyl-	17312-54-8	5.04	NGS	74	JNT
S17T023940				2,6-Dimethyldecane	13150-81-7	5.09	NGS	32	JNT
S17T023940				Undecane	1120-21-4	5.44	NGS	85	JNT
S17T023940				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	12	JNT
S17T023940				Decamethylcyclopentasiloxane	541-02-6	5.70	NGS	39	JNT
S17T023940				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	27	JNT
S17T023940				Dodecane, 2,6,10-trimethyl-	3891-98-3	6.95	NGS	9.2	JNT

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-IN-1

Customer Sample ID: 17-04568-1-TL1-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023941				4-Methoxy-1-pentene	98386-09-5	3.29	NGS	40 JNT	
S17T023941				3-Hexanone, 5-methyl-	623-56-3	3.51	NGS	38 JNT	
S17T023941				3-Hexanol, 5-methyl-	623-55-2	3.62	NGS	27 JNT	
S17T023941				Cyclotetrasiloxane, octamethyl	556-67-2	4.36	NGS	74 JNT	
S17T023941				Decane, 2,5,9-trimethyl-	62108-22-9	4.75	NGS	32 JNT	
S17T023941				1-Hexanol, 2-ethyl-	104-76-7	4.84	NGS	110 JNT	
S17T023941				2,5,6-Trimethyldecane	62108-23-0	4.89	NGS	57 JNT	
S17T023941				Undecane, 4,6-dimethyl-	17312-82-2	5.06	NGS	170 JNT	
S17T023941				2,6-Dimethyldecane	13150-81-7	5.11	NGS	79 JNT	
S17T023941				Decane, 2,6,8-trimethyl-	62108-26-3	5.14	NGS	60 JNT	
S17T023941				Hexyl octyl ether	17071-54-4	5.20	NGS	45 JNT	
S17T023941				1-Octanol, 2-butyl-	3913-02-8	5.25	NGS	74 JNT	
S17T023941				Decane, 3,7-dimethyl-	17312-54-8	5.34	NGS	66 JNT	
S17T023941				Undecane, 2,7-dimethyl-	17301-24-5	5.38	NGS	36 JNT	
S17T023941				2,3-Dimethyldecane	17312-44-6	5.40	NGS	59 JNT	
S17T023941				Undecane	1120-21-4	5.47	NGS	59 JNT	
S17T023941				Undecane, 4,7-dimethyl-	17301-32-5	5.52	NGS	34 JNT	
S17T023941				Undecane, 2,6-dimethyl-	17301-23-4	5.59	NGS	25 JNT	
S17T023941				Decamethylcyclopentasiloxane	541-02-6	5.74	NGS	53 JNT	
S17T023941				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.91	NGS	33 JNT	
S17T023941				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.40	NGS	32 JNT	

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04568-1-TL1-IN-8

Customer Sample ID: 17-04568-1-TL1-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023942				Propane, 2-methyl-2-(1-methyl-	17348-59-3	3.30	NGS	110 JNT	
S17T023942				Oxirane, (3-methylbutyl)-	53229-41-7	3.38	NGS	29 JNT	
S17T023942				3-Hexanone, 5-methyl-	523-56-3	3.51	NGS	65 JNT	
S17T023942				Pentanal, 2,4-dimethyl-	27844-79-2	3.54	NGS	59 JNT	
S17T023942				3-Hexanol, 5-methyl-	523-55-2	3.63	NGS	52 JNT	
S17T023942				Pentane, 2,2,3,3-tetramethyl-	7154-79-2	3.77	NGS	27 JNT	
S17T023942				2-Hexyl-1-octanol	19780-79-1	4.11	NGS	28 JNT	
S17T023942				Cyclotetrasiloxane, octamethyl	556-87-2	4.35	NGS	53 JNT	
S17T023942				D-Limonene	989-27-5	4.84	NGS	88 JNT	
S17T023942				Decane, 2,5,9-trimethyl-	52108-22-9	4.88	NGS	37 JNT	
S17T023942				Decane, 2,4,6-trimethyl-	52108-27-4	5.04	NGS	65 JNT	
S17T023942				2,6-Dimethyldecane	13150-81-7	5.09	NGS	27 JNT	
S17T023942				Undecane	1120-21-4	5.44	NGS	78 JNT	
S17T023942				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	11 JNT	
S17T023942				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	35 JNT	
S17T023942				Dodecane, 2,6,10-trimethyl-	3891-98-3	6.89	NGS	25 JNT	

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H - Missed Holdtime

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Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-1

Customer Sample ID: 17-04569-1-TL2-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023943				Cyclohexasiloxane, octamethyl	556-67-2	4.36	NGS	87 JNT	
S17T023943				D-Limonene	5989-27-5	4.85	NGS	86 JNT	
S17T023943				2,6-Dimethyldecane	13150-81-7	5.05	NGS	130 JNT	
S17T023943				Decane, 3,7-dimethyl-	17312-54-8	5.11	NGS	50 JNT	
S17T023943				2,3-Dimethyldecane	17312-44-6	5.39	NGS	44 JNT	
S17T023943				Undecane	1120-21-4	5.47	NGS	70 JNT	
S17T023943				Undecane, 4,7-dimethyl-	17301-32-5	5.51	NGS	36 JNT	
S17T023943				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	34 JNT	
S17T023943				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.91	NGS	55 JNT	
S17T023943				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.97	NGS	21 JNT	
S17T023943				Dodecamethylcyclotetrasiloxane	540-97-6	7.07	NGS	29 JNT	
S17T023943				Dodecane, 4,6-dimethyl	51141-72-8	7.26	NGS	40 JNT	
S17T023943				Dodecane, 2,6,10-trimethyl-	3891-98-3	7.34	NGS	29 JNT	
S17T023943				Decane, 2,3,5,8-tetramethyl-	192823-15-7	7.40	NGS	32 JNT	

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N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-2

Customer Sample ID: 17-04569-1-TL2-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023944				Cyclotetrasiloxane, octamethyl	556-67-2	4.36	NGS	98 JNT	
S17T023944				2,2,7,7-Tetramethyloctane	1071-31-4	4.75	NGS	27 JNT	
S17T023944				1,3,8-p-Menthatriene	21195-59-5	4.80	NGS	27 JNT	
S17T023944				D-Limonene	5989-27-5	4.85	NGS	190 JNT	
S17T023944				2,6-Dimethyldecane	13150-81-7	5.06	NGS	260 JNT	
S17T023944				Octane, 2,3,6,7-tetramethyl-	52670-34-5	5.11	NGS	120 JNT	
S17T023944				Decane, 2,5,9-trimethyl-	52108-22-9	5.14	NGS	78 JNT	
S17T023944				Decane, 2,4,6-trimethyl-	52108-27-4	5.19	NGS	48 JNT	
S17T023944				Undecane, 2,6-dimethyl-	17301-23-4	5.21	NGS	33 JNT	
S17T023944				1-Octanol, 2-butyl-	3913-02-8	5.25	NGS	86 JNT	
S17T023944				Decane, 2,3,5,8-tetramethyl-	192823-15-7	5.33	NGS	36 JNT	
S17T023944				Decane, 2,6,7-trimethyl-	52108-25-2	5.34	NGS	38 JNT	
S17T023944				2,3-Dimethyldecane	17312-44-6	5.40	NGS	110 JNT	
S17T023944				Undecane	1120-21-4	5.47	NGS	89 JNT	
S17T023944				Undecane, 4,7-dimethyl-	17301-32-5	5.52	NGS	49 JNT	
S17T023944				Decamethylcyclopentasiloxane	541-02-6	5.73	NGS	57 JNT	
S17T023944				5-Ethyldecane	17302-36-2	6.31	NGS	49 JNT	
S17T023944				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.91	NGS	54 JNT	
S17T023944				Dodecane, 2,6,10-trimethyl-	3891-98-3	6.97	NGS	24 JNT	
S17T023944				Dodecane, 4,6-dimethyl	51141-72-8	7.27	NGS	36 JNT	
S17T023944				Decane, 5-propyl-	17312-62-8	7.37	NGS	45 JNT	
S17T023944				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.41	NGS	40 JNT	
S17T023944				Tetracontane, 3,5,24-trimethyl	55162-81-3	7.58	NGS	26 JNT	

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N - Named TIC

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T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-3

Customer Sample ID: 17-04569-1-TL2-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S177023945				Cycloletrasiloxane, octamethyl	556-67-2	4.35	NGS	60 JNT	
S177023945				D-Limonene	5989-27-5	4.85	NGS	170 JNT	
S177023945				Decane, 3,7-dimethyl-	17312-54-8	5.06	NGS	180 JNT	
S177023945				2,6-Dimethyldecane	13150-81-7	5.10	NGS	92 JNT	
S177023945				2,3,7-trimethyloctane	92016-34-6	5.13	NGS	28 JNT	
S177023945				1-Octanol, 2-butyl-	3913-02-8	5.24	NGS	48 JNT	
S177023945				Benzene, 4-ethenyl-1,2-dimethyl	27831-13-6	5.39	NGS	100 JNT	
S177023945				Undecane	1120-21-4	5.47	NGS	230 JNT	
S177023945				Undecane, 5,7-dimethyl-	17312-83-3	5.51	NGS	35 JNT	
S177023945				Decamethylcyclopentasiloxane	541-02-6	5.73	NGS	36 JNT	
S177023945				1,2-Benzisothiazole	272-16-2	6.62	NGS	37 JNT	
S177023945				Cyclopropane, 1,1-dimethyl-2-n	41977-38-2	6.68	NGS	33 JNT	
S177023945				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.91	NGS	50 JNT	
S177023945				Dodecane, 4,6-dimethyl	51141-72-8	7.27	NGS	35 JNT	
S177023945				Nonane, 3-methyl-5-propyl-	31081-18-2	7.37	NGS	38 JNT	
S177023945				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.41	NGS	50 JNT	

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Y - Comment

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H - Missed Holdtime

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-4

Customer Sample ID: 17-04569-1-TL2-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVQA #2									
S17T023946				Hexane, 2,4-dimethyl-	569-43-5	3.63	NGS	30 JNT	
S17T023946				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	41 JNT	
S17T023946				D-Limonene	5989-27-5	4.84	NGS	86 JNT	
S17T023946				Decane, 3,7-dimethyl-	17312-54-8	5.05	NGS	98 JNT	
S17T023946				2,6-Dimethyldecane	13150-81-7	5.09	NGS	45 JNT	
S17T023946				Acetophenone	98-86-2	5.18	NGS	30 JNT	
S17T023946				2,3-Dimethyldecane	17312-44-6	5.38	NGS	37 JNT	
S17T023946				Undecane	1120-21-4	5.45	NGS	140 JNT	
S17T023946				Decane, 2,4,6-trimethyl-	52108-27-4	5.50	NGS	32 JNT	
S17T023946				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	34 JNT	
S17T023946				Acetic acid, trifluoro-, 3,7-d	28745-07-5	5.99	NGS	28 JNT	
S17T023946				Undecane, 2,6-dimethyl-	17301-23-4	6.31	NGS	80 JNT	
S17T023946				1,2-Benzisothiazole	272-16-2	6.62	NGS	66 JNT	
S17T023946				2-Propenoic acid, octyl ester	2498-59-4	6.65	NGS	35 JNT	
S17T023946				1-Octanol, 3,7-dimethyl-	106-21-8	6.68	NGS	48 JNT	
S17T023946				Unknown-1	-	6.73	NGS	34 JT	
S17T023946				1-Octanol, 2-butyl-	3913-02-8	6.77	NGS	31 JNT	
S17T023946				4-Undecene, 3-methyl-, (Z)-	74645-87-7	6.81	NGS	34 JNT	
S17T023946				2,2,7,7-Tetramethyloctane	1071-31-4	6.85	NGS	35 JNT	
S17T023946				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.91	NGS	55 JNT	
S17T023946				2-Hexyl-1-octanol	19780-79-1	7.11	NGS	27 JNT	
S17T023946				Decane, 2,3,5,8-tetramethyl-	192823-15-7	7.27	NGS	38 JNT	
S17T023946				Undecane, 2,3-dimethyl-	17312-77-5	7.37	NGS	52 JNT	
S17T023946				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.41	NGS	47 JNT	
S17T023946				Decane, 2,6,8-trimethyl-	52108-26-3	7.58	NGS	28 JNT	
S17T023946				Decane, 2,6,6-trimethyl-	52108-24-1	7.68	NGS	26 JNT	
S17T023946				Benzoic acid, 4-ethoxy-, ethyl	23676-09-7	8.76	NGS	23 JNT	

J - Estimated  
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 NA = Not Analyzed, ND = Not Detected  
 Q - Qualitative  
 Y - Comment



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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269  
SDG Number:  
Customer Sample ID: 17-04569-1-TL2-EF-4

J - Estimated T - Tentatively Identified Compound	U - Less Than Detection Limit N - Named TIC	E - Outside Calibration Range H - Missed Holdtime	NA = Not Analyzed, ND = Not Detected Q - Qualitative Y - Comment
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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-5

Customer Sample ID: 17-04569-1-TL2-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023947				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	35 JNT	
S17T023947				D-Limonene	5989-27-5	4.85	NGS	130 JNT	
S17T023947				Decane, 3,7-dimethyl-	17312-54-8	5.05	NGS	120 JNT	
S17T023947				2,6-Dimethyldecane	13150-81-7	5.10	NGS	61 JNT	
S17T023947				Acetic acid, trifluoro-, 3,7-d	28745-07-5	5.24	NGS	31 JNT	
S17T023947				2,3-Dimethyldecane	17312-44-6	5.38	NGS	56 JNT	
S17T023947				Undecane	1120-21-4	5.46	NGS	150 JNT	
S17T023947				Decane, 2,4,6-trimethyl-	32108-27-4	5.50	NGS	31 JNT	
S17T023947				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	31 JNT	
S17T023947				1,2-Benzisothiazole	272-16-2	6.61	NGS	47 JNT	
S17T023947				Decane, 2,6,6-trimethyl-	32108-24-1	6.85	NGS	28 JNT	
S17T023947				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.91	NGS	44 JNT	
S17T023947				Dodecane, 4,6-dimethyl	51141-72-8	7.26	NGS	29 JNT	
S17T023947				Dodecane, 2,6,10-trimethyl-	3891-88-3	7.34	NGS	28 JNT	
S17T023947				Undecane, 2,3-dimethyl-	17312-77-5	7.37	NGS	35 JNT	
S17T023947				Dodecane, 2,6,11-trimethyl-	31295-66-4	7.40	NGS	44 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-6

Customer Sample ID: 17-04569-1-TL2-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023948				Nonane	111-84-2	3.62	NGS	28 JNT	
S17T023948				Cyclotetrasiloxane, octamethyl	556-87-2	4.35	NGS	35 JNT	
S17T023948				D-Limonene	5989-27-5	4.84	NGS	88 JNT	
S17T023948				Decane, 3,7-dimethyl-	17312-54-8	5.04	NGS	70 JNT	
S17T023948				Decane, 2,4,6-trimethyl-	32108-27-4	5.09	NGS	30 JNT	
S17T023948				2,3-Dimethyldecane	17312-44-6	5.38	NGS	28 JNT	
S17T023948				Undecane	1120-21-4	5.45	NGS	91 JNT	
S17T023948				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	39 JNT	
S17T023948				1,2-Benzisothiazole	272-16-2	6.59	NGS	41 JNT	
S17T023948				Ethylene diacrylate	2274-11-5	6.66	NGS	26 JNT	
S17T023948				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	36 JNT	
S17T023948				Undecane, 2-methyl-	7045-71-8	7.25	NGS	22 JNT	

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U - Less Than Detection Limit  
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E - Outside Calibration Range  
H - Missed Holdtime

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Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-7

Customer Sample ID: 17-04569-1-TL2-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023949				Cyclotrisiloxane, hexamethyl-	541-05-9	2.87	NGS	28 JNT	
S17T023949				Nonane	111-84-2	3.63	NGS	28 JNT	
S17T023949				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	31 JNT	
S17T023949				D-Limonene	5989-27-5	4.84	NGS	57 JNT	
S17T023949				Decane, 2,4,6-trimethyl-	62108-27-4	5.04	NGS	49 JNT	
S17T023949				Undecane	1120-21-4	5.44	NGS	61 JNT	
S17T023949				Decamethylcyclopentasiloxane	541-02-6	5.70	NGS	32 JNT	
S17T023949				Unknown-1	-	6.66	NGS	26 JT	
S17T023949				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.99	NGS	35 JNT	
S17T023949				Dodecane, 4,6-dimethyl	61141-72-8	7.25	NGS	23 JNT	
S17T023949				Dodecane, 2,6,10-trimethyl-	3891-98-3	7.33	NGS	16 JNT	

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H - Missed Holdtime

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Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-EF-8

Customer Sample ID: 17-04569-1-TL2-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023950				Nonane	111-84-2	3.62	NGS	25 JNT	
S17T023950				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	29 JNT	
S17T023950				D-Limonene	5989-27-5	4.85	NGS	100 JNT	
S17T023950				Undecane, 4,6-dimethyl-	17312-82-2	5.05	NGS	82 JNT	
S17T023950				2,6-Dimethyldodecane	13150-81-7	5.10	NGS	38 JNT	
S17T023950				Decane, 2,6,7-trimethyl-	62108-25-2	5.32	NGS	31 JNT	
S17T023950				2,3-Dimethyldodecane	17312-44-6	5.38	NGS	38 JNT	
S17T023950				Undecane	1120-21-4	5.45	NGS	98 JNT	
S17T023950				Decane, 2,4,6-trimethyl-	62108-27-4	5.49	NGS	28 JNT	
S17T023950				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	21 JNT	
S17T023950				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	31 JNT	
S17T023950				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.89	NGS	27 JNT	
S17T023950				Dodecane, 2,6,10-trimethyl-	3891-98-3	6.95	NGS	12 JNT	
S17T023950				Dodecane, 4,6-dimethyl	61141-72-8	7.25	NGS	17 JNT	

J - Estimated  
T - Tentatively Identified Compound

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-IN-1

Customer Sample ID: 17-04569-1-TL2-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023951				Propane, 2-methyl-2-(1-methyle	17348-59-3	3.28	NGS	77 JNT	
S17T023951				3-Hexanone, 5-methyl-	623-55-3	3.50	NGS	62 JNT	
S17T023951				3-Hexanol, 5-methyl-	623-55-2	3.62	NGS	39 JNT	
S17T023951				2-Hexyl-1-octanol	19780-79-1	4.11	NGS	26 JNT	
S17T023951				Cyclohexasiloxane, octamethyl	556-67-2	4.36	NGS	130 JNT	
S17T023951				Decane, 2,6,7-trimethyl-	62108-25-2	4.55	NGS	26 JNT	
S17T023951				2,2,7,7-Tetramethyloctane	1071-31-4	4.75	NGS	31 JNT	
S17T023951				1-Hexanol, 2-ethyl-	104-76-7	4.84	NGS	140 JNT	
S17T023951				2,5,6-Trimethyldecane	62108-23-0	4.89	NGS	120 JNT	
S17T023951				Undecane, 4,7-dimethyl-	17301-32-5	5.06	NGS	270 JNT	
S17T023951				Decane, 2,4,6-trimethyl-	62108-27-4	5.11	NGS	120 JNT	
S17T023951				Decane, 2,5,9-trimethyl-	62108-22-9	5.14	NGS	72 JNT	
S17T023951				Acetophenone	98-86-2	5.19	NGS	73 JNT	
S17T023951				1-Octanol, 2-butyl-	3913-02-8	5.24	NGS	100 JNT	
S17T023951				Octane, 2,3,6,7-tetramethyl-	52670-34-5	5.39	NGS	120 JNT	
S17T023951				Undecane	1120-21-4	5.47	NGS	58 JNT	
S17T023951				Decane, 3,7-dimethyl-	17312-54-8	5.51	NGS	34 JNT	
S17T023951				Decamethylcyclopentasiloxane	541-02-6	5.73	NGS	35 JNT	
S17T023951				Undecane, 2,6-dimethyl-	17301-23-4	6.40	NGS	13 JNT	
S17T023951				Undecane, 3,7-dimethyl-	17301-29-0	6.91	NGS	37 JNT	
S17T023951				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.97	NGS	17 JNT	
S17T023951				Dodecane, 2,7,10-trimethyl-	74645-98-0	7.26	NGS	25 JNT	
S17T023951				Decane, 2,3,5,8-tetramethyl-	192823-15-7	7.40	NGS	38 JNT	

J - Estimated  
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N - Named TIC

E - Outside Calibration Range  
H - Missed Holdtime

NA = Not Analyzed, ND = Not Detected  
Q - Qualitative  
Y - Comment



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172269

SDG Number:

Customer Sample ID: 17-04569-1-TL2-IN-8

Customer Sample ID: 17-04569-1-TL2-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T023952				Propane, 2-methyl-2-(1-methyl-	17348-59-3	3.30	NGS	130	HJNT
S17T023952				Hydroperoxide, hexyl	4312-76-9	3.38	NGS	31	HJNT
S17T023952				3-Hexanone, 5-methyl-	623-56-3	3.51	NGS	90	HJNT
S17T023952				Hexanal, 2-methyl-	925-54-2	3.54	NGS	72	HJNT
S17T023952				3-Hexanol, 5-methyl-	623-55-2	3.63	NGS	56	HJNT
S17T023952				Butanal, 2-ethyl-3-methyl-	26254-92-2	3.77	NGS	30	HJNT
S17T023952				Cyclotetrasiloxane, octamethyl	556-87-2	4.35	NGS	29	HJNT
S17T023952				D-Limonene	5989-27-5	4.84	NGS	62	HJNT
S17T023952				2,2,4,4,5,5,7,7-Octamethylocta	5171-85-7	4.89	NGS	42	HJNT
S17T023952				Undecane, 4,6-dimethyl-	17312-82-2	5.05	NGS	68	HJNT
S17T023952				Decane, 2,4,6-trimethyl-	62108-27-4	5.09	NGS	29	HJNT
S17T023952				Undecane	1120-21-4	5.45	NGS	84	HJNT
S17T023952				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	8.5	HJNT
S17T023952				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	32	HJNT
S17T023952				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.89	NGS	28	HJNT
S17T023952				Dodecane, 2,6,10-trimethyl-	3891-88-3	6.96	NGS	11	HJNT
S17T023952				Undecane, 2-methyl-	7045-71-8	7.25	NGS	17	HJNT

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Y - Comment



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2017 Cartridge Evaluation  
Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-1

Customer Sample ID: 17-03269-1-TL1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022187			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022187			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022187			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022187			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022187			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022187			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022187			112-40-3	Dodecane	NGS	100	<0.60	61	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022187			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022187			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022187			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022187			629-50-5	Tridecane	NGS	110	<1.6	9.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022187			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022187			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated

T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-EF-2  
Customer Sample ID: 17-03269-1-TL1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rac %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022188			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	8.8	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022188			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022188			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022188			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022188			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022188			84-86-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022188			112-40-3	Dodecane	NGS	100	<0.60	55	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022188			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022188			629-59-4	Tetradecane	NGS	92	<3.9	8.0	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022188			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022188			629-50-5	Tridecane	NGS	110	<1.6	9.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022188			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022188			629-62-9	Pentadecane	NGS	96	<3.0	4.4	n/a	n/a	n/a	n/a	3.0	n/a	J

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U - Less Than Detection Limit

N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
 SDG Number:  
 Customer Sample ID: 17-03269-1-TL1-EF-3  
 Customer Sample ID: 17-03269-1-TL1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022189			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022189			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022189			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022189			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022189			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022189			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022189			112-40-3	Dodecane	NGS	100	<0.60	72	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022189			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022189			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022189			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022189			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022189			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022189			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
 E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
 T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-EF-4  
Customer Sample ID: 17-03269-1-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Er %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022190			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022190			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022190			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022190			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022190			78-46-6	Diethyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022190			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022190			112-40-3	Dodecane	NGS	100	<0.60	<0.55	n/a	n/a	n/a	n/a	0.55	n/a	U
S17T022190			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022190			629-59-4	Tetradecane	NGS	92	<3.9	6.8	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022190			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022190			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022190			629-76-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022190			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-EF-5  
Customer Sample ID: 17-03269-1-TL1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022191			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022191			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022191			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022191			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022191			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022191			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022191			112-40-3	Dodecane	NGS	100	<0.60	43	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022191			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022191			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022191			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022191			629-50-5	Tridecane	NGS	110	<1.6	7.1	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022191			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022191			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
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N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-EF-6  
Customer Sample ID: 17-03269-1-TL1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022192			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022192			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022192			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022192			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022192			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022192			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022192			112-40-3	Dodecane	NGS	100	<0.60	34	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022192			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022192			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022192			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022192			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022192			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022192			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



## 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-EF-7  
Customer Sample ID: 17-03269-1-TL1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022193		3891-98-3		2,5,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022193		95-48-7		2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022193		108-39-4M		Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022193		92-52-4		Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022193		78-46-6		Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022193		84-66-2		Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022193		112-40-3		Dodecane	NGS	100	<0.60	22	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022193		544-76-3		Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022193		629-59-4		Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022193		126-73-8		Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022193		629-50-5		Tridecane	NGS	110	<1.6	3.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022193		629-78-7		Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022193		629-62-9		Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-EF-8  
Customer Sample ID: 17-03269-1-TL1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022194			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022194			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022194			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022194			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022194			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022194			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022194			112-40-3	Dodecane	NGS	100	<0.60	22	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022194			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022194			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022194			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022194			629-50-5	Tridecane	NGS	110	<1.6	5.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022194			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022194			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
 SDG Number:  
 Customer Sample ID: 17-03269-1-TL1-IN-1  
 Customer Sample ID: 17-03269-1-TL1-IN-1

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022195			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022195			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022195			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022195			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022195			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022195			94-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022195			112-40-3	Dodecane	NGS	100	<0.60	59	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022195			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022195			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022195			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022195			629-50-5	Tridecane	NGS	110	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022195			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022195			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected  
 E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
 T - Tentatively Identified Compound



## 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03269-1-TL1-IN-8  
Customer Sample ID: 17-03269-1-TL1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022196			3891-88-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T022196			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S17T022196			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T022196			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S17T022196			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022196			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S17T022196			112-40-3	Dodecane	NGS	100	<0.60	14	n/a	n/a	n/a	n/a	0.55		n/a
S17T022196			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022196			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S17T022196			126-73-8	Tributyl phosphate	NGS	78	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S17T022196			629-50-5	Tridecane	NGS	110	<1.6	2.7	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022196			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022196			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-1

Customer Sample ID: 17-03273-1-TL2-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022197			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022197			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022197			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022197			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022197			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022197			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022197			112-40-3	Dodecane	NGS	100	<0.60	70	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022197			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022197			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022197			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022197			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022197			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022197			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-EF-2  
Customer Sample ID: 17-03273-1-TL2-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022198			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	12	n/a	n/a	n/a	n/a	3.9	n/a	
S17T022198			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022198			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022198			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022198			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022198			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022198			112-40-3	Dodecane	NGS	100	<0.60	64	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022198			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022198			629-59-4	Tetradecane	NGS	92	<3.9	13	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022198			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022198			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022198			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022198			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



## 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-EF-3  
Customer Sample ID: 17-03273-1-TL2-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022199			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022199			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022199			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022199			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022199			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022199			84-56-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022199			112-40-3	Dodecane	NGS	100	<0.60	86	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022199			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022199			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022199			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022199			629-50-5	Tridecane	NGS	110	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022199			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022199			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-EF-4  
Customer Sample ID: 17-03273-1-TL2-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022200			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	7.7	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022200			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022200			106-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022200			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022200			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022200			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022200			112-40-3	Dodecane	NGS	100	<0.60	63	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022200			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022200			629-59-4	Tetradecane	NGS	92	<3.9	6.7	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022200			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022200			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022200			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022200			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-EF-5  
Customer Sample ID: 17-03273-1-TL2-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022201			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022201			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022201			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022201			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022201			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022201			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022201			112-40-3	Dodecane	NGS	100	<0.60	61	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022201			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022201			629-59-4	Tetradecane	NGS	92	<3.9	6.5	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022201			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022201			629-50-5	Tridecane	NGS	110	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022201			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022201			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-EF-6  
Customer Sample ID: 17-03273-1-TL2-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022202			3891-98-3	2,6,10-Trimethyldodecane	NGS	94	<3.9	5.5	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022202			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022202			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022202			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022202			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022202			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022202			112-40-3	Dodecane	NGS	100	<0.60	54	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022202			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022202			629-59-4	Tetradecane	NGS	92	<3.9	5.5	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022202			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022202			629-50-5	Tridecane	NGS	110	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022202			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022202			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-EF-7  
Customer Sample ID: 17-03273-1-TL2-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022203			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	4.9	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022203			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022203			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022203			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022203			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022203			84-86-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022203			112-40-3	Dodecane	NGS	100	<0.60	44	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022203			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022203			629-59-4	Tetradecane	NGS	92	<3.9	4.7	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022203			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022203			629-50-5	Tridecane	NGS	110	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022203			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022203			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-EF-8  
Customer Sample ID: 17-03273-1-TL2-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022204			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022204			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022204			108-38-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022204			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022204			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022204			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022204			112-40-3	Dodecane	NGS	100	<0.60	45	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022204			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022204			629-59-4	Tetradecane	NGS	92	<3.9	4.7	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022204			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022204			629-50-5	Tridecane	NGS	110	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022204			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022204			629-82-9	Pentadecane	NGS	96	<3.0	3.0	n/a	n/a	n/a	n/a	3.0	n/a	J

J - Estimated  
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N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-1  
Customer Sample ID: 17-03273-1-TL2-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022205			3891-98-3	2,6,10-Trimethyldecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022205			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022205			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022205			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022205			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022205			84-66-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022205			112-40-3	Dodecane	NGS	100	<0.60	68	n/a	n/a	n/a	n/a	0.55	n/a	E
S17T022205			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022205			629-59-4	Tetradecane	NGS	92	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022205			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022205			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022205			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022205			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158  
SDG Number:  
Customer Sample ID: 17-03273-1-TL2-IN-8  
Customer Sample ID: 17-03273-1-TL2-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T022206			3891-98-3	2,6,10-Trimethylidodecane	NGS	94	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T022206			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T022206			108-39-4M	Cresol (m & p)	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022206			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T022206			78-46-6	Dibutyl butylphosphonate	NGS	84	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022206			84-56-2	Diethylphthalate	NGS	81	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T022206			112-40-3	Dodecane	NGS	100	<0.60	26	n/a	n/a	n/a	n/a	0.55	n/a	
S17T022206			544-76-3	Hexadecane	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022206			629-59-4	Tetradecane	NGS	92	<3.9	4.5	n/a	n/a	n/a	n/a	3.9	n/a	J
S17T022206			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T022206			629-50-5	Tridecane	NGS	110	<1.6	6.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022206			629-78-7	Heptadecane	NGS	93	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022206			629-62-9	Pentadecane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



*David Plam 8-15-17*

2017 Cartridge Evaluation  
Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-1

Customer Sample ID: 17-03269-1-TL1-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022187				Cyclotrisiloxane, octamethyl	556-67-2	4.37	NGS	75 JNT	
S17T022187				2,5,6-Trimethyldecane	82108-23-0	4.84	NGS	52 JNT	
S17T022187				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	4.85	NGS	94 JNT	
S17T022187				Decane, 3,7-dimethyl-	17312-54-8	5.07	NGS	150 JNT	
S17T022187				Decane, 2,4,6-trimethyl-	82108-27-4	5.12	NGS	89 JNT	
S17T022187				Dodecane, 2,6,11-trimethyl-	31295-56-4	5.23	NGS	89 JNT	
S17T022187				2,6-Dimethyldecane	13150-81-7	5.35	NGS	140 JNT	
S17T022187				8-Ethyl-2-methyl-octane	82016-19-7	5.41	NGS	95 JNT	
S17T022187				Undecane	1120-21-4	5.49	NGS	72 JNT	
S17T022187				Undecane, 4,7-dimethyl-	17301-32-5	5.53	NGS	38 JNT	
S17T022187				Undecane, 4,6-dimethyl-	17312-82-2	5.58	NGS	27 JNT	
S17T022187				Undecane, 2,6-dimethyl-	17301-23-4	5.61	NGS	39 JNT	
S17T022187				Hydroxylamine, O-decyl-	29812-79-1	5.70	NGS	35 JNT	
S17T022187				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	27 JNT	

J - Estimated  
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E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-2

Customer Sample ID: 17-03269-1-TL1-EF-2

Sample#	R	AI#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022188				Cyclotetrasiloxane, octamethyl	556-67-2	4.37	NGS	92 JNT	
S17T022188				Heptane, 4-ethyl-2,2,6,6-tetra	62108-31-0	4.76	NGS	33 JNT	
S17T022188				D-Limonene	5989-27-5	4.85	NGS	150 JNT	
S17T022188				Decane, 2,4,6-trimethyl-	62108-27-4	5.07	NGS	150 JNT	
S17T022188				6-Ethyl-2-methyl-octane	62016-19-7	5.11	NGS	63 JNT	
S17T022188				2,2,7,7-Tetramethyloctane	1071-31-4	5.15	NGS	54 JNT	
S17T022188				2,6-Dimethyldecane	13150-81-7	5.25	NGS	65 JNT	
S17T022188				Dodecane, 2,7,10-trimethyl-	74645-98-0	5.34	NGS	53 JNT	
S17T022188				2,3-Dimethyldecane	17312-44-6	5.40	NGS	57 JNT	
S17T022188				Undecane	1120-21-4	5.47	NGS	130 JNT	
S17T022188				Undecane, 4,7-dimethyl-	17301-32-5	5.51	NGS	37 JNT	
S17T022188				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.90	NGS	29 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

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E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-3

Customer Sample ID: 17-03269-1-TL1-EF-3

Sample#	R	AP	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022189				Cyclotetrasiloxane, octamethyl	556-67-2	4.36	NGS	47 JNT	
S17T022189				Cyclohexane, 1-methyl-4-(1-met	7705-14-8	4.86	NGS	170 JNT	
S17T022189				Decane, 3,7-dimethyl-	17312-64-8	5.05	NGS	130 JNT	
S17T022189				2,6-Dimethyldecane	13150-81-7	5.10	NGS	60 JNT	
S17T022189				2-Hexyl-1-octanol	19780-79-1	5.19	NGS	41 JNT	
S17T022189				Acetic acid, trifluoro-, 3,7-d	28745-07-5	5.24	NGS	37 JNT	
S17T022189				2,3-Dimethyldecane	17312-44-6	5.39	NGS	50 JNT	
S17T022189				Undecane	1120-21-4	5.46	NGS	160 JNT	
S17T022189				Decane, 2,4,6-trimethyl-	62108-27-4	5.51	NGS	31 JNT	
S17T022189				Undecane, 2,6-dimethyl-	17301-23-4	5.58	NGS	20 JNT	
S17T022189				1,2-Benzisothiazole	272-16-2	6.61	NGS	40 JNT	
S17T022189				2-Propenoic acid, octyl ester	2489-59-4	6.67	NGS	27 JNT	
S17T022189				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	36 JNT	
S17T022189				Dodecane, 4,6-dimethyl	61141-72-8	7.26	NGS	23 JNT	

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T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



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# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-4

Customer Sample ID: 17-03269-1-TL1-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022190				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	46	JNT
S17T022190				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	140	JNT
S17T022190				Decane, 2,4,6-trimethyl-	62108-27-4	5.00	NGS	11	JNT
S17T022190				Decane, 3,7-dimethyl-	17312-54-8	5.06	NGS	140	JNT
S17T022190				Decane, 2,6,7-trimethyl-	62108-25-2	5.11	NGS	79	JNT
S17T022190				Heptadecane, 2,6-dimethyl-	54105-67-8	5.14	NGS	71	JNT
S17T022190				Dodecane, 2,6,11-trimethyl-	31295-56-4	5.23	NGS	170	JNT
S17T022190				2,6-Dimethyldecane	13150-81-7	5.35	NGS	190	JNT
S17T022190				3,3-Dimethylhexane	563-16-6	5.38	NGS	52	JNT
S17T022190				Pentane, 2,2,3,3-tetramethyl-	7154-79-2	5.42	NGS	140	JNT
S17T022190				Undecane	1120-21-4	5.47	NGS	120	JNT
S17T022190				Undecane, 2,7-dimethyl-	17301-24-5	5.52	NGS	48	JNT
S17T022190				Octane, 4-ethyl-	15869-86-0	5.55	NGS	37	JNT
S17T022190				Undecane, 4,6-dimethyl-	17312-82-2	5.58	NGS	68	JNT
S17T022190				2,5,6-Trimethyldecane	62108-23-0	5.61	NGS	82	JNT
S17T022190				Dodecane, 2,7,10-trimethyl-	74645-98-0	5.70	NGS	84	JNT
S17T022190				Undecane, 2,6-dimethyl-	17301-23-4	5.76	NGS	38	JNT
S17T022190				2,3-Dimethyldecane	17312-44-6	5.92	NGS	25	JNT
S17T022190				1-Octanol, 2-butyl-	3913-02-8	6.30	NGS	60	JNT
S17T022190				1,2-Benzisothiazole	272-16-2	6.61	NGS	47	JNT
S17T022190				4-Decene	19689-18-0	6.65	NGS	34	JNT
S17T022190				Unknown-1	-	6.68	NGS	41	JT
S17T022190				Acetic acid, trifluoro-, decyl	333-88-0	6.76	NGS	27	JNT
S17T022190				Propanoic acid, 2-methyl-, 1-(	74381-40-1	9.18	NGS	43	JNT

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-5

Customer Sample ID: 17-03269-1-TL1-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022191				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	30	UNT
S17T022191				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	4.85	NGS	93	UNT
S17T022191				Undecane, 4,7-dimethyl-	17301-32-5	5.05	NGS	60	UNT
S17T022191				2,6-Dimethyldecane	13150-81-7	5.10	NGS	27	UNT
S17T022191				2,3-Dimethyldecane	17312-44-6	5.38	NGS	25	UNT
S17T022191				Undecane	1120-21-4	5.45	NGS	79	UNT
S17T022191				Decane, 2,4,6-trimethyl-	62108-27-4	5.50	NGS	23	UNT
S17T022191				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	35	UNT
S17T022191				Undecane, 2,6-dimethyl-	17301-23-4	6.40	NGS	8.3	UNT
S17T022191				1,2-Benzisothiazole	272-16-2	6.59	NGS	34	UNT
S17T022191				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.89	NGS	27	UNT
S17T022191				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.96	NGS	11	UNT
S17T022191				Undecane, 3,7-dimethyl-	17301-29-0	7.25	NGS	15	UNT

J - Estimated

T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-6

Customer Sample ID: 17-03269-1-TL1-EF-6

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022192				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	38	JNT
S17T022192				Limonene	138-86-3	4.85	NGS	91	JNT
S17T022192				Decane, 2,4,6-trimethyl-	62108-27-4	5.05	NGS	49	JNT
S17T022192				Undecane	1120-21-4	5.45	NGS	61	JNT
S17T022192				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	10	JNT
S17T022192				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	39	JNT
S17T022192				1,2-Benzisothiazole	272-16-2	6.59	NGS	28	JNT
S17T022192				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	25	JNT

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-7

Customer Sample ID: 17-03269-1-TL1-EF-7

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S177022193				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	75 JNT	
S177022193				Decane, 2,4,6-trimethyl-	62108-27-4	5.05	NGS	39 JNT	
S177022193				Dodecane, 2,6,11-trimethyl-	31295-56-4	5.21	NGS	45 JNT	
S177022193				Heptane, 3,3-dimethyl-	4032-86-4	5.41	NGS	41 JNT	
S177022193				Octane, 2,3,6-trimethyl-	62016-33-5	5.45	NGS	63 JNT	
S177022193				Undecane, 2,6-dimethyl-	17301-23-4	5.58	NGS	60 JNT	
S177022193				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	29 JNT	
S177022193				Undecane	1120-21-4	5.74	NGS	14 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-EF-8

Customer Sample ID: 17-03269-1-TL1-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022194				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	27 JNT	
S17T022194				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	94 JNT	
S17T022194				Decane, 3,7-dimethyl-	17312-54-8	5.05	NGS	50 JNT	
S17T022194				2,6-Dimethyldecane	13150-81-7	5.10	NGS	30 JNT	
S17T022194				Dodecane, 2,6,11-trimethyl-	31295-56-4	5.21	NGS	40 JNT	
S17T022194				Dodecane, 2,7,10-trimethyl-	74645-98-0	5.32	NGS	38 JNT	
S17T022194				Undecane	1120-21-4	5.45	NGS	72 JNT	
S17T022194				Decane, 2,4,6-trimethyl-	62108-27-4	5.50	NGS	26 JNT	
S17T022194				Undecane, 2,6-dimethyl-	17301-23-4	5.55	NGS	27 JNT	
S17T022194				Undecane, 4,6-dimethyl-	17312-82-2	5.58	NGS	26 JNT	
S17T022194				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	33 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

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2017 Cartridge Evaluation  
Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-IN-1

Customer Sample ID: 17-03269-1-TL1-IN-1

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022195				4-Methoxy-1-pentene	98386-09-5	3.29	NGS	47 JNT	
S17T022195				3-Hexanone, 5-methyl-	623-56-3	3.51	NGS	33 JNT	
S17T022195				Cyclotetrasiloxane, octamethyl	556-67-2	4.37	NGS	130 JNT	
S17T022195				Phenol	108-95-2	4.43	NGS	33 JNT	
S17T022195				Heptane, 2,4,4,6,6-pentamethyl	13475-82-6	4.75	NGS	31 JNT	
S17T022195				1-Hexene, 3,5-dimethyl-	7423-69-0	4.84	NGS	55 JNT	
S17T022195				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	110 JNT	
S17T022195				Undecane, 4,7-dimethyl-	17301-32-5	5.07	NGS	230 JNT	
S17T022195				Decane, 2,4,6-trimethyl-	62108-27-4	5.11	NGS	97 JNT	
S17T022195				2,2,7,7-Tetramethyloctane	1071-31-4	5.14	NGS	58 JNT	
S17T022195				Hexyl octyl ether	17071-54-4	5.20	NGS	51 JNT	
S17T022195				2,3-Dimethyldecane	17312-44-6	5.39	NGS	50 JNT	
S17T022195				Undecane	1120-21-4	5.47	NGS	190 JNT	
S17T022195				Undecane, 5,7-dimethyl-	17312-83-3	5.51	NGS	37 JNT	
S17T022195				Undecane, 4-methyl-	2980-69-0	5.58	NGS	16 JNT	
S17T022195				Decamethylcyclopentasiloxane	541-02-6	5.73	NGS	49 JNT	
S17T022195				Undecane, 2,6-dimethyl-	17301-23-4	6.85	NGS	13 JNT	
S17T022195				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	34 JNT	
S17T022195				Dodecane, 4,6-dimethyl	61141-72-8	7.26	NGS	20 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

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E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03269-1-TL1-IN-8

Customer Sample ID: 17-03269-1-TL1-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022196				4-Methoxy-1-pentene	98386-09-5	3.30	NGS	41 JNT	
S17T022196				3-Hexanone, 5-methyl-	623-56-3	3.51	NGS	41 JNT	
S17T022196				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	33 JNT	
S17T022196				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	4.85	NGS	62 JNT	
S17T022196				Decane, 2,4,6-trimethyl-	62108-27-4	5.04	NGS	33 JNT	
S17T022196				Undecane	1120-21-4	5.45	NGS	52 JNT	
S17T022196				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	15 JNT	
S17T022196				Decamethylcyclopentasiloxane	641-02-6	5.71	NGS	30 JNT	
S17T022196				Undecane, 2-methyl-	7045-71-8	7.25	NGS	8.5 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-1

Customer Sample ID: 17-03273-1-TL2-EF-1

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022197				Cycloetrasiloxane, octamethyl	556-67-2	4.37	NGS	77 JNT	
S17T022197				Decane, 2,4,6-trimethyl-	62108-27-4	4.55	NGS	12 JNT	
S17T022197				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	140 JNT	
S17T022197				Decane, 3,7-dimethyl-	17312-54-8	5.07	NGS	180 JNT	
S17T022197				Undecane, 4,7-dimethyl-	17301-32-5	5.11	NGS	80 JNT	
S17T022197				2,2,7,7-Tetramethyloctane	1071-31-4	5.14	NGS	46 JNT	
S17T022197				Hydroxylamine, O-decyl-	29812-78-1	5.20	NGS	50 JNT	
S17T022197				Acetic acid, trifluoro-, 3,7-d	28745-07-5	5.25	NGS	60 JNT	
S17T022197				1-Octanol, 2-butyl-	3913-02-8	5.34	NGS	31 JNT	
S17T022197				2,3-Dimethyldecane	17312-44-6	5.39	NGS	59 JNT	
S17T022197				Undecane	1120-21-4	5.47	NGS	64 JNT	
S17T022197				Undecane, 5,7-dimethyl-	17312-83-3	5.52	NGS	33 JNT	
S17T022197				Undecane, 2,6-dimethyl-	17301-23-4	6.40	NGS	11 JNT	
S17T022197				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	34 JNT	
S17T022197				Heptadecane, 2,6,10,14-tetrame	18344-37-1	7.40	NGS	26 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-2

Customer Sample ID: 17-03273-1-TL2-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022198				Cyclotetrasiloxane, octamethyl	556-87-2	4.36	NGS	140 JNT	
S17T022198				2,2,7,7-Tetramethyloctane	1071-31-4	4.75	NGS	30 JNT	
S17T022198				1-Hexanol, 2-ethyl-	104-76-7	4.83	NGS	43 JNT	
S17T022198				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	140 JNT	
S17T022198				Octane, 3,5-dimethyl-	15869-93-9	5.06	NGS	220 JNT	
S17T022198				Undecane, 4,7-dimethyl-	17301-32-5	5.11	NGS	95 JNT	
S17T022198				Decane, 2,6,8-trimethyl-	62108-26-3	5.14	NGS	67 JNT	
S17T022198				Hexyl octyl ether	17071-54-4	5.19	NGS	53 JNT	
S17T022198				Decane, 2,3,5,8-tetramethyl-	192823-15-7	5.25	NGS	83 JNT	
S17T022198				Undecane, 2,6-dimethyl-	17301-23-4	5.34	NGS	33 JNT	
S17T022198				2,3-Dimethyldecane	17312-44-6	5.39	NGS	62 JNT	
S17T022198				Undecane	1120-21-4	5.47	NGS	210 JNT	
S17T022198				Decane, 2,4,6-trimethyl-	62108-27-4	5.51	NGS	34 JNT	
S17T022198				Decamethylcyclopentasiloxane	541-02-6	5.73	NGS	45 JNT	
S17T022198				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	41 JNT	
S17T022198				Dodecane,4,6-dimethyl	61141-72-8	7.26	NGS	27 JNT	
S17T022198				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.40	NGS	23 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-3

Customer Sample ID: 17-03273-1-TL2-EF-3

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S177022199				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	43 JNT	
S177022199				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	160 JNT	
S177022199				Decane, 2,4,6-trimethyl-	62108-27-4	4.99	NGS	13 JNT	
S177022199				Octane, 3,5-dimethyl-	15869-93-9	5.06	NGS	170 JNT	
S177022199				Octane, 2,3,6,7-tetramethyl-	52870-34-5	5.11	NGS	94 JNT	
S177022199				2,3,7-trimethyldecane	62016-34-6	5.14	NGS	42 JNT	
S177022199				Decane, 2,6,8-trimethyl-	62108-26-3	5.22	NGS	110 JNT	
S177022199				Decane, 2,6,7-trimethyl-	62108-25-2	5.25	NGS	57 JNT	
S177022199				2,6-Dimethyldecane	13150-81-7	5.34	NGS	110 JNT	
S177022199				1-Octanol, 2-butyl-	3913-02-8	5.37	NGS	40 JNT	
S177022199				Unknown-1	-	5.40	NGS	110 JT	
S177022199				Undecane	1120-21-4	5.47	NGS	240 JNT	
S177022199				Decane, 3,7-dimethyl-	17312-54-8	5.51	NGS	36 JNT	
S177022199				Undecane, 2,6-dimethyl-	17301-23-4	5.59	NGS	60 JNT	
S177022199				1,2-Benzisothiazole	272-16-2	6.61	NGS	43 JNT	
S177022199				Unknown-2	-	6.67	NGS	29 JT	
S177022199				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.91	NGS	41 JNT	
S177022199				Dodecane, 4,6-dimethyl	61141-72-8	7.26	NGS	27 JNT	
S177022199				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.40	NGS	28 JNT	

J - Estimated

T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-4

Customer Sample ID: 17-03273-1-TL2-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022200				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	4.85	NGS	100 JNT	
S17T022200				Decane, 2,4,6-trimethyl-	62108-27-4	5.05	NGS	66 JNT	
S17T022200				2,6-Dimethyldecane	13150-81-7	5.10	NGS	30 JNT	
S17T022200				Dodecane, 2,6,11-trimethyl-	31295-56-4	5.21	NGS	52 JNT	
S17T022200				2,5,6-Trimethyldecane	62108-23-0	5.25	NGS	25 JNT	
S17T022200				Decane, 2,6,7-trimethyl-	62108-25-2	5.33	NGS	51 JNT	
S17T022200				3,3-Dimethylhexane	563-16-6	5.39	NGS	41 JNT	
S17T022200				Undecane	1120-21-4	5.45	NGS	93 JNT	
S17T022200				Undecane, 2,6-dimethyl-	17301-23-4	5.58	NGS	30 JNT	
S17T022200				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	31 JNT	
S17T022200				1,2-Benzisothiazole	272-16-2	6.61	NGS	44 JNT	
S17T022200				Unknown-1	-	6.67	NGS	32 JT	
S17T022200				1-Octanol, 2-butyl-	3913-02-8	6.76	NGS	27 JNT	
S17T022200				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	34 JNT	
S17T022200				Dodecane, 4,6-dimethyl	61141-72-8	7.26	NGS	24 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-5

Customer Sample ID: 17-03273-1-TL2-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022201				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	28 JNT	
S17T022201				D-Limonene	5989-27-5	4.85	NGS	120 JNT	
S17T022201				Decane, 2,4,6-trimethyl-	62108-27-4	5.05	NGS	74 JNT	
S17T022201				Octane, 5-ethyl-2-methyl-	62016-18-6	5.10	NGS	36 JNT	
S17T022201				2,3-Dimethyldecane	17312-44-6	5.38	NGS	26 JNT	
S17T022201				Undecane	1120-21-4	5.45	NGS	100 JNT	
S17T022201				Undecane, 4,7-dimethyl-	17301-32-5	5.50	NGS	29 JNT	
S17T022201				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	34 JNT	
S17T022201				Undecane, 2,6-dimethyl-	17301-23-4	6.40	NGS	15 JNT	
S17T022201				1,2-Benzisothiazole	272-16-2	6.60	NGS	39 JNT	
S17T022201				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	37 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-6

Customer Sample ID: 17-03273-1-TL2-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022202				Cyclotrisiloxane, hexamethyl-	541-05-9	2.86	NGS	26 JNT	
S17T022202				Nonane	111-84-2	3.63	NGS	27 JNT	
S17T022202				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	40 JNT	
S17T022202				D-Limonene	5989-27-5	4.85	NGS	130 JNT	
S17T022202				Decane, 2,4,6-trimethyl-	82108-27-4	5.05	NGS	60 JNT	
S17T022202				Undecane	1120-21-4	5.45	NGS	81 JNT	
S17T022202				2,5,6-Trimethyldecane	82108-23-0	5.50	NGS	28 JNT	
S17T022202				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	41 JNT	
S17T022202				1,2-Benzisothiazole	272-16-2	6.60	NGS	38 JNT	
S17T022202				Ethylene diacrylate	2274-11-5	6.67	NGS	27 JNT	
S17T022202				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	35 JNT	

J - Estimated  
T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-7

Customer Sample ID: 17-03273-1-TL2-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022203				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	26	JNT
S17T022203				D-Limonene	5989-27-5	4.85	NGS	91	JNT
S17T022203				Undecane, 4,6-dimethyl-	17312-82-2	5.05	NGS	43	JNT
S17T022203				Decane, 2,4,6-trimethyl-	62108-27-4	5.20	NGS	24	JNT
S17T022203				Undecane	1120-21-4	5.45	NGS	64	JNT
S17T022203				Hydroxylamine, O-decyl-	29812-79-1	5.50	NGS	26	JNT
S17T022203				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	18	JNT
S17T022203				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	33	JNT
S17T022203				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.89	NGS	28	JNT

NA = Not Analyzed, ND = Not Detected  
E - Outside Calibration Range

U - Less Than Detection Limit

N - Named TIC

J - Estimated  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-EF-8

Customer Sample ID: 17-03273-1-TL2-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022204				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	27	JNT
S17T022204				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	4.85	NGS	110	JNT
S17T022204				Decane, 2,4,6-trimethyl-	62108-27-4	5.05	NGS	70	JNT
S17T022204				2,6-Dimethyldecane	13150-81-7	5.10	NGS	31	JNT
S17T022204				Decane, 2,6,7-trimethyl-	82108-25-2	5.32	NGS	26	JNT
S17T022204				2,3-Dimethyldecane	17312-44-6	5.38	NGS	29	JNT
S17T022204				Undecane	1120-21-4	5.46	NGS	92	JNT
S17T022204				Undecane, 2,6-dimethyl-	17301-23-4	5.58	NGS	19	JNT
S17T022204				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	31	JNT
S17T022204				Methenamine	100-97-0	6.64	NGS	13	JNT
S17T022204				Undecane, 2-methyl-	7045-71-8	7.25	NGS	15	JNT

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E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-IN-1

Customer Sample ID: 17-03273-1-TL2-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022205				4-Methoxy-1-pentene	98386-08-5	3.29	NGS	28	JNT
S17T022205				Cyclotetrasiloxane, octamethyl	556-67-2	4.37	NGS	110	JNT
S17T022205				Decane, 2,2,7-trimethyl-	62237-98-4	4.75	NGS	32	JNT
S17T022205				1-Hexanol, 2-ethyl-	104-76-7	4.84	NGS	100	JNT
S17T022205				Undecane, 4,6-dimethyl-	17312-82-2	4.88	NGS	57	JNT
S17T022205				Decane, 3,7-dimethyl-	17312-54-8	5.06	NGS	200	JNT
S17T022205				Octane, 2,3,6,7-tetramethyl-	52670-34-5	5.11	NGS	88	JNT
S17T022205				Decane, 2,5,9-trimethyl-	62108-22-9	5.15	NGS	65	JNT
S17T022205				Hexyl octyl ether	17071-54-4	5.20	NGS	53	JNT
S17T022205				Decane, 2,4,6-trimethyl-	62108-27-4	5.22	NGS	27	JNT
S17T022205				1-Octanol, 2-butyl-	3913-02-8	5.25	NGS	85	JNT
S17T022205				Decane, 2,6,7-trimethyl-	62108-25-2	5.28	NGS	54	JNT
S17T022205				Decane, 2,3,5,8-tetramethyl-	192823-15-7	5.34	NGS	69	JNT
S17T022205				2,3-Dimethyldecane	17312-44-6	5.40	NGS	73	JNT
S17T022205				Undecane	1120-21-4	5.48	NGS	64	JNT
S17T022205				Undecane, 4,7-dimethyl-	17301-32-5	5.52	NGS	35	JNT
S17T022205				Decamethylcyclopentasiloxane	541-02-6	5.74	NGS	28	JNT
S17T022205				Undecane, 2,6-dimethyl-	17301-23-4	6.40	NGS	11	JNT
S17T022205				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	32	JNT

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2017 Cartridge Evaluation  
Data Summary Report

Sample Group: 20172158

SDG Number:

Customer Sample ID: 17-03273-1-TL2-IN-8

Customer Sample ID: 17-03273-1-TL2-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T022206				4-Methoxy-1-pentene	98386-09-5	3.29	NGS	40	JNT
S17T022206				Cycloletrasiloxane, octamethyl	556-87-2	4.35	NGS	29	JNT
S17T022206				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	4.84	NGS	66	JNT
S17T022206				Decane, 2,6,7-trimethyl-	62108-25-2	4.89	NGS	40	JNT
S17T022206				Decane, 2,4,6-trimethyl-	62108-27-4	5.05	NGS	64	JNT
S17T022206				2,3,7-trimethyloctane	62016-34-6	5.10	NGS	27	JNT
S17T022206				Decane, 2,5,9-trimethyl-	62108-22-9	5.13	NGS	26	JNT
S17T022206				Decane, 2,6,8-trimethyl-	62108-26-3	5.21	NGS	55	JNT
S17T022206				2,6-Dimethyldecane	13150-81-7	5.33	NGS	54	JNT
S17T022206				Heptane, 3,3-dimethyl-	4032-86-4	5.41	NGS	27	JNT
S17T022206				Undecane	1120-21-4	5.45	NGS	82	JNT
S17T022206				Dodecane, 2,7,10-trimethyl-	74645-98-0	5.50	NGS	27	JNT
S17T022206				Undecane, 2,6-dimethyl-	17301-23-4	5.58	NGS	49	JNT
S17T022206				Undecane, 4,6-dimethyl-	17312-82-2	5.68	NGS	25	JNT
S17T022206				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	27	JNT

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## C.4.2 VOC and VOCTIC

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*David R. Ham*  
8-31-17

### 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-1

Customer Sample ID: 17-04564-2-SD1-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S177023833				Silane	7803-62-5	9.42	NGS	30 JNT	
S177023833				Nonane	111-84-2	21.08	NGS	27 JNT	
S177023833				Cyclotetrasiloxane, octamethyl	556-67-2	22.99	NGS	40 JNT	
S177023833				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	55 JNT	
S177023833				3,3-Dimethylhexane	563-16-6	25.04	NGS	32 JNT	
S177023833				Heptane, 3,3-dimethyl-	4032-86-4	25.75	NGS	35 JNT	
S177023833				Pentane, 2,2,3,3-tetramethyl-	7154-79-2	25.87	NGS	34 JNT	
S177023833				Nonanal	124-19-6	26.04	NGS	43 JNT	
S177023833				Unknown-1	--	26.25	NGS	150 JT	
S177023833				Tridecane	529-50-5	27.64	NGS	35 JNT	
S177023833				Decane, 2,4,6-trimethyl-	52108-27-4	29.24	NGS	66 JNT	
S177023833				1,2-Benzisothiazole	272-16-2	29.30	NGS	54 JNT	
S177023833				1-Iodo-2-methylundecane	73105-67-6	29.40	NGS	38 JNT	

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N - Named TIC

J - Estimated  
Y - Comment

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-2

Customer Sample ID: 17-04564-2-SD1-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023834				Nonane	111-84-2	21.09	NGS	30 JNT	
S17T023834				Decane, 2,5,9-trimethyl-	52108-22-9	23.74	NGS	26 JNT	
S17T023834				2,4,6-trimethyldecane	52016-37-9	24.20	NGS	28 JNT	
S17T023834				Undecane, 2,6-dimethyl-	17301-23-4	24.28	NGS	20 JNT	
S17T023834				Decane, 2,6,8-trimethyl-	52108-26-3	24.39	NGS	56 JNT	
S17T023834				Decane, 2,4,6-trimethyl-	52108-27-4	24.54	NGS	6.4 JNT	
S17T023834				Cyclohexane, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	43 JNT	
S17T023834				3,3-Dimethylhexane	563-16-6	24.84	NGS	36 JNT	
S17T023834				Octane, 4-ethyl-	15869-86-0	24.94	NGS	27 JNT	
S17T023834				Dodecane, 2,7,10-trimethyl-	74645-98-0	25.07	NGS	31 JNT	
S17T023834				Unknown-1	-	25.14	NGS	30 JT	
S17T023834				Heptane, 5-ethyl-2,2,3-trimeth	52199-06-8	25.22	NGS	28 JNT	
S17T023834				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.33	NGS	27 JNT	
S17T023834				Heptane, 2,3,6-trimethyl-	20278-85-7	25.38	NGS	90 JNT	
S17T023834				Undecane, 4,7-dimethyl-	17301-32-5	25.44	NGS	82 JNT	
S17T023834				Dodecane, 2,6,10-trimethyl-	3691-98-3	25.57	NGS	33 JNT	
S17T023834				Pentane, 2,2,3,3-tetramethyl-	7154-79-2	25.88	NGS	510 JNT	
S17T023834				Undecane, 3,6-dimethyl-	17301-28-9	25.88	NGS	130 JNT	
S17T023834				Decane, 2,3,4-trimethyl-	52238-15-7	25.97	NGS	26 JNT	
S17T023834				Unknown-2	-	26.07	NGS	66 JT	
S17T023834				Undecane, 3,5-dimethyl-	17312-81-1	26.12	NGS	120 JNT	
S17T023834				2,6-Dimethyldecane	13150-81-7	26.25	NGS	190 JNT	
S17T023834				Tridecane	529-50-5	26.35	NGS	31 JNT	
S17T023834				Decane, 2,4-dimethyl-	2801-84-5	26.50	NGS	130 JNT	
S17T023834				Heptane, 2,3,6-trimethyl-	4032-93-3	26.60	NGS	32 JNT	
S17T023834				Unknown-3	-	26.87	NGS	54 JT	
S17T023834				2,3-Dimethyldecane	17312-44-6	27.63	NGS	26 JNT	

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound  
E - Outside Calibration Range  
J - Estimated  
Y - Comment  
U - Less Than Detection Limit  
N - Named TIC



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04564-2-SD1-EF-2**

**Customer Sample ID: 17-04564-2-SD1-EF-2**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023834				Methenamine	100-97-0	29.15	NGS	7.9 JNT	
S17T023834				Heptadecane, 2,6-dimethyl-	54105-67-8	29.40	NGS	26 JNT	
S17T023834				2,6-Octadiene-4,5-diol	4486-59-3	29.70	NGS	26 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-3

Customer Sample ID: 17-04564-2-SD1-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023835				Nonane	111-84-2	21.09	NGS	25 JNT	
S17T023835				2,5,6-Trimethyldecane	52108-23-0	23.74	NGS	26 JNT	
S17T023835				Decane, 2,4,6-trimethyl-	52108-27-4	24.12	NGS	12 JNT	
S17T023835				Undecane	1120-21-4	24.21	NGS	13 JNT	
S17T023835				2,2,7,7-Tetramethyloctane	1071-31-4	24.40	NGS	56 JNT	
S17T023835				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	38 JNT	
S17T023835				3,3-Dimethylhexane	563-16-6	24.84	NGS	36 JNT	
S17T023835				Undecane, 2,6-dimethyl-	17301-23-4	24.95	NGS	22 JNT	
S17T023835				2,6-Dimethyldecane	13150-81-7	25.07	NGS	29 JNT	
S17T023835				Decane, 2,5,9-trimethyl-	52108-22-9	25.14	NGS	29 JNT	
S17T023835				2,2,6-Trimethyloctane	52016-28-8	25.22	NGS	25 JNT	
S17T023835				Dodecane, 2,7,10-trimethyl-	74645-98-0	25.35	NGS	31 JNT	
S17T023835				Decane, 2,6,8-trimethyl-	52108-26-3	25.39	NGS	64 JNT	
S17T023835				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.45	NGS	73 JNT	
S17T023835				Nonane, 3,7-dimethyl-	17302-32-8	25.59	NGS	29 JNT	
S17T023835				Decane, 2,4-dimethyl-	2801-84-5	25.71	NGS	74 JNT	
S17T023835				Decane, 3,7-dimethyl-	17312-54-8	25.75	NGS	130 JNT	
S17T023835				Undecane, 4,6-dimethyl-	17312-82-2	25.90	NGS	76 JNT	
S17T023835				Heptadecane, 2,6,10,14-tetrame	18344-37-1	25.99	NGS	38 JNT	
S17T023835				Unknown-1	-	26.08	NGS	64 JT	
S17T023835				2,3,7-trimethyloctane	52016-34-6	26.14	NGS	87 JNT	
S17T023835				Decane, 2,3,5,8-tetramethyl-	192823-15-7	26.26	NGS	200 JNT	
S17T023835				Undecane, 4,7-dimethyl-	17301-32-5	26.38	NGS	30 JNT	
S17T023835				Octane, 3,4,5,6-tetramethyl-	52185-21-1	26.53	NGS	130 JNT	
S17T023835				Heptane, 3-ethyl-2-methyl-	14676-29-0	26.59	NGS	36 JNT	
S17T023835				2,3-Dimethyldecane	17312-44-6	26.89	NGS	52 JNT	
S17T023835				Undecane, 3-methyl-	1002-43-3	27.15	NGS	15 JNT	

U - Less Than Detection Limit  
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Y - Comment  
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T - Tentatively Identified Compound



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04564-2-SD1-EF-3**

**Customer Sample ID: 17-04564-2-SD1-EF-3**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023835				Hydroxylamine, O-decyl-	29812-79-1	27.63	NGS	26 JNT	
S17T023835				Dodecane, 2,6,10-trimethyl-	3891-98-3	29.09	NGS	16 JNT	
S17T023835				Tetradecane, 1-iodo-	19218-94-1	29.24	NGS	30 JNT	
S17T023835				1-Iodo-2-methylundecane	73105-67-6	29.41	NGS	29 JNT	
S17T023835				Propanoic acid, 2-methyl-, 1-(	74381-40-1	29.71	NGS	34 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04564-2-SD1-EF-4**

**Customer Sample ID: 17-04564-2-SD1-EF-4**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023836				Cyclotrisiloxane, hexamethyl-	541-05-9	18.69	NGS	48 JNT	
S17T023836				Nonane	111-84-2	21.10	NGS	33 JNT	
S17T023836				Cyclotetrasiloxane, octamethyl	556-67-2	23.01	NGS	400 JNT	
S17T023836				2,5,6-Trimethyldecane	52108-23-0	23.74	NGS	41 JNT	
S17T023836				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	220 JNT	
S17T023836				Undecane, 4,7-dimethyl-	17301-32-5	25.05	NGS	550 JNT	
S17T023836				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.18	NGS	200 JNT	
S17T023836				Decane, 3-methyl-	13151-34-3	25.23	NGS	33 JNT	
S17T023836				Acetic acid, trifluoro-, 3,7-d	28745-07-5	25.52	NGS	83 JNT	
S17T023836				2-Hexyl-1-octanol	19780-79-1	25.60	NGS	39 JNT	
S17T023836				Undecane	1120-21-4	25.75	NGS	200 JNT	
S17T023836				2,3-Dimethyldecane	17312-44-6	25.83	NGS	73 JNT	
S17T023836				2,6-Dimethyldecane	13150-81-7	25.88	NGS	460 JNT	
S17T023836				Decane, 2,4,6-trimethyl-	52108-27-4	25.98	NGS	230 JNT	
S17T023836				Undecane, 4-methyl-	2980-69-0	26.12	NGS	110 JNT	
S17T023836				Unknown-1	-	26.26	NGS	550 JT	
S17T023836				Hexyl octyl ether	17071-54-4	26.85	NGS	71 JNT	
S17T023836				Hydroxylamine, O-decyl-	29812-79-1	26.93	NGS	34 JNT	
S17T023836				Tetradecane, 1-iodo-	19218-94-1	27.01	NGS	31 JNT	
S17T023836				4,4-Dipropylheptane	17312-72-0	27.16	NGS	37 JNT	
S17T023836				Pentadecanal-	2765-11-9	27.25	NGS	31 JNT	
S17T023836				Undecane, 2,6-dimethyl-	17301-23-4	27.64	NGS	140 JNT	
S17T023836				1-Octanol, 2-butyl-	3913-02-8	27.94	NGS	31 JNT	
S17T023836				Methanamine	100-97-0	29.17	NGS	22 JNT	
S17T023836				Unknown-2	-	29.25	NGS	160 JT	
S17T023836				1-Iodo-2-methylundecane	73105-67-6	29.41	NGS	78 JNT	
S17T023836				10-Methylnonadecane	56862-62-5	29.51	NGS	28 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-4

Customer Sample ID: 17-04564-2-SD1-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023836				Unknown-3	-	29.67	NGS	28 JT	
S17T023836				1-Decanol, 2-hexyl-	2425-77-6	29.75	NGS	66 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-5

Customer Sample ID: 17-04564-2-SD1-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023837				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	41 JNT	
S17T023837				2,6-Dimethyldecane	13150-81-7	25.04	NGS	28 JNT	
S17T023837				Decane, 2,4,6-trimethyl-	62108-27-4	25.75	NGS	11 JNT	
S17T023837				3,3-Dimethylhexane	563-16-6	25.87	NGS	29 JNT	
S17T023837				Undecane	1120-21-4	25.99	NGS	9.6 JNT	
S17T023837				Unknown-1	-	26.25	NGS	82 JT	
S17T023837				Undecane, 2,6-dimethyl-	17301-23-4	27.64	NGS	27 JNT	
S17T023837				Methenamine	100-97-0	29.15	NGS	74 JNT	
S17T023837				2,3-Dimethyldecane	17312-44-6	29.24	NGS	36 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-6

Customer Sample ID: 17-04564-2-SD1-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023838				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	55 JNT	
S17T023838				Decane, 2,4,6-trimethyl-	52108-27-4	25.05	NGS	10 JNT	
S17T023838				Unknown-1	-	26.26	NGS	90 JT	
S17T023838				Undecane, 2,6-dimethyl-	17301-23-4	27.63	NGS	23 JNT	
S17T023838				Undecane	1120-21-4	29.24	NGS	42 JNT	
S17T023838				Tetradecane	529-59-4	29.40	NGS	19 JNT	
S17T023838				2-Hexyl-1-octanol	19780-79-1	29.75	NGS	29 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

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T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-7

Customer Sample ID: 17-04564-2-SD1-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023839				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	26	JNT
S17T023839				Decane, 2,4,6-trimethyl-	52108-27-4	25.89	NGS	12	JNT
S17T023839				Unknown-1	-	26.26	NGS	54	JT
S17T023839				Undecane, 2,6-dimethyl-	17301-23-4	27.65	NGS	18	JNT
S17T023839				2,6-Dimethyldecane	13150-81-7	29.25	NGS	28	JNT

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

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T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-EF-8

Customer Sample ID: 17-04564-2-SD1-EF-8

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023840				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	28	JNT
S17T023840				Decane, 2,4,6-trimethyl-	52108-27-4	25.89	NGS	12	JNT
S17T023840				Unknown-1	-	26.26	NGS	58	JT
S17T023840				Undecane, 2,6-dimethyl-	17301-23-4	27.64	NGS	21	JNT
S17T023840				Tetradecane, 1-iodo-	19218-94-1	29.25	NGS	38	JNT
S17T023840				2-Hexyl-1-octanol	19780-79-1	29.75	NGS	26	JNT

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N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

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T - Tentatively Identified Compound



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04564-2-SD1-IN-1**

**Customer Sample ID: 17-04564-2-SD1-IN-1**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023841				4-Methoxy-1-pentene	98386-09-5	8.15	NGS	70 JNTY	
S17T023841				Methyl Acetate	79-20-9	8.46	NGS	37 JNTY	
S17T023841				Tetrahydrofuran	109-99-9	13.06	NGS	8.4 JNTY	
S17T023841				Acetic acid	64-19-7	13.40	NGS	46 JNTY	
S17T023841				4-Penten-2-one	13891-87-7	14.34	NGS	50 JNTY	
S17T023841				2-Pentanone	107-87-9	15.24	NGS	220 JNTY	
S17T023841				Unknown-1	-	15.48	NGS	45 JTY	
S17T023841				2-Butanone, 3,3-dimethyl-	75-97-8	16.05	NGS	170 JNTY	
S17T023841				Formamide	75-12-7	16.20	NGS	50 JNTY	
S17T023841				Nitric acid, propyl ester	627-13-4	16.27	NGS	42 JNTY	
S17T023841				Propane, 2-methyl-1-nitro-	625-74-1	17.09	NGS	93 JNTY	
S17T023841				Pentane	109-66-0	17.28	NGS	20 JNTY	
S17T023841				Heptane	142-82-5	18.07	NGS	14 JNTY	
S17T023841				2-Hexene, 5,5-dimethyl-, (Z)-	39761-61-0	20.20	NGS	55 JNTY	
S17T023841				Nonane	111-84-2	21.10	NGS	27 JNTY	
S17T023841				Cyclohexene, 1-methyl-5-(1-methyl-2,5,6-trimethyldecane	556-67-2	23.00	NGS	31 JNTY	
S17T023841				Decane, 2,4,6-trimethyl-	52108-23-0	23.74	NGS	26 JNTY	
S17T023841				2,2,7-Tetramethyloctane	52108-27-4	24.22	NGS	15 JNTY	
S17T023841				Cyclohexene, 1-methyl-5-(1-methyl-3,3-dimethylhexane	1071-31-4	24.40	NGS	65 JNTY	
S17T023841				Heptadecane, 2,6,10,14-tetrame	1461-27-4	24.79	NGS	34 JNTY	
S17T023841				Dodecane, 2,7,10-trimethyl-	563-16-6	24.85	NGS	42 JNTY	
S17T023841				Heptane, 5-ethyl-2,2,3-trimeth	18344-37-1	25.07	NGS	33 JNTY	
S17T023841				Dodecane, 2,6,11-trimethyl-	74645-98-0	25.15	NGS	30 JNTY	
S17T023841				Decane, 2,6,8-trimethyl-	32199-06-8	25.24	NGS	27 JNTY	
S17T023841				Decane, 2,6,8-trimethyl-	31295-56-4	25.34	NGS	36 JNTY	
S17T023841				Decane, 2,5,9-trimethyl-	32108-26-3	25.38	NGS	59 JNTY	
S17T023841				Decane, 2,5,9-trimethyl-	32108-22-9	25.45	NGS	62 JNTY	

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Y - Comment  
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N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-1

Customer Sample ID: 17-04564-2-SD1-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023841				Heptadecane, 2,6-dimethyl-	54105-67-8	25.59	NGS	31	JNTY
S17T023841				Octane, 3,4,5,6-tetramethyl-	52185-21-1	25.70	NGS	73	JNTY
S17T023841				Decane, 2,6,7-trimethyl-	52108-25-2	25.74	NGS	120	JNTY
S17T023841				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	120	JNTY
S17T023841				2,3-Dimethyldecane	17312-44-6	25.99	NGS	42	JNTY
S17T023841				Dodecane, 2,6,10-trimethyl-	3891-98-3	26.08	NGS	64	JNTY
S17T023841				Undecane, 2,6-dimethyl-	17301-23-4	26.14	NGS	100	JNTY
S17T023841				Octane, 5-ethyl-2-methyl-	52016-18-6	26.26	NGS	240	JNTY
S17T023841				2,6-Dimethyldecane	13150-81-7	26.52	NGS	120	JNTY
S17T023841				Hydroxylamine, O-decyl-	29812-79-1	26.89	NGS	45	JNTY
S17T023841				Undecane, 3-methyl-	1002-43-3	27.16	NGS	5.7	JNTY
S17T023841				Tetradecane	529-59-4	29.42	NGS	17	JNTY

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**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04564-2-SD1-JN-8**

**Customer Sample ID: 17-04564-2-SD1-JN-8**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023842				Methyl Acetate	79-20-9	8.45	NGS	38 JNT	
S17T023842				Tetrahydrofuran	109-99-9	13.05	NGS	7.3 JNT	
S17T023842				2-Butanone, 3-methyl-	563-80-4	14.32	NGS	40 JNT	
S17T023842				2-Pentanone	107-87-9	15.22	NGS	190 JNT	
S17T023842				Unknown-1	-	15.48	NGS	36 JT	
S17T023842				2-Butanone, 3,3-dimethyl-	75-97-8	16.05	NGS	120 JNT	
S17T023842				Unknown-2	-	16.27	NGS	25 JT	
S17T023842				Propane, 2-methyl-1-nitro-	525-74-1	17.09	NGS	86 JNT	
S17T023842				2-Hexene, 5,5-dimethyl-, (Z)-	39761-61-0	20.19	NGS	55 JNT	
S17T023842				Cyclohexene, 1-methyl-5-(1-met	13898-73-2	24.79	NGS	42 JNT	
S17T023842				Decane, 2,4,6-trimethyl-	52108-27-4	25.06	NGS	7.5 JNT	
S17T023842				Undecane	1120-21-4	25.88	NGS	13 JNT	
S17T023842				Unknown-3	-	26.26	NGS	67 JT	
S17T023842				Tridecane	529-50-5	27.66	NGS	21 JNT	
S17T023842				Decane, 6-ethyl-2-methyl-	52108-21-8	29.24	NGS	25 JNT	
S17T023842				4,5-Octanedione	5455-24-3	29.72	NGS	31 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-1

Customer Sample ID: 17-04569-2-TL2-EF-1

Sample#	R	AI#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023843				Formamide	75-12-7	16.92	NGS	69 JNT	
S17T023843				Nonane	111-84-2	21.11	NGS	28 JNT	
S17T023843				Cyclotetrasiloxane, octamethyl	556-87-2	23.02	NGS	250 JNT	
S17T023843				Decane, 2,4,6-trimethyl-	52108-27-4	24.13	NGS	9.6 JNT	
S17T023843				Pentane, 3-ethyl-2,2-dimethyl-	16747-32-3	24.41	NGS	52 JNT	
S17T023843				Cyclohexene, 1-methyl-5-(1-methyl-2-propenyl)-	1461-27-4	24.80	NGS	240 JNT	
S17T023843				3,3-Dimethylhexane	563-16-6	24.85	NGS	50 JNT	
S17T023843				6-Ethyl-2-methyl-octane	52016-19-7	25.00	NGS	28 JNT	
S17T023843				3-Ethyl-3-methylheptane	17302-01-1	25.06	NGS	450 JNT	
S17T023843				Unknown-1	-	25.18	NGS	160 JT	
S17T023843				Decane, 2,5,9-trimethyl-	52108-22-9	25.26	NGS	110 JNT	
S17T023843				Undecane, 2,6-dimethyl-	17301-23-4	25.47	NGS	18 JNT	
S17T023843				Acetic acid, trifluoro-, 3,7-d	28745-07-5	25.52	NGS	49 JNT	
S17T023843				Unknown-2	-	25.60	NGS	70 JT	
S17T023843				Tridecane	529-50-5	25.76	NGS	130 JNT	
S17T023843				Undecane, 4,7-dimethyl-	17301-32-5	25.89	NGS	420 JNT	
S17T023843				Undecane, 3,7-dimethyl-	17301-29-0	26.00	NGS	230 JNT	
S17T023843				Undecane, 4-methyl-	2980-69-0	26.14	NGS	120 JNT	
S17T023843				Unknown-3	-	26.26	NGS	520 JT	
S17T023843				Decane, 3-methyl-	13151-34-3	26.37	NGS	30 JNT	
S17T023843				Hexyl octyl ether	17071-54-4	26.51	NGS	41 JNT	
S17T023843				5-Ethyldecane	17302-36-2	26.65	NGS	25 JNT	
S17T023843				Octane, 4-ethyl-	15989-86-0	26.85	NGS	71 JNT	
S17T023843				2,3-Dimethyldecane	17312-44-6	26.93	NGS	26 JNT	
S17T023843				1-Iodo-2-methylundecane	73105-67-6	27.01	NGS	35 JNT	
S17T023843				Unknown-4	-	27.17	NGS	38 JT	
S17T023843				Unknown-5	-	27.26	NGS	56 JT	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-1

Customer Sample ID: 17-04569-2-TL2-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023843				Decane, 2,6,8-trimethyl-	62108-26-3	27.65	NGS	120 JNT	
S17T023843				Heptane, 2,3,5-trimethyl-	20278-85-7	27.95	NGS	39 JNT	
S17T023843				Dodecane, 2,6,10-trimethyl-	3891-98-3	29.00	NGS	18 JNT	
S17T023843				Hexane, 2,2,5,5-tetramethyl-	1071-81-4	29.09	NGS	29 JNT	
S17T023843				Unknown-6		29.26	NGS	130 JT	
S17T023843				Undecane, 3,8-dimethyl-	17301-30-3	29.42	NGS	58 JNT	
S17T023843				2-Hexyl-1-octanol	19780-79-1	29.76	NGS	34 JNT	

U - Less Than Detection Limit  
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Y - Comment

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T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-2

Customer Sample ID: 17-04569-2-TL2-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023844				Cyclotetrasiloxane, octamethyl	556-87-2	23.01	NGS	250 JNT	
S17T023844				2,5,6-Trimethyldecane	52108-23-0	23.74	NGS	34 JNT	
S17T023844				2,2,7,7-Tetramethyloctane	1071-31-4	24.40	NGS	38 JNT	
S17T023844				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	250 JNT	
S17T023844				Undecane, 2,6-dimethyl-	17301-23-4	24.95	NGS	11 JNT	
S17T023844				3-Ethyl-3-methylheptane	17302-01-1	25.05	NGS	460 JNT	
S17T023844				Decane, 2,4,6-trimethyl-	52108-27-4	25.18	NGS	160 JNT	
S17T023844				Decane, 2,5,9-trimethyl-	52108-22-9	25.24	NGS	75 JNT	
S17T023844				Acetic acid, trifluoro-, 3,7-d	28745-07-5	25.52	NGS	56 JNT	
S17T023844				Unknown-1	-	25.60	NGS	56 JT	
S17T023844				Tridecane	529-50-5	25.76	NGS	190 JNT	
S17T023844				Undecane, 4,7-dimethyl-	17301-32-5	25.90	NGS	450 JNT	
S17T023844				2,6-Dimethyldecane	13150-81-7	26.00	NGS	230 JNT	
S17T023844				Undecane, 4-methyl-	2980-69-0	26.13	NGS	120 JNT	
S17T023844				Unknown-2	-	26.26	NGS	490 JT	
S17T023844				Decane, 2,6,6-trimethyl-	52108-24-1	26.38	NGS	28 JNT	
S17T023844				Hexyl octyl ether	17071-54-4	26.52	NGS	39 JNT	
S17T023844				Octane, 4-ethyl-	15869-86-0	26.85	NGS	74 JNT	
S17T023844				Unknown-3	-	26.94	NGS	38 JT	
S17T023844				Tridecane, 6-methyl-	13287-21-3	27.01	NGS	39 JNT	
S17T023844				5-Ethyldecane	17302-36-2	27.16	NGS	47 JNT	
S17T023844				Hydroxylamine, O-decyl-	29812-79-1	27.25	NGS	45 JNT	
S17T023844				Tetradecane, 1-iodo-	19218-94-1	27.64	NGS	170 JNT	
S17T023844				2-Hexyl-1-octanol	19780-79-1	27.84	NGS	40 JNT	
S17T023844				1-Octanol, 2-butyl-	3913-02-8	27.95	NGS	45 JNT	
S17T023844				1-Octene, 3,7-dimethyl-	4984-01-4	28.69	NGS	32 JNT	
S17T023844				Dodecane, 2,6,10-trimethyl-	3891-88-3	28.99	NGS	19 JNT	

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U - Less Than Detection Limit

N - Named TIC



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04569-2-TL2-EF-2**

**Customer Sample ID: 17-04569-2-TL2-EF-2**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023844				Nonane, 3,7-dimethyl-	17302-32-8	29.09	NGS	26 JNT	
S17T023844				Unknown-4	-	29.25	NGS	190 JT	
S17T023844				1,2-Benzisothiazole	272-16-2	29.33	NGS	36 JNT	
S17T023844				Dodecane, 2,7,10-trimethyl-	74645-98-0	29.41	NGS	98 JNT	
S17T023844				Unknown-5	-	29.51	NGS	36 JT	
S17T023844				Unknown-6	-	29.67	NGS	34 JT	
S17T023844				2,6-Dimethyl-6-trifluoroacetox	61986-67-2	29.77	NGS	31 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-3

Customer Sample ID: 17-04569-2-TL2-EF-3

Sample#	R	AI#	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
SI17T023845				Nonane	111-84-2	21.10	NGS	27	JNT
SI17T023845				Cycloletrasiloxane, octamethyl	556-67-2	23.01	NGS	50	JNT
SI17T023845				2,5,6-Trimethyldecane	62108-23-0	23.74	NGS	26	JNT
SI17T023845				Heptane, 5-ethyl-2,2,3-trimeth	62199-06-8	24.40	NGS	37	JNT
SI17T023845				Cyclohexane, 1-methyl-4-(1-met	7705-14-8	24.80	NGS	170	JNT
SI17T023845				Undecane	1120-21-4	25.06	NGS	180	JNT
SI17T023845				Tridecane	629-50-5	25.17	NGS	87	JNT
SI17T023845				Decane, 2,4,6-trimethyl-	62108-27-4	25.34	NGS	25	JNT
SI17T023845				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.39	NGS	20	JNT
SI17T023845				Decane, 2,6,8-trimethyl-	62108-26-3	25.46	NGS	31	JNT
SI17T023845				2,6-Dimethyldecane	13150-81-7	25.70	NGS	79	JNT
SI17T023845				Undecane, 4,7-dimethyl-	17301-32-5	25.75	NGS	110	JNT
SI17T023845				Undecane, 4,6-dimethyl-	17312-82-2	25.88	NGS	230	JNT
SI17T023845				Undecane, 3,7-dimethyl-	17301-29-0	25.99	NGS	110	JNT
SI17T023845				Unknown-1	-	26.08	NGS	48	JT
SI17T023845				Dodecane, 2,7,10-trimethyl-	74645-98-0	26.13	NGS	110	JNT
SI17T023845				Unknown-2	-	26.26	NGS	390	JT
SI17T023845				Decane, 2,5,9-trimethyl-	62108-22-9	26.35	NGS	26	JNT
SI17T023845				Decane, 2,4-dimethyl-	2801-84-5	26.52	NGS	140	JNT
SI17T023845				2-Hexyl-1-octanol	19780-79-1	26.86	NGS	78	JNT
SI17T023845				1-Undecene, 4-methyl-	74630-39-0	26.93	NGS	30	JNT
SI17T023845				Tridecane, 6-methyl-	13287-21-3	27.01	NGS	26	JNT
SI17T023845				Hexyl octyl ether	17071-54-4	27.17	NGS	31	JNT
SI17T023845				1-Iodo-2-methylundecane	73105-67-6	27.27	NGS	28	JNT
SI17T023845				Tetradecane, 1-iodo-	19218-94-1	27.65	NGS	120	JNT
SI17T023845				Acetic acid, trifluoro-, 3,7-d	28745-07-5	27.86	NGS	86	JNT
SI17T023845				Tetraoctane, 3,5,24-trimethyl	55162-61-3	27.94	NGS	27	JNT

E - Outside Calibration Range

	J - Estimated	Y - Comment
1	1.00	
2	1.00	
3	1.00	
4	1.00	
5	1.00	
6	1.00	
7	1.00	
8	1.00	
9	1.00	
10	1.00	
11	1.00	
12	1.00	
13	1.00	
14	1.00	
15	1.00	
16	1.00	
17	1.00	
18	1.00	
19	1.00	
20	1.00	
21	1.00	
22	1.00	
23	1.00	
24	1.00	
25	1.00	
26	1.00	
27	1.00	
28	1.00	
29	1.00	
30	1.00	
31	1.00	
32	1.00	
33	1.00	
34	1.00	
35	1.00	
36	1.00	
37	1.00	
38	1.00	
39	1.00	
40	1.00	
41	1.00	
42	1.00	
43	1.00	
44	1.00	
45	1.00	
46	1.00	
47	1.00	
48	1.00	
49	1.00	
50	1.00	
51	1.00	
52	1.00	
53	1.00	
54	1.00	
55	1.00	
56	1.00	
57	1.00	
58	1.00	
59	1.00	
60	1.00	
61	1.00	
62	1.00	
63	1.00	
64	1.00	
65	1.00	
66	1.00	
67	1.00	
68	1.00	
69	1.00	
70	1.00	
71	1.00	
72	1.00	
73	1.00	
74	1.00	
75	1.00	
76	1.00	
77	1.00	
78	1.00	
79	1.00	
80	1.00	
81	1.00	
82	1.00	
83	1.00	
84	1.00	
85	1.00	
86	1.00	
87	1.00	
88	1.00	
89	1.00	
90	1.00	
91	1.00	
92	1.00	
93	1.00	
94	1.00	
95	1.00	
96	1.00	
97	1.00	
98	1.00	
99	1.00	
100	1.00	

U - Less Than Detection Limit  
N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-3

Customer Sample ID: 17-04569-2-TL2-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR:TDU VOA #2									
S17T023845				1-Octene, 3,7-dimethyl-	4984-01-4	28.60	NGS	30	JNT
S17T023845				5-Methyl-1-heptanol	7212-53-5	28.90	NGS	32	JNT
S17T023845				Nonane, 3,7-dimethyl-	17302-32-8	29.09	NGS	34	JNT
S17T023845				Unknown-3	-	29.25	NGS	120	JT
S17T023845				1,2-Benzisothiazole	272-16-2	29.33	NGS	62	JNT
S17T023845				Decane, 2,3,5,8-tetramethyl-	19283-15-7	29.42	NGS	84	JNT
S17T023845				Heptadecane, 2,6-dimethyl-	54105-67-8	29.67	NGS	27	JNT
S17T023845				1-Octanol, 2-butyl-	3913-02-8	29.77	NGS	30	JNT

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-4

Customer Sample ID: 17-04569-2-TL2-EF-4

Sample#	R	AI#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023846				Undecane, 2,3-dimethyl-	17312-77-5	18.15	NGS		
S17T023846				Cyclotetrasiloxane, octamethyl	556-87-2	23.00	NGS		55 JNT
S17T023846				Cyclohexane, 1-methyl-5-(1-met	1461-27-4	24.79	NGS		65 JNT
S17T023846				Decane, 2,4,6-trimethyl-	52108-27-4	25.05	NGS		130 JNT
S17T023846				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.18	NGS		220 JNT
S17T023846				Acetic acid, trifluoro-, 3,7-d	28745-07-5	25.51	NGS		83 JNT
S17T023846				Undecane	1120-21-4	25.75	NGS		30 JNT
S17T023846				2,3-Dimethyldecane	17312-44-6	25.84	NGS		110 JNT
S17T023846				Undecane, 4,7-dimethyl-	17301-32-5	25.88	NGS		35 JNT
S17T023846				2,6-Dimethyldecane	13150-81-7	25.99	NGS		260 JNT
S17T023846				Undecane, 4-methyl-	2980-69-0	26.12	NGS		140 JNT
S17T023846				Unknown-1	-	26.26	NGS		76 JNT
S17T023846				Hexyl octyl ether	17071-54-4	26.50	NGS		340 JT
S17T023846				1-Octanol, 2-butyl-	3913-02-8	26.85	NGS		28 JNT
S17T023846				Hydroxylamine, O-decyl-	29812-79-1	26.93	NGS		61 JNT
S17T023846				Decane, 2,6,8-trimethyl-	52108-26-3	27.01	NGS		27 JNT
S17T023846				1-Octene, 3,7-dimethyl-	4984-01-4	27.11	NGS		31 JNT
S17T023846				Heptane, 2,4,6-trimethyl-	2613-61-8	27.16	NGS		39 JNT
S17T023846				Decane, 2,6,6-trimethyl-	52108-24-1	27.26	NGS		80 JNT
S17T023846				2-Hexyl-1-octanol	19780-79-1	27.52	NGS		52 JNT
S17T023846				Tetradecane, 1-iodo-	19218-94-1	27.64	NGS		26 JNT
S17T023846				4-Undecene, 10-methyl-, (E)-	74630-60-7	27.85	NGS		140 JNT
S17T023846				2-Methyl-1-undecanol	10522-26-6	27.94	NGS		230 JNT
S17T023846				2-Piperidinone, N-[4-bromo-n-b	195194-80-0	28.28	NGS		53 JNT
S17T023846				Unknown-2	-	28.42	NGS		49 JNT
S17T023846				2-Propenoic acid, octyl ester	2499-59-4	28.54	NGS		47 JT
S17T023846				Cyclopentane, 1,2,4-trimethyl-	2815-58-9	28.60	NGS		33 JNT

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound  
E - Outside Calibration Range  
J - Estimated  
Y - Comment  
U - Less Than Detection Limit  
N - Named TIC



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04569-2-TL2-EF-4**

**Customer Sample ID: 17-04569-2-TL2-EF-4**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023846				Unknown-3	-	28.68	NGS	320 JT	
S17T023846				5-Methyl-1-heptanol	7212-53-5	28.89	NGS	79 JNT	
S17T023846				Tetraoctane, 3,5,24-trimethyl	55162-61-3	29.00	NGS	29 JNT	
S17T023846				Nonane, 3,7-dimethyl-	17302-32-8	29.09	NGS	50 JNT	
S17T023846				Unknown-4	-	29.24	NGS	130 JT	
S17T023846				1,2-Benzisothiazole	272-16-2	29.31	NGS	140 JNT	
S17T023846				1-Iodo-2-methylundecane	73105-67-6	29.41	NGS	110 JNT	
S17T023846				Heptadecane, 2,6-dimethyl-	54105-67-8	29.51	NGS	27 JNT	
S17T023846				Unknown-5	-	29.66	NGS	37 JT	
S17T023846				10-Heneicosene (c.t.)	95008-11-0	29.76	NGS	44 JNT	

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Y - Comment

E - Outside Calibration Range

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T - Tentatively Identified Compound



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04569-2-TL2-EF-5**

**Customer Sample ID: 17-04569-2-TL2-EF-5**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023847				Isopropyl Alcohol	67-63-0	7.02	NGS	140 JNT	
S17T023847				Methyl Acetate	79-20-9	8.43	NGS	31 JNT	
S17T023847				Decane, 2,3,8-trimethyl-	62238-14-6	16.17	NGS	48 JNT	
S17T023847				Heptane, 2,4,6-trimethyl-	2613-61-8	21.10	NGS	26 JNT	
S17T023847				Cyclotrisiloxane, octamethyl	556-67-2	23.01	NGS	67 JNT	
S17T023847				Cyclohexane, 1-methyl-5-(1-met	1461-27-4	24.80	NGS	220 JNT	
S17T023847				Decane, 2,4,6-trimethyl-	62108-27-4	25.06	NGS	270 JNT	
S17T023847				Tridecane	629-50-5	25.18	NGS	97 JNT	
S17T023847				Tridecane, 6-methyl-	13287-21-3	25.24	NGS	13 JNT	
S17T023847				Acetic acid, trifluoro-, 3,7-d	28745-07-5	25.52	NGS	41 JNT	
S17T023847				2,5,6-Trimethyldecane	62108-23-0	25.76	NGS	110 JNT	
S17T023847				Undecane, 3,7-dimethyl-	17301-29-0	25.84	NGS	45 JNT	
S17T023847				Undecane, 4,7-dimethyl-	17301-32-5	25.89	NGS	270 JNT	
S17T023847				Decane, 3,7-dimethyl-	17312-54-8	26.00	NGS	140 JNT	
S17T023847				Undecane, 4-methyl-	2980-69-0	26.13	NGS	67 JNT	
S17T023847				Unknown-1	-	26.26	NGS	300 JT	
S17T023847				Hexyl octyl ether	17071-54-4	26.86	NGS	66 JNT	
S17T023847				2,3-Dimethyldecane	17312-44-6	26.94	NGS	30 JNT	
S17T023847				Decane, 2,6,8-trimethyl-	62108-26-3	27.01	NGS	27 JNT	
S17T023847				Hydroxylamine, O-decyl-	29812-79-1	27.16	NGS	47 JNT	
S17T023847				Unknown-2	-	27.26	NGS	41 JT	
S17T023847				Undecane, 2,6-dimethyl-	17301-23-4	27.65	NGS	130 JNT	
S17T023847				1-Octene, 3,7-dimethyl-	4984-01-4	27.85	NGS	75 JNT	
S17T023847				2-Hexyl-1-octanol	19780-79-1	27.95	NGS	40 JNT	
S17T023847				2,4,8-Tetramethyl-1-undecane	59820-26-2	28.60	NGS	32 JNT	
S17T023847				2,6-Dimethyl-6-trifluoroacetox	61986-67-2	28.89	NGS	30 JNT	
S17T023847				Dodecane, 2,6,10-trimethyl-	3891-88-3	29.00	NGS	31 JNT	

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound

E - Outside Calibration Range

J - Estimated

Y - Comment

U - Less Than Detection Limit

N - Named TIC



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04569-2-TL2-EF-5**

**Customer Sample ID: 17-04569-2-TL2-EF-5**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023847				Decane, 2,6,6-trimethyl-	52108-24-1	29.09	NGS	40 JNT	
S17T023847				Methenamine	100-97-0	29.18	NGS	27 JNT	
S17T023847				Unknown-3	-	29.25	NGS	160 JT	
S17T023847				1,2-Benzisothiazole	272-16-2	29.33	NGS	120 JNT	
S17T023847				2,6-Dimethyldecane	13150-81-7	29.42	NGS	82 JNT	
S17T023847				1-Iodo-2-methyldodecane	73105-67-6	29.51	NGS	32 JNT	
S17T023847				Heptadecane, 2,6-dimethyl-	54105-67-8	29.67	NGS	37 JNT	
S17T023847				1-Octanol, 2-butyl-	3913-02-8	29.76	NGS	36 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-6

Customer Sample ID: 17-04569-2-TL2-EF-6

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023848				Formamide	75-12-7	16.16	NGS	93 JNT	
S17T023848				Cyclotetrasiloxane, octamethyl	556-67-2	23.01	NGS	36 JNT	
S17T023848				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	110 JNT	
S17T023848				Unknown-1	-	25.05	NGS	110 JT	
S17T023848				3,3-Dimethylhexane	563-16-6	25.17	NGS	40 JNT	
S17T023848				Heptane, 3,3-dimethyl-	4032-86-4	25.75	NGS	27 JNT	
S17T023848				Decane, 2,4,6-trimethyl-	62108-27-4	25.88	NGS	120 JNT	
S17T023848				Ether, hexyl pentyl	32357-83-8	25.99	NGS	53 JNT	
S17T023848				Tridecane	629-50-5	26.13	NGS	22 JNT	
S17T023848				Unknown-2	-	26.26	NGS	190 JT	
S17T023848				Decane, 2,5,9-trimethyl-	62108-22-9	27.26	NGS	29 JNT	
S17T023848				Decane, 2,6,8-trimethyl-	62108-26-3	27.64	NGS	55 JNT	
S17T023848				Acetic acid, trifluoro-, 3,7-d	28745-07-5	27.86	NGS	66 JNT	
S17T023848				Unknown-3	-	27.95	NGS	26 JT	
S17T023848				Tridecane, 6-methyl-	13287-21-3	28.19	NGS	14 JNT	
S17T023848				Unknown-4	-	29.09	NGS	30 JT	
S17T023848				1-Iodo-2-methylundecane	73105-67-6	29.24	NGS	71 JNT	
S17T023848				1,2-Benzisothiazole	272-16-2	29.32	NGS	50 JNT	
S17T023848				Pentane, 2,2,3,3-tetramethyl-	7154-79-2	29.41	NGS	40 JNT	
S17T023848				Dodecane, 2,6,10-trimethyl-	3891-88-3	29.51	NGS	13 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-EF-7

Customer Sample ID: 17-04569-2-TL2-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023849				Formamide	75-12-7	15.80	NGS	48 JNT	
S17T023849				Unknown-1	--	24.79	NGS	44 JT	
S17T023849				3,3-Dimethylhexane	563-16-6	25.05	NGS	60 JNT	
S17T023849				Decane, 2,4,6-trimethyl-	52108-27-4	25.17	NGS	23 JNT	
S17T023849				Tridecane	529-50-5	25.75	NGS	14 JNT	
S17T023849				Heptane, 3,3-dimethyl-	4032-88-4	25.89	NGS	52 JNT	
S17T023849				Unknown-2	--	26.26	NGS	100 JT	
S17T023849				Decane, 2,5,9-trimethyl-	52108-22-9	27.64	NGS	32 JNT	
S17T023849				4-Octene, 2,6-dimethyl-, [S-Z]	52960-77-4	27.86	NGS	45 JNT	
S17T023849				Dodecane, 2,6,10-trimethyl-	3891-98-3	29.09	NGS	23 JNT	
S17T023849				Unknown-3	--	29.24	NGS	33 JT	
S17T023849				Undecane, 3,7-dimethyl-	17301-29-0	29.41	NGS	23 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-EF-8  
Customer Sample ID: 17-04569-2-TL2-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023850				Methyl Acetate	79-20-9	8.44	NGS	33 JNT	
S17T023850				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	29 JNT	
S17T023850				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	110 JNT	
S17T023850				Unknown-1	-	25.05	NGS	130 JT	
S17T023850				2,4,6-trimethyloctane	62016-37-9	25.17	NGS	52 JNT	
S17T023850				Dodecane, 2,6,10-trimethyl-	3891-98-3	25.23	NGS	21 JNT	
S17T023850				Decane, 2,4,6-trimethyl-	62108-27-4	25.70	NGS	21 JNT	
S17T023850				Tridecane	629-50-5	25.75	NGS	78 JNT	
S17T023850				Undecane, 4,7-dimethyl-	17301-32-5	25.88	NGS	140 JNT	
S17T023850				2,6-Dimethylundecane	13150-81-7	25.99	NGS	62 JNT	
S17T023850				Unknown-2	-	26.08	NGS	34 JT	
S17T023850				Undecane, 4,6-dimethyl-	17312-82-2	26.14	NGS	76 JNT	
S17T023850				Unknown-3	-	26.26	NGS	180 JT	
S17T023850				Heptadecane, 2,6-dimethyl-	54105-67-8	26.51	NGS	55 JNT	
S17T023850				Undecane, 2,6-dimethyl-	17301-23-4	26.84	NGS	25 JNT	
S17T023850				Undecane, 3-methyl-	1002-43-3	27.16	NGS	16 JNT	
S17T023850				Decane, 2,6,8-trimethyl-	62108-26-3	27.64	NGS	45 JNT	
S17T023850				1-Iodo-2-methylundecane	73105-67-6	29.25	NGS	57 JNT	
S17T023850				Decane, 2,5,9-trimethyl-	62108-22-9	29.42	NGS	26 JNT	

U - Less Than Detection Limit  
N - Named TIC

J - Estimated  
Y - Comment

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-IN-1

Customer Sample ID: 17-04569-2-TL2-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023851				2-Propanol, 2-methyl-	75-65-0	8.13	NGS	260	JNT
S17T023851				Tetrahydrofuran	109-99-9	13.05	NGS	41	JNT
S17T023851				4-Penten-2-one	13891-87-7	14.35	NGS	29	JNT
S17T023851				2-Pentanone	107-87-9	15.24	NGS	84	JNT
S17T023851				2-Butanone, 3,3-dimethyl-	75-97-9	16.06	NGS	230	JNT
S17T023851				Nitric acid, propyl ester	527-13-4	16.27	NGS	24	JNT
S17T023851				Ethylene Glycol	107-21-1	16.92	NGS	40	JNT
S17T023851				Propane, 2-methyl-1-nitro-	525-74-1	17.10	NGS	130	JNT
S17T023851				2-Pentanone, 4,4-dimethyl-	590-90-1	18.13	NGS	180	JNT
S17T023851				Pentanal, 2,4-dimethyl-	27944-79-2	18.25	NGS	61	JNT
S17T023851				3,5-Dimethyl-1,6-heptadien-4-o	19549-56-7	18.37	NGS	32	JNT
S17T023851				Cyclotrisiloxane, hexamethyl-	541-05-9	18.69	NGS	52	JNT
S17T023851				2-Hexene, 5,5-dimethyl-, (Z)-	39761-61-0	20.20	NGS	120	JNT
S17T023851				3-Hexanone, 2-methyl-	7379-12-6	20.47	NGS	25	JNT
S17T023851				3-Hexanone, 5-methyl-	523-56-3	20.85	NGS	220	JNT
S17T023851				Pentane, 2,2,3,3-tetramethyl-	7154-79-2	21.94	NGS	27	JNT
S17T023851				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	250	JNT
S17T023851				Decane, 2,2,3-trimethyl-	52338-09-4	23.44	NGS	26	JNT
S17T023851				2,5,6-Trimethyldecane	52108-23-0	23.73	NGS	26	JNT
S17T023851				Hydroxylamine, O-decyl-	29812-79-1	23.88	NGS	37	JNT
S17T023851				Decane, 2,5,9-trimethyl-	52108-22-9	23.98	NGS	33	JNT
S17T023851				Undecane	1120-21-4	24.12	NGS	18	JNT
S17T023851				Decane, 2,4,6-trimethyl-	52108-27-4	24.21	NGS	23	JNT
S17T023851				Acetic acid, trifluoro-, 3,7-d	28745-07-5	24.33	NGS	41	JNT
S17T023851				2,2,7,7-Tetramethyloctane	1071-31-4	24.39	NGS	110	JNT
S17T023851				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	150	JNT
S17T023851				Octane, 2,3,6,7-tetramethyl-	52670-34-5	24.84	NGS	130	JNT

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J - Estimated

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U - Less Than Detection Limit

N - Named TIC



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172264**

**SDG Number:**

**Customer Sample ID: 17-04569-2-TL2-IN-1**

**Customer Sample ID: 17-04569-2-TL2-IN-1**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023851				Unknown-1	-	24.99	NGS	38 JT	
S17T023851				3-Ethyl-3-methylheptane	17302-01-1	25.04	NGS	390 JNT	
S17T023851				2,6-Dimethyldecane	13150-81-7	25.16	NGS	160 JNT	
S17T023851				2,2,6-Trimethyloctane	62016-28-8	25.23	NGS	160 JNT	
S17T023851				Decane, 2,6,8-trimethyl-	62108-26-3	25.38	NGS	44 JNT	
S17T023851				Heptadecane, 2,6-dimethyl-	54105-87-8	25.45	NGS	59 JNT	
S17T023851				Cyclohexane, 2-propyl-1,1,3-tr	81983-70-2	25.51	NGS	49 JNT	
S17T023851				Unknown-2	-	25.58	NGS	95 JT	
S17T023851				Octane, 2,3,3-trimethyl-	62016-30-2	25.69	NGS	41 JNT	
S17T023851				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.75	NGS	170 JNT	
S17T023851				Undecane, 4,7-dimethyl-	17301-32-5	25.88	NGS	380 JNT	
S17T023851				Decane, 3,7-dimethyl-	17312-54-8	25.99	NGS	160 JNT	
S17T023851				Dodecane, 2,7,10-trimethyl-	74645-98-0	26.14	NGS	180 JNT	
S17T023851				Unknown-3	-	26.26	NGS	420 JT	
S17T023851				Decane, 2,6,6-trimethyl-	62108-24-1	26.35	NGS	37 JNT	
S17T023851				Heptane, 2,4,6-trimethyl-	2613-61-8	26.50	NGS	74 JNT	
S17T023851				Octane, 4-ethyl-	15869-86-0	26.84	NGS	69 JNT	
S17T023851				Undecane, 4-methyl-	2980-69-0	26.92	NGS	29 JNT	
S17T023851				Undecane, 2-methyl-	7045-71-8	27.00	NGS	27 JNT	
S17T023851				5-Ethyldecane	17302-36-2	27.15	NGS	26 JNT	
S17T023851				Undecane, 2,6-dimethyl-	17301-23-4	27.64	NGS	84 JNT	
S17T023851				1-Octanol, 2-butyl-	3913-02-8	27.84	NGS	40 JNT	
S17T023851				Unknown-4	-	28.67	NGS	39 JT	
S17T023851				Unknown-5	-	29.24	NGS	82 JT	
S17T023851				1-Iodo-2-methylundecane	73105-67-6	29.40	NGS	34 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172264

SDG Number:

Customer Sample ID: 17-04569-2-TL2-IN-8

Customer Sample ID: 17-04569-2-TL2-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T023852				Methyl Acetate	79-20-9	8.46	NGS	63 JNT	
S17T023852				Tetrahydrofuran	109-99-9	13.06	NGS	73 JNT	
S17T023852				2-Pentanol, formate	58368-66-4	13.42	NGS	51 JNT	
S17T023852				2-Butanone, 3-methyl-	563-80-4	14.34	NGS	27 JNT	
S17T023852				Butane, 2-azido-2,3,3-trimethyl	51677-41-9	14.48	NGS	30 JNT	
S17T023852				Butane	106-97-8	15.24	NGS	120 JNT	
S17T023852				Unknown-1	--	15.48	NGS	45 JT	
S17T023852				2-Butanone, 3,3-dimethyl-	75-97-8	16.06	NGS	400 JNT	
S17T023852				DL-2,3-Butanediol	5982-25-8	16.26	NGS	170 JNT	
S17T023852				Propane, 2-methyl-1-nitro-	525-74-1	17.10	NGS	180 JNT	
S17T023852				1-Propanamine, 3-nitro-	108351-04-8	17.96	NGS	35 JNT	
S17T023852				2-Pentanone, 4,4-dimethyl-	590-50-1	18.13	NGS	180 JNT	
S17T023852				2-Hexene, 5,5-dimethyl-, (Z)-	39761-61-0	20.20	NGS	150 JNT	
S17T023852				Propanoic acid, 2-methyl-, anhydride	97-72-3	20.47	NGS	26 JNT	
S17T023852				Cycloletrasiloxane, octamethyl-	556-67-2	23.00	NGS	40 JNT	
S17T023852				Cyclohexene, 1-methyl-5-(1-methyl-2-propenyl)-	1461-27-4	24.79	NGS	85 JNT	
S17T023852				3,3-Dimethylhexane	563-16-6	25.05	NGS	98 JNT	
S17T023852				Unknown-2	--	25.07	NGS	43 JT	
S17T023852				Decane, 2,4,6-trimethyl-	52108-27-4	25.17	NGS	34 JNT	
S17T023852				Unknown-3	--	25.88	NGS	94 JT	
S17T023852				Decane, 2,5,9-trimethyl-	52108-22-9	25.99	NGS	40 JNT	
S17T023852				Unknown-4	--	26.25	NGS	130 JT	
S17T023852				Tridecane	529-50-5	27.64	NGS	40 JNT	
S17T023852				Dodecane, 2,6,10-trimethyl-	3891-98-3	29.09	NGS	12 JNT	
S17T023852				Undecane, 3,6-dimethyl-	17301-30-3	29.24	NGS	38 JNT	
S17T023852				Tridecane, 6-methyl-	13287-21-3	29.40	NGS	18 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

*James D. Hansen*  
8-29-2017

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-1  
Customer Sample ID: 17-03269-2-TL1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022267			79-34-5	1,1,2,2-Tetrachloroethane	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022267			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022267			75-34-3	1,1-Dichloroethane	NGS	93	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022267			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022267			107-06-2	1,2-Dichloroethane	NGS	98	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022267			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022267			106-46-7	1,4-Dichlorobenzene	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022267			123-91-1	1,4-Dioxane	NGS	99	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022267			71-36-3	1-Butanol	NGS	91	<2.7	5.4	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022267			111-70-6	1-Heptanol	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022267			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022267			108-47-4	2,4-Dimethylpyridine	NGS	85	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022267			1708-29-8	2,5-Dihydrofuran	NGS	110	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022267			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022267			110-43-0	2-Heptanone	NGS	87	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022267			591-78-6	2-Hexanone	NGS	91	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022267			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022267			78-94-4	3-Buten-2-one	NGS	91	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022267			106-35-4	3-Heptanone	NGS	86	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022267			106-68-3	3-Octanone	NGS	97	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022267			105-42-0	4-Methyl-2-hexanone	NGS	86	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022267			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022267			67-64-1	Acetone	NGS	93	8.5	27	n/a	n/a	n/a	n/a	3.8	n/a	B
S17T022267			75-05-8	Acetonitrile	NGS	100	<2.9	400	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022267			98-96-2	Acetophenone	NGS	96	<2.0	22	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022267			107-13-1	Acrylonitrile	NGS	91	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022267			107-18-6	Allyl Alcohol	NGS	82	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022267			107-05-1	Allyl Chloride	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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E - Outside Calibration Range  
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NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-1  
Customer Sample ID: 17-03269-2-TL1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022267			71-43-2	Benzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022267			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022267			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022267			109-74-0	Butanenitrile	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022267			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022267			108-90-7	Chlorobenzene	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022267			75-00-3	Chloroethane	NGS	87	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022267			67-56-3	Chloroform	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022267			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022267			124-18-5	Decane	NGS	90	<0.82	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	U
S17T022267			64-17-5	Ethanol	NGS	96	<4.6	16	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022267			141-78-6	Ethyl acetate	NGS	110	<1.6	1.6	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022267			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022267			110-00-9	Furan	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022267			110-54-3	Hexane	NGS	84	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022267			628-73-9	Hexanenitrile	NGS	92	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022267			126-98-7	Methacrylonitrile	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022267			75-09-2	Methylene Chloride	NGS	99	7.9	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	LU
S17T022267			91-20-3	Naphthalene	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022267			98-95-3	Nitrobenzene	NGS	55	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	LQUa
S17T022267			110-59-8	Pentanitrile	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022267			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022267			110-86-1	Pyridine	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022267			100-42-5	Styrene	NGS	94	<1.7	4.9	n/a	n/a	n/a	n/a	1.7	n/a	
S17T022267			127-18-4	Tetrachloroethene	NGS	97	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022267			108-88-3	Toluene	NGS	95	<1.1	4.5	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022267			79-01-6	Trichloroethene	NGS	99	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022267			75-89-4	Trichlorofluoromethane	NGS	99	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-1

Customer Sample ID: 17-03269-2-TL1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022267			10061-01-5	cis-1,3-Dichloropropene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022267			123-86-4	n-Butyl acetate	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022267			142-82-5	n-Heptane	NGS	100	<1.5	1.9	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022267			10061-02-6	trans-1,3-Dichloropropene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-2  
Customer Sample ID: 17-03269-2-TL1-EF-2

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022268			79-34-5	1,1,2,2-Tetrachloroethane	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022268			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022268			75-34-3	1,1-Dichloroethane	NGS	93	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022268			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022268			107-06-2	1,2-Dichloroethane	NGS	98	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022268			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022268			106-46-7	1,4-Dichlorobenzene	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022268			123-91-1	1,4-Dioxane	NGS	99	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022268			71-36-3	1-Butanol	NGS	91	<2.7	8.8	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022268			111-70-6	1-Heptanol	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022268			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022268			108-47-4	2,4-Dimethylpyridine	NGS	85	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022268			1708-29-8	2,5-Dihydrofuran	NGS	110	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022268			78-93-3	2-Butanone	NGS	100	<2.3	3.1	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022268			110-43-0	2-Heptanone	NGS	87	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022268			591-78-6	2-Hexanone	NGS	91	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022268			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022268			78-94-4	3-Butan-2-one	NGS	91	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022268			105-35-4	3-Heptanone	NGS	86	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022268			106-68-3	3-Octanone	NGS	97	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022268			105-42-0	4-Methyl-2-hexanone	NGS	86	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022268			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022268			67-64-1	Acetone	NGS	93	8.5	60	n/a	n/a	n/a	n/a	3.8	n/a	B
S17T022268			75-05-8	Acetonitrile	NGS	100	<2.9	810	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022268			98-96-2	Acetophenone	NGS	96	<2.0	16	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022268			107-13-1	Acrylonitrile	NGS	91	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022268			107-18-6	Allyl Alcohol	NGS	82	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022268			107-05-1	Allyl Chloride	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-2  
Customer Sample ID: 17-03269-2-TL1-EF-2

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022268			71-43-2	Benzene	NGS	100	<1.5	4.0	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022268			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022268			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022268			109-74-0	Butanenitrile	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022268			56-23-5	Carbon tetrachloride	NGS	93	<1.3	1.9	n/a	n/a	n/a	n/a	1.3	n/a	
S17T022268			108-90-7	Chlorobenzene	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022268			75-00-3	Chloroethane	NGS	87	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022268			87-66-3	Chloroform	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022268			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022268			124-18-5	Decane	NGS	90	<0.82	21	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022268			84-17-5	Ethanol	NGS	96	<4.6	43	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022268			141-78-6	Ethyl acetate	NGS	110	<1.6	2.2	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022268			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022268			110-00-9	Furan	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022268			110-54-3	Hexane	NGS	84	<2.1	3.3	n/a	n/a	n/a	n/a	2.1	n/a	
S17T022268			628-73-9	Hexanenitrile	NGS	92	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022268			126-98-7	Methacrylonitrile	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022268			75-09-2	Methylene Chloride	NGS	99	7.9	7.4	n/a	n/a	n/a	n/a	3.0	n/a	BL
S17T022268			91-20-3	Naphthalene	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022268			98-95-3	Nitrobenzene	NGS	55	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	LQUa
S17T022268			110-59-8	Pentanitrile	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022268			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022268			110-86-1	Pyridine	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022268			100-42-5	Styrene	NGS	94	<1.7	4.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022268			127-18-4	Tetrachloroethene	NGS	97	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022268			108-88-3	Toluene	NGS	95	<1.1	8.7	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022268			79-01-6	Trichloroethene	NGS	99	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022268			75-69-4	Trichlorofluoromethane	NGS	99	<2.9	7.4	n/a	n/a	n/a	n/a	2.9	n/a	J

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L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-2  
Customer Sample ID: 17-03269-2-TL1-EF-2

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022268			10061-01-5	cis-1,3-Dichloropropene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022268			123-86-4	n-Butyl acetate	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022268			142-82-5	n-Heptane	NGS	100	<1.5	3.1	n/a	n/a	n/a	n/a	1.5		n/a J
S17T022268			10061-02-6	trans-1,3-Dichloropropene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

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J - Estimated  
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N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-3  
Customer Sample ID: 17-03269-2-TL1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022269			79-34-5	1,1,2,2-Tetrachloroethane	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022269			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022269			75-34-3	1,1-Dichloroethane	NGS	93	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022269			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022269			107-06-2	1,2-Dichloroethane	NGS	98	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022269			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022269			108-46-7	1,4-Dichlorobenzene	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022269			123-91-1	1,4-Dioxane	NGS	99	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022269			71-36-3	1-Butanol	NGS	91	<2.7	5.2	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022269			111-70-6	1-Heptanol	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022269			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022269			108-47-4	2,4-Dimethylpyridine	NGS	85	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022269			1708-29-8	2,5-Dihydrofuran	NGS	110	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022269			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022269			110-43-0	2-Heptanone	NGS	87	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022269			591-78-6	2-Hexanone	NGS	91	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022269			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022269			78-94-4	3-Buten-2-one	NGS	91	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022269			106-35-4	3-Heptanone	NGS	86	<1.4	1.8	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022269			106-68-3	3-Octanone	NGS	97	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022269			105-42-0	4-Methyl-2-hexanone	NGS	86	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022269			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022269			67-64-1	Acetone	NGS	93	8.5	19	n/a	n/a	n/a	n/a	3.8	n/a	B
S17T022269			75-05-8	Acetonitrile	NGS	100	<2.9	7.10	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022269			98-86-2	Acetophenone	NGS	96	<2.0	10	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022269			107-13-1	Acrylonitrile	NGS	91	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022269			107-18-6	Allyl Alcohol	NGS	82	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022269			107-05-1	Allyl Chloride	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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J - Estimated  
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E - Outside Calibration Range  
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NA = Not Analyzed, ND = Not Detected  
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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-3  
Customer Sample ID: 17-03269-2-TL1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022269			71-43-2	Benzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022269			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022269			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022269			109-74-0	Butanenitrile	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022269			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022269			106-90-7	Chlorobenzene	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022269			75-00-3	Chloroethane	NGS	87	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022269			67-56-3	Chloroform	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022269			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022269			124-18-5	Decane	NGS	90	<0.82	18	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022269			64-17-5	Ethanol	NGS	96	<4.6	36	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022269			141-78-6	Ethyl acetate	NGS	110	<1.6	2.0	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022269			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022269			110-00-9	Furan	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022269			110-54-3	Hexane	NGS	84	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022269			628-73-9	Hexanenitrile	NGS	92	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022269			126-98-7	Methacrylonitrile	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022269			75-09-2	Methylene Chloride	NGS	99	7.9	5.6	n/a	n/a	n/a	n/a	3.0	n/a	BL
S17T022269			91-20-3	Naphthalene	NGS	100	<1.9	2.7	n/a	n/a	n/a	n/a	1.9	n/a	
S17T022269			98-95-3	Nitrobenzene	NGS	55	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	LQUa
S17T022269			110-59-8	Pentanitrile	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022269			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022269			110-86-1	Pyridine	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022269			100-42-5	Styrene	NGS	94	<1.7	4.6	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022269			127-18-4	Tetrachloroethene	NGS	97	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022269			108-88-3	Toluene	NGS	95	<1.1	4.5	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022269			79-01-6	Trichloroethene	NGS	99	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022269			75-89-4	Trichlorofluoromethane	NGS	99	<2.9	60	n/a	n/a	n/a	n/a	2.9	n/a	

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N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-3

Customer Sample ID: 17-03269-2-TL1-EF-3

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022269			10061-01-5	cis-1,3-Dichloropropene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177022269			123-86-4	n-Butyl acetate	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177022269			142-82-5	n-Heptane	NGS	100	<1.5	2.2	n/a	n/a	n/a	n/a	1.5	n/a	J
S177022269			10061-02-6	trans-1,3-Dichloropropene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-4  
Customer Sample ID: 17-03269-2-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022270			79-34-5	1,1,2,2-Tetrachloroethane	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022270			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022270			75-34-3	1,1-Dichloroethane	NGS	93	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022270			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022270			107-06-2	1,2-Dichloroethane	NGS	98	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022270			542-75-6	1,3-Dichloropropene (Total)	NGS		n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022270			106-46-7	1,4-Dichlorobenzene	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022270			123-91-1	1,4-Dioxane	NGS	99	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022270			71-36-3	1-Butanol	NGS	91	<2.7	4.5	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022270			111-70-6	1-Heptanol	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022270			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022270			108-47-4	2,4-Dimethylpyridine	NGS	85	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022270			1708-29-8	2,5-Dihydrofuran	NGS	110	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022270			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022270			110-43-0	2-Heptanone	NGS	87	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022270			591-78-6	2-Hexanone	NGS	91	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022270			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022270			78-94-4	3-Buten-2-one	NGS	91	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022270			106-35-4	3-Heptanone	NGS	86	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022270			106-68-3	3-Octanone	NGS	97	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022270			106-42-0	4-Methyl-2-hexanone	NGS	86	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022270			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022270			67-64-1	Acetone	NGS	93	8.5	32	n/a	n/a	n/a	n/a	3.8	n/a	B
S17T022270			75-05-8	Acetonitrile	NGS	100	<2.9	2.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022270			98-86-2	Acetophenone	NGS	96	<2.0	9.7	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022270			107-13-1	Acrylonitrile	NGS	91	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022270			107-18-6	Allyl Alcohol	NGS	82	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022270			107-05-1	Allyl Chloride	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-4

Customer Sample ID: 17-03269-2-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022270			71-43-2	Benzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022270			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022270			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022270			109-74-0	Butanenitrile	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022270			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022270			108-90-7	Chlorobenzene	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022270			75-00-3	Chloroethane	NGS	87	<2.0	3.1	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022270			87-86-3	Chloroform	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022270			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022270			124-18-5	Decane	NGS	90	<0.82	14	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022270			84-17-5	Ethanol	NGS	96	<4.6	80	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022270			141-78-6	Ethyl acetate	NGS	110	<1.6	1.9	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022270			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022270			110-00-9	Furan	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022270			110-54-3	Hexane	NGS	84	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022270			628-73-8	Hexanenitrile	NGS	92	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022270			126-98-7	Methacrylonitrile	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022270			75-09-2	Methylene Chloride	NGS	99	7.9	7.4	n/a	n/a	n/a	n/a	3.0	n/a	BL
S17T022270			91-20-3	Naphthalene	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022270			98-95-3	Nitrobenzene	NGS	55	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	LQUA
S17T022270			110-59-8	Pentanenitrile	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022270			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022270			110-86-1	Pyridine	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022270			100-42-5	Styrene	NGS	94	<1.7	2.1	n/a	n/a	n/a	n/a	1.7	n/a	
S17T022270			127-18-4	Tetrachloroethene	NGS	97	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022270			108-88-3	Toluene	NGS	95	<1.1	3.2	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022270			79-01-6	Trichloroethene	NGS	99	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022270			75-69-4	Trichlorofluoromethane	NGS	99	<2.9	160	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
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U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-4

Customer Sample ID: 17-03269-2-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022270			10061-01-5	cis-1,3-Dichloropropene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022270			123-86-4	n-Butyl acetate	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022270			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022270			10061-02-6	trans-1,3-Dichloropropene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-5  
Customer Sample ID: 17-03269-2-TL1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022271			79-34-5	1,1,2,2-Tetrachloroethane	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a/U
S17T022271			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.3		n/a/U
S17T022271			75-34-3	1,1-Dichloroethane	NGS	93	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a/U
S17T022271			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a/U
S17T022271			107-06-2	1,2-Dichloroethane	NGS	98	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a/U
S17T022271			542-75-6	1,3-Dichloropropene (Total)	NGS		n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a/U
S17T022271			106-46-7	1,4-Dichlorobenzene	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a/U
S17T022271			123-91-1	1,4-Dioxane	NGS	99	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a/U
S17T022271			71-36-3	1-Butanol	NGS	91	<2.7	14	n/a	n/a	n/a	n/a	2.7		n/a
S17T022271			111-70-6	1-Heptanol	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a/U
S17T022271			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a/U
S17T022271			108-47-4	2,4-Dimethylpyridine	NGS	85	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a/U
S17T022271			1708-29-9	2,5-Dihydrofuran	NGS	110	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a/U
S17T022271			78-93-3	2-Butanone	NGS	100	<2.3	2.4	n/a	n/a	n/a	n/a	2.3		n/a
S17T022271			110-43-0	2-Heptanone	NGS	87	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a/U
S17T022271			591-78-6	2-Hexanone	NGS	91	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a/U
S17T022271			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.5	n/a	n/a	n/a	n/a	1.6		n/a/U
S17T022271			78-94-4	3-Buten-2-one	NGS	91	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a/U
S17T022271			106-35-4	3-Heptanone	NGS	86	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a/U
S17T022271			106-68-3	3-Octanone	NGS	97	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a/U
S17T022271			105-42-0	4-Methyl-2-hexanone	NGS	86	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a/U
S17T022271			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a/U
S17T022271			67-64-1	Acetone	NGS	93	8.5	42	n/a	n/a	n/a	n/a	3.8		n/a/B
S17T022271			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9		n/a/E
S17T022271			98-86-2	Acetophenone	NGS	96	<2.0	6.0	n/a	n/a	n/a	n/a	2.0		n/a
S17T022271			107-13-1	Acrylonitrile	NGS	91	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a/U
S17T022271			107-18-6	Allyl Alcohol	NGS	82	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a/U
S17T022271			107-05-1	Allyl Chloride	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a/U

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-5  
Customer Sample ID: 17-03269-2-TL1-EF-5

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022271			71-43-2	Benzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S177022271			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177022271			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177022271			109-74-0	Butanenitrile	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177022271			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177022271			108-90-7	Chlorobenzene	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177022271			75-00-3	Chloroethane	NGS	87	<2.0	3.0	n/a	n/a	n/a	n/a	2.0	n/a	
S177022271			67-66-3	Chloroform	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177022271			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S177022271			124-18-5	Decane	NGS	90	<0.82	21	n/a	n/a	n/a	n/a	0.82	n/a	
S177022271			64-17-5	Ethanol	NGS	96	<4.6	97	n/a	n/a	n/a	n/a	4.6	n/a	
S177022271			141-78-6	Ethyl acetate	NGS	110	<1.6	2.9	n/a	n/a	n/a	n/a	1.6	n/a	
S177022271			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S177022271			110-00-9	Furan	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177022271			110-54-3	Hexane	NGS	84	<2.1	3.4	n/a	n/a	n/a	n/a	2.1	n/a	
S177022271			628-73-9	Hexanenitrile	NGS	92	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177022271			126-98-7	Methacrylonitrile	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S177022271			75-09-2	Methylene Chloride	NGS	99	7.9	17	n/a	n/a	n/a	n/a	3.0	n/a	BL
S177022271			91-20-3	Naphthalene	NGS	100	<1.9	2.3	n/a	n/a	n/a	n/a	1.9	n/a	
S177022271			98-95-3	Nitrobenzene	NGS	55	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	LQUa
S177022271			110-59-8	Pentanenitrile	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177022271			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S177022271			110-86-1	Pyridine	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177022271			100-42-5	Styrene	NGS	94	<1.7	2.6	n/a	n/a	n/a	n/a	1.7	n/a	
S177022271			127-18-4	Tetrachloroethene	NGS	97	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177022271			108-88-3	Toluene	NGS	95	<1.1	5.1	n/a	n/a	n/a	n/a	1.1	n/a	
S177022271			79-01-6	Trichloroethene	NGS	99	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177022271			75-69-4	Trichlorofluoromethane	NGS	99	<2.9	260	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-5

Customer Sample ID: 17-03269-2-TL1-EF-5

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022271			10061-01-5	cis-1,3-Dichloropropene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022271			123-86-4	n-Butyl acetate	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022271			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022271			10061-02-6	trans-1,3-Dichloropropene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-6  
Customer Sample ID: 17-03269-2-TL1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022272		79-34-5		1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177022272		79-00-5		1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177022272		75-34-3		1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177022272		75-35-4		1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177022272		107-06-2		1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177022272		542-75-6		1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177022272		106-46-7		1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177022272		123-91-1		1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S177022272		71-36-3		1-Butanol	NGS	100	<2.7	12	n/a	n/a	n/a	n/a	2.7	n/a	J
S177022272		111-70-6		1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S177022272		71-23-8		1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S177022272		108-47-4		2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177022272		1708-29-8		2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S177022272		78-93-3		2-Butanone	NGS	100	<2.3	2.4	n/a	n/a	n/a	n/a	2.3	n/a	J
S177022272		110-43-0		2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S177022272		591-78-6		2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S177022272		534-22-5		2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177022272		78-94-4		3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177022272		106-35-4		3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177022272		106-68-3		3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S177022272		105-42-0		4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177022272		108-10-1		4-Methyl-2-pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177022272		57-64-1		Acetone	NGS	91	4.0	64	n/a	n/a	n/a	n/a	3.8	n/a	U
S177022272		75-05-8		Acetonitrile	NGS	100	<2.9	1.3E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S177022272		98-86-2		Acetophenone	NGS	87	2.1	4.3	n/a	n/a	n/a	n/a	2.0	n/a	J
S177022272		107-13-1		Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S177022272		107-18-6		Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177022272		107-05-1		Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-6  
Customer Sample ID: 17-03269-2-TL1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022272			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S17T022272			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S17T022272			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T022272			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	n/a
S17T022272			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S17T022272			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S17T022272			75-00-3	Chloroethane	NGS	70	<2.0	3.6	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S17T022272			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T022272			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T022272			124-18-5	Decane	NGS	100	1.1	11	n/a	n/a	n/a	n/a	0.82	n/a	n/a
S17T022272			64-17-5	Ethanol	NGS	90	<4.6	96	n/a	n/a	n/a	n/a	4.6	n/a	n/a
S17T022272			141-78-6	Ethyl acetate	NGS	95	<1.6	2.0	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S17T022272			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S17T022272			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T022272			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	n/a
S17T022272			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T022272			128-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a
S17T022272			75-09-2	Methylene Chloride	NGS	100	3.6	8.1	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T022272			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S17T022272			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S17T022272			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	n/a
S17T022272			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	n/a
S17T022272			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S17T022272			100-42-5	Styrene	NGS	95	<1.7	1.9	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S17T022272			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	n/a
S17T022272			108-88-3	Toluene	NGS	97	<1.1	3.3	n/a	n/a	n/a	n/a	1.1	n/a	n/a
S17T022272			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S17T022272			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	320	n/a	n/a	n/a	n/a	2.9	n/a	n/a

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Q - Qualitative  
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T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-6

Customer Sample ID: 17-03269-2-TL1-EF-6

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022272			10061-01-5	dis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022272			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022272			142-82-5	n-Heptane	NGS	100	<1.5	2.7	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T022272			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-7

Customer Sample ID: 17-03269-2-TL1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Ont Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022273			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S177022273			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S177022273			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177022273			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177022273			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177022273			542-75-6	1,3-Dichloropropene (Total)	NGS		n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177022273			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S177022273			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S177022273			71-36-3	1-Butanol	NGS	100	<2.7	25	n/a	n/a	n/a	n/a	2.7	n/a	
S177022273			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	QU
S177022273			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S177022273			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	QU
S177022273			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S177022273			78-93-3	2-Butanone	NGS	100	<2.3	3.5	n/a	n/a	n/a	n/a	2.3	n/a	J
S177022273			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S177022273			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S177022273			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177022273			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177022273			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S177022273			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	QU
S177022273			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	QU
S177022273			108-10-1	4-Methyl-2-pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177022273			67-64-1	Acetone	NGS	91	4.0	170	n/a	n/a	n/a	n/a	3.8	n/a	
S177022273			75-06-8	Acetonitrile	NGS	100	<2.9	2.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S177022273			98-86-2	Acetophenone	NGS	87	2.1	9.4	n/a	n/a	n/a	n/a	2.0	n/a	JQ
S177022273			107-13-1	Acrylonitrile	NGS	94	<2.6	4.1	n/a	n/a	n/a	n/a	2.6	n/a	J
S177022273			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177022273			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-7  
Customer Sample ID: 17-03269-2-TL1-EF-7

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022273			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022273			100-47-0	Benzonitrile	NGS	92	<2.0	4.4	n/a	n/a	n/a	n/a	2.0	n/a	JQ
S17T022273			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022273			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022273			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022273			108-90-7	Chlorobenzene	NGS	95	<1.3	1.4	n/a	n/a	n/a	n/a	1.3	n/a	JQ
S17T022273			75-00-3	Chloroethane	NGS	70	<2.0	6.7	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022273			87-86-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022273			110-82-7	Cyclohexane	NGS	89	<2.4	2.6	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T022273			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	QU
S17T022273			64-17-5	Ethanol	NGS	90	<4.6	180	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022273			141-78-6	Ethyl acetate	NGS	95	<1.6	5.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022273			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022273			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022273			110-54-3	Hexane	NGS	88	<2.1	3.2	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T022273			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	QU
S17T022273			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022273			75-09-2	Methylene Chloride	NGS	100	3.6	29	n/a	n/a	n/a	n/a	3.0	n/a	
S17T022273			91-20-3	Naphthalene	NGS	87	2.1	3.1	n/a	n/a	n/a	n/a	1.9	n/a	JQ
S17T022273			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022273			110-59-8	Pentanitrile	NGS	94	<1.4	2.2	n/a	n/a	n/a	n/a	1.4	n/a	JQ
S17T022273			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022273			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022273			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022273			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022273			108-88-3	Toluene	NGS	97	<1.1	4.7	n/a	n/a	n/a	n/a	1.1	n/a	JQ
S17T022273			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022273			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	290	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-7

Customer Sample ID: 17-03269-2-TL1-EF-7

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022273			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022273			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022273			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022273			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-8  
Customer Sample ID: 17-03269-2-TL1-EF-8

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022274			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022274			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022274			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022274			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022274			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022274			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022274			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022274			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022274			71-36-3	1-Butanol	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022274			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022274			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022274			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022274			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022274			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022274			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022274			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022274			534-22-5	2-Methylfuran	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022274			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022274			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022274			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022274			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022274			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022274			87-64-1	Acetone	NGS	91	4.0	38	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022274			75-05-8	Acetonitrile	NGS	100	<2.9	2.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022274			98-86-2	Acetophenone	NGS	87	2.1	4.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022274			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022274			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022274			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range  
Q - Qualitative  
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E - Outside Calibration Range  
Y - Comment  
U - Less Than Detection Limit  
a - LCS Outside Range  
B - Blank Contamination  
NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-8  
Customer Sample ID: 17-03269-2-TL1-EF-8

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022274			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022274			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022274			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022274			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022274			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022274			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022274			75-00-3	Chloroethane	NGS	70	<2.0	3.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022274			87-86-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022274			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022274			124-18-5	Decane	NGS	100	1.1	9.6	n/a	n/a	n/a	n/a	0.82	n/a	J
S17T022274			84-17-5	Ethanol	NGS	90	<4.6	97	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022274			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022274			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022274			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022274			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022274			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022274			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022274			75-09-2	Methylene Chloride	NGS	100	3.6	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022274			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022274			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022274			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022274			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022274			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022274			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022274			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022274			108-88-3	Toluene	NGS	97	<1.1	2.7	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022274			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022274			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	260	n/a	n/a	n/a	n/a	2.9	n/a	U

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
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T - Tentatively Identified Compound  
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L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-EF-8  
Customer Sample ID: 17-03269-2-TL1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022274			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022274			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022274			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022274			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-1  
Customer Sample ID: 17-03269-2-TL1-IN-1

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022275			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022275			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022275			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022275			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022275			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022275			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022275			108-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022275			123-91-1	1,4-Dioxane	NGS	97	<3.8	27	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022275			71-36-3	1-Butanol	NGS	100	<2.7	210	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022275			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022275			71-23-8	1-Propanol	NGS	94	<5.2	130	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022275			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022275			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022275			78-93-3	2-Butanone	NGS	100	<2.3	380	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022275			110-43-0	2-Heptanone	NGS	100	<1.5	15	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022275			591-78-6	2-Hexanone	NGS	100	<1.5	79	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022275			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022275			78-94-4	3-Buten-2-one	NGS	98	<2.5	12	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022275			108-35-4	3-Heptanone	NGS	99	<1.4	70	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022275			108-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022275			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	6.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022275			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	17	n/a	n/a	n/a	n/a	2.5	n/a	
S17T022275			67-64-1	Acetone	NGS	91	4.0	2.1E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022275			75-05-8	Acetonitrile	NGS	100	<2.9	2.3E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022275			98-86-2	Acetophenone	NGS	87	2.1	23	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022275			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022275			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022275			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-1  
Customer Sample ID: 17-03269-2-TL1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022275			71-43-2	Benzene	NGS	99	<1.5	21	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022275			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a/U	
S17T022275			123-72-8	Bulanal	NGS	100	<3.6	14	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022275			109-74-0	Butanenitrile	NGS	95	<1.8	27	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022275			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a/U	
S17T022275			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a/U	
S17T022275			75-00-3	Chloroethane	NGS	70	<2.0	3.9	n/a	n/a	n/a	n/a	2.0	n/a/J	
S17T022275			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a/U	
S17T022275			110-82-7	Cyclohexane	NGS	89	<2.4	2.4	n/a	n/a	n/a	n/a	2.4	n/a/J	
S17T022275			124-18-5	Decane	NGS	100	1.1	26	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022275			64-17-5	Ethanol	NGS	90	<4.6	360	n/a	n/a	n/a	n/a	4.6	n/a/L	
S17T022275			141-78-6	Ethyl acetate	NGS	95	<1.6	3.1	n/a	n/a	n/a	n/a	1.6	n/a/J	
S17T022275			100-41-4	Ethylbenzene	NGS	97	<1.7	5.1	n/a	n/a	n/a	n/a	1.7	n/a/J	
S17T022275			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a/U	
S17T022275			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a/U	
S17T022275			628-73-9	Hexanenitrile	NGS	90	<2.3	10	n/a	n/a	n/a	n/a	2.3	n/a/J	
S17T022275			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a/U	
S17T022275			75-09-2	Methylene Chloride	NGS	100	3.6	18	n/a	n/a	n/a	n/a	3.0	n/a	
S17T022275			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a/U	
S17T022275			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a/U	
S17T022275			110-59-8	Pentanitrile	NGS	94	<1.4	17	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022275			107-12-0	Propanenitrile	NGS	89	<3.2	18	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022275			110-86-1	Pyridine	NGS	95	<1.9	4.4	n/a	n/a	n/a	n/a	1.9	n/a/J	
S17T022275			100-42-5	Styrene	NGS	95	<1.7	5.0	n/a	n/a	n/a	n/a	1.7	n/a/J	
S17T022275			127-18-4	Tetrachloroethene	NGS	98	<1.1	3.1	n/a	n/a	n/a	n/a	1.1	n/a/J	
S17T022275			108-88-3	Toluene	NGS	97	<1.1	18	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022275			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a/U	
S17T022275			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	510	n/a	n/a	n/a	n/a	2.9	n/a/E	

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-IN-1

Customer Sample ID: 17-03269-2-TL1-IN-1

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022275			10061-01-5	dis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022275			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022275			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022275			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-8  
Customer Sample ID: 17-03269-2-TL1-IN-8

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022276			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022276			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022276			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022276			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022276			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022276			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022276			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022276			123-91-1	1,4-Dioxane	NGS	97	<3.8	36	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022276			71-36-3	1-Butanol	NGS	100	<2.7	240	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022276			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	QU
S17T022276			71-23-8	1-Propanol	NGS	94	<5.2	220	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022276			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	QU
S17T022276			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022276			78-93-3	2-Butanone	NGS	100	<2.3	830	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T022276			110-43-0	2-Heptanone	NGS	100	<1.5	5.0	n/a	n/a	n/a	n/a	1.5	n/a	JQ
S17T022276			591-78-6	2-Hexanone	NGS	100	<1.5	59	n/a	n/a	n/a	n/a	1.5	n/a	Q
S17T022276			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022276			78-94-4	3-Buten-2-one	NGS	98	<2.5	9.2	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022276			106-35-4	3-Heptanone	NGS	99	<1.4	26	n/a	n/a	n/a	n/a	1.4	n/a	Q
S17T022276			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	QU
S17T022276			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	5.2	n/a	n/a	n/a	n/a	1.6	n/a	JQ
S17T022276			108-10-1	4-Methyl-2-pentanone	NGS	98	<2.5	9.7	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022276			57-84-1	Acetone	NGS	91	4.0	4.2E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022276			75-05-8	Acetonitrile	NGS	100	<2.9	2.7E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022276			98-96-2	Acetophenone	NGS	87	2.1	8.2	n/a	n/a	n/a	n/a	2.0	n/a	JQ
S17T022276			107-13-1	Acrylonitrile	NGS	94	<2.6	8.2	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T022276			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022276			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-8  
Customer Sample ID: 17-03269-2-TL1-IN-8

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022276			71-43-2	Benzene	NGS	99	<1.5	22	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022276			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	QU
S17T022276			123-72-8	Butanal	NGS	100	<3.6	16	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022276			109-74-0	Butanenitrile	NGS	95	<1.8	42	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022276			56-23-5	Carbon tetrachloride	NGS	95	<1.3	1.9	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T022276			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	QU
S17T022276			75-00-3	Chloroethane	NGS	70	<2.0	6.2	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022276			87-86-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022276			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022276			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	QU
S17T022276			84-17-5	Ethanol	NGS	90	<4.6	370	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022276			141-78-6	Ethyl acetate	NGS	95	<1.6	3.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022276			100-41-4	Ethylbenzene	NGS	97	<1.7	2.4	n/a	n/a	n/a	n/a	1.7	n/a	JQ
S17T022276			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022276			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022276			828-73-9	Hexanenitrile	NGS	90	<2.3	9.8	n/a	n/a	n/a	n/a	2.3	n/a	JO
S17T022276			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022276			75-09-2	Methylene Chloride	NGS	100	3.6	3.9	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022276			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	QU
S17T022276			98-95-3	Nitrobenzene	NGS	98	1.5	5.8	n/a	n/a	n/a	n/a	1.2	n/a	JO
S17T022276			110-59-8	Pentanenitrile	NGS	94	<1.4	30	n/a	n/a	n/a	n/a	1.4	n/a	Q
S17T022276			107-12-0	Propanenitrile	NGS	89	<3.2	22	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022276			110-86-1	Pyridine	NGS	95	<1.9	4.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022276			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022276			127-18-4	Tetrachloroethene	NGS	98	<1.1	4.2	n/a	n/a	n/a	n/a	1.1	n/a	JO
S17T022276			108-88-3	Toluene	NGS	97	<1.1	14	n/a	n/a	n/a	n/a	1.1	n/a	Q
S17T022276			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022276			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	690	n/a	n/a	n/a	n/a	2.9	n/a	E

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Q - Qualitative  
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E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-IN-8

Customer Sample ID: 17-03269-2-TL1-IN-8

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022276			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022276			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022276			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022276			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
 J - Estimated  
 L - LLS Outside Range

Q - Qualitative  
 N - Named TIC  
 E - Outside Calibration Range

Y - Comment  
 U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
 a - LCS Outside Range  
 B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-1

Customer Sample ID: 17-03273-2-TL2-EF-1

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022277			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022277			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022277			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022277			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022277			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022277			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022277			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022277			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T022277			71-36-3	1-Butanol	NGS	100	<2.7	22	n/a	n/a	n/a	n/a	2.7		n/a U
S17T022277			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022277			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U
S17T022277			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022277			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022277			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022277			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022277			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022277			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022277			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022277			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022277			106-88-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022277			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022277			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022277			67-64-1	Acetone	NGS	91	4.0	37	n/a	n/a	n/a	n/a	3.8		n/a
S17T022277			75-05-8	Acetonitrile	NGS	100	<2.9	4.5E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022277			98-86-2	Acetophenone	NGS	87	2.1	23	n/a	n/a	n/a	n/a	2.0		n/a
S17T022277			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022277			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022277			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range

B - Blank Contamination

Y - Comment

U - Less Than Detection Limit

Q - Qualitative

N - Named TIC

E - Outside Calibration Range

T - Tentatively Identified Compound

J - Estimated

L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-1  
Customer Sample ID: 17-03273-2-TL2-EF-1

Sample#	R	AS#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022277			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022277			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022277			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022277			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022277			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022277			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022277			75-00-3	Chloroethane	NGS	70	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022277			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022277			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022277			124-18-5	Decane	NGS	100	1.1	28	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022277			64-17-5	Ethanol	NGS	90	<4.6	35	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022277			141-78-6	Ethyl acetate	NGS	95	<1.6	2.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022277			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022277			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022277			110-54-3	Hexane	NGS	88	<2.1	3.0	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T022277			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022277			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022277			75-09-2	Methylene Chloride	NGS	100	3.6	24	n/a	n/a	n/a	n/a	3.0	n/a	
S17T022277			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022277			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022277			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022277			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022277			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022277			100-42-5	Styrene	NGS	95	<1.7	5.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022277			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022277			108-88-3	Toluene	NGS	97	<1.1	11	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022277			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022277			75-89-4	Trichlorofluoromethane	NGS	89	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172162**  
**SDG Number:**  
**Customer Sample ID: 17-03273-2-TL2-EF-1**  
**Customer Sample ID: 17-03273-2-TL2-EF-1**

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022277			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022277			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022277			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022277			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-2  
Customer Sample ID: 17-03273-2-TL2-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022278			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022278			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022278			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022278			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022278			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022278			542-75-6	1,3-Dichloropropene (Total)	NGS				n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022278			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022278			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022278			71-36-3	1-Butanol	NGS	100	<2.7	5.9	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T022278			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022278			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022278			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022278			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022278			78-93-3	2-Butanone	NGS	100	<2.3	2.6	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T022278			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022278			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022278			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022278			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022278			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022278			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022278			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022278			108-10-1	4-Methyl-2-pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022278			67-64-1	Acetone	NGS	91	4.0	65	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022278			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022278			98-86-2	Acetophenone	NGS	87	2.1	18	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022278			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022278			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022278			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range  
Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range  
Y - Comment  
U - Less Than Detection Limit  
NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-2  
Customer Sample ID: 17-03273-2-TL2-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022278			71-43-2	Benzene	NGS	99	<1.5	2.7	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T022278			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022278			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022278			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022278			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022278			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022278			75-00-3	Chloroethane	NGS	70	<2.0	2.4	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022278			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022278			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022278			124-18-5	Decane	NGS	100	1.1	20	n/a	n/a	n/a	n/a	0.82	n/a	L
S17T022278			64-17-5	Ethanol	NGS	90	<4.6	200	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022278			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022278			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022278			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022278			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022278			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022278			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022278			75-09-2	Methylene Chloride	NGS	100	3.6	4.7	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022278			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022278			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022278			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022278			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022278			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022278			100-42-5	Styrene	NGS	95	<1.7	4.5	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022278			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022278			108-88-3	Toluene	NGS	97	<1.1	7.3	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022278			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022278			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	4.0	n/a	n/a	n/a	n/a	2.9	n/a	J

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
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Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-2  
Customer Sample ID: 17-03273-2-TL2-EF-2

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022278			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022278			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022278			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022278			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-3  
Customer Sample ID: 17-03273-2-TL2-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022279			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022279			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022279			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022279			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022279			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022279			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022279			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022279			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022279			71-36-3	1-Butanol	NGS	100	<2.7	23	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T022279			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022279			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022279			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022279			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022279			78-93-3	2-Butanone	NGS	100	<2.3	2.7	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T022279			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022279			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022279			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022279			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022279			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022279			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022279			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022279			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022279			67-64-1	Acetone	NGS	91	4.0	20	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022279			75-05-8	Acetonitrile	NGS	100	<2.9	2.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022279			98-86-2	Acetophenone	NGS	87	2.1	12	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022279			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022279			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022279			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-3  
Customer Sample ID: 17-03273-2-TL2-EF-3

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022279		71-43-2		Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022279		100-47-0		Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022279		123-72-8		Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022279		109-74-0		Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022279		56-23-5		Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022279		108-90-7		Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022279		75-00-3		Chloroethane	NGS	70	<2.0	2.6	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022279		67-66-3		Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022279		110-82-7		Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022279		124-18-5		Decane	NGS	100	1.1	22	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022279		64-17-5		Ethanol	NGS	90	<4.6	93	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022279		141-78-6		Ethyl acetate	NGS	95	<1.6	2.2	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022279		100-41-4		Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022279		110-00-9		Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022279		110-54-3		Hexane	NGS	88	<2.1	2.3	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022279		628-73-9		Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022279		126-98-7		Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022279		75-09-2		Methylene Chloride	NGS	100	3.6	12	n/a	n/a	n/a	n/a	3.0	n/a	
S17T022279		91-20-3		Naphthalene	NGS	87	2.1	2.8	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022279		98-95-3		Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022279		110-59-8		Penanenitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022279		107-12-0		Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022279		110-96-1		Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022279		100-42-5		Styrene	NGS	95	<1.7	6.2	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022279		127-18-4		Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022279		108-88-3		Toluene	NGS	97	<1.1	7.4	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022279		79-01-6		Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022279		75-69-4		Trichlorofluoromethane	NGS	89	<2.9	5.0	n/a	n/a	n/a	n/a	2.9	n/a	U

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B - Blank Contamination

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U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-3

Customer Sample ID: 17-03273-2-TL2-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022279			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022279			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022279			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022279			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

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N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-4  
Customer Sample ID: 17-03273-2-TL2-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S17T022280			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022280			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022280			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022280			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022280			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022280			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022280			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022280			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T022280			71-36-3	1-Butanol	NGS	100	<2.7	2.8	n/a	n/a	n/a	n/a	2.7		n/a J
S17T022280			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022280			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U
S17T022280			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022280			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022280			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022280			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022280			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022280			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022280			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022280			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022280			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022280			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022280			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022280			67-64-1	Acetone	NGS	91	4.0	14	n/a	n/a	n/a	n/a	3.8		n/a
S17T022280			75-05-8	Acetonitrile	NGS	100	<2.9	3.3E+03	n/a	n/a	n/a	n/a	2.9		n/a EY
S17T022280			98-86-2	Acetophenone	NGS	87	2.1	10	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022280			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022280			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022280			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

T - Tentatively Identified Compound  
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N - Named TIC  
E - Outside Calibration Range

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NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-4  
Customer Sample ID: 17-03273-2-TL2-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022280			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022280			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022280			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022280			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022280			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022280			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022280			75-00-3	Chloroethane	NGS	70	<2.0	3.5	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022280			67-86-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022280			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022280			124-18-5	Decane	NGS	100	1.1	13	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022280			64-17-5	Ethanol	NGS	90	<4.6	110	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022280			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022280			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022280			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022280			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022280			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022280			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022280			75-09-2	Methylene Chloride	NGS	100	3.6	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022280			91-20-3	Napthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022280			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022280			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022280			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022280			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022280			100-42-5	Styrene	NGS	95	<1.7	1.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022280			127-18-4	Tetrachloroethane	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022280			108-88-3	Toluene	NGS	97	<1.1	2.4	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022280			79-01-6	Trichloroethane	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022280			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	8.5	n/a	n/a	n/a	n/a	2.9	n/a	J

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Q - Qualitative  
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E - Outside Calibration Range

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J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-4  
Customer Sample ID: 17-03273-2-TL2-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022280			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022280			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022280			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022280			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-5  
Customer Sample ID: 17-03273-2-TL2-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022281			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022281			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022281			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022281			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022281			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022281			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022281			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022281			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T022281			71-36-3	1-Butanol	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T022281			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022281			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U
S17T022281			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022281			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022281			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022281			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022281			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022281			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022281			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022281			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022281			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022281			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022281			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022281			67-64-1	Acetone	NGS	91	4.0	32	n/a	n/a	n/a	n/a	3.8		n/a
S17T022281			75-05-8	Acetonitrile	NGS	100	<2.9	1.2E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022281			98-86-2	Acetophenone	NGS	87	2.1	7.0	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022281			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022281			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022281			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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Y - Comment  
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Q - Qualitative  
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T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-5  
Customer Sample ID: 17-03273-2-TL2-EF-5

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022281			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022281			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022281			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022281			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022281			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022281			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022281			75-00-3	Chloroethane	NGS	70	<2.0	3.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022281			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022281			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022281			124-18-5	Decane	NGS	100	1.1	17	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022281			64-17-5	Ethanol	NGS	90	<4.6	200	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022281			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022281			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022281			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022281			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022281			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022281			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022281			75-09-2	Methylene Chloride	NGS	100	3.6	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022281			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022281			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022281			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022281			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022281			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022281			100-42-5	Styrene	NGS	95	<1.7	1.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022281			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022281			108-88-3	Toluene	NGS	97	<1.1	2.9	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022281			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022281			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	18	n/a	n/a	n/a	n/a	2.9	n/a	

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L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-5  
Customer Sample ID: 17-03273-2-TL2-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022281			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022281			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022281			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022281			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

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N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-6  
Customer Sample ID: 17-03273-2-TL2-EF-6

Sample#	R	AS#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022282			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022282			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022282			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022282			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022282			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022282			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022282			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022282			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022282			71-36-3	1-Butanol	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022282			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022282			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022282			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022282			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022282			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022282			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022282			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022282			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022282			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022282			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022282			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022282			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022282			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022282			67-64-1	Acetone	NGS	91	4.0	56	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022282			75-05-8	Acetonitrile	NGS	100	<2.9	1.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022282			98-96-2	Acetophenone	NGS	87	2.1	4.9	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022282			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022282			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022282			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-6  
Customer Sample ID: 17-03273-2-TL2-EF-6

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022282			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a U
S17T022282			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a U
S17T022282			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a U
S17T022282			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	n/a U
S17T022282			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a U
S17T022282			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a U
S17T022282			75-00-3	Chloroethane	NGS	70	<2.0	3.5	n/a	n/a	n/a	n/a	2.0	n/a	n/a J
S17T022282			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a U
S17T022282			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a U
S17T022282			124-18-5	Decane	NGS	100	1.1	12	n/a	n/a	n/a	n/a	0.82	n/a	n/a
S17T022282			64-17-5	Ethanol	NGS	90	<4.6	300	n/a	n/a	n/a	n/a	4.6	n/a	n/a L
S17T022282			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a U
S17T022282			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a U
S17T022282			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a U
S17T022282			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	n/a U
S17T022282			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a U
S17T022282			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a U
S17T022282			75-09-2	Methylene Chloride	NGS	100	3.6	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a U
S17T022282			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a U
S17T022282			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a U
S17T022282			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	n/a U
S17T022282			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	n/a U
S17T022282			110-96-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a U
S17T022282			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a U
S17T022282			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	n/a U
S17T022282			108-98-3	Toluene	NGS	97	<1.1	2.4	n/a	n/a	n/a	n/a	1.1	n/a	n/a J
S17T022282			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a U
S17T022282			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	82	n/a	n/a	n/a	n/a	2.9	n/a	n/a

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U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-6

Customer Sample ID: 17-03273-2-TL2-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022282			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022282			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022282			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022282			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-7  
Customer Sample ID: 17-03273-2-TL2-EF-7

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022283			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022283			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022283			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022283			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022283			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022283			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022283			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022283			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022283			71-36-3	1-Butanol	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022283			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022283			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022283			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022283			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022283			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022283			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022283			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022283			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022283			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022283			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022283			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022283			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022283			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022283			67-84-1	Acetone	NGS	91	4.0	78	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022283			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022283			98-96-2	Acetophenone	NGS	87	2.1	4.3	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022283			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022283			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022283			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

T - Tentatively Identified Compound  
 J - Estimated  
 L - LLS Outside Range  
 Q - Qualitative  
 N - Named TIC  
 E - Outside Calibration Range  
 Y - Comment  
 U - Less Than Detection Limit  
 NA = Not Analyzed, ND = Not Detected  
 a - LCS Outside Range  
 B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-7  
Customer Sample ID: 17-03273-2-TL2-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022283			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022283			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022283			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022283			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022283			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022283			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022283			75-00-3	Chloroethane	NGS	70	<2.0	3.9	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022283			67-86-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022283			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022283			124-18-5	Decane	NGS	100	1.1	8.6	n/a	n/a	n/a	n/a	0.82	n/a	J
S17T022283			64-17-5	Ethanol	NGS	90	<4.6	290	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022283			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022283			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022283			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022283			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022283			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022283			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022283			75-09-2	Methylene Chloride	NGS	100	3.6	3.1	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022283			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022283			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022283			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022283			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022283			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022283			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022283			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022283			108-88-3	Toluene	NGS	97	<1.1	2.0	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022283			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022283			75-89-4	Trichlorofluoromethane	NGS	89	<2.9	450	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
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U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-7  
Customer Sample ID: 17-03273-2-TL2-EF-7

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022283			10061-01-5	dis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022283			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022283			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022283			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-8  
Customer Sample ID: 17-03273-2-TL2-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022284			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022284			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022284			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022284			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022284			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022284			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022284			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022284			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T022284			71-36-3	1-Butanol	NGS	100	<2.7	3.5	n/a	n/a	n/a	n/a	2.7		n/a J
S17T022284			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022284			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U
S17T022284			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022284			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022284			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022284			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022284			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022284			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022284			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022284			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022284			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022284			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022284			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022284			67-64-1	Acetone	NGS	91	4.0	240	n/a	n/a	n/a	n/a	3.8		n/a
S17T022284			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022284			98-86-2	Acetophenone	NGS	87	2.1	5.2	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022284			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022284			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022284			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

NA = Not Analyzed, ND = Not Detected

a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-8  
Customer Sample ID: 17-03273-2-TL2-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022284			71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S17T022284			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S17T022284			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T022284			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	n/a
S17T022284			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S17T022284			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S17T022284			75-00-3	Chloroethane	NGS	70	<2.0	3.3	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S17T022284			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T022284			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T022284			124-18-5	Decane	NGS	100	1.1	13	n/a	n/a	n/a	n/a	0.92	n/a	n/a
S17T022284			64-17-5	Ethanol	NGS	90	<4.6	350	n/a	n/a	n/a	n/a	4.6	n/a	n/a
S17T022284			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S17T022284			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S17T022284			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T022284			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	n/a
S17T022284			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T022284			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a
S17T022284			76-09-2	Methylene Chloride	NGS	100	3.6	5.8	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T022284			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S17T022284			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S17T022284			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	n/a
S17T022284			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	n/a
S17T022284			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S17T022284			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S17T022284			127-18-4	Tetrachloroethane	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	n/a
S17T022284			108-88-3	Toluene	NGS	97	<1.1	2.4	n/a	n/a	n/a	n/a	1.1	n/a	n/a
S17T022284			79-01-6	Trichloroethane	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S17T022284			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	550	n/a	n/a	n/a	n/a	2.9	n/a	n/a

NA = Not Analyzed, ND = Not Detected  
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B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-8  
Customer Sample ID: 17-03273-2-TL2-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022284			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022284			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022284			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022284			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-1  
Customer Sample ID: 17-03273-2-TL2-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022285			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022285			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022285			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022285			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022285			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022285			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022285			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022285			123-91-1	1,4-Dioxane	NGS	97	<3.8	18	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022285			71-36-3	1-Butanol	NGS	100	<2.7	160	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022285			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022285			71-23-8	1-Propanol	NGS	94	<5.2	88	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022285			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022285			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022285			78-93-3	2-Butanone	NGS	100	<2.3	390	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022285			110-43-0	2-Heptanone	NGS	100	<1.5	20	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022285			591-78-6	2-Hexanone	NGS	100	<1.5	91	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022285			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022285			78-94-4	3-Buten-2-one	NGS	98	<2.5	7.1	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022285			106-35-4	3-Heptanone	NGS	99	<1.4	93	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022285			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022285			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	8.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022285			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	14	n/a	n/a	n/a	n/a	2.5	n/a	
S17T022285			67-64-1	Acetone	NGS	91	4.0	1.5E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022285			75-05-8	Acetonitrile	NGS	100	<2.9	910	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022285			98-86-2	Acetophenone	NGS	87	2.1	20	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022285			107-13-1	Acrylonitrile	NGS	94	<2.6	11	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T022285			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022285			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-1

Customer Sample ID: 17-03273-2-TL2-IN-1

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022285			71-43-2	Benzene	NGS	99	<1.5	23	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022285			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022285			123-72-8	Butanal	NGS	100	<3.6	14	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022285			109-74-0	Butanenitrile	NGS	95	<1.8	23	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022285			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022285			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022285			75-00-3	Chloroethane	NGS	70	<2.0	2.9	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022285			87-86-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022285			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022285			124-18-5	Decane	NGS	100	1.1	17	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022285			64-17-5	Ethanol	NGS	90	<4.6	340	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022285			141-78-6	Ethyl acetate	NGS	95	<1.6	1.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022285			100-41-4	Ethylbenzene	NGS	97	<1.7	7.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022285			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022285			110-54-3	Hexane	NGS	88	<2.1	19	n/a	n/a	n/a	n/a	2.1	n/a	
S17T022285			628-73-9	Hexanenitrile	NGS	90	<2.3	13	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022285			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022285			75-09-2	Methylene Chloride	NGS	100	3.6	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022285			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022285			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022285			110-59-8	Pentanitrile	NGS	94	<1.4	16	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022285			107-12-0	Propanenitrile	NGS	89	<3.2	10	n/a	n/a	n/a	n/a	3.2	n/a	J
S17T022285			110-86-1	Pyridine	NGS	95	<1.9	3.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022285			100-42-5	Styrene	NGS	95	<1.7	5.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022285			127-18-4	Tetrachloroethene	NGS	98	<1.1	3.5	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022285			108-88-3	Toluene	NGS	97	<1.1	21	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022285			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022285			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	220	n/a	n/a	n/a	n/a	2.9	n/a	

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Q - Qualitative  
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T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-1  
Customer Sample ID: 17-03273-2-TL2-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spl Rec %	Det Limit	Chl Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022285			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022285			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022285			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022285			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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N - Named TIC  
E - Outside Calibration Range

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-8  
Customer Sample ID: 17-03273-2-TL2-IN-8

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022286			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022286			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022286			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022286			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022286			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022286			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022286			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022286			123-91-1	1,4-Dioxane	NGS	97	<3.8	27	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022286			71-36-3	1-Butanol	NGS	100	<2.7	300	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022286			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022286			71-23-8	1-Propanol	NGS	94	<5.2	200	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022286			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022286			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022286			78-93-3	2-Butanone	NGS	100	<2.3	610	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T022286			110-43-0	2-Heptanone	NGS	100	<1.5	27	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022286			591-78-6	2-Hexanone	NGS	100	<1.5	120	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022286			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022286			78-94-4	3-Buten-2-one	NGS	98	<2.5	12	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022286			106-35-4	3-Heptanone	NGS	99	<1.4	130	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022286			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022286			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S17T022286			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	17	n/a	n/a	n/a	n/a	2.5	n/a	
S17T022286			57-64-1	Acetone	NGS	91	4.0	2.5E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022286			75-05-8	Acetonitrile	NGS	100	<2.9	1.7E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022286			98-86-2	Acetophenone	NGS	87	2.1	4.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022286			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022286			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022286			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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 E - Outside Calibration Range  
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 U - Less Than Detection Limit  
 NA = Not Analyzed, ND = Not Detected  
 a - LCS Outside Range  
 B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-8  
Customer Sample ID: 17-03273-2-TL2-IN-8

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022286			71-43-2	Benzene	NGS	99	<1.5	25	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022286			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022286			123-72-8	Butanal	NGS	100	<3.6	23	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022286			109-74-0	Butanenitrile	NGS	95	<1.8	32	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022286			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022286			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022286			75-00-3	Chloroethane	NGS	70	<2.0	3.6	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022286			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022286			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022286			124-18-5	Decane	NGS	100	1.1	12	n/a	n/a	n/a	n/a	0.82	n/a	J
S17T022286			64-17-5	Ethanol	NGS	90	<4.6	430	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022286			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022286			100-41-4	Ethylbenzene	NGS	97	<1.7	7.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022286			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022286			110-54-3	Hexane	NGS	88	<2.1	23	n/a	n/a	n/a	n/a	2.1	n/a	
S17T022286			628-73-9	Hexanenitrile	NGS	90	<2.3	19	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022286			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022286			75-09-2	Methylene Chloride	NGS	100	3.6	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022286			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022286			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022286			110-59-8	Pentanitrile	NGS	94	<1.4	25	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022286			107-12-0	Propanenitrile	NGS	89	<3.2	23	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022286			110-86-1	Pyridine	NGS	95	<1.9	4.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022286			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022286			127-18-4	Tetrachloroethene	NGS	98	<1.1	4.7	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022286			108-88-3	Toluene	NGS	97	<1.1	17	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022286			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022286			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	280	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

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B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC  
E - Outside Calibration Range

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-8  
Customer Sample ID: 17-03273-2-TL2-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022286			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022286			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022286			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022286			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
J - Estimated  
L - LLS Outside Range

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N - Named TIC  
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U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
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B - Blank Contamination



*David M. Haver*  
8-29-2017

**2017 Cartridge Evaluation  
Data Summary of All Results**

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-1

Customer Sample ID: 17-03269-2-TL1-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022267				Methyl formate	107-31-3	5.39	NGS	160 JNT	
S17T022267				Cyanogen chloride	506-77-4	9.34	NGS	61 JNT	
S17T022267				Silane	7803-62-5	9.36	NGS	170 JNT	
S17T022267				Cyclotrisiloxane, hexamethyl-	541-05-9	18.69	NGS	180 JNT	
S17T022267				Cyclotetrasiloxane, octamethyl	556-67-2	23.01	NGS	370 JNT	
S17T022267				Decane, 2,4,6-trimethyl-	62108-27-4	23.74	NGS	26 JNT	
S17T022267				Acetic acid, trifluoro-, 3,7-d	28745-07-5	24.33	NGS	27 JNT	
S17T022267				2,2-Dimethyldecane	17302-37-3	24.40	NGS	74 JNT	
S17T022267				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	220 JNT	
S17T022267				3,3-Dimethylhexane	563-16-6	24.85	NGS	58 JNT	
S17T022267				Undecane, 2,6-dimethyl-	17301-23-4	24.94	NGS	10 JNT	
S17T022267				Unknown-1	-	25.00	NGS	28 JT	
S17T022267				Undecane, 4,7-dimethyl-	17301-32-5	25.05	NGS	380 JNT	
S17T022267				Unknown-2	-	25.17	NGS	140 JT	
S17T022267				Heptane, 5-ethyl-2,3-trimeth	62199-06-8	25.25	NGS	120 JNT	
S17T022267				1-Octene, 3,7-dimethyl-	4984-01-4	25.52	NGS	48 JNT	
S17T022267				Unknown-3	-	25.60	NGS	75 JT	
S17T022267				Tridecane	628-50-5	25.76	NGS	130 JNT	
S17T022267				Decane, 3,7-dimethyl-	17312-54-8	25.89	NGS	300 JNT	
S17T022267				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.99	NGS	140 JNT	
S17T022267				Hexyl octyl ether	17071-54-4	26.05	NGS	49 JNT	
S17T022267				Decane, 4-methyl-	2847-72-5	26.13	NGS	94 JNT	
S17T022267				Unknown-4	-	26.26	NGS	380 JT	
S17T022267				Dodecane, 2,6,10-trimethyl-	3891-98-3	26.36	NGS	25 JNT	
S17T022267				Octane, 4-ethyl-	15669-86-0	26.84	NGS	59 JNT	
S17T022267				Undecane, 2-methyl-	7045-71-8	27.01	NGS	19 JNT	
S17T022267				Undecane, 3-methyl-	1002-43-3	27.16	NGS	23 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-1

Customer Sample ID: 17-03269-2-TL1-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022267				Decane, 2,5,9-trimethyl-	62108-22-9	27.65	NGS	89 JNT	
S17T022267				2-Hexyl-1-octanol	19780-79-1	27.96	NGS	29 JNT	
S17T022267				Unknown-5	-	29.25	NGS	91 JT	
S17T022267				Heptadecane, 2,6-dimethyl-	54105-67-8	29.41	NGS	30 JNT	
S17T022267			BLNK	Decanal	112-31-2	27.96	NGS	33 JNT	
S17T022267			BLNK	Diethyl Phthalate	84-86-2	29.81	NGS	45 JNT	

T - Tentatively Identified Compound  
J - Estimated

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N - Named TIC

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U - Less Than Detection Limit

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-2

Customer Sample ID: 17-03269-2-TL1-EF-2

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022268				Silane	7803-62-5	9.37	NGS	86	JNT
S17T022268				Cyclotrisiloxane, hexamethyl-	541-05-9	18.89	NGS	180	JNT
S17T022268				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	370	JNT
S17T022268				Decane, 2,4,6-trimethyl-	62108-27-4	23.98	NGS	14	JNT
S17T022268				2,2,7,7-Tetramethyloctane	1071-31-4	24.40	NGS	44	JNT
S17T022268				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	210	JNT
S17T022268				3,3-Dimethylhexane	563-16-6	24.85	NGS	49	JNT
S17T022268				Undecane, 4,7-dimethyl-	17301-32-5	25.05	NGS	380	JNT
S17T022268				2,6-Dimethyldecane	13150-81-7	25.17	NGS	140	JNT
S17T022268				Decane, 2,5,9-trimethyl-	62108-22-9	25.25	NGS	70	JNT
S17T022268				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.45	NGS	20	JNT
S17T022268				Acetic acid, trifluoro-, 3,7-d	28745-07-5	25.51	NGS	36	JNT
S17T022268				Unknown-1	-	25.60	NGS	54	JT
S17T022268				Undecane	1120-21-4	25.75	NGS	200	JNT
S17T022268				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	350	JNT
S17T022268				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.99	NGS	140	JNT
S17T022268				Dodecane, 2,7,10-trimethyl-	74645-98-0	26.13	NGS	110	JNT
S17T022268				Unknown-2	-	26.26	NGS	380	JT
S17T022268				Undecane, 2,6-dimethyl-	17301-23-4	26.35	NGS	23	JNT
S17T022268				Octane, 4-ethyl-	15869-86-0	26.53	NGS	78	JNT
S17T022268				Tridecane, 6-methyl-	13287-21-3	26.63	NGS	22	JNT
S17T022268				Undecane, 2-methyl-	7045-71-8	27.01	NGS	25	JNT
S17T022268				Undecane, 3-methyl-	1002-43-3	27.15	NGS	31	JNT
S17T022268				Tetradecane, 1-iodo-	19218-94-1	27.65	NGS	90	JNT
S17T022268				Decane, 2,3,5,8-tetramethyl-	192823-15-7	29.25	NGS	61	JNT
S17T022268				Heptadecane, 2,6-dimethyl-	54105-67-8	29.41	NGS	26	JNT
S17T022268			BLNK	Decanal	112-31-2	27.96	NGS	33	JNT

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-2

Customer Sample ID: 17-03269-2-TL1-EF-2

Sample#	R	As	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S177022268			BLNK	Diethyl Phthalate	84-66-2	29.81	NGS	45	JNT

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J - Estimated

Q - Qualitative  
N - Named TIC

Y - Comment  
U - Less Than Detection Limit

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B - Blank Contamination



**2017 Cartridge Evaluation  
Data Summary of All Results**

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-3

Customer Sample ID: 17-03269-2-TL1-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022269				Methyl formate	107-31-3	5.39	NGS	160 JNT	
S17T022269				Unknown-1	-	9.38	NGS	53 JT	
S17T022269				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	60 JNT	
S17T022269				D-Limonene	5989-27-5	24.79	NGS	210 JNT	
S17T022269				Unknown-2	-	25.05	NGS	160 JT	
S17T022269				Decane, 2,4,6-trimethyl-	62108-27-4	25.17	NGS	65 JNT	
S17T022269				Pentane, 2,2,3,3-tetramethyl-	7154-79-2	25.33	NGS	31 JNT	
S17T022269				Undecane, 2,6-dimethyl-	17301-23-4	25.45	NGS	16 JNT	
S17T022269				Decane, 2,6,8-trimethyl-	62108-26-3	25.75	NGS	100 JNT	
S17T022269				Undecane, 4,7-dimethyl-	17301-32-5	25.88	NGS	200 JNT	
S17T022269				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.99	NGS	76 JNT	
S17T022269				Unknown-3	-	26.14	NGS	77 JT	
S17T022269				Unknown-4	-	26.26	NGS	280 JT	
S17T022269				2,6-Dimethyldecane	13150-81-7	26.51	NGS	51 JNT	
S17T022269				Hexyl octyl ether	17071-54-4	27.16	NGS	50 JNT	
S17T022269				Decane, 2,5,9-trimethyl-	62108-22-9	27.25	NGS	27 JNT	
S17T022269				Tridecane	629-50-5	27.84	NGS	83 JNT	
S17T022269				Acetic acid, trifluoro-, 3,7-d	28745-07-5	27.85	NGS	76 JNT	
S17T022269				Dodecane, 2,6,10-trimethyl-	3891-98-3	29.09	NGS	20 JNT	
S17T022269				Cyanamide	420-04-2	29.16	NGS	79 JNT	
S17T022269				Unknown-5	-	29.24	NGS	76 JT	
S17T022269				1,2-Benzisothiazole	272-16-2	29.31	NGS	49 JNT	
S17T022269				3,3-Dimethylhexane	563-16-6	29.40	NGS	39 JNT	
S17T022269		BLNK		Decanal	112-31-2	27.96	NGS	33 JNT	
S17T022269		BLNK		Diethyl Phthalate	84-66-2	29.81	NGS	45 JNT	

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Q - Qualitative  
N - Named TIC

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J - Estimated



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-4

Customer Sample ID: 17-03269-2-TL1-EF-4

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022270				Methyl formate	107-31-3	5.37	NGS	110 JNT	
S17T022270				Cycloetrasiloxane, octamethyl	556-87-2	23.00	NGS	56 JNT	
S17T022270				D-Limonene	5989-27-5	24.79	NGS	160 JNT	
S17T022270				Decane, 2,4,6-trimethyl-	62108-27-4	25.05	NGS	95 JNT	
S17T022270				2,6-Dimethyldecane	13150-81-7	25.17	NGS	37 JNT	
S17T022270				Undecane, 2,6-dimethyl-	17301-23-4	25.33	NGS	9.7 JNT	
S17T022270				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.44	NGS	22 JNT	
S17T022270				Dodecane, 2,7,10-trimethyl-	74645-98-0	25.75	NGS	74 JNT	
S17T022270				Undecane, 4,7-dimethyl-	17301-32-5	25.88	NGS	140 JNT	
S17T022270				3,3-Dimethylhexane	563-16-6	25.99	NGS	45 JNT	
S17T022270				Heptadecane, 2,6-dimethyl-	54105-67-8	26.13	NGS	58 JNT	
S17T022270				Unknown-1	-	26.26	NGS	240 JT	
S17T022270				Octane, 4-ethyl-	15869-86-0	26.62	NGS	52 JNT	
S17T022270				1-Octanol, 2-butyl-	3913-02-8	26.85	NGS	47 JNT	
S17T022270				Tetradecane, 1-iodo-	19218-94-1	27.64	NGS	57 JNT	
S17T022270				Acetic acid, trifluoro-, 3,7-d	28745-07-5	27.85	NGS	130 JNT	
S17T022270				2-Hexyl-1-octanol	19780-79-1	27.94	NGS	28 JNT	
S17T022270				1-Octene, 3,7-dimethyl-	4984-01-4	28.59	NGS	25 JNT	
S17T022270				5-Methyl-1-heptanol	7212-53-5	28.89	NGS	33 JNT	
S17T022270				Cyanamide	420-04-2	29.16	NGS	61 JNT	
S17T022270				Unknown-2	-	29.24	NGS	31 JT	
S17T022270				1,2-Benzisothiazole	272-16-2	29.31	NGS	54 JNT	
S17T022270			BLNK	Decanal	112-31-2	27.96	NGS	33 JNT	
S17T022270			BLNK	Diethyl Phthalate	84-66-2	29.81	NGS	45 JNT	

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U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-5

Customer Sample ID: 17-03269-2-TL1-EF-5

Sample#	R	AF	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022271				Methyl formate	107-31-3	5.37	NGS	100 JNT	
S17T022271				Cycloletrasiloxane, octamethyl	556-67-2	22.99	NGS	32 JNT	
S17T022271				Heptane, 5-ethyl-2,3-trimeth	62199-06-8	24.39	NGS	35 JNT	
S17T022271				D-Limonene	5989-27-5	24.79	NGS	97 JNT	
S17T022271				Undecane, 2,6-dimethyl-	17301-23-4	24.94	NGS	20 JNT	
S17T022271				Dodecane, 2,7,10-trimethyl-	74645-98-0	25.06	NGS	110 JNT	
S17T022271				Decane, 2,5,9-trimethyl-	62108-22-9	25.13	NGS	88 JNT	
S17T022271				2,2,7,7-Tetramethyloctane	1071-31-4	25.22	NGS	44 JNT	
S17T022271				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.32	NGS	72 JNT	
S17T022271				2,3,7-trimethyloctane	62016-34-6	25.36	NGS	120 JNT	
S17T022271				Decane, 2,6,8-trimethyl-	62108-26-3	25.44	NGS	160 JNT	
S17T022271				2,6-Dimethyldodecane	13150-81-7	25.58	NGS	73 JNT	
S17T022271				Octane, 3,4,5,6-tetramethyl-	62185-21-1	25.69	NGS	160 JNT	
S17T022271				Undecane, 4,7-dimethyl-	17301-32-5	25.74	NGS	260 JNT	
S17T022271				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	270 JNT	
S17T022271				3,3-Dimethylhexane	563-16-6	25.98	NGS	120 JNT	
S17T022271				Octane, 3,3-dimethyl-	4110-44-5	26.08	NGS	140 JNT	
S17T022271				Undecane, 3,5-dimethyl-	17312-81-1	26.12	NGS	200 JNT	
S17T022271				Octane, 5-ethyl-2-methyl-	62016-18-6	26.26	NGS	430 JNT	
S17T022271				Undecane, 4,6-dimethyl-	17312-82-2	26.35	NGS	90 JNT	
S17T022271				Unknown-1	-	26.43	NGS	25 JT	
S17T022271				Decane, 3,6-dimethyl-	17312-53-7	26.52	NGS	260 JNT	
S17T022271				Heptane, 3-ethyl-2-methyl-	14676-29-0	26.62	NGS	46 JNT	
S17T022271				2,4,4-Trimethyl-1-hexene	51174-12-0	26.72	NGS	31 JNT	
S17T022271				Octane, 4-ethyl-	15869-86-0	26.86	NGS	43 JNT	
S17T022271				Hydroxylamine, O-decyl-	29812-79-1	26.89	NGS	50 JNT	
S17T022271				2,3-Dimethyldodecane	17312-44-6	27.01	NGS	30 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-5

Customer Sample ID: 17-03269-2-TL1-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022271				5-Ethyldecane	17302-36-2	27.16	NGS	28 JNT	
S17T022271				Decane, 3-methyl-	13151-34-3	27.64	NGS	40 JNT	
S17T022271				Methanamine	100-97-0	29.15	NGS	28 JNT	
S17T022271				1,2-Benzisothiazole	272-16-2	29.31	NGS	29 JNT	
S17T022271			BLNK	Decanal	112-31-2	27.96	NGS	33 JNT	
S17T022271			BLNK	Diethyl Phthalate	84-66-2	29.81	NGS	45 JNT	

T - Tentatively Identified Compound  
J - Estimated

Q - Qualitative  
N - Named TIC

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-6

Customer Sample ID: 17-03269-2-TL1-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022272				Carbon dioxide	124-38-9	7.31	NGS	37 JNT	
S17T022272				Cyclotetrasiloxane, octamethyl	558-87-2	22.98	NGS	43 JNT	
S17T022272				Cyclotetrasiloxane, 4-ethenyl-1,4-dim	1743-61-9	24.77	NGS	110 JNT	
S17T022272				2,6-Dimethyldecane	13150-81-7	25.03	NGS	66 JNT	
S17T022272				Nonane, 3,7-dimethyl-	17302-32-8	25.13	NGS	36 JNT	
S17T022272				Dodecane, 2,6,10-trimethyl-	3891-98-3	25.30	NGS	31 JNT	
S17T022272				Decane, 2,6,6-trimethyl-	82108-24-1	25.36	NGS	40 JNT	
S17T022272				Undecane, 3,5-dimethyl-	17312-81-1	25.42	NGS	51 JNT	
S17T022272				Decane, 3,6-dimethyl-	17312-53-7	25.67	NGS	60 JNT	
S17T022272				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.73	NGS	110 JNT	
S17T022272				Dodecane, 2,7,10-trimethyl-	74645-98-0	25.81	NGS	52 JNT	
S17T022272				Undecane, 4,7-dimethyl-	17301-32-5	25.87	NGS	130 JNT	
S17T022272				Decane, 3,7-dimethyl-	17312-54-8	25.97	NGS	37 JNT	
S17T022272				Undecane, 4-methyl-	2980-69-0	26.05	NGS	57 JNT	
S17T022272				Undecane, 2,6-dimethyl-	17301-23-4	26.11	NGS	89 JNT	
S17T022272				Decane, 2,3,5,8-tetramethyl-	192823-15-7	26.23	NGS	220 JNT	
S17T022272				Heptadecane, 2,6,10,14-tetrame	18344-37-1	26.32	NGS	32 JNT	
S17T022272				Octane, 2,3,3-trimethyl-	62016-30-2	26.50	NGS	120 JNT	
S17T022272				Tridecane, 6-methyl-	13287-21-3	26.59	NGS	32 JNT	
S17T022272				2-Hexyl-1-octanol	19780-79-1	26.86	NGS	46 JNT	
S17T022272				Unknown-1	-	27.62	NGS	26 JT	
S17T022272				1-Octanol, 2-butyl-	3913-02-8	27.83	NGS	30 JNT	
S17T022272				4-Undecene, 10-methyl-, (E)-	74830-60-7	28.66	NGS	35 JNT	
S17T022272				Diethylphthalate	84-66-2	29.78	NGS	130 JNT	

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination

Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC

T - Tentatively Identified Compound  
J - Estimated



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-7

Customer Sample ID: 17-03269-2-TL1-EF-7

Sample#	R	AI	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S177022273				Methyl formate	107-31-3	5.37	NGS	48 JNT	
S177022273				Methane, dimethoxy-	109-87-5	7.90	NGS	26 JNT	
S177022273				1,3,5-Trioxane	110-88-3	15.22	NGS	26 JNT	
S177022273				alpha-Pinene	80568	22.72	NGS	30 JT	
S177022273				Unknown-1	-	22.84	NGS	34 JT	
S177022273				Cyclotetrasiloxane, octamethyl	556-87-2	22.99	NGS	200 JNT	
S177022273				Unknown-2	-	23.87	NGS	29 JT	
S177022273				Decane, 2,5,9-trimethyl-	62108-22-9	23.97	NGS	46 JNT	
S177022273				Undecane, 3,6-dimethyl-	17301-28-9	24.37	NGS	88 JNT	
S177022273				Decane, 3-methyl-	13151-34-3	24.44	NGS	33 JNT	
S177022273				Decane, 2,6,8-trimethyl-	62108-26-3	24.80	NGS	37 JNT	
S177022273				Tridecane	629-50-5	24.84	NGS	170 JNT	
S177022273				Unknown-3	-	24.94	NGS	30 JT	
S177022273				Unknown-4	-	24.97	NGS	26 JT	
S177022273				2,2,7,7-Tetramethyloctane	1071-31-4	25.07	NGS	48 JNT	
S177022273				Nonane, 3,7-dimethyl-	17302-32-8	25.13	NGS	170 JNT	
S177022273				Heptane, 5-ethyl-2,2,3-trimethyl	62199-06-8	25.22	NGS	71 JNT	
S177022273				2,3,7-trimethyloctane	62016-34-6	25.30	NGS	87 JNT	
S177022273				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.35	NGS	350 JNT	
S177022273				2,6-Dimethyldecane	13150-81-7	25.42	NGS	31 JNT	
S177022273				Hexyl octyl ether	17071-54-4	25.49	NGS	36 JNT	
S177022273				2-Hexyl-1-octanol	19780-79-1	25.57	NGS	90 JNT	
S177022273				Decane, 3,6-dimethyl-	17312-53-7	25.68	NGS	48 JNT	
S177022273				Decane, 2,6,7-trimethyl-	62108-25-2	25.72	NGS	160 JNT	
S177022273				Heptane, 3,3-dimethyl-	4032-86-4	25.89	NGS	92 JNT	
S177022273				1-Octanol, 2-butyl-	3913-02-8	25.97	NGS	45 JNT	
S177022273				Unknown-5	-	26.08	NGS	380 JT	

T - Tentatively Identified Compound  
J - Estimated  
Q - Qualitative  
N - Named TIC  
Y - Comment  
U - Less Than Detection Limit  
NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-7

Customer Sample ID: 17-03269-2-TL1-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022273				Unknown-6		26.24	NGS	700 JT	
S17T022273				Decane, 2,3,5,8-tetramethyl-	192823-15-7	26.38	NGS	39 JNT	
S17T022273				Octane, 3,4,5,6-tetramethyl-	62185-21-1	26.52	NGS	110 JNT	
S17T022273				Unknown-7		26.71	NGS	53 JT	
S17T022273				Tetracontane, 3,5,24-trimethyl	55162-61-3	26.76	NGS	33 JNT	
S17T022273				1-Decanol, 2-hexyl-	2425-77-6	26.87	NGS	34 JNT	
S17T022273				Unknown-8		27.04	NGS	27 JT	
S17T022273				3-Trifluoroacetoxy-6-ethyldeca	116435-59-0	27.17	NGS	55 JNT	
S17T022273				Methenamine	100-97-0	29.15	NGS	190 JNT	

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Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC

T - Tentatively Identified Compound  
J - Estimated



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-EF-8

Customer Sample ID: 17-03269-2-TL1-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022274				Methyl formate	107-31-3	5.38	NGS	100 JNT	
S17T022274				Cyclotetrasiloxane, octamethyl	556-87-2	22.99	NGS	54 JNT	
S17T022274				Decane, 2,4,6-trimethyl-	82108-27-4	23.73	NGS	15 JNT	
S17T022274				D-Limonene	5989-27-5	24.79	NGS	110 JNT	
S17T022274				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.04	NGS	82 JNT	
S17T022274				2,6-Dimethyldecane	13150-81-7	25.16	NGS	31 JNT	
S17T022274				Undecane	1120-21-4	25.75	NGS	29 JNT	
S17T022274				3,3-Dimethylhexane	563-16-6	25.87	NGS	74 JNT	
S17T022274				Decane, 3,7-dimethyl-	17312-54-8	25.99	NGS	27 JNT	
S17T022274				Silane, tetramethyl-	75-76-3	26.25	NGS	130 JNT	
S17T022274				Dodecane	112-40-3	27.63	NGS	27 JNT	
S17T022274				Methanamine	100-97-0	29.15	NGS	86 JNT	
S17T022274				Decane, 2,3,5,8-tetramethyl-	192823-15-7	29.23	NGS	26 JNT	
S17T022274				Diethylphthalate	84-86-2	29.80	NGS	180 JNT	

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Y - Comment  
U - Less Than Detection Limit

Q - Qualitative  
N - Named TIC

T - Tentatively Identified Compound  
J - Estimated



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-IN-1

Customer Sample ID: 17-03269-2-TL1-IN-1

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S177022275				Methyl formate	107-31-3	5.39	NGS	190 JNT	
S177022275				Carbon dioxide	124-38-9	7.31	NGS	25 JNT	
S177022275				2-Propanol, 2-methyl-	75-65-0	8.07	NGS	240 JNT	
S177022275				Methyl Acetate	79-20-9	8.42	NGS	52 JNT	
S177022275				Acetic acid	64-19-7	10.66	NGS	12 JNT	
S177022275				Tetrahydrofuran	109-99-9	13.03	NGS	8.7 JNT	
S177022275				2-Butanone, 3-methyl-	563-80-4	14.31	NGS	59 JNT	
S177022275				Ethylene Glycol	107-21-1	14.97	NGS	93 JNT	
S177022275				2-Pentanone	107-87-9	15.21	NGS	250 JNT	
S177022275				3-Pentanone	96-22-0	15.47	NGS	46 JNT	
S177022275				2-Butanone, 3,3-dimethyl-	75-97-8	16.04	NGS	130 JNT	
S177022275				Nitric acid, propyl ester	627-13-4	16.26	NGS	28 JNT	
S177022275				Propane, 2-methyl-2-nitro-	594-70-7	17.08	NGS	110 JNT	
S177022275				2-Pentanone, 4,4-dimethyl-	590-50-1	18.12	NGS	130 JNT	
S177022275				Cyclotrisiloxane, hexamethyl-	541-05-9	18.68	NGS	160 JNT	
S177022275				Nitric acid, butyl ester	928-45-0	19.12	NGS	7.6 JNT	
S177022275				Unknown-1	-	20.17	NGS	44 JT	
S177022275				3-Hexanone, 5-methyl-	623-56-3	20.84	NGS	52 JNT	
S177022275				Cyclotetrasiloxane, octamethyl	556-87-2	23.00	NGS	350 JNT	
S177022275				2-Hexyl-1-octanol	19780-79-1	23.87	NGS	33 JNT	
S177022275				1-Hexanol, 2-ethyl-	104-76-7	24.31	NGS	36 JNT	
S177022275				2,2,7,7-Tetramethyloctane	1071-31-4	24.39	NGS	70 JNT	
S177022275				D-Limonene	5989-27-5	24.79	NGS	220 JNT	
S177022275				Octane, 2,3,6,7-tetramethyl-	52670-34-5	24.99	NGS	26 JNT	
S177022275				Octane, 2,3,3-trimethyl-	62016-30-2	25.04	NGS	350 JNT	
S177022275				2,6-Dimethyldecane	13150-81-7	25.16	NGS	150 JNT	
S177022275				Decane, 2,5,9-trimethyl-	62108-22-9	25.24	NGS	75 JNT	

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N - Named TIC

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-IN-1

Customer Sample ID: 17-03269-2-TL1-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S177022275				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.32	NGS	57 JNT	
S177022275				Decane, 2,6,8-trimethyl-	62108-26-3	25.38	NGS	53 JNT	
S177022275				Decane, 2,6,8-trimethyl-	62108-24-1	25.45	NGS	70 JNT	
S177022275				1-Nonene, 4,6,8-trimethyl-	54410-98-9	25.51	NGS	48 JNT	
S177022275				Decane, 2,3,4-trimethyl-	62238-15-7	25.59	NGS	64 JNT	
S177022275				Octane, 3,4,5,6-tetramethyl-	62185-21-1	25.70	NGS	79 JNT	
S177022275				Dodecane, 2,7,10-trimethyl-	74645-98-0	25.75	NGS	230 JNT	
S177022275				3,3-Dimethylhexane	563-16-6	25.83	NGS	96 JNT	
S177022275				Undecane, 4,7-dimethyl-	17301-32-5	25.89	NGS	380 JNT	
S177022275				Decane, 3,7-dimethyl-	17312-54-8	25.99	NGS	140 JNT	
S177022275				Undecane, 4-methyl-	2980-69-0	26.08	NGS	77 JNT	
S177022275				Dodecane	112-40-3	26.14	NGS	170 JNT	
S177022275				Unknown-2	-	26.26	NGS	450 JT	
S177022275				Undecane, 2,6-dimethyl-	17301-23-4	26.36	NGS	47 JNT	
S177022275				Decane, 2,4-dimethyl-	2801-84-5	26.52	NGS	140 JNT	
S177022275				Tetracontane, 3,5,24-trimethyl	55162-61-3	26.62	NGS	30 JNT	
S177022275				Hydroxylamine, O-decyl-	29812-79-1	26.86	NGS	27 JNT	
S177022275				Oxirane, decyl-	2855-19-8	26.89	NGS	34 JNT	
S177022275				2,3-Dimethyldecane	17312-44-6	26.92	NGS	26 JNT	
S177022275				Unknown-3	-	27.01	NGS	25 JT	
S177022275				Undecane, 3-methyl-	1002-43-3	27.15	NGS	32 JNT	
S177022275				Tetradecane, 1-iodo-	19218-94-1	27.63	NGS	64 JNT	
S177022275				Methanamine	100-97-0	29.15	NGS	63 JNT	
S177022275				1-iodo-2-methylundecane	73105-67-6	29.24	NGS	51 JNT	

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Q - Qualitative  
N - Named TIC

T - Tentatively Identified Compound  
J - Estimated



**2017 Cartridge Evaluation**  
**Data Summary of All Results**

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03269-2-TL1-IN-8

Customer Sample ID: 17-03269-2-TL1-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022276				Methyl formate	107-31-3	5.38	NGS	140 JNT	
S17T022276				Carbon dioxide	124-38-9	7.31	NGS	56 JNT	
S17T022276				2-Propanol, 2-methyl-	75-65-0	8.10	NGS	280 JNT	
S17T022276				Methyl Acetate	79-20-9	8.43	NGS	28 JNT	
S17T022276				Acetic acid	64-19-7	11.14	NGS	15 JNT	
S17T022276				Nitric acid, ethyl ester	825-58-1	12.93	NGS	25 JNT	
S17T022276				Tetrahydrofuran	109-99-9	13.03	NGS	11 JNT	
S17T022276				2-Butanone, 3-methyl-	563-80-4	14.31	NGS	53 JNT	
S17T022276				2-Pentanone	107-87-9	15.21	NGS	160 JNT	
S17T022276				3-Pentanone	96-22-0	15.47	NGS	29 JNT	
S17T022276				2-Butanone, 3,3-dimethyl-	75-97-8	16.04	NGS	130 JNT	
S17T022276				Nitric acid, propyl ester	627-13-4	16.26	NGS	17 JNT	
S17T022276				Neopentane	463-82-1	17.08	NGS	120 JNT	
S17T022276				2-Pentanone, 4,4-dimethyl-	590-50-1	18.12	NGS	230 JNT	
S17T022276				Butanamide, 3,3-dimethyl-	926-04-5	20.18	NGS	95 JNT	
S17T022276				Cycloletrasiloxane, octamethyl	556-67-2	22.99	NGS	250 JNT	
S17T022276				Unknown-1	-	23.90	NGS	69 JT	
S17T022276				Unknown-2	-	24.79	NGS	31 JT	
S17T022276				2,2,4,4,5,5,7,7-Octamethylocta	5171-85-7	25.09	NGS	72 JNT	
S17T022276				Tetraoctane, 3,5,24-trimethyl	55162-61-3	25.69	NGS	31 JNT	
S17T022276				Heptane, 5-ethyl-2,2,3-trimeth	62199-06-8	25.81	NGS	36 JNT	
S17T022276				Decane, 4-methyl-	2847-72-5	26.08	NGS	43 JNT	
S17T022276				Unknown-3	-	26.25	NGS	520 JT	
S17T022276				Unknown-4	-	26.38	NGS	29 JT	
S17T022276				1-Cyclohexynonene	114614-84-5	27.96	NGS	38 JNT	
S17T022276				Methanamine	100-97-0	29.18	NGS	100 JNT	
S17T022276				Unknown-5	-	29.39	NGS	30 JT	

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T - Tentatively Identified Compound  
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**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172162**

**SDG Number:**

**Customer Sample ID: 17-03269-2-TL 1-IN-8**

**Customer Sample ID: 17-03269-2-TL 1-IN-8**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022276				Diethylphthalate	84-66-2	29.82	NGS	36 JNT	

T - Tentatively Identified Compound  
J - Estimated

Q - Qualitative  
N - Named TIC

Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-1  
Customer Sample ID: 17-03273-2-TL2-EF-1

Sample#	R	As#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022277				Methyl formate	107-31-3	5.38	NGS	46 JNT	
S17T022277				Unknown-1	-	9.43	NGS	32 JT	
S17T022277				Unknown-2	-	12.54	NGS	5.8 JT	
S17T022277				Cyclotrisiloxane, hexamethyl-	541-05-9	18.68	NGS	64 JNT	
S17T022277				Cyclotetrasiloxane, octamethyl	556-67-2	22.99	NGS	280 JNT	
S17T022277				2,2,7,7-Tetramethyloctane	1071-31-4	24.39	NGS	80 JNT	
S17T022277				Cyclohexane, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	190 JNT	
S17T022277				Nonane, 3-methyl-5-propyl-	31081-18-2	24.83	NGS	73 JNT	
S17T022277				Undecane, 4,7-dimethyl-	17301-32-5	25.04	NGS	350 JNT	
S17T022277				Octane, 2,3,3-trimethyl-	62016-30-2	25.16	NGS	130 JNT	
S17T022277				Decane, 2,5,9-trimethyl-	62108-22-9	25.23	NGS	73 JNT	
S17T022277				1-Nonene, 4,6,8-trimethyl-	54410-98-9	25.51	NGS	32 JNT	
S17T022277				Unknown-3	-	25.58	NGS	66 JT	
S17T022277				2,6-Dimethyldecane	13150-81-7	25.69	NGS	33 JNT	
S17T022277				Tridecane	629-50-5	25.75	NGS	130 JNT	
S17T022277				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.83	NGS	73 JNT	
S17T022277				Decane, 2,4,6-trimethyl-	62108-27-4	25.88	NGS	320 JNT	
S17T022277				Decane, 3,7-dimethyl-	17312-54-8	25.99	NGS	120 JNT	
S17T022277				6-Ethyl-2-methyl-octane	62016-19-7	26.07	NGS	36 JNT	
S17T022277				Dodecane, 2,6,10-trimethyl-	3891-98-3	26.12	NGS	95 JNT	
S17T022277				Unknown-4	-	26.25	NGS	350 JT	
S17T022277				Decane, 2,4-dimethyl-	2801-84-5	26.50	NGS	85 JNT	
S17T022277				Undecane, 2,6-dimethyl-	17301-23-4	26.82	NGS	15 JNT	
S17T022277				1,14-Tetradecanediol	19812-64-7	26.87	NGS	50 JNT	
S17T022277				Heptadecane, 2,6-dimethyl-	54105-67-8	27.24	NGS	26 JNT	
S17T022277				Hydroxylamine, O-decyl-	29812-79-1	27.83	NGS	49 JNT	
S17T022277				Unknown-5	-	29.24	NGS	39 JT	

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T - Tentatively Identified Compound  
J - Estimated



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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-1

Customer Sample ID: 17-03273-2-TL2-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022277				Diethylphthalate	84-66-2	29.81	NGS	77 JNT	

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NA = Not Analyzed, ND = Not Detected  
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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-2

Customer Sample ID: 17-03273-2-TL2-EF-2

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022278				Formamide	75-12-7	7.01	NGS	38 JNT	
S17T022278				Cyclotrisiloxane, hexamethyl-	541-05-9	18.89	NGS	48 JNT	
S17T022278				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	370 JNT	
S17T022278				2,5,6-Trimethyldecane	62108-23-0	23.74	NGS	30 JNT	
S17T022278				2,2-Dimethyldecane	17302-37-3	24.40	NGS	53 JNT	
S17T022278				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	290 JNT	
S17T022278				Nonane, 3,7-dimethyl-	17302-32-8	24.84	NGS	51 JNT	
S17T022278				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.00	NGS	28 JNT	
S17T022278				3,3-Dimethylhexane	563-16-6	25.05	NGS	510 JNT	
S17T022278				Undecane, 4,7-dimethyl-	17301-32-5	25.17	NGS	190 JNT	
S17T022278				Decane, 2,5,9-trimethyl-	62108-22-9	25.24	NGS	94 JNT	
S17T022278				Undecane, 2,6-dimethyl-	17301-23-4	25.31	NGS	25 JNT	
S17T022278				1-Decene, 8-methyl-	61142-79-8	25.51	NGS	64 JNT	
S17T022278				Unknown-1	-	25.60	NGS	67 JT	
S17T022278				Undecane	1120-21-4	25.75	NGS	190 JNT	
S17T022278				Unknown-2	-	25.83	NGS	82 JT	
S17T022278				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	460 JNT	
S17T022278				Decane, 2,4,6-trimethyl-	62108-27-4	25.99	NGS	230 JNT	
S17T022278				Undecane, 4-methyl-	2980-69-0	26.13	NGS	120 JNT	
S17T022278				Benzeneethanamine, N-(pentyl)	55429-85-1	26.26	NGS	460 JNT	
S17T022278				Dodecane, 2,7,10-trimethyl-	74645-98-0	26.36	NGS	31 JNT	
S17T022278				2-Hexyl-1-octanol	19780-79-1	26.50	NGS	39 JNT	
S17T022278				Octane, 4-ethyl-	15869-86-0	26.84	NGS	71 JNT	
S17T022278				2,3-Dimethyldecane	17312-44-6	26.92	NGS	37 JNT	
S17T022278				Undecane, 2-methyl-	7045-71-8	27.01	NGS	37 JNT	
S17T022278				5-Ethyldecane	17302-36-2	27.15	NGS	42 JNT	
S17T022278				Tetraoctane, 3,5,24-trimethyl	55162-81-3	27.25	NGS	37 JNT	

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**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172162**

**SDG Number:**

**Customer Sample ID: 17-03273-2-TL2-EF-2**

**Customer Sample ID: 17-03273-2-TL2-EF-2**

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022278				Tridecane	629-50-5	27.64	NGS	140 JNT	
S17T022278				1-Octanol, 2-butyl-	3913-02-8	27.94	NGS	34 JNT	
S17T022278				Unknown-3	-	29.24	NGS	130 JT	
S17T022278				Hexadecane, 2,6,10,14-tetramet	638-36-8	29.40	NGS	61 JNT	
S17T022278				1-Iodo-2-methylundecane	73105-67-6	29.51	NGS	25 JNT	

T - Tentatively Identified Compound  
J - Estimated

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N - Named TIC

Y - Comment  
U - Less Than Detection Limit

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-3

Customer Sample ID: 17-03273-2-TL2-EF-3

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022279				Methyl formate	107-31-3	5.37	NGS	150 JNT	
S17T022279				Unknown-1	-	9.35	NGS	30 JT	
S17T022279				Cyclotetrasiloxane, octamethyl	556-87-2	22.99	NGS	46 JNT	
S17T022279				2,5,6-Trimethyldecane	62108-23-0	24.39	NGS	29 JNT	
S17T022279				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	190 JNT	
S17T022279				Decane, 2,4,6-trimethyl-	62108-27-4	25.04	NGS	170 JNT	
S17T022279				Undecane, 4,7-dimethyl-	17301-32-5	25.16	NGS	71 JNT	
S17T022279				Dodecane, 2,6,11-trimethyl-	31295-56-4	25.33	NGS	26 JNT	
S17T022279				Undecane, 3,5-dimethyl-	17312-81-1	25.38	NGS	26 JNT	
S17T022279				Decane, 2,6,8-trimethyl-	62108-26-3	25.45	NGS	31 JNT	
S17T022279				Octane, 3,4,5,6-tetramethyl-	62185-21-1	25.69	NGS	49 JNT	
S17T022279				Undecane	1120-21-4	25.75	NGS	130 JNT	
S17T022279				2,3-Dimethyldecane	17312-44-6	25.83	NGS	61 JNT	
S17T022279				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	220 JNT	
S17T022279				2,6-Dimethyldecane	13150-81-7	25.99	NGS	82 JNT	
S17T022279				Undecane, 4-methyl-	2980-69-0	26.08	NGS	39 JNT	
S17T022279				Dodecane, 2,7,10-trimethyl-	74645-98-0	26.12	NGS	92 JNT	
S17T022279				Unknown-2	-	26.26	NGS	310 JT	
S17T022279				Decane, 2,3,5,8-tetramethyl-	192823-15-7	26.36	NGS	34 JNT	
S17T022279				Octane, 2,3,3-trimethyl-	62016-30-2	26.51	NGS	68 JNT	
S17T022279				Heptadecane, 2,6-dimethyl-	54105-67-8	26.84	NGS	61 JNT	
S17T022279				Tetraoctane, 3,5,24-trimethyl	55162-81-3	27.15	NGS	28 JNT	
S17T022279				Tetradecane, 1-iodo-	19218-94-1	27.63	NGS	66 JNT	
S17T022279				2-Dodecene, (E)-	7206-13-5	27.84	NGS	69 JNT	
S17T022279				2-Propenoic acid, octyl ester	2499-59-4	28.67	NGS	100 JNT	
S17T022279				Methanamine	100-97-0	29.15	NGS	50 JNT	
S17T022279				Unknown-3	-	29.24	NGS	59 JT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-3

Customer Sample ID: 17-03273-2-TL2-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022279				1,2-Benzisothiazole	272-16-2	29.31	NGS	49 JNT	
S17T022279				1-Iodo-2-methylundecane	73105-67-6	29.40	NGS	41 JNT	

T - Tentatively Identified Compound  
J - Estimated

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-EF-4  
Customer Sample ID: 17-03273-2-TL2-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022280				Methyl formate	107-31-3	5.37	NGS	28	JNT
S17T022280				Unknown-1	-	8.31	NGS	28	JT
S17T022280				Acetic acid	64-19-7	13.06	NGS	5.2	JNT
S17T022280				Formamide	75-12-7	16.08	NGS	54	JNT
S17T022280				Cyclohexane, 1-methyl-5-(1-met	556-67-2	23.00	NGS	50	JNT
S17T022280				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	160	JNT
S17T022280				Undecane, 4,7-dimethyl-	17301-32-5	25.04	NGS	130	JNT
S17T022280				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.17	NGS	48	JNT
S17T022280				Undecane	1120-21-4	25.75	NGS	46	JNT
S17T022280				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	130	JNT
S17T022280				Decane, 2,4,6-trimethyl-	62108-27-4	25.99	NGS	56	JNT
S17T022280				Tetradecane, 1-iodo-	19218-94-1	26.12	NGS	26	JNT
S17T022280				Benzoic acid, 2-[(trimethylsil	3789-85-3	26.26	NGS	220	JNT
S17T022280				2-Methyl-1-undecanol	10522-26-6	26.84	NGS	31	JNT
S17T022280				Acetic acid, trifluoro-, 3,7-d	28745-07-5	27.10	NGS	31	JNT
S17T022280				Heptadecane, 2,6-dimethyl-	54105-67-8	27.64	NGS	58	JNT
S17T022280				1-Hexene, 3,5-dimethyl-	7423-69-0	27.85	NGS	160	JNT
S17T022280				2-Hexyl-1-octanol	19780-79-1	27.93	NGS	36	JNT
S17T022280				4-Undecene, 10-methyl-, (E)-	74630-60-7	28.41	NGS	27	JNT
S17T022280				Unknown-2	-	28.67	NGS	160	JT
S17T022280				2-Propenoic acid, octyl ester	2499-59-4	28.88	NGS	34	JNT
S17T022280				1-Iodo-2-methylundecane	73105-67-6	29.24	NGS	57	JNT
S17T022280				1,2-Benzisothiazole	272-16-2	29.30	NGS	88	JNT
S17T022280				Decane, 2,3,5,8-tetramethyl-	192823-15-7	29.40	NGS	39	JNT

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-5

Customer Sample ID: 17-03273-2-TL2-EF-5

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S177022281				Methyl formate	107-31-3	5.39	NGS	53 JNT	
S177022281				Unknown-1	-	8.35	NGS	31 JT	
S177022281				Acetic acid	64-19-7	13.25	NGS	6.4 JNT	
S177022281				Formamide	75-12-7	16.17	NGS	66 JNT	
S177022281				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	57 JNT	
S177022281				Tridecane	329-50-5	23.74	NGS	25 JNT	
S177022281				Cyclohexane, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	180 JNT	
S177022281				Undecane, 4,7-dimethyl-	17301-32-5	25.05	NGS	160 JNT	
S177022281				Decane, 2,4,6-trimethyl-	62108-27-4	25.17	NGS	60 JNT	
S177022281				Tridecane, 6-methyl-	13287-21-3	25.23	NGS	11 JNT	
S177022281				Undecane	1120-21-4	25.75	NGS	49 JNT	
S177022281				Decane, 3,7-dimethyl-	17312-54-8	25.87	NGS	160 JNT	
S177022281				2,6-Dimethyldecane	13150-81-7	25.99	NGS	76 JNT	
S177022281				Hydroxylamine, O-decyl-	29812-79-1	26.12	NGS	35 JNT	
S177022281				Benzoic acid, 2-[(trimethylsil	3789-85-3	26.25	NGS	210 JNT	
S177022281				1-Pentadecane, 2-methyl-	29833-69-0	26.83	NGS	32 JNT	
S177022281				Undecane, 2,3-dimethyl-	17312-77-5	27.15	NGS	28 JNT	
S177022281				Unknown-2	-	27.24	NGS	28 JT	
S177022281				Tetradecane, 1-iodo-	19218-84-1	27.64	NGS	71 JNT	
S177022281				Acetic acid, trifluoro-, 3,7-d	28745-07-5	27.85	NGS	41 JNT	
S177022281				Tetracontane, 3,5,24-trimethyl	55162-61-3	27.95	NGS	29 JNT	
S177022281				4-Undecene, 4-methyl-	61142-40-3	28.67	NGS	52 JNT	
S177022281				Dodecane, 2,6,10-trimethyl-	3891-98-3	29.09	NGS	20 JNT	
S177022281				Decane, 2,3,5,8-tetramethyl-	192823-15-7	29.24	NGS	63 JNT	
S177022281				1,2-Benzisothiazole	272-16-2	29.30	NGS	68 JNT	
S177022281				Heptadecane, 2,6-dimethyl-	54105-67-8	29.40	NGS	33 JNT	
S177022281				Diethylphthalate	84-66-2	29.81	NGS	93 JNT	

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**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172162**

**SDG Number:**

**Customer Sample ID: 17-03273-2-TL2-EF-5**

NA = Not Analyzed, ND = Not Detected  
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J - Estimated



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-6

Customer Sample ID: 17-03273-2-TL2-EF-6

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022282				Methyl formate	107-31-3	5.38	NGS	40 JNT	
S17T022282				DL-2,3-Butanediol	6982-25-8	7.06	NGS	44 JNT	
S17T022282				Acetic acid, hydrazide	1068-57-1	8.46	NGS	56 JNT	
S17T022282				Acetic acid	64-19-7	13.76	NGS	7.6 JNT	
S17T022282				Formamide	75-12-7	16.41	NGS	60 JNT	
S17T022282				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	52 JNT	
S17T022282				Cyclohexene, 1-methyl-5-(1-met	1461-27-4	24.79	NGS	140 JNT	
S17T022282				3,3-Dimethylhexane	563-16-6	25.05	NGS	93 JNT	
S17T022282				Decane, 3,7-dimethyl-	17312-54-8	25.17	NGS	35 JNT	
S17T022282				Tridecane	629-50-5	25.75	NGS	27 JNT	
S17T022282				Undecane, 4,7-dimethyl-	17301-32-5	25.88	NGS	84 JNT	
S17T022282				Decane, 2,4,6-trimethyl-	62108-27-4	25.99	NGS	37 JNT	
S17T022282				Benzeneethanamine, N1(pentafl	55428-85-1	26.26	NGS	190 JNT	
S17T022282				Decane, 2,6,6-trimethyl-	62108-24-1	27.26	NGS	25 JNT	
S17T022282				Hydroxylamine, O-decyl-	29812-79-1	27.64	NGS	46 JNT	
S17T022282				1-Octanol, 2-butyl-	3913-02-8	27.85	NGS	55 JNT	
S17T022282				2-Propenolc acid, octyl ester	2499-59-4	28.68	NGS	62 JNT	
S17T022282				1-Iodo-2-methylundecane	73105-67-6	29.24	NGS	46 JNT	
S17T022282				1,2-Benzisothiazole	272-16-2	29.31	NGS	34 JNT	
S17T022282				Heptadecane, 2,6-dimethyl-	54105-67-8	29.40	NGS	31 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-7

Customer Sample ID: 17-03273-2-TL2-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flag
VAPOR-TDU VOA #2									
S17T022283				Methyl formate	107-31-3	5.37	NGS	45 JNT	
S17T022283				Acetic acid, hydrazide	1088-57-1	8.46	NGS	31 JNT	
S17T022283				Acetic acid	64-19-7	13.73	NGS	8.4 JNT	
S17T022283				Formamide	75-12-7	16.39	NGS	49 JNT	
S17T022283				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	26 JNT	
S17T022283				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	95 JNT	
S17T022283				3,3-Dimethylhexane	563-16-6	25.04	NGS	53 JNT	
S17T022283				Undecane	1120-21-4	25.75	NGS	18 JNT	
S17T022283				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	52 JNT	
S17T022283				Undecane, 4,7-dimethyl-	17301-32-5	25.99	NGS	25 JNT	
S17T022283				Benzic acid, 2-[(trimethylsil	3789-85-3	26.25	NGS	120 JNT	
S17T022283				Dodecane, 2,7,10-trimethyl-	74645-98-0	27.63	NGS	38 JNT	
S17T022283				Acetic acid, trifluoro-, 3,7-d	28745-07-5	27.84	NGS	55 JNT	
S17T022283				2-Propenoic acid, octyl ester	2499-59-4	28.67	NGS	69 JNT	
S17T022283				Dodecane, 2,6,10-trimethyl-	3891-98-3	29.08	NGS	21 JNT	
S17T022283				Decane, 2,3,5,8-tetramethyl-	192823-15-7	29.24	NGS	28 JNT	
S17T022283				Heptadecane, 2,6-dimethyl-	54105-67-8	29.39	NGS	26 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-EF-8

Customer Sample ID: 17-03273-2-TL2-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022284				Methyl formate	107-31-3	5.38	NGS	45 JNT	
S17T022284				Unknown-1	-	8.46	NGS	35 JT	
S17T022284				Acetic acid	64-19-7	13.69	NGS	7.6 JNT	
S17T022284				Formamide	75-12-7	16.38	NGS	62 JNT	
S17T022284				Cyclotetrasiloxane, octamethyl	556-67-2	23.00	NGS	43 JNT	
S17T022284				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	140 JNT	
S17T022284				Decane, 2,4-dimethyl-	2801-84-5	25.05	NGS	110 JNT	
S17T022284				2,6-Dimethyldecane	13150-81-7	25.17	NGS	42 JNT	
S17T022284				Undecane	1120-21-4	25.75	NGS	54 JNT	
S17T022284				Decane, 3,7-dimethyl-	17312-54-8	25.88	NGS	110 JNT	
S17T022284				Decane, 2,4,6-trimethyl-	62108-27-4	25.99	NGS	46 JNT	
S17T022284				Dodecane	112-40-3	26.12	NGS	29 JNT	
S17T022284				Benzaldehyde, 2,5-bis[(trimeth	58114-69-3	26.26	NGS	140 JNT	
S17T022284				Tetradecane, 1-iodo-	19218-94-1	27.64	NGS	57 JNT	
S17T022284				Dodecane, 2,6,10-trimethyl-	3891-98-3	28.99	NGS	12 JNT	
S17T022284				Dodecane, 2,7,10-trimethyl-	74645-98-0	29.24	NGS	34 JNT	
S17T022284				1-iodo-2-methylundecane	73105-67-6	29.40	NGS	27 JNT	

T - Tentatively Identified Compound  
J - Estimated

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Y - Comment  
U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected  
a - LCS Outside Range  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-1

Customer Sample ID: 17-03273-2-TL2-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022285				Methyl formate	107-31-3	5.39	NGS		35 JNT
S17T022285				2-Propanol, 2-methyl-	75-65-0	8.13	NGS		180 JNT
S17T022285				Methyl Acetate	79-20-9	8.46	NGS		28 JNT
S17T022285				Dimethylamine	124-40-3	12.78	NGS		8.7 JNT
S17T022285				Tetrahydrofuran	109-99-9	13.06	NGS		8.8 JNT
S17T022285				Acetic acid	64-19-7	14.22	NGS		26 JNT
S17T022285				2-Butanone, 3-methyl-	563-80-4	14.34	NGS		49 JNT
S17T022285				2-Pentanone	107-87-9	15.24	NGS		180 JNT
S17T022285				Cyclopentanol	96-41-3	15.49	NGS		42 JNT
S17T022285				2-Butanone, 3,3-dimethyl-	75-97-8	16.06	NGS		100 JNT
S17T022285				Ethylene Glycol	107-21-1	16.53	NGS		86 JNT
S17T022285				Formamide	75-12-7	16.63	NGS		92 JNT
S17T022285				Propane, 2-methyl-1-nitro-	625-74-1	17.10	NGS		79 JNT
S17T022285				2-Pentanone, 4,4-dimethyl-	590-50-1	18.13	NGS		140 JNT
S17T022285				Cyclotrisiloxane, hexamethyl-	541-05-9	18.69	NGS		74 JNT
S17T022285				2-Hexene, 5,5-dimethyl-, (Z)-	39761-61-0	20.20	NGS		40 JNT
S17T022285				3-Hexanone, 5-methyl-	623-56-3	20.86	NGS		77 JNT
S17T022285				Cyclotetrasiloxane, octamethyl	556-87-2	23.00	NGS		480 JNT
S17T022285				Undecane, 4,6-dimethyl-	17312-82-2	23.74	NGS		26 JNT
S17T022285				1-Undecane, 4-methyl-	74630-39-0	23.88	NGS		37 JNT
S17T022285				1-Hexanol, 2-ethyl-	104-76-7	24.32	NGS		32 JNT
S17T022285				2,2-Dimethyldecane	17302-37-3	24.40	NGS		59 JNT
S17T022285				D-Limonene	5989-27-5	24.79	NGS		250 JNT
S17T022285				Nonane, 3-methyl-5-propyl-	31081-18-2	24.84	NGS		55 JNT
S17T022285				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.00	NGS		34 JNT
S17T022285				6-Ethyl-2-methyl-octane	62016-19-7	25.05	NGS		560 JNT
S17T022285				Decane, 3,7-dimethyl-	17312-54-8	25.17	NGS		190 JNT

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-1

Customer Sample ID: 17-03273-2-TL2-IN-1

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022285				2,2,6-Trimethylcyclohexane	62016-28-8	25.24	NGS	100	JNT
S17T022285				2,6-Dimethyl-6-trifluoroacetox	61986-67-2	25.51	NGS	72	JNT
S17T022285				1-Octanol, 2-butyl-	3913-02-8	25.60	NGS	68	JNT
S17T022285				Undecane	1120-21-4	25.75	NGS	130	JNT
S17T022285				Decane, 2,4,6-trimethyl-	62108-27-4	25.84	NGS	81	JNT
S17T022285				Dodecane, 4,6-dimethyl	61141-72-8	25.89	NGS	420	JNT
S17T022285				Undecane, 4,7-dimethyl-	17301-32-5	26.00	NGS	210	JNT
S17T022285				Undecane, 4-methyl-	2980-69-0	26.13	NGS	94	JNT
S17T022285				Unknown-1	-	26.26	NGS	410	JT
S17T022285				Dodecane, 2,6,10-trimethyl-	3891-98-3	26.37	NGS	22	JNT
S17T022285				2-Hexyl-1-octanol	19780-79-1	26.86	NGS	62	JNT
S17T022285				2,3-Dimethyldecane	17312-44-6	26.93	NGS	25	JNT
S17T022285				Tetradecane, 1-iodo-	19218-94-1	27.01	NGS	31	JNT
S17T022285				5-Ethyldecane	17302-36-2	27.16	NGS	38	JNT
S17T022285				trans-2-Undecen-1-ol	75039-84-8	27.25	NGS	30	JNT
S17T022285				Dodecane	112-40-3	27.64	NGS	110	JNT
S17T022285				cis-9,10-Epoxyoctadecan-1-ol	13980-12-6	27.83	NGS	23	JNT
S17T022285				Undecane, 2,6-dimethyl-	17301-23-4	27.94	NGS	28	JNT
S17T022285				Unknown-2	-	29.25	NGS	94	JT
S17T022285				1-iodo-2-methylundecane	73105-67-6	29.41	NGS	34	JNT

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-8

Customer Sample ID: 17-03273-2-TL2-IN-8

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022286				Methyl formate	107-31-3	5.39	NGS	60 JNT	
S17T022286				1-Propene, 2-methyl-	115-11-7	8.14	NGS	270 JNT	
S17T022286				Unknown-1	-	8.45	NGS	78 JT	
S17T022286				Tetrahydrofuran	109-99-9	13.06	NGS	9.0 JNT	
S17T022286				Acetic acid	64-19-7	13.63	NGS	14 JNT	
S17T022286				2-Butanone, 3-methyl-	563-80-4	14.34	NGS	56 JNT	
S17T022286				2-Pentanone	107-87-9	15.23	NGS	240 JNT	
S17T022286				3-Pentanone	96-22-0	15.48	NGS	53 JNT	
S17T022286				2-Butanone, 3,3-dimethyl-	75-97-8	16.05	NGS	140 JNT	
S17T022286				Unknown-2	-	16.27	NGS	36 JT	
S17T022286				Formamide	75-12-7	16.35	NGS	110 JNT	
S17T022286				Propane, 2-methyl-1-nitro-	625-74-1	17.09	NGS	100 JNT	
S17T022286				2-Pentanone, 4,4-dimethyl-	590-50-1	18.13	NGS	180 JNT	
S17T022286				2-Hexene, 5,5-dimethyl-, (Z)-	39761-61-0	20.19	NGS	71 JNT	
S17T022286				3-Hexanone, 5-methyl-	623-56-3	20.85	NGS	100 JNT	
S17T022286				Cyclotrisiloxane, octamethyl	556-67-2	23.00	NGS	42 JNT	
S17T022286				2-Methyl-1-undecanol	10522-26-6	23.89	NGS	30 JNT	
S17T022286				Cyclohexene, 1-methyl-4-(1-met	7705-14-8	24.79	NGS	110 JNT	
S17T022286				3,3-Dimethylhexane	563-16-6	25.04	NGS	77 JNT	
S17T022286				Dodecane, 2,6,10-trimethyl-	3891-98-3	25.08	NGS	17 JNT	
S17T022286				Octane, 2,3,6,7-tetramethyl-	52670-34-5	25.16	NGS	26 JNT	
S17T022286				Undecane	1120-21-4	25.75	NGS	26 JNT	
S17T022286				2,6-Dimethyldecane	13150-81-7	25.87	NGS	81 JNT	
S17T022286				Decane, 2,4,6-trimethyl-	62108-27-4	25.99	NGS	37 JNT	
S17T022286				Benzoic acid, 2-[(trimethylsil	3789-85-3	26.25	NGS	140 JNT	
S17T022286				Undecane, 3-methyl-	1002-43-3	27.14	NGS	10 JNT	
S17T022286				Undecane, 2,6-dimethyl-	17301-23-4	27.63	NGS	43 JNT	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172162

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-8

Customer Sample ID: 17-03273-2-TL2-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T022286				Decane, 2,3,5,8-tetramethyl-	192823-15-7	29.24	NGS	40 JNT	
S17T022286				Unknown-3	--	29.39	NGS	27 JT	
S17T022286				Diethylphthalate	84-66-2	29.80	NGS	18 JNT	

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

*[Signature]*  
9-6-2017

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BA-EF  
Customer Sample ID: 17-04564-2-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023853			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023853			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177023853			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023853			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023853			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023853			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023853			108-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023853			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S177023853			71-36-3	1-Butanol	NGS	96	<2.7	55	n/a	n/a	n/a	n/a	2.7	n/a	U
S177023853			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S177023853			71-23-8	1-Propanol	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S177023853			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023853			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S177023853			78-93-3	2-Butanone	NGS	110	<2.3	4.8	n/a	n/a	n/a	n/a	2.3	n/a	J
S177023853			110-43-0	2-Heptanone	NGS	100	<1.5	2.1	n/a	n/a	n/a	n/a	1.5	n/a	J
S177023853			591-78-6	2-Hexanone	NGS	110	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S177023853			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023853			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177023853			106-35-4	3-Heptanone	NGS	98	<1.4	2.2	n/a	n/a	n/a	n/a	1.4	n/a	J
S177023853			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S177023853			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023853			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	2.7	n/a	n/a	n/a	n/a	2.5	n/a	J
S177023853			67-64-1	Acetone	NGS	110	<3.8	93	n/a	n/a	n/a	n/a	3.8	n/a	U
S177023853			75-05-8	Acetonitrile	NGS	100	<2.9	71	n/a	n/a	n/a	n/a	2.9	n/a	U
S177023853			98-86-2	Acetophenone	NGS	97	<2.0	17	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023853			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S177023853			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023853			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BA-EF  
Customer Sample ID: 17-04564-2-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023853			71-43-2	Benzene	NGS	110	<1.5	5.0	n/a	n/a	n/a	n/a	1.5	n/a	J
S177023853			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023853			123-72-8	Butanal	NGS	100	<3.6	5.3	n/a	n/a	n/a	n/a	3.6	n/a	J
S177023853			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023853			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023853			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023853			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023853			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023853			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S177023853			124-18-5	Decane	NGS	110	<0.82	58	n/a	n/a	n/a	n/a	0.82	n/a	
S177023853			64-17-5	Ethanol	NGS	99	<4.6	32	n/a	n/a	n/a	n/a	4.6	n/a	
S177023853			141-78-6	Ethyl acetate	NGS	100	<1.6	2.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S177023853			100-41-4	Ethylbenzene	NGS	98	<1.7	2.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023853			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023853			110-54-3	Hexane	NGS	130	<2.1	3.4	n/a	n/a	n/a	n/a	2.1	n/a	J
S177023853			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023853			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S177023853			75-09-2	Methylene Chloride	NGS	110	<3.0	7.4	n/a	n/a	n/a	n/a	3.0	n/a	J
S177023853			91-20-3	Naphthalene	NGS	89	<1.9	3.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S177023853			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023853			110-59-8	Pentanitrile	NGS	94	<1.4	3.6	n/a	n/a	n/a	n/a	1.4	n/a	J
S177023853			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S177023853			110-86-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023853			100-42-5	Styrene	NGS	100	<1.7	4.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023853			127-18-4	Tetrachloroethene	NGS	100	<1.1	110	n/a	n/a	n/a	n/a	1.1	n/a	
S177023853			108-88-3	Toluene	NGS	100	<1.1	12	n/a	n/a	n/a	n/a	1.1	n/a	J
S177023853			79-01-6	Trichloroethene	NGS	98	<2.0	2.7	n/a	n/a	n/a	n/a	2.0	n/a	J
S177023853			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-BA-EF

Customer Sample ID: 17-04564-2-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023853			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T023853			123-96-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T023853			142-92-5	n-Heptane	NGS	110	<1.5	3.4	n/a	n/a	n/a	n/a	1.5		n/a J
S17T023853			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BA-IN  
Customer Sample ID: 17-04564-2-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023854			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S17T023854			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	n/a
S17T023854			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T023854			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T023854			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023854			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	n/a
S17T023854			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	n/a
S17T023854			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	n/a
S17T023854			71-36-3	1-Butanol	NGS	96	<2.7	61	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023854			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S17T023854			71-23-8	1-Propanol	NGS	95	<5.2	8.6	n/a	n/a	n/a	n/a	5.2	n/a	n/a
S17T023854			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S17T023854			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	n/a
S17T023854			78-93-3	2-Butanone	NGS	110	<2.3	4.2	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T023854			110-43-0	2-Heptanone	NGS	100	<1.5	1.7	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S17T023854			591-78-6	2-Hexanone	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S17T023854			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S17T023854			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023854			106-35-4	3-Heptanone	NGS	98	<1.4	3.0	n/a	n/a	n/a	n/a	1.4	n/a	n/a
S17T023854			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	n/a
S17T023854			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S17T023854			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023854			67-64-1	Acetone	NGS	110	<3.8	100	n/a	n/a	n/a	n/a	3.8	n/a	n/a
S17T023854			75-05-8	Acetonitrile	NGS	100	<2.9	30	n/a	n/a	n/a	n/a	2.9	n/a	n/a
S17T023854			98-86-2	Acetophenone	NGS	97	<2.0	9.8	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S17T023854			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023854			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a
S17T023854			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	n/a

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BA-IN  
Customer Sample ID: 17-04564-2-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023854			71-43-2	Benzene	NGS	110	<1.5	6.6	n/a	n/a	n/a	n/a	1.5	n/a	J
S177023854			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023854			123-72-8	Butanal	NGS	100	<3.6	5.6	n/a	n/a	n/a	n/a	3.6	n/a	J
S177023854			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023854			56-23-5	Carbon tetrachloride	NGS	120	<1.3	1.9	n/a	n/a	n/a	n/a	1.3	n/a	J
S177023854			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023854			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023854			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023854			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S177023854			124-18-5	Decane	NGS	110	<0.82	46	n/a	n/a	n/a	n/a	0.82	n/a	
S177023854			64-17-5	Ethanol	NGS	99	<4.6	49	n/a	n/a	n/a	n/a	4.6	n/a	
S177023854			141-78-6	Ethyl acetate	NGS	100	<1.6	2.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S177023854			100-41-4	Ethylbenzene	NGS	98	<1.7	4.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023854			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023854			110-54-3	Hexane	NGS	130	<2.1	6.4	n/a	n/a	n/a	n/a	2.1	n/a	J
S177023854			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023854			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S177023854			75-09-2	Methylene Chloride	NGS	110	<3.0	7.3	n/a	n/a	n/a	n/a	3.0	n/a	J
S177023854			91-20-3	Naphthalene	NGS	89	<1.9	2.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S177023854			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023854			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023854			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S177023854			110-98-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023854			100-42-5	Styrene	NGS	100	<1.7	3.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023854			127-18-4	Tetrachloroethene	NGS	100	<1.1	1.9	n/a	n/a	n/a	n/a	1.1	n/a	J
S177023854			108-98-3	Toluene	NGS	100	<1.1	20	n/a	n/a	n/a	n/a	1.1	n/a	
S177023854			79-01-6	Trichloroethene	NGS	98	<2.0	3.1	n/a	n/a	n/a	n/a	2.0	n/a	J
S177023854			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	6.1	n/a	n/a	n/a	n/a	2.9	n/a	J

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U - Less Than Detection Limit

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E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BA-IN  
Customer Sample ID: 17-04564-2-SD1-BA-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023854			10061-01-5	dis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023854			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023854			142-82-5	n-Heptane	NGS	110	<1.5	5.2	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T023854			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BL-EF  
Customer Sample ID: 17-04564-2-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023855			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023855			79-00-5	1,1,2-Trichloroethane	NGS	85	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023855			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023855			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023855			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023855			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023855			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023855			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023855			71-36-3	1-Butanol	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023855			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023855			71-23-8	1-Propanol	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023855			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023855			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023855			78-93-3	2-Butanone	NGS	110	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023855			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023855			591-78-6	2-Hexanone	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023855			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023855			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023855			106-35-4	3-Heptanone	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023855			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023855			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023855			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023855			67-64-1	Acetone	NGS	110	<3.8	49	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023855			75-05-8	Acetonitrile	NGS	100	<2.9	11	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023855			98-86-2	Acetophenone	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023855			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023855			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023855			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BL-EF  
Customer Sample ID: 17-04564-2-SD1-BL-EF

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023855			71-43-2	Benzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S177023855			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023855			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023855			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023855			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023855			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023855			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023855			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023855			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S177023855			124-18-5	Decane	NGS	110	<0.82	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	U
S177023855			64-17-5	Ethanol	NGS	99	<4.6	9.1	n/a	n/a	n/a	n/a	4.6	n/a	J
S177023855			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023855			100-41-4	Ethylbenzene	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S177023855			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023855			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S177023855			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023855			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S177023855			75-09-2	Methylene Chloride	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023855			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023855			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023855			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023855			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S177023855			110-86-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023855			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S177023855			127-18-4	Tetrachloroethene	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177023855			108-88-3	Toluene	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177023855			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023855			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-BL-EF

Customer Sample ID: 17-04564-2-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023855			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T023855			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T023855			142-82-5	n-Heptane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T023855			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BL-IN  
Customer Sample ID: 17-04564-2-SD1-BL-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023856			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023856			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177023856			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023856			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023856			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023856			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023856			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023856			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S177023856			71-36-3	1-Butanol	NGS	96	<2.7	54	n/a	n/a	n/a	n/a	2.7	n/a	U
S177023856			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S177023856			71-23-8	1-Propanol	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S177023856			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023856			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S177023856			78-93-3	2-Butanone	NGS	110	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023856			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S177023856			591-78-6	2-Hexanone	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S177023856			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023856			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177023856			106-35-4	3-Heptanone	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023856			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S177023856			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023856			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177023856			67-64-1	Acetone	NGS	110	<3.8	81	n/a	n/a	n/a	n/a	3.8	n/a	U
S177023856			75-05-8	Acetonitrile	NGS	100	<2.9	37	n/a	n/a	n/a	n/a	2.9	n/a	U
S177023856			98-86-2	Acetophenone	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023856			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S177023856			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023856			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BL-IN  
Customer Sample ID: 17-04564-2-SD1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023856			71-43-2	Benzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S177023856			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S177023856			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S177023856			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	n/a
S177023856			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S177023856			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S177023856			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S177023856			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	n/a
S177023856			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S177023856			124-18-5	Decane	NGS	110	<0.82	13	n/a	n/a	n/a	n/a	0.82	n/a	n/a
S177023856			64-17-5	Ethanol	NGS	99	<4.6	36	n/a	n/a	n/a	n/a	4.6	n/a	n/a
S177023856			141-78-6	Ethyl acetate	NGS	100	<1.6	1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S177023856			100-41-4	Ethylbenzene	NGS	98	<1.7	1.8	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S177023856			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S177023856			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	n/a
S177023856			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S177023856			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a
S177023856			75-09-2	Methylene Chloride	NGS	110	<3.0	7.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S177023856			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S177023856			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S177023856			110-59-8	Pentanenitrile	NGS	94	<1.4	3.9	n/a	n/a	n/a	n/a	1.4	n/a	n/a
S177023856			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	n/a
S177023856			110-86-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S177023856			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S177023856			127-18-4	Tetrachloroethene	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	n/a
S177023856			108-88-3	Toluene	NGS	100	<1.1	6.2	n/a	n/a	n/a	n/a	1.1	n/a	n/a
S177023856			79-01-6	Trichloroethene	NGS	98	<2.0	3.4	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S177023856			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	n/a

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-BL-IN  
Customer Sample ID: 17-04564-2-SD1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023856			10061-01-5	dis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023856			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023856			142-92-5	n-Heptane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023856			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-2  
Customer Sample ID: 17-04564-2-SD1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023857			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023857			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023857			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023857			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023857			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023857			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023857			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023857			123-91-1	1,4-Dioxane	NGS	100	<3.8	36	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023857			71-36-3	1-Butanol	NGS	96	<2.7	270	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023857			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023857			71-23-8	1-Propanol	NGS	95	<5.2	210	n/a	n/a	n/a	n/a	5.2	n/a	
S17T023857			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023857			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023857			78-83-3	2-Butanone	NGS	110	<2.3	690	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T023857			110-43-0	2-Heptanone	NGS	100	<1.5	36	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023857			591-78-6	2-Hexanone	NGS	110	<1.5	130	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023857			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023857			78-94-4	3-Buten-2-one	NGS	120	<2.5	28	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023857			106-35-4	3-Heptanone	NGS	98	<1.4	170	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023857			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023857			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023857			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	24	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023857			67-64-1	Acetone	NGS	110	<3.8	5.2E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023857			75-05-8	Acetonitrile	NGS	100	<2.9	1.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023857			98-86-2	Acetophenone	NGS	97	<2.0	17	n/a	n/a	n/a	n/a	2.0	n/a	
S17T023857			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023857			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023857			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-2

Customer Sample ID: 17-04564-2-SD1-IN-2

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023857			71-43-2	Benzene	NGS	110	<1.5	26	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023857			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023857			123-72-8	Butanal	NGS	100	<3.6	50	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023857			109-74-0	Butanenitrile	NGS	100	<1.8	43	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023857			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023857			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023857			75-00-3	Chloroethane	NGS	130	<2.0	4.6	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023857			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023857			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023857			124-18-5	Decane	NGS	110	<0.82	47	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023857			84-17-5	Ethanol	NGS	99	<4.6	560	n/a	n/a	n/a	n/a	4.6	n/a	
S17T023857			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023857			100-41-4	Ethylbenzene	NGS	98	<1.7	9.6	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023857			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023857			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023857			628-73-9	Hexanenitrile	NGS	99	<2.3	22	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023857			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023857			75-09-2	Methylene Chloride	NGS	110	<3.0	8.1	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023857			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023857			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023857			110-59-8	Pentanenitrile	NGS	94	<1.4	29	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023857			107-12-0	Propanenitrile	NGS	100	<3.2	26	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023857			110-96-1	Pyridine	NGS	99	<1.9	6.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023857			100-42-5	Styrene	NGS	100	<1.7	2.6	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023857			127-18-4	Tetrachloroethene	NGS	100	<1.1	7.7	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023857			108-98-3	Toluene	NGS	100	<1.1	23	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023857			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023857			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	500	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-2  
Customer Sample ID: 17-04564-2-SD1-IN-2

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023857			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023857			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023857			142-82-5	n-Heptane	NGS	110	<1.5	19	n/a	n/a	n/a	n/a	1.5	n/a	
S177023857			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-3

Customer Sample ID: 17-04564-2-SD1-IN-3

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023858			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023858			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177023858			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023858			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023858			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023858			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023858			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023858			123-91-1	1,4-Dioxane	NGS	100	<3.8	36	n/a	n/a	n/a	n/a	3.8	n/a	
S177023858			71-36-3	1-Butanol	NGS	96	<2.7	280	n/a	n/a	n/a	n/a	2.7	n/a	
S177023858			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S177023858			71-23-8	1-Propanol	NGS	95	<5.2	200	n/a	n/a	n/a	n/a	5.2	n/a	
S177023858			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023858			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S177023858			78-93-3	2-Butanone	NGS	110	<2.3	650	n/a	n/a	n/a	n/a	2.3	n/a	E
S177023858			110-43-0	2-Heptanone	NGS	100	<1.5	36	n/a	n/a	n/a	n/a	1.5	n/a	
S177023858			591-78-6	2-Hexanone	NGS	110	<1.5	120	n/a	n/a	n/a	n/a	1.5	n/a	
S177023858			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023858			78-94-4	3-Buten-2-one	NGS	120	<2.5	29	n/a	n/a	n/a	n/a	2.5	n/a	
S177023858			106-35-4	3-Heptanone	NGS	98	<1.4	170	n/a	n/a	n/a	n/a	1.4	n/a	
S177023858			106-88-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S177023858			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	J
S177023858			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	23	n/a	n/a	n/a	n/a	2.5	n/a	
S177023858			67-64-1	Acetone	NGS	110	<3.8	5.4E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S177023858			75-05-8	Acetonitrile	NGS	100	<2.9	1.2E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S177023858			98-86-2	Acetophenone	NGS	97	<2.0	19	n/a	n/a	n/a	n/a	2.0	n/a	
S177023858			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S177023858			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023858			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-3  
Customer Sample ID: 17-04564-2-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023858			71-43-2	Benzene	NGS	110	<1.5	26	n/a	n/a	n/a	n/a	1.5	n/a	
S177023858			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a U	
S177023858			123-72-8	Butanal	NGS	100	<3.6	45	n/a	n/a	n/a	n/a	3.6	n/a	
S177023858			109-74-0	Butanenitrile	NGS	100	<1.8	41	n/a	n/a	n/a	n/a	1.8	n/a	
S177023858			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U	
S177023858			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U	
S177023858			75-00-3	Chloroethane	NGS	130	<2.0	5.6	n/a	n/a	n/a	n/a	2.0	n/a J	
S177023858			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a U	
S177023858			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a U	
S177023858			124-18-5	Decane	NGS	110	<0.82	43	n/a	n/a	n/a	n/a	0.82	n/a	
S177023858			64-17-5	Ethanol	NGS	99	<4.6	560	n/a	n/a	n/a	n/a	4.6	n/a	
S177023858			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U	
S177023858			100-41-4	Ethylbenzene	NGS	98	<1.7	9.3	n/a	n/a	n/a	n/a	1.7	n/a J	
S177023858			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a U	
S177023858			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a U	
S177023858			628-73-9	Hexanenitrile	NGS	99	<2.3	24	n/a	n/a	n/a	n/a	2.3	n/a	
S177023858			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a U	
S177023858			75-09-2	Methylene Chloride	NGS	110	<3.0	8.1	n/a	n/a	n/a	n/a	3.0	n/a J	
S177023858			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a U	
S177023858			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a U	
S177023858			110-59-8	Pentanenitrile	NGS	94	<1.4	29	n/a	n/a	n/a	n/a	1.4	n/a	
S177023858			107-12-0	Propanenitrile	NGS	100	<3.2	25	n/a	n/a	n/a	n/a	3.2	n/a	
S177023858			110-96-1	Pyridine	NGS	99	<1.9	6.7	n/a	n/a	n/a	n/a	1.9	n/a J	
S177023858			100-42-5	Styrene	NGS	100	<1.7	2.4	n/a	n/a	n/a	n/a	1.7	n/a J	
S177023858			127-18-4	Tetrachloroethene	NGS	100	<1.1	6.3	n/a	n/a	n/a	n/a	1.1	n/a J	
S177023858			108-88-3	Toluene	NGS	100	<1.1	22	n/a	n/a	n/a	n/a	1.1	n/a	
S177023858			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a U	
S177023858			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	520	n/a	n/a	n/a	n/a	2.9	n/a E	

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-3  
Customer Sample ID: 17-04564-2-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023858			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023858			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023858			142-92-5	n-Heptane	NGS	110	<1.5	18	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023858			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-4

Customer Sample ID: 17-04564-2-SD1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023859			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023859			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023859			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023859			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023859			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023859			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023859			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023859			123-91-1	1,4-Dioxane	NGS	100	<3.8	33	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023859			71-36-3	1-Butanol	NGS	96	<2.7	230	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023859			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023859			71-23-8	1-Propanol	NGS	95	<5.2	170	n/a	n/a	n/a	n/a	5.2	n/a	
S17T023859			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023859			1706-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023859			78-93-3	2-Butanone	NGS	110	<2.3	560	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T023859			110-43-0	2-Heptanone	NGS	100	<1.5	31	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023859			591-78-6	2-Hexanone	NGS	110	<1.5	100	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023859			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023859			78-94-4	3-Buten-2-one	NGS	120	<2.5	23	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023859			106-35-4	3-Heptanone	NGS	98	<1.4	140	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023859			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023859			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023859			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	21	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023859			67-64-1	Acetone	NGS	110	<3.8	4.3E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023859			75-05-8	Acetonitrile	NGS	100	<2.9	1.2E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023859			98-86-2	Acetophenone	NGS	97	<2.0	11	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023859			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023859			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023859			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

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J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-4  
Customer Sample ID: 17-04564-2-SD1-IN-4

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023859			71-43-2	Benzene	NGS	110	<1.5	22	n/a	n/a	n/a	n/a	1.5	n/a	
S177023859			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023859			123-72-8	Butanal	NGS	100	<3.6	36	n/a	n/a	n/a	n/a	3.6	n/a	
S177023859			109-74-0	Butanenitrile	NGS	100	<1.8	34	n/a	n/a	n/a	n/a	1.8	n/a	
S177023859			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023859			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023859			75-00-3	Chloroethane	NGS	130	<2.0	4.7	n/a	n/a	n/a	n/a	2.0	n/a	J
S177023859			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023859			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S177023859			124-18-5	Decane	NGS	110	<0.82	33	n/a	n/a	n/a	n/a	0.82	n/a	
S177023859			64-17-5	Ethanol	NGS	99	<4.6	460	n/a	n/a	n/a	n/a	4.6	n/a	
S177023859			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023859			100-41-4	Ethylbenzene	NGS	98	<1.7	7.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023859			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023859			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S177023859			628-73-9	Hexanenitrile	NGS	99	<2.3	22	n/a	n/a	n/a	n/a	2.3	n/a	
S177023859			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S177023859			75-09-2	Methylene Chloride	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023859			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023859			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023859			110-59-8	Pentanitrile	NGS	94	<1.4	24	n/a	n/a	n/a	n/a	1.4	n/a	
S177023859			107-12-0	Propanenitrile	NGS	100	<3.2	24	n/a	n/a	n/a	n/a	3.2	n/a	
S177023859			110-96-1	Pyridine	NGS	99	<1.9	5.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S177023859			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S177023859			127-18-4	Tetrachloroethene	NGS	100	<1.1	5.0	n/a	n/a	n/a	n/a	1.1	n/a	J
S177023859			108-88-3	Toluene	NGS	100	<1.1	17	n/a	n/a	n/a	n/a	1.1	n/a	
S177023859			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023859			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	470	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-4

Customer Sample ID: 17-04564-2-SD1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023859			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023859			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023859			142-82-5	n-Heptane	NGS	110	<1.5	16	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023859			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-5  
Customer Sample ID: 17-04564-2-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023860			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023860			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023860			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023860			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023860			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023860			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023860			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023860			123-91-1	1,4-Dioxane	NGS	100	<3.8	24	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023860			71-36-3	1-Butanol	NGS	96	<2.7	200	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023860			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023860			71-23-8	1-Propanol	NGS	95	<5.2	130	n/a	n/a	n/a	n/a	5.2	n/a	
S17T023860			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023860			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023860			78-93-3	2-Butanone	NGS	110	<2.3	280	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023860			110-43-0	2-Heptanone	NGS	100	<1.5	27	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023860			591-78-6	2-Hexanone	NGS	110	<1.5	84	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023860			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023860			78-94-4	3-Buten-2-one	NGS	120	<2.5	11	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T023860			106-35-4	3-Heptanone	NGS	98	<1.4	120	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023860			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023860			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	9.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023860			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	19	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023860			67-64-1	Acetone	NGS	110	<3.8	2.4E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023860			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023860			98-86-2	Acetophenone	NGS	97	<2.0	8.7	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023860			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023860			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023860			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-5  
Customer Sample ID: 17-04564-2-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023860			71-43-2	Benzene	NGS	110	<1.5	18	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023860			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023860			123-72-8	Butanal	NGS	100	<3.6	24	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023860			109-74-0	Butanenitrile	NGS	100	<1.8	25	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023860			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023860			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023860			75-00-3	Chloroethane	NGS	130	<2.0	4.1	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023860			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023860			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023860			124-18-5	Decane	NGS	110	<0.82	20	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023860			64-17-5	Ethanol	NGS	99	<4.6	360	n/a	n/a	n/a	n/a	4.6	n/a	
S17T023860			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023860			100-41-4	Ethylbenzene	NGS	98	<1.7	6.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023860			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023860			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023860			628-73-9	Hexanenitrile	NGS	99	<2.3	18	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023860			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023860			75-09-2	Methylene Chloride	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023860			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023860			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023860			110-59-8	Pentanenitrile	NGS	94	<1.4	22	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023860			107-12-0	Propanenitrile	NGS	100	<3.2	18	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023860			110-86-1	Pyridine	NGS	99	<1.9	4.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023860			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T023860			127-18-4	Tetrachloroethene	NGS	100	<1.1	4.4	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023860			106-88-3	Toluene	NGS	100	<1.1	14	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023860			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023860			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	470	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-5

Customer Sample ID: 17-04564-2-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023860			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023860			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023860			142-82-5	n-Heptane	NGS	110	<1.5	13	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023860			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-6  
Customer Sample ID: 17-04564-2-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023861			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023861			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023861			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023861			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023861			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023861			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023861			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023861			123-91-1	1,4-Dioxane	NGS	100	<3.8	23	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023861			71-36-3	1-Butanol	NGS	96	<2.7	340	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023861			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023861			71-23-8	1-Propanol	NGS	95	<5.2	270	n/a	n/a	n/a	n/a	5.2	n/a	
S17T023861			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023861			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023861			78-93-3	2-Butanone	NGS	110	<2.3	370	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023861			110-43-0	2-Heptanone	NGS	100	<1.5	25	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023861			591-78-6	2-Hexanone	NGS	110	<1.5	93	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023861			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023861			78-94-4	3-Buten-2-one	NGS	120	<2.5	12	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023861			106-35-4	3-Heptanone	NGS	98	<1.4	120	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023861			106-88-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023861			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S17T023861			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	17	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023861			67-64-1	Acetone	NGS	110	<3.8	2.5E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023861			75-05-8	Acetonitrile	NGS	100	<2.9	1.2E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023861			98-86-2	Acetophenone	NGS	97	<2.0	5.5	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023861			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023861			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023861			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-6  
Customer Sample ID: 17-04564-2-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023861			71-43-2	Benzene	NGS	110	<1.5	22	n/a	n/a	n/a	n/a	1.5	n/a	
S177023861			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023861			123-72-8	Butanal	NGS	100	<3.6	32	n/a	n/a	n/a	n/a	3.6	n/a	
S177023861			109-74-0	Butanenitrile	NGS	100	<1.8	29	n/a	n/a	n/a	n/a	1.8	n/a	
S177023861			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023861			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023861			75-00-3	Chloroethane	NGS	130	<2.0	3.3	n/a	n/a	n/a	n/a	2.0	n/a	J
S177023861			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023861			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S177023861			124-18-5	Decane	NGS	110	<0.82	16	n/a	n/a	n/a	n/a	0.82	n/a	
S177023861			64-17-5	Ethanol	NGS	99	<4.6	330	n/a	n/a	n/a	n/a	4.6	n/a	
S177023861			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023861			100-41-4	Ethylbenzene	NGS	98	<1.7	5.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023861			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023861			110-54-3	Hexane	NGS	130	<2.1	17	n/a	n/a	n/a	n/a	2.1	n/a	
S177023861			628-73-9	Hexanenitrile	NGS	99	<2.3	16	n/a	n/a	n/a	n/a	2.3	n/a	
S177023861			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S177023861			75-09-2	Methylene Chloride	NGS	110	<3.0	3.1	n/a	n/a	n/a	n/a	3.0	n/a	J
S177023861			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023861			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023861			110-59-8	Pentanitrile	NGS	94	<1.4	22	n/a	n/a	n/a	n/a	1.4	n/a	
S177023861			107-12-0	Propanenitrile	NGS	100	<3.2	21	n/a	n/a	n/a	n/a	3.2	n/a	
S177023861			110-86-1	Pyridine	NGS	99	<1.9	4.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S177023861			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S177023861			127-18-4	Tetrachloroethene	NGS	100	<1.1	4.5	n/a	n/a	n/a	n/a	1.1	n/a	J
S177023861			108-88-3	Toluene	NGS	100	<1.1	14	n/a	n/a	n/a	n/a	1.1	n/a	
S177023861			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023861			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	400	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-6

Customer Sample ID: 17-04564-2-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023861			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023861			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023861			142-82-5	n-Heptane	NGS	110	<1.5	15	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023861			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-7

Customer Sample ID: 17-04564-2-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023862			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023862			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177023862			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023862			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023862			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023862			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023862			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023862			123-91-1	1,4-Dioxane	NGS	100	<3.8	16	n/a	n/a	n/a	n/a	3.8	n/a	
S177023862			71-36-3	1-Butanol	NGS	96	<2.7	210	n/a	n/a	n/a	n/a	2.7	n/a	
S177023862			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S177023862			71-23-8	1-Propanol	NGS	95	<5.2	80	n/a	n/a	n/a	n/a	5.2	n/a	
S177023862			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023862			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S177023862			78-93-3	2-Butanone	NGS	110	<2.3	130	n/a	n/a	n/a	n/a	2.3	n/a	
S177023862			110-43-0	2-Heptanone	NGS	100	<1.5	21	n/a	n/a	n/a	n/a	1.5	n/a	
S177023862			591-78-8	2-Hexanone	NGS	110	<1.5	73	n/a	n/a	n/a	n/a	1.5	n/a	
S177023862			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023862			78-94-4	3-Buten-2-one	NGS	120	<2.5	8.7	n/a	n/a	n/a	n/a	2.5	n/a	J
S177023862			106-35-4	3-Heptanone	NGS	98	<1.4	99	n/a	n/a	n/a	n/a	1.4	n/a	
S177023862			106-88-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S177023862			105-42-0	4-Methyl-2-Hexanone	NGS	97	<1.6	8.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S177023862			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	15	n/a	n/a	n/a	n/a	2.5	n/a	
S177023862			67-64-1	Acetone	NGS	110	<3.8	1.3E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S177023862			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S177023862			98-86-2	Acetophenone	NGS	97	<2.0	3.3	n/a	n/a	n/a	n/a	2.0	n/a	J
S177023862			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S177023862			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023862			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04564-2-SD1-IN-7  
Customer Sample ID: 17-04564-2-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023862			71-43-2	Benzene	NGS	110	<1.5	17	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023862			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023862			123-72-8	Butanal	NGS	100	<3.6	21	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023862			109-74-0	Butanenitrile	NGS	100	<1.8	17	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023862			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023862			106-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023862			75-00-3	Chloroethane	NGS	130	<2.0	3.2	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023862			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023862			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023862			124-18-5	Decane	NGS	110	<0.82	12	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023862			64-17-5	Ethanol	NGS	99	<4.6	290	n/a	n/a	n/a	n/a	4.6	n/a	
S17T023862			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023862			100-41-4	Ethylbenzene	NGS	98	<1.7	5.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023862			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023862			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023862			628-73-9	Hexanenitrile	NGS	99	<2.3	14	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023862			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023862			75-09-2	Methylene Chloride	NGS	110	<3.0	4.8	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023862			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023862			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023862			110-59-8	Pentanitrile	NGS	94	<1.4	18	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023862			107-12-0	Propanenitrile	NGS	100	<3.2	16	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023862			110-86-1	Pyridine	NGS	99	<1.9	4.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023862			100-42-5	Styrene	NGS	100	<1.7	2.5	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023862			127-18-4	Tetrachloroethene	NGS	100	<1.1	3.5	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023862			106-88-3	Toluene	NGS	100	<1.1	15	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023862			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023862			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	360	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04564-2-SD1-IN-7

Customer Sample ID: 17-04564-2-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023862			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023862			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023862			142-82-5	n-Heptane	NGS	110	<1.5	12	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023862			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BA-EF  
Customer Sample ID: 17-04569-2-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023863			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023863			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S177023863			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023863			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023863			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023863			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023863			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023863			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S177023863			71-36-3	1-Butanol	NGS	96	<2.7	33	n/a	n/a	n/a	n/a	2.7	n/a	
S177023863			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S177023863			71-23-8	1-Propanol	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S177023863			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023863			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S177023863			78-93-3	2-Butanone	NGS	110	<2.3	7.5	n/a	n/a	n/a	n/a	2.3	n/a	J
S177023863			110-43-0	2-Heptanone	NGS	100	<1.5	31	n/a	n/a	n/a	n/a	1.5	n/a	
S177023863			591-78-6	2-Hexanone	NGS	110	<1.5	13	n/a	n/a	n/a	n/a	1.5	n/a	
S177023863			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023863			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177023863			106-35-4	3-Heptanone	NGS	98	<1.4	140	n/a	n/a	n/a	n/a	1.4	n/a	
S177023863			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S177023863			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023863			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S177023863			67-64-1	Acetone	NGS	110	<3.8	180	n/a	n/a	n/a	n/a	3.8	n/a	
S177023863			75-05-8	Acetonitrile	NGS	100	<2.9	450	n/a	n/a	n/a	n/a	2.9	n/a	E
S177023863			98-86-2	Acetophenone	NGS	97	<2.0	20	n/a	n/a	n/a	n/a	2.0	n/a	
S177023863			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S177023863			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S177023863			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BA-EF  
Customer Sample ID: 17-04569-2-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177023863			71-43-2	Benzene	NGS	110	<1.5	17	n/a	n/a	n/a	n/a	1.5	n/a	
S177023863			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023863			123-72-8	Butanal	NGS	100	<3.6	6.3	n/a	n/a	n/a	n/a	3.6	n/a	J
S177023863			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177023863			56-23-5	Carbon tetrachloride	NGS	120	<1.3	1.8	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023863			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S177023863			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023863			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S177023863			110-82-7	Cyclohexane	NGS	110	<2.4	3.8	n/a	n/a	n/a	n/a	2.4	n/a	J
S177023863			124-18-5	Decane	NGS	110	<0.82	23	n/a	n/a	n/a	n/a	0.82	n/a	
S177023863			64-17-5	Ethanol	NGS	99	<4.6	140	n/a	n/a	n/a	n/a	4.6	n/a	
S177023863			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S177023863			100-41-4	Ethylbenzene	NGS	98	<1.7	5.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023863			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S177023863			110-54-3	Hexane	NGS	130	<2.1	16	n/a	n/a	n/a	n/a	2.1	n/a	
S177023863			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S177023863			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S177023863			75-09-2	Methylene Chloride	NGS	110	<3.0	3.5	n/a	n/a	n/a	n/a	3.0	n/a	J
S177023863			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023863			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S177023863			110-59-8	Pentanenitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177023863			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S177023863			110-86-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S177023863			100-42-5	Styrene	NGS	100	<1.7	4.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S177023863			127-18-4	Tetrachloroethene	NGS	100	<1.1	1.1	n/a	n/a	n/a	n/a	1.1	n/a	J
S177023863			108-88-3	Toluene	NGS	100	<1.1	32	n/a	n/a	n/a	n/a	1.1	n/a	
S177023863			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S177023863			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	9.1	n/a	n/a	n/a	n/a	2.9	n/a	J

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BA-EF  
Customer Sample ID: 17-04569-2-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023863			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023863			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023863			142-82-5	n-Heptane	NGS	110	<1.5	9.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T023863			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BA-IN  
Customer Sample ID: 17-04569-2-TL2-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023864			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023864			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023864			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023864			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023864			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023864			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023864			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023864			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023864			71-36-3	1-Butanol	NGS	96	<2.7	16	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T023864			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023864			71-23-8	1-Propanol	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023864			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023864			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023864			78-93-3	2-Butanone	NGS	110	<2.3	3.0	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023864			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023864			591-78-6	2-Hexanone	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023864			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023864			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023864			106-35-4	3-Heptanone	NGS	98	<1.4	1.6	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T023864			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023864			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023864			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023864			57-64-1	Acetone	NGS	110	<3.8	91	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023864			75-05-8	Acetonitrile	NGS	100	<2.9	61	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023864			98-96-2	Acetophenone	NGS	97	<2.0	12	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023864			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023864			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023864			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BA-IN  
Customer Sample ID: 17-04569-2-TL2-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023864			71-43-2	Benzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023864			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023864			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023864			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023864			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023864			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023864			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023864			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023864			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023864			124-18-5	Decane	NGS	110	<0.82	27	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023864			64-17-5	Ethanol	NGS	99	<4.6	41	n/a	n/a	n/a	n/a	4.6	n/a	
S17T023864			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023864			100-41-4	Ethylbenzene	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T023864			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023864			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023864			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023864			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023864			75-09-2	Methylene Chloride	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023864			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023864			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023864			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023864			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T023864			110-86-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023864			100-42-5	Styrene	NGS	100	<1.7	2.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023864			127-18-4	Tetrachloroethene	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023864			108-88-3	Toluene	NGS	100	<1.1	4.8	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023864			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023864			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

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U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04569-2-TL2-BA-IN

Customer Sample ID: 17-04569-2-TL2-BA-IN

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023864			10061-01-5	dis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023864			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023864			142-82-5	n-Heptane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023864			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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E - Outside Calibration Range

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U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BL-EF  
Customer Sample ID: 17-04569-2-TL2-BL-EF

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023865			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023865			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023865			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023865			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023865			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023865			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023865			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023865			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023865			71-36-3	1-Butanol	NGS	96	<2.7	20	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T023865			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023865			71-23-8	1-Propanol	NGS	95	<5.2	7.1	n/a	n/a	n/a	n/a	5.2	n/a	J
S17T023865			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023865			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023865			78-93-3	2-Butanone	NGS	110	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023865			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023865			591-78-6	2-Hexanone	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023865			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023865			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023865			106-35-4	3-Heptanone	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023865			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023865			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023865			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023865			67-64-1	Acetone	NGS	110	<3.8	100	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023865			75-05-8	Acetonitrile	NGS	100	<2.9	64	n/a	n/a	n/a	n/a	2.9	n/a	
S17T023865			98-86-2	Acetophenone	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023865			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023865			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023865			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BL-EF  
Customer Sample ID: 17-04569-2-TL2-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023865			71-43-2	Benzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023865			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023865			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023865			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023865			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023865			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023865			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023865			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023865			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023865			124-18-5	Decane	NGS	110	<0.82	3.0	n/a	n/a	n/a	n/a	0.82	n/a	J
S17T023865			64-17-5	Ethanol	NGS	99	<4.6	66	n/a	n/a	n/a	n/a	4.6	n/a	
S17T023865			141-78-6	Ethyl acetate	NGS	100	<1.6	1.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023865			100-41-4	Ethylbenzene	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T023865			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023865			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023865			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023865			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023865			75-09-2	Methylene Chloride	NGS	110	<3.0	3.3	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023865			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023865			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023865			110-59-8	Pentanenitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023865			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T023865			110-86-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023865			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T023865			127-18-4	Tetrachloroethene	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023865			108-98-3	Toluene	NGS	100	<1.1	2.4	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023865			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023865			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BL-EF  
Customer Sample ID: 17-04569-2-TL2-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023865			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T023865			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T023865			142-82-5	n-Heptane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T023865			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BL-IN  
Customer Sample ID: 17-04569-2-TL2-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023866			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023866			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023866			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023866			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023866			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023866			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023866			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023866			123-91-1	1,4-Dioxane	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023866			71-36-3	1-Butanol	NGS	96	<2.7	11	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T023866			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023866			71-23-8	1-Propanol	NGS	95	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023866			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023866			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023866			78-93-3	2-Butanone	NGS	110	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023866			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023866			591-78-6	2-Hexanone	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023866			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023866			78-94-4	3-Buten-2-one	NGS	120	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023866			106-35-4	3-Heptanone	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023866			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023866			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023866			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023866			67-64-1	Acetone	NGS	110	<3.8	64	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023866			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023866			98-86-2	Acetophenone	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023866			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023866			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023866			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-BL-IN  
Customer Sample ID: 17-04569-2-TL2-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023866			71-43-2	Benzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023866			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023866			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023866			109-74-0	Butanenitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023866			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023866			106-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023866			75-00-3	Chloroethane	NGS	130	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023866			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023866			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023866			124-18-5	Decane	NGS	110	<0.82	2.6	n/a	n/a	n/a	n/a	0.82	n/a	J
S17T023866			64-17-5	Ethanol	NGS	99	<4.6	95	n/a	n/a	n/a	n/a	4.6	n/a	U
S17T023866			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023866			100-41-4	Ethylbenzene	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T023866			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023866			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023866			628-73-9	Hexanenitrile	NGS	98	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023866			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023866			75-08-2	Methylene Chloride	NGS	110	<3.0	3.4	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023866			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023866			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023866			110-59-8	Pentanenitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023866			107-12-0	Propanenitrile	NGS	100	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T023866			110-86-1	Pyridine	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023866			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T023866			127-18-4	Tetrachloroethene	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023866			108-88-3	Toluene	NGS	100	<1.1	1.7	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023866			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023866			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172265  
 SDG Number:  
 Customer Sample ID: 17-04569-2-TL2-BL-IN  
 Customer Sample ID: 17-04569-2-TL2-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023866			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T023866			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T023866			142-82-5	n-Heptane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T023866			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-2  
Customer Sample ID: 17-04569-2-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023867		79-34-5		1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023867		79-00-5		1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023867		75-34-3		1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023867		75-35-4		1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023867		107-06-2		1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023867		542-75-6		1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023867		106-46-7		1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023867		123-91-1		1,4-Dioxane	NGS	100	<3.8	33	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023867		71-36-3		1-Butanol	NGS	96	<2.7	1.0E+03	n/a	n/a	n/a	n/a	2.7	n/a	E
S17T023867		111-70-6		1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023867		71-23-8		1-Propanol	NGS	95	<5.2	510	n/a	n/a	n/a	n/a	5.2	n/a	
S17T023867		108-47-4		2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023867		1708-28-8		2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023867		78-93-3		2-Butanone	NGS	110	<2.3	430	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T023867		110-43-0		2-Heptanone	NGS	100	<1.5	120	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023867		591-78-6		2-Hexanone	NGS	110	<1.5	120	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023867		534-22-5		2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023867		78-94-4		3-Buten-2-one	NGS	120	<2.5	29	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023867		106-35-4		3-Heptanone	NGS	98	<1.4	500	n/a	n/a	n/a	n/a	1.4	n/a	E
S17T023867		106-68-3		3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023867		105-42-0		4-Methyl-2-hexanone	NGS	97	<1.6	6.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023867		108-10-1		4-Methyl-2-Pentanone	NGS	100	<2.5	25	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023867		67-64-1		Acetone	NGS	110	<3.8	5.4E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023867		75-05-8		Acetonitrile	NGS	100	<2.9	2.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023867		98-86-2		Acetophenone	NGS	97	<2.0	26	n/a	n/a	n/a	n/a	2.0	n/a	
S17T023867		107-13-1		Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023867		107-18-6		Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023867		107-05-1		Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-2  
Customer Sample ID: 17-04569-2-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023867			71-43-2	Benzene	NGS	110	<1.5	35	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023867			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023867			123-72-8	Butanal	NGS	100	<3.6	84	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023867			109-74-0	Butanenitrile	NGS	100	<1.8	53	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023867			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023867			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023867			75-00-3	Chloroethane	NGS	130	<2.0	8.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023867			67-56-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023867			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023867			124-18-5	Decane	NGS	110	<0.82	41	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023867			64-17-5	Ethanol	NGS	99	<4.6	1.2E+03	n/a	n/a	n/a	n/a	4.6	n/a	E
S17T023867			141-78-6	Ethyl acetate	NGS	100	<1.6	1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023867			100-41-4	Ethylbenzene	NGS	98	<1.7	7.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023867			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023867			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023867			628-73-9	Hexanenitrile	NGS	99	<2.3	12	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023867			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023867			75-09-2	Methylene Chloride	NGS	110	<3.0	4.5	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023867			91-20-3	Naphthalene	NGS	89	<1.9	2.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023867			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023867			110-59-8	Pentanitrile	NGS	94	<1.4	15	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023867			107-12-0	Propanenitrile	NGS	100	<3.2	43	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023867			110-86-1	Pyridine	NGS	99	<1.9	13	n/a	n/a	n/a	n/a	1.9	n/a	
S17T023867			100-42-5	Styrene	NGS	100	<1.7	5.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023867			127-18-4	Tetrachloroethene	NGS	100	<1.1	4.6	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023867			108-88-3	Toluene	NGS	100	<1.1	26	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023867			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023867			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	600	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-2  
Customer Sample ID: 17-04569-2-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023867			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023867			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023867			142-82-5	n-Heptane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023867			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-3  
Customer Sample ID: 17-04569-2-TL2-IN-3

Sample#	R	A#	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023868			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023868			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023868			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023868			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023868			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023868			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023868			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023868			123-91-1	1,4-Dioxane	NGS	100	<3.8	30	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023868			71-36-3	1-Butanol	NGS	96	<2.7	860	n/a	n/a	n/a	n/a	2.7	n/a	E
S17T023868			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023868			71-23-8	1-Propanol	NGS	95	<5.2	480	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023868			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023868			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023868			78-93-3	2-Butanone	NGS	110	<2.3	380	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023868			110-43-0	2-Heptanone	NGS	100	<1.5	100	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023868			591-78-6	2-Hexanone	NGS	110	<1.5	94	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023868			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023868			78-94-4	3-Buten-2-one	NGS	120	<2.5	29	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023868			106-35-4	3-Heptanone	NGS	98	<1.4	430	n/a	n/a	n/a	n/a	1.4	n/a	E
S17T023868			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023868			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	5.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023868			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	23	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023868			67-64-1	Acetone	NGS	110	<3.8	5.3E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023868			75-05-8	Acetonitrile	NGS	100	<2.9	1.5E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023868			98-96-2	Acetophenone	NGS	97	<2.0	20	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023868			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023868			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023868			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-3  
Customer Sample ID: 17-04569-2-TL2-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023868			71-43-2	Benzene	NGS	110	<1.5	32	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023868			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023868			123-72-8	Butanal	NGS	100	<3.6	160	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023868			109-74-0	Butanenitrile	NGS	100	<1.8	43	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023868			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023868			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023868			75-00-3	Chloroethane	NGS	130	<2.0	8.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023868			67-56-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023868			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023868			124-18-5	Decane	NGS	110	<0.82	32	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023868			64-17-5	Ethanol	NGS	99	<4.6	890	n/a	n/a	n/a	n/a	4.6	n/a	E
S17T023868			141-78-6	Ethyl acetate	NGS	100	<1.6	1.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023868			100-41-4	Ethylbenzene	NGS	98	<1.7	6.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023868			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023868			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023868			628-73-9	Hexanenitrile	NGS	99	<2.3	12	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023868			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023868			75-09-2	Methylene Chloride	NGS	110	<3.0	4.1	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023868			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023868			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023868			110-59-8	Pentanitrile	NGS	94	<1.4	13	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023868			107-12-0	Propanenitrile	NGS	100	<3.2	35	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023868			110-86-1	Pyridine	NGS	99	<1.9	12	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023868			100-42-5	Styrene	NGS	100	<1.7	4.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023868			127-18-4	Tetrachloroethene	NGS	100	<1.1	4.2	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023868			108-88-3	Toluene	NGS	100	<1.1	23	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023868			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023868			75-59-4	Trichlorofluoromethane	NGS	120	<2.9	520	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04569-2-TL2-IN-3

Customer Sample ID: 17-04569-2-TL2-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023868			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023868			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023868			142-82-5	n-Heptane	NGS	110	<1.5	43	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023868			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-4  
Customer Sample ID: 17-04569-2-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023869			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023869			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023869			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023869			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023869			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023869			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023869			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023869			123-91-1	1,4-Dioxane	NGS	100	<3.8	27	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023869			71-36-3	1-Butanol	NGS	96	<2.7	920	n/a	n/a	n/a	n/a	2.7	n/a	E
S17T023869			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023869			71-23-8	1-Propanol	NGS	95	<5.2	470	n/a	n/a	n/a	n/a	5.2	n/a	
S17T023869			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023869			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023869			78-93-3	2-Butanone	NGS	110	<2.3	350	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023869			110-43-0	2-Heptanone	NGS	100	<1.5	97	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023869			591-78-6	2-Hexanone	NGS	110	<1.5	97	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023869			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023869			78-94-4	3-Buten-2-one	NGS	120	<2.5	27	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023869			106-35-4	3-Heptanone	NGS	98	<1.4	430	n/a	n/a	n/a	n/a	1.4	n/a	E
S17T023869			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023869			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	5.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023869			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	23	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023869			67-64-1	Acetone	NGS	110	<3.8	4.9E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023869			75-05-8	Acetonitrile	NGS	100	<2.9	1.6E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023869			98-96-2	Acetophenone	NGS	97	<2.0	22	n/a	n/a	n/a	n/a	2.0	n/a	
S17T023869			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023869			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023869			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-4  
Customer Sample ID: 17-04569-2-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023869			71-43-2	Benzene	NGS	110	<1.5	33	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023869			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023869			123-72-8	Butanal	NGS	100	<3.6	170	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023869			106-74-0	Butanenitrile	NGS	100	<1.8	43	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023869			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023869			106-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023869			75-00-3	Chloroethane	NGS	130	<2.0	4.4	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023869			67-56-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023869			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023869			124-18-5	Decane	NGS	110	<0.82	28	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023869			64-17-5	Ethanol	NGS	99	<4.6	860	n/a	n/a	n/a	n/a	4.6	n/a	E
S17T023869			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023869			100-41-4	Ethylbenzene	NGS	98	<1.7	6.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023869			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023869			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023869			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023869			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023869			75-09-2	Methylene Chloride	NGS	110	<3.0	3.2	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023869			91-20-3	Naphthalene	NGS	89	<1.9	2.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023869			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023869			110-59-8	Pentanenitrile	NGS	94	<1.4	13	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023869			107-12-0	Propanenitrile	NGS	100	<3.2	33	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023869			110-86-1	Pyridine	NGS	99	<1.9	11	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023869			100-42-5	Styrene	NGS	100	<1.7	4.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023869			127-18-4	Tetrachloroethene	NGS	100	<1.1	2.8	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023869			108-88-3	Toluene	NGS	100	<1.1	28	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023869			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023869			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	480	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-4  
Customer Sample ID: 17-04569-2-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023869			10061-01-5	dis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023869			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023869			142-82-5	n-Heptane	NGS	110	<1.5	44	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023869			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-5  
Customer Sample ID: 17-04569-2-TL2-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023870			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T023870			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T023870			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023870			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T023870			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T023870			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T023870			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T023870			123-91-1	1,4-Dioxane	NGS	100	<3.8	31	n/a	n/a	n/a	n/a	3.8		n/a
S17T023870			71-36-3	1-Butanol	NGS	96	<2.7	960	n/a	n/a	n/a	n/a	2.7		n/a E
S17T023870			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T023870			71-23-8	1-Propanol	NGS	95	<5.2	500	n/a	n/a	n/a	n/a	5.2		n/a
S17T023870			106-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023870			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T023870			78-93-3	2-Butanone	NGS	110	<2.3	370	n/a	n/a	n/a	n/a	2.3		n/a
S17T023870			110-43-0	2-Heptanone	NGS	100	<1.5	110	n/a	n/a	n/a	n/a	1.5		n/a
S17T023870			591-78-6	2-Hexanone	NGS	110	<1.5	120	n/a	n/a	n/a	n/a	1.5		n/a
S17T023870			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T023870			78-94-4	3-Buten-2-one	NGS	120	<2.5	23	n/a	n/a	n/a	n/a	2.5		n/a
S17T023870			106-35-4	3-Heptanone	NGS	98	<1.4	450	n/a	n/a	n/a	n/a	1.4		n/a E
S17T023870			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T023870			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	5.6	n/a	n/a	n/a	n/a	1.6		n/a J
S17T023870			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	25	n/a	n/a	n/a	n/a	2.5		n/a
S17T023870			67-64-1	Acetone	NGS	110	<3.8	4.7E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T023870			75-05-8	Acetonitrile	NGS	100	<2.9	1.7E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T023870			98-86-2	Acetophenone	NGS	97	<2.0	24	n/a	n/a	n/a	n/a	2.0		n/a
S17T023870			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023870			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T023870			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-5  
Customer Sample ID: 17-04569-2-TL2-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023870			71-43-2	Benzene	NGS	110	<1.5	33	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023870			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023870			123-72-8	Butanal	NGS	100	<3.6	140	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023870			109-74-0	Butanenitrile	NGS	100	<1.8	50	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023870			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023870			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023870			75-00-3	Chloroethane	NGS	130	<2.0	8.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023870			67-56-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023870			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023870			124-18-5	Decane	NGS	110	<0.82	27	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023870			64-17-5	Ethanol	NGS	99	<4.6	900	n/a	n/a	n/a	n/a	4.6	n/a	E
S17T023870			141-78-6	Ethyl acetate	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023870			100-41-4	Ethylbenzene	NGS	98	<1.7	6.6	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023870			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023870			110-54-3	Hexane	NGS	130	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023870			628-73-9	Hexanenitrile	NGS	99	<2.3	16	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023870			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023870			75-09-2	Methylene Chloride	NGS	110	<3.0	5.5	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023870			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023870			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023870			110-59-8	Pentanitrile	NGS	94	<1.4	14	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023870			107-12-0	Propanenitrile	NGS	100	<3.2	44	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023870			110-86-1	Pyridine	NGS	99	<1.9	13	n/a	n/a	n/a	n/a	1.9	n/a	
S17T023870			100-42-5	Styrene	NGS	100	<1.7	3.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023870			127-18-4	Tetrachloroethene	NGS	100	<1.1	4.4	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023870			108-88-3	Toluene	NGS	100	<1.1	26	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023870			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023870			75-68-4	Trichlorofluoromethane	NGS	120	<2.9	620	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-5  
Customer Sample ID: 17-04569-2-TL2-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023870			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023870			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023870			142-82-5	n-Heptane	NGS	110	<1.5	49	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023870			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-6  
Customer Sample ID: 17-04569-2-TL2-IN-6

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023871			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023871			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023871			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023871			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023871			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023871			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023871			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023871			123-91-1	1,4-Dioxane	NGS	100	<3.8	19	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023871			71-36-3	1-Butanol	NGS	96	<2.7	800	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023871			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023871			71-23-8	1-Propanol	NGS	95	<5.2	400	n/a	n/a	n/a	n/a	5.2	n/a	
S17T023871			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023871			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023871			78-93-3	2-Butanone	NGS	110	<2.3	220	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023871			110-43-0	2-Heptanone	NGS	100	<1.5	78	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023871			591-78-6	2-Hexanone	NGS	110	<1.5	92	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023871			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023871			78-94-4	3-Buten-2-one	NGS	120	<2.5	12	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023871			105-35-4	3-Heptanone	NGS	98	<1.4	330	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023871			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023871			105-42-0	4-Methyl-2-hexanone	NGS	97	<1.6	3.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023871			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	18	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023871			67-64-1	Acetone	NGS	110	<3.8	3.1E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023871			75-05-8	Acetonitrile	NGS	100	<2.9	2.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023871			98-96-2	Acetophenone	NGS	97	<2.0	7.3	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023871			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023871			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023871			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-6  
Customer Sample ID: 17-04569-2-TL2-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023871			71-43-2	Benzene	NGS	110	<1.5	26	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023871			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023871			123-72-8	Butanal	NGS	100	<3.6	83	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023871			109-74-0	Butanenitrile	NGS	100	<1.8	30	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023871			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023871			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023871			75-00-3	Chloroethane	NGS	130	<2.0	2.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023871			67-56-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023871			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023871			124-18-5	Decane	NGS	110	<0.82	17	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023871			64-17-5	Ethanol	NGS	99	<4.6	670	n/a	n/a	n/a	n/a	4.6	n/a	
S17T023871			141-78-6	Ethyl acetate	NGS	100	<1.6	1.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023871			100-41-4	Ethylbenzene	NGS	98	<1.7	3.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023871			110-00-9	Furan	NGS	110	<3.0	11	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023871			110-54-3	Hexane	NGS	130	<2.1	52	n/a	n/a	n/a	n/a	2.1	n/a	
S17T023871			628-73-9	Hexanenitrile	NGS	99	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023871			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023871			75-09-2	Methylene Chloride	NGS	110	<3.0	4.0	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023871			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023871			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023871			110-59-8	Pentanenitrile	NGS	94	<1.4	13	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023871			107-12-0	Propanenitrile	NGS	100	<3.2	32	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023871			110-86-1	Pyridine	NGS	99	<1.9	9.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023871			100-42-5	Styrene	NGS	100	<1.7	2.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023871			127-18-4	Tetrachloroethene	NGS	100	<1.1	2.4	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023871			108-88-3	Toluene	NGS	100	<1.1	17	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023871			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023871			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	290	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-6  
Customer Sample ID: 17-04569-2-TL2-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023871			10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023871			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023871			142-82-5	n-Heptane	NGS	110	<1.5	37	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023871			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-7  
Customer Sample ID: 17-04569-2-TL2-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023872			79-34-5	1,1,2,2-Tetrachloroethane	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023872			79-00-5	1,1,2-Trichloroethane	NGS	95	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023872			75-34-3	1,1-Dichloroethane	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023872			75-35-4	1,1-Dichloroethene	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023872			107-06-2	1,2-Dichloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023872			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023872			106-46-7	1,4-Dichlorobenzene	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023872			123-91-1	1,4-Dioxane	NGS	100	<3.8	27	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023872			71-36-3	1-Butanol	NGS	96	<2.7	850	n/a	n/a	n/a	n/a	2.7	n/a	E
S17T023872			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023872			71-23-8	1-Propanol	NGS	95	<5.2	430	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023872			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023872			1708-29-8	2,5-Dihydrofuran	NGS	100	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T023872			78-93-3	2-Butanone	NGS	110	<2.3	320	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023872			110-43-0	2-Heptanone	NGS	100	<1.5	93	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023872			591-78-6	2-Hexanone	NGS	110	<1.5	98	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T023872			534-22-5	2-Methylfuran	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T023872			78-94-4	3-Buten-2-one	NGS	120	<2.5	16	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023872			106-35-4	3-Heptanone	NGS	98	<1.4	400	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023872			106-68-3	3-Octanone	NGS	94	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023872			105-42-0	4-Methyl-2-pentanone	NGS	97	<1.6	4.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023872			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	20	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023872			67-64-1	Acetone	NGS	110	<3.8	3.5E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T023872			75-05-8	Acetonitrile	NGS	100	<2.9	1.8E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T023872			98-86-2	Acetophenone	NGS	97	<2.0	6.2	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023872			107-13-1	Acrylonitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023872			107-18-6	Allyl Alcohol	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T023872			107-05-1	Allyl Chloride	NGS	120	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265  
SDG Number:  
Customer Sample ID: 17-04569-2-TL2-IN-7  
Customer Sample ID: 17-04569-2-TL2-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023872			71-43-2	Benzene	NGS	110	<1.5	30	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023872			100-47-0	Benzonitrile	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023872			123-72-8	Butanal	NGS	100	<3.6	97	n/a	n/a	n/a	n/a	3.6	n/a	
S17T023872			109-74-0	Butanenitrile	NGS	100	<1.8	39	n/a	n/a	n/a	n/a	1.8	n/a	
S17T023872			56-23-5	Carbon tetrachloride	NGS	120	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023872			108-90-7	Chlorobenzene	NGS	98	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T023872			75-00-3	Chloroethane	NGS	130	<2.0	5.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T023872			67-66-3	Chloroform	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023872			110-82-7	Cyclohexane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023872			124-18-5	Decane	NGS	110	<0.82	17	n/a	n/a	n/a	n/a	0.82	n/a	
S17T023872			64-17-5	Ethanol	NGS	99	<4.6	800	n/a	n/a	n/a	n/a	4.6	n/a	
S17T023872			141-78-6	Ethyl acetate	NGS	100	<1.6	1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T023872			100-41-4	Ethylbenzene	NGS	98	<1.7	4.6	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T023872			110-00-9	Furan	NGS	110	<3.0	8.1	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023872			110-54-3	Hexane	NGS	130	<2.1	48	n/a	n/a	n/a	n/a	2.1	n/a	
S17T023872			628-73-9	Hexanenitrile	NGS	99	<2.3	10	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023872			126-98-7	Methacrylonitrile	NGS	110	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023872			75-09-2	Methylene Chloride	NGS	110	<3.0	4.0	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T023872			91-20-3	Naphthalene	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T023872			98-95-3	Nitrobenzene	NGS	120	1.4	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T023872			110-59-8	Pentanenitrile	NGS	94	<1.4	12	n/a	n/a	n/a	n/a	1.4	n/a	
S17T023872			107-12-0	Propanenitrile	NGS	100	<3.2	36	n/a	n/a	n/a	n/a	3.2	n/a	
S17T023872			110-86-1	Pyridine	NGS	99	<1.9	11	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T023872			100-42-5	Styrene	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T023872			127-18-4	Tetrachloroethene	NGS	100	<1.1	3.8	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T023872			108-88-3	Toluene	NGS	100	<1.1	20	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023872			79-01-6	Trichloroethene	NGS	98	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T023872			75-69-4	Trichlorofluoromethane	NGS	120	<2.9	600	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172265

SDG Number:

Customer Sample ID: 17-04569-2-TL2-IN-7

Customer Sample ID: 17-04569-2-TL2-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023872			10061-01-5	dis-1,3-Dichloropropene	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T023872			123-86-4	n-Butyl acetate	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T023872			142-92-5	n-Heptane	NGS	110	<1.5	50	n/a	n/a	n/a	n/a	1.5	n/a	
S17T023872			10061-02-6	trans-1,3-Dichloropropene	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

U - Less Than Detection Limit

J - Estimated

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected



*Samuel R. Hoffman*  
8-29-2017

2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03269-2-TL1-BA-EF

Customer Sample ID: 17-03269-2-TL1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022295			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022295			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022295			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022295			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022295			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022295			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022295			108-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022295			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022295			71-36-3	1-Butanol	NGS	100	<2.7	7.4	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T022295			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022295			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022295			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022295			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022295			78-93-3	2-Butanone	NGS	100	<2.3	3.2	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T022295			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022295			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022295			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022295			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022295			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022295			106-88-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022295			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022295			108-10-1	4-Methyl-2-pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022295			67-64-1	Acetone	NGS	91	4.0	47	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022295			75-05-8	Acetonitrile	NGS	100	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022295			98-86-2	Acetophenone	NGS	87	2.1	16	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022295			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022295			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022295			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected  
N - Named TIC

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
L - ILS Outside Range

T - Tentatively Identified Compound  
U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BA-EF  
Customer Sample ID: 17-03269-2-TL1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022295			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022295			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022295			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022295			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022295			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022295			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022295			75-00-3	Chloroethane	NGS	70	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022295			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022295			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022295			124-18-5	Decane	NGS	100	1.1	18	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022295			64-17-5	Ethanol	NGS	90	<4.6	38	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022295			141-78-6	Ethyl acetate	NGS	95	<1.6	1.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022295			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022295			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022295			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022295			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022295			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022295			75-09-2	Methylene Chloride	NGS	100	3.6	4.5	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022295			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022295			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022295			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022295			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022295			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022295			100-42-5	Styrene	NGS	95	<1.7	3.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022295			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022295			106-88-3	Toluene	NGS	97	<1.1	5.2	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022295			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022295			75-89-4	Trichlorofluoromethane	NGS	89	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

T - Tentatively Identified Compound  
U - Less Than Detection Limit

Q - Qualitative  
L - LLS Outside Range

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
N - Named TIC



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
 SDG Number:  
 Customer Sample ID: 17-03269-2-TL1-BA-EF  
 Customer Sample ID: 17-03269-2-TL1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022295			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022295			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022295			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022295			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BA-IN  
Customer Sample ID: 17-03269-2-TL1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S17T022296			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022296			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022296			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022296			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022296			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022296			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022296			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022296			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022296			71-36-3	1-Butanol	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022296			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	QU
S17T022296			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022296			106-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	QU
S17T022296			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022296			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022296			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S17T022296			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S17T022296			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022296			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022296			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022296			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	QU
S17T022296			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	QU
S17T022296			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022296			57-84-1	Acetone	NGS	91	4.0	57	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022296			75-05-8	Acetonitrile	NGS	100	<2.9	2.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022296			98-86-2	Acetophenone	NGS	87	2.1	2.6	n/a	n/a	n/a	n/a	2.0	n/a	JQ
S17T022296			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022296			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022296			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

T - Tentatively Identified Compound  
U - Less Than Detection Limit  
Q - Qualitative  
L - LLS Outside Range  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BA-IN  
Customer Sample ID: 17-03269-2-TL1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022296			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022296			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	QU
S17T022296			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022296			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022296			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022296			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	QU
S17T022296			75-00-3	Chloroethane	NGS	70	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022296			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022296			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022296			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	QU
S17T022296			64-17-5	Ethanol	NGS	90	<4.6	17	n/a	n/a	n/a	n/a	4.6	n/a	U
S17T022296			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022296			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022296			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022296			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022296			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	QU
S17T022296			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022296			75-09-2	Methylene Chloride	NGS	100	3.6	3.0	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022296			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	QU
S17T022296			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022296			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022296			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022296			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022296			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022296			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022296			108-88-3	Toluene	NGS	97	<1.1	1.3	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022296			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022296			75-89-4	Trichlorofluoromethane	NGS	89	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

NA = Not Analyzed, ND = Not Detected

N - Named TIC

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
L - LLS Outside Range

T - Tentatively Identified Compound  
U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03269-2-TL1-BA-IN

Customer Sample ID: 17-03269-2-TL1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022296			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022296			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022296			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022296			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
U - Less Than Detection Limit

Q - Qualitative  
L - LLS Outside Range

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BL-EF  
Customer Sample ID: 17-03269-2-TL1-BL-EF

Sample#	R	IA#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022297			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022297			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022297			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022297			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022297			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022297			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022297			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022297			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022297			71-36-3	1-Butanol	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022297			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	QU
S17T022297			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022297			106-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	QU
S17T022297			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022297			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022297			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S17T022297			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S17T022297			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022297			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022297			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022297			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	QU
S17T022297			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	QU
S17T022297			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022297			57-64-1	Acetone	NGS	91	4.0	56	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022297			75-05-8	Acetonitrile	NGS	100	<2.9	1.3E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022297			98-96-2	Acetophenone	NGS	87	2.1	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	QU
S17T022297			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022297			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022297			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BL-EF  
Customer Sample ID: 17-03269-2-TL1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022297			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022297			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	QU
S17T022297			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022297			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022297			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022297			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	QU
S17T022297			75-00-3	Chloroethane	NGS	70	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022297			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022297			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022297			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	QU
S17T022297			64-17-5	Ethanol	NGS	90	<4.6	19	n/a	n/a	n/a	n/a	4.6	n/a	U
S17T022297			141-78-6	Ethyl acetate	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022297			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022297			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022297			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022297			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	QU
S17T022297			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022297			75-09-2	Methylene Chloride	NGS	100	3.6	4.0	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022297			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	QU
S17T022297			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022297			110-59-8	Pentanitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022297			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022297			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022297			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022297			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022297			108-88-3	Toluene	NGS	97	<1.1	1.3	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022297			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022297			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BL-EF  
Customer Sample ID: 17-03269-2-TL1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022297			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022297			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022297			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022297			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BL-IN  
Customer Sample ID: 17-03269-2-TL1-BL-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022298			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022298			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022298			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022298			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022298			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022298			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022298			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022298			123-91-1	1,4-Dioxane	NGS	97	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022298			71-36-3	1-Butanol	NGS	100	<2.7	2.9	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T022298			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	QU
S17T022298			71-23-8	1-Propanol	NGS	94	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022298			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	QU
S17T022298			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022298			78-93-3	2-Butanone	NGS	100	<2.3	4.4	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T022298			110-43-0	2-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S17T022298			591-78-6	2-Hexanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	QU
S17T022298			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022298			78-94-4	3-Buten-2-one	NGS	98	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022298			106-35-4	3-Heptanone	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022298			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	QU
S17T022298			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	QU
S17T022298			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	4.5	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022298			67-64-1	Acetone	NGS	91	4.0	170	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022298			75-05-8	Acetonitrile	NGS	100	<2.9	2.2E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022298			98-96-2	Acetophenone	NGS	87	2.1	11	n/a	n/a	n/a	n/a	2.0	n/a	JQ
S17T022298			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022298			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022298			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BL-IN  
Customer Sample ID: 17-03269-2-TL1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022298			71-43-2	Benzene	NGS	99	<1.5	6.4	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T022298			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	QU
S17T022298			123-72-8	Butanal	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022298			109-74-0	Butanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022298			56-23-5	Carbon tetrachloride	NGS	95	<1.3	1.4	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T022298			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	QU
S17T022298			75-00-3	Chloroethane	NGS	70	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022298			67-86-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022298			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022298			124-18-5	Decane	NGS	100	1.1	28	n/a	n/a	n/a	n/a	0.82	n/a	Q
S17T022298			64-17-5	Ethanol	NGS	90	<4.6	43	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022298			141-78-6	Ethyl acetate	NGS	95	<1.6	2.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022298			100-41-4	Ethylbenzene	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022298			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022298			110-54-3	Hexane	NGS	88	<2.1	4.9	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T022298			628-73-9	Hexanenitrile	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	QU
S17T022298			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022298			75-09-2	Methylene Chloride	NGS	100	3.6	17	n/a	n/a	n/a	n/a	3.0	n/a	
S17T022298			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	QU
S17T022298			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	QU
S17T022298			110-59-8	Pentanenitrile	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022298			107-12-0	Propanenitrile	NGS	89	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2	n/a	U
S17T022298			110-86-1	Pyridine	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022298			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	QU
S17T022298			127-18-4	Tetrachloroethene	NGS	98	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	QU
S17T022298			108-88-3	Toluene	NGS	97	<1.1	13	n/a	n/a	n/a	n/a	1.1	n/a	Q
S17T022298			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022298			75-89-4	Trichlorofluoromethane	NGS	89	<2.9	11	n/a	n/a	n/a	n/a	2.9	n/a	J

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-BL-IN  
Customer Sample ID: 17-03269-2-TL1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022298			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022298			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022298			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022298			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-2  
Customer Sample ID: 17-03269-2-TL1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022299			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022299			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022299			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022299			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022299			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022299			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022299			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022299			123-91-1	1,4-Dioxane	NGS	97	<3.8	25	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022299			71-36-3	1-Butanol	NGS	100	<2.7	180	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022299			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T022299			71-23-8	1-Propanol	NGS	94	<5.2	130	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022299			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022299			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022299			78-93-3	2-Butanone	NGS	100	<2.3	400	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T022299			110-43-0	2-Heptanone	NGS	100	<1.5	19	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022299			591-78-6	2-Hexanone	NGS	100	<1.5	180	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022299			534-22-5	2-Methylfuran	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022299			78-94-4	3-Buten-2-one	NGS	98	<2.5	11	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022299			106-35-4	3-Heptanone	NGS	99	<1.4	92	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022299			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022299			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	7.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022299			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	16	n/a	n/a	n/a	n/a	2.5	n/a	
S17T022299			67-64-1	Acetone	NGS	91	4.0	2.0E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022299			75-05-8	Acetonitrile	NGS	100	<2.9	1.3E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022299			98-86-2	Acetophenone	NGS	87	2.1	26	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022299			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022299			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022299			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-2  
Customer Sample ID: 17-03269-2-TL1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022299			71-43-2	Benzene	NGS	99	<1.5	20	n/a	n/a	n/a	n/a	1.5		n/a
S17T022299			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022299			123-72-8	Butanal	NGS	100	<3.6	10	n/a	n/a	n/a	n/a	3.6		n/a J
S17T022299			109-74-0	Butanenitrile	NGS	95	<1.8	25	n/a	n/a	n/a	n/a	1.8		n/a
S17T022299			56-23-5	Carbon tetrachloride	NGS	95	<1.3	1.5	n/a	n/a	n/a	n/a	1.3		n/a J
S17T022299			108-90-7	Chlorobenzene	NGS	95	<1.3	3.9	n/a	n/a	n/a	n/a	1.3		n/a J
S17T022299			75-00-3	Chloroethane	NGS	70	<2.0	4.4	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022299			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022299			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022299			124-18-5	Decane	NGS	100	1.1	17	n/a	n/a	n/a	n/a	0.82		n/a
S17T022299			64-17-5	Ethanol	NGS	90	<4.6	320	n/a	n/a	n/a	n/a	4.6		n/a L
S17T022299			141-78-6	Ethyl acetate	NGS	95	<1.6	1.9	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022299			100-41-4	Ethylbenzene	NGS	97	<1.7	5.1	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022299			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022299			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S17T022299			628-73-9	Hexanenitrile	NGS	90	<2.3	14	n/a	n/a	n/a	n/a	2.3		n/a
S17T022299			126-98-7	Methacrylonitrile	NGS	97	<3.1	15	n/a	n/a	n/a	n/a	3.1		n/a
S17T022299			75-09-2	Methylene Chloride	NGS	100	3.6	3.1	n/a	n/a	n/a	n/a	3.0		n/a J
S17T022299			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022299			98-95-3	Nitrobenzene	NGS	98	1.5	1.8	n/a	n/a	n/a	n/a	1.2		n/a J
S17T022299			110-59-8	Pentanitrile	NGS	94	<1.4	16	n/a	n/a	n/a	n/a	1.4		n/a
S17T022299			107-12-0	Propanenitrile	NGS	89	<3.2	15	n/a	n/a	n/a	n/a	3.2		n/a
S17T022299			110-86-1	Pyridine	NGS	95	<1.9	3.6	n/a	n/a	n/a	n/a	1.9		n/a J
S17T022299			100-42-5	Styrene	NGS	95	<1.7	4.0	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022299			127-18-4	Tetrachloroethene	NGS	98	<1.1	3.4	n/a	n/a	n/a	n/a	1.1		n/a J
S17T022299			108-88-3	Toluene	NGS	97	<1.1	14	n/a	n/a	n/a	n/a	1.1		n/a
S17T022299			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022299			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	570	n/a	n/a	n/a	n/a	2.9		n/a E

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03269-2-TL1-IN-2

Customer Sample ID: 17-03269-2-TL1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022299			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022299			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022299			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022299			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-3  
Customer Sample ID: 17-03269-2-TL1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022300			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a QU
S17T022300			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a QU
S17T022300			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022300			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022300			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022300			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022300			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a QU
S17T022300			123-91-1	1,4-Dioxane	NGS	97	<3.8	4.3	n/a	n/a	n/a	n/a	3.8		n/a
S17T022300			71-36-3	1-Butanol	NGS	100	<2.7	24.0	n/a	n/a	n/a	n/a	2.7		n/a
S17T022300			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a QU
S17T022300			71-23-8	1-Propanol	NGS	94	<5.2	23.0	n/a	n/a	n/a	n/a	5.2		n/a
S17T022300			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a QU
S17T022300			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022300			78-93-3	2-Butanone	NGS	100	<2.3	88.0	n/a	n/a	n/a	n/a	2.3		n/a E
S17T022300			110-43-0	2-Heptanone	NGS	100	<1.5	5.7	n/a	n/a	n/a	n/a	1.5		n/a JQ
S17T022300			591-78-6	2-Hexanone	NGS	100	<1.5	62	n/a	n/a	n/a	n/a	1.5		n/a Q
S17T022300			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022300			78-94-4	3-Buten-2-one	NGS	98	<2.5	11	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022300			106-35-4	3-Heptanone	NGS	99	<1.4	32	n/a	n/a	n/a	n/a	1.4		n/a Q
S17T022300			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a QU
S17T022300			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	5.1	n/a	n/a	n/a	n/a	1.6		n/a JQ
S17T022300			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	8.4	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022300			67-64-1	Acetone	NGS	91	4.0	4.8E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T022300			75-05-8	Acetonitrile	NGS	100	<2.9	99.0	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022300			98-86-2	Acetophenone	NGS	87	2.1	10	n/a	n/a	n/a	n/a	2.0		n/a JQ
S17T022300			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022300			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022300			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-3  
Customer Sample ID: 17-03269-2-TL1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022300			71-43-2	Benzene	NGS	99	<1.5	22	n/a	n/a	n/a	n/a	1.5		n/a
S17T022300			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a QU
S17T022300			123-72-8	Butanal	NGS	100	<3.6	20	n/a	n/a	n/a	n/a	3.6		n/a
S17T022300			109-74-0	Butanenitrile	NGS	95	<1.8	43	n/a	n/a	n/a	n/a	1.8		n/a
S17T022300			56-23-5	Carbon tetrachloride	NGS	95	<1.3	2.0	n/a	n/a	n/a	n/a	1.3		n/a J
S17T022300			108-90-7	Chlorobenzene	NGS	95	<1.3	6.4	n/a	n/a	n/a	n/a	1.3		n/a JQ
S17T022300			75-00-3	Chloroethane	NGS	70	<2.0	4.2	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022300			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022300			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022300			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82		n/a QU
S17T022300			64-17-5	Ethanol	NGS	90	<4.6	360	n/a	n/a	n/a	n/a	4.6		n/a L
S17T022300			141-78-6	Ethyl acetate	NGS	95	<1.6	2.2	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022300			100-41-4	Ethylbenzene	NGS	97	<1.7	2.9	n/a	n/a	n/a	n/a	1.7		n/a JQ
S17T022300			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022300			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S17T022300			628-73-9	Hexanenitrile	NGS	90	<2.3	11	n/a	n/a	n/a	n/a	2.3		n/a JQ
S17T022300			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T022300			75-09-2	Methylene Chloride	NGS	100	3.6	14	n/a	n/a	n/a	n/a	3.0		n/a
S17T022300			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9		n/a QU
S17T022300			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2		n/a QU
S17T022300			110-59-8	Pentanitrile	NGS	94	<1.4	36	n/a	n/a	n/a	n/a	1.4		n/a Q
S17T022300			107-12-0	Propanenitrile	NGS	89	<3.2	21	n/a	n/a	n/a	n/a	3.2		n/a
S17T022300			110-86-1	Pyridine	NGS	95	<1.9	4.3	n/a	n/a	n/a	n/a	1.9		n/a J
S17T022300			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a QU
S17T022300			127-18-4	Tetrachloroethene	NGS	98	<1.1	5.0	n/a	n/a	n/a	n/a	1.1		n/a JQ
S17T022300			108-88-3	Toluene	NGS	97	<1.1	16	n/a	n/a	n/a	n/a	1.1		n/a Q
S17T022300			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022300			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	600	n/a	n/a	n/a	n/a	2.9		n/a E

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-3  
Customer Sample ID: 17-03269-2-TL1-IN-3

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022300			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022300			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022300			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022300			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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U - Less Than Detection Limit

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L - LLS Outside Range

J - Estimated  
E - Outside Calibration Range

N - Named TIC

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-4  
Customer Sample ID: 17-03269-2-TL1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S17T022301			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a QU
S17T022301			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a QU
S17T022301			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022301			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022301			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022301			642-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022301			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a QU
S17T022301			123-91-1	1,4-Dioxane	NGS	97	<3.8	40	n/a	n/a	n/a	n/a	3.8		n/a
S17T022301			71-36-3	1-Butanol	NGS	100	<2.7	250	n/a	n/a	n/a	n/a	2.7		n/a
S17T022301			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a QU
S17T022301			71-23-8	1-Propanol	NGS	94	<5.2	280	n/a	n/a	n/a	n/a	5.2		n/a
S17T022301			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a QU
S17T022301			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022301			78-93-3	2-Butanone	NGS	100	<2.3	1.1E+03	n/a	n/a	n/a	n/a	2.3		n/a E
S17T022301			110-43-0	2-Heptanone	NGS	100	<1.5	4.7	n/a	n/a	n/a	n/a	1.5		n/a JQ
S17T022301			591-78-6	2-Hexanone	NGS	100	<1.5	62	n/a	n/a	n/a	n/a	1.5		n/a Q
S17T022301			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022301			78-94-4	3-Buten-2-one	NGS	98	<2.5	11	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022301			106-35-4	3-Heptanone	NGS	99	<1.4	28	n/a	n/a	n/a	n/a	1.4		n/a Q
S17T022301			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a QU
S17T022301			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	5.5	n/a	n/a	n/a	n/a	1.6		n/a JQ
S17T022301			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	7.7	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022301			67-64-1	Acetone	NGS	91	4.0	5.1E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T022301			75-05-8	Acetonitrile	NGS	100	<2.9	1.5E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022301			98-86-2	Acetophenone	NGS	87	2.1	5.1	n/a	n/a	n/a	n/a	2.0		n/a JQ
S17T022301			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022301			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022301			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-4  
Customer Sample ID: 17-03269-2-TL1-IN-4

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022301			71-43-2	Benzene	NGS	99	<1.5	23	n/a	n/a	n/a	n/a	1.5		n/a
S17T022301			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a QU
S17T022301			123-72-8	Butanal	NGS	100	<3.6	22	n/a	n/a	n/a	n/a	3.6		n/a
S17T022301			109-74-0	Butanenitrile	NGS	95	<1.8	47	n/a	n/a	n/a	n/a	1.8		n/a
S17T022301			56-23-5	Carbon tetrachloride	NGS	95	<1.3	1.7	n/a	n/a	n/a	n/a	1.3		n/a J
S17T022301			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a QU
S17T022301			75-00-3	Chloroethane	NGS	70	<2.0	4.0	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022301			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022301			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022301			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82		n/a QU
S17T022301			64-17-5	Ethanol	NGS	90	<4.6	320	n/a	n/a	n/a	n/a	4.6		n/a L
S17T022301			141-78-6	Ethyl acetate	NGS	96	<1.6	4.2	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022301			100-41-4	Ethylbenzene	NGS	97	<1.7	2.3	n/a	n/a	n/a	n/a	1.7		n/a JQ
S17T022301			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022301			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S17T022301			628-73-9	Hexanenitrile	NGS	90	<2.3	9.2	n/a	n/a	n/a	n/a	2.3		n/a JQ
S17T022301			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T022301			75-09-2	Methylene Chloride	NGS	100	3.6	8.9	n/a	n/a	n/a	n/a	3.0		n/a J
S17T022301			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9		n/a QU
S17T022301			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2		n/a QU
S17T022301			110-59-8	Pentanitrile	NGS	94	<1.4	41	n/a	n/a	n/a	n/a	1.4		n/a Q
S17T022301			107-12-0	Propanenitrile	NGS	89	<3.2	25	n/a	n/a	n/a	n/a	3.2		n/a
S17T022301			110-86-1	Pyridine	NGS	95	<1.9	3.8	n/a	n/a	n/a	n/a	1.9		n/a J
S17T022301			100-42-5	Styrene	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a QU
S17T022301			127-18-4	Tetrachloroethene	NGS	98	<1.1	5.1	n/a	n/a	n/a	n/a	1.1		n/a JQ
S17T022301			108-88-3	Toluene	NGS	97	<1.1	15	n/a	n/a	n/a	n/a	1.1		n/a Q
S17T022301			79-01-5	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022301			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	380	n/a	n/a	n/a	n/a	2.9		n/a

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-4  
Customer Sample ID: 17-03269-2-TL1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022301			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022301			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	QU
S17T022301			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022301			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-5  
Customer Sample ID: 17-03269-2-TL1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S17T022302			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022302			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022302			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022302			75-35-4	1,1-Dichloroethane	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022302			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022302			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022302			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022302			123-91-1	1,4-Dioxane	NGS	97	<3.8	23	n/a	n/a	n/a	n/a	3.8		n/a
S17T022302			71-36-3	1-Butanol	NGS	100	<2.7	190	n/a	n/a	n/a	n/a	2.7		n/a
S17T022302			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022302			71-23-8	1-Propanol	NGS	94	<5.2	140	n/a	n/a	n/a	n/a	5.2		n/a
S17T022302			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022302			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022302			78-93-3	2-Butanone	NGS	100	<2.3	550	n/a	n/a	n/a	n/a	2.3		n/a E
S17T022302			110-43-0	2-Heptanone	NGS	100	<1.5	20	n/a	n/a	n/a	n/a	1.5		n/a
S17T022302			591-78-6	2-Hexanone	NGS	100	<1.5	99	n/a	n/a	n/a	n/a	1.5		n/a
S17T022302			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022302			78-94-4	3-Buten-2-one	NGS	98	<2.5	11	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022302			106-35-4	3-Heptanone	NGS	99	<1.4	100	n/a	n/a	n/a	n/a	1.4		n/a
S17T022302			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022302			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	7.8	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022302			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	13	n/a	n/a	n/a	n/a	2.5		n/a
S17T022302			67-64-1	Acetone	NGS	91	4.0	2.4E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T022302			75-05-8	Acetonitrile	NGS	100	<2.9	910	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022302			98-86-2	Acetophenone	NGS	87	2.1	12	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022302			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022302			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022302			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-5  
Customer Sample ID: 17-03269-2-TL1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022302			71-43-2	Benzene	NGS	99	<1.5	21	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022302			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022302			123-72-8	Butanal	NGS	100	<3.6	28	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022302			109-74-0	Butanenitrile	NGS	95	<1.8	28	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022302			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022302			108-90-7	Chlorobenzene	NGS	95	<1.3	5.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T022302			75-00-3	Chloroethane	NGS	70	<2.0	2.5	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022302			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022302			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022302			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	U
S17T022302			64-17-5	Ethanol	NGS	90	<4.6	270	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022302			141-78-6	Ethyl acetate	NGS	95	<1.6	2.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022302			100-41-4	Ethylbenzene	NGS	97	<1.7	5.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022302			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022302			110-54-3	Hexane	NGS	88	<2.1	17	n/a	n/a	n/a	n/a	2.1	n/a	
S17T022302			628-73-9	Hexanenitrile	NGS	90	<2.3	14	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022302			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022302			75-09-2	Methylene Chloride	NGS	100	3.6	5.8	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022302			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022302			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022302			110-59-8	Pentanitrile	NGS	94	<1.4	20	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022302			107-12-0	Propanenitrile	NGS	89	<3.2	22	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022302			110-86-1	Pyridine	NGS	95	<1.9	4.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022302			100-42-5	Styrene	NGS	95	<1.7	2.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022302			127-18-4	Tetrachloroethene	NGS	98	<1.1	3.8	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022302			108-88-3	Toluene	NGS	97	<1.1	14	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022302			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022302			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	250	n/a	n/a	n/a	n/a	2.9	n/a	

T - Tentatively Identified Compound  
U - Less Than Detection Limit  
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L - LLS Outside Range  
J - Estimated  
E - Outside Calibration Range  
N - Named TIC  
NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-5  
Customer Sample ID: 17-03269-2-TL1-IN-5

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022302			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022302			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022302			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022302			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

T - Tentatively Identified Compound  
U - Less Than Detection Limit  
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L - LLS Outside Range  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-6  
Customer Sample ID: 17-03269-2-TL1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rac %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022303			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022303			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022303			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022303			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022303			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022303			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022303			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022303			123-91-1	1,4-Dioxane	NGS	97	<3.8	22	n/a	n/a	n/a	n/a	3.8		n/a
S17T022303			71-36-3	1-Butanol	NGS	100	<2.7	170	n/a	n/a	n/a	n/a	2.7		n/a
S17T022303			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022303			71-23-8	1-Propanol	NGS	94	<5.2	120	n/a	n/a	n/a	n/a	5.2		n/a U
S17T022303			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022303			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022303			78-93-3	2-Butanone	NGS	100	<2.3	480	n/a	n/a	n/a	n/a	2.3		n/a E
S17T022303			110-43-0	2-Heptanone	NGS	100	<1.5	19	n/a	n/a	n/a	n/a	1.5		n/a
S17T022303			591-78-6	2-Hexanone	NGS	100	<1.5	89	n/a	n/a	n/a	n/a	1.5		n/a
S17T022303			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022303			78-94-4	3-Buten-2-one	NGS	98	<2.5	11	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022303			108-35-4	3-Heptanone	NGS	99	<1.4	95	n/a	n/a	n/a	n/a	1.4		n/a
S17T022303			106-68-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022303			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	8.2	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022303			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	13	n/a	n/a	n/a	n/a	2.5		n/a
S17T022303			67-64-1	Acetone	NGS	91	4.0	2.7E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T022303			75-05-8	Acetonitrile	NGS	100	<2.9	1.3E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022303			98-86-2	Acetophenone	NGS	87	2.1	3.4	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022303			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022303			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022303			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-6  
Customer Sample ID: 17-03269-2-TL1-IN-6

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022303			71-43-2	Benzene	NGS	99	<1.5	22	n/a	n/a	n/a	n/a	1.5		n/a
S17T022303			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022303			123-72-8	Butanal	NGS	100	<3.6	22	n/a	n/a	n/a	n/a	3.6		n/a
S17T022303			109-74-0	Butanenitrile	NGS	95	<1.8	25	n/a	n/a	n/a	n/a	1.8		n/a
S17T022303			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022303			108-90-7	Chlorobenzene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022303			75-00-3	Chloroethane	NGS	70	<2.0	4.2	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022303			87-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022303			110-82-7	Cyclohexane	NGS	89	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022303			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82		n/a U
S17T022303			64-17-5	Ethanol	NGS	90	<4.6	270	n/a	n/a	n/a	n/a	4.6		n/a L
S17T022303			141-78-6	Ethyl acetate	NGS	95	<1.6	2.0	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022303			100-41-4	Ethylbenzene	NGS	97	<1.7	5.3	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022303			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022303			110-54-3	Hexane	NGS	88	<2.1	15	n/a	n/a	n/a	n/a	2.1		n/a
S17T022303			628-73-9	Hexanenitrile	NGS	90	<2.3	13	n/a	n/a	n/a	n/a	2.3		n/a
S17T022303			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T022303			75-09-2	Methylene Chloride	NGS	100	3.6	4.9	n/a	n/a	n/a	n/a	3.0		n/a J
S17T022303			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022303			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022303			110-59-8	Pentanitrile	NGS	94	<1.4	17	n/a	n/a	n/a	n/a	1.4		n/a
S17T022303			107-12-0	Propanenitrile	NGS	89	<3.2	21	n/a	n/a	n/a	n/a	3.2		n/a
S17T022303			110-86-1	Pyridine	NGS	95	<1.9	3.3	n/a	n/a	n/a	n/a	1.9		n/a J
S17T022303			100-42-5	Styrene	NGS	95	<1.7	1.9	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022303			127-18-4	Tetrachloroethene	NGS	98	<1.1	3.6	n/a	n/a	n/a	n/a	1.1		n/a J
S17T022303			108-88-3	Toluene	NGS	97	<1.1	16	n/a	n/a	n/a	n/a	1.1		n/a
S17T022303			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022303			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	480	n/a	n/a	n/a	n/a	2.9		n/a E

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
 SDG Number:  
 Customer Sample ID: 17-03269-2-TL1-IN-6  
 Customer Sample ID: 17-03269-2-TL1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022303			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022303			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022303			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022303			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-7  
Customer Sample ID: 17-03269-2-TL1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022304			79-34-5	1,1,2,2-Tetrachloroethane	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022304			79-00-5	1,1,2-Trichloroethane	NGS	90	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022304			75-34-3	1,1-Dichloroethane	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022304			75-35-4	1,1-Dichloroethene	NGS	89	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022304			107-06-2	1,2-Dichloroethane	NGS	97	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022304			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022304			106-46-7	1,4-Dichlorobenzene	NGS	93	1.6	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022304			123-91-1	1,4-Dioxane	NGS	97	<3.8	23	n/a	n/a	n/a	n/a	3.8		n/a
S17T022304			71-36-3	1-Butanol	NGS	100	<2.7	180	n/a	n/a	n/a	n/a	2.7		n/a
S17T022304			111-70-6	1-Heptanol	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022304			71-23-8	1-Propanol	NGS	94	<5.2	120	n/a	n/a	n/a	n/a	5.2		n/a
S17T022304			108-47-4	2,4-Dimethylpyridine	NGS	92	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022304			1708-29-8	2,5-Dihydrofuran	NGS	97	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022304			78-93-3	2-Butanone	NGS	100	<2.3	340	n/a	n/a	n/a	n/a	2.3		n/a
S17T022304			110-43-0	2-Heptanone	NGS	100	<1.5	19	n/a	n/a	n/a	n/a	1.5		n/a
S17T022304			591-78-6	2-Hexanone	NGS	100	<1.5	68	n/a	n/a	n/a	n/a	1.5		n/a
S17T022304			534-22-5	2-Methylfuran	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022304			78-94-4	3-Buten-2-one	NGS	98	<2.5	11	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022304			106-35-4	3-Heptanone	NGS	99	<1.4	92	n/a	n/a	n/a	n/a	1.4		n/a
S17T022304			106-66-3	3-Octanone	NGS	98	1.4	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022304			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.6	7.5	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022304			108-10-1	4-Methyl-2-Pentanone	NGS	98	<2.5	14	n/a	n/a	n/a	n/a	2.5		n/a
S17T022304			67-64-1	Acetone	NGS	91	4.0	2.3E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T022304			75-05-8	Acetonitrile	NGS	100	<2.9	1.8E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022304			98-86-2	Acetophenone	NGS	87	2.1	3.2	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022304			107-13-1	Acrylonitrile	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022304			107-18-6	Allyl Alcohol	NGS	92	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022304			107-05-1	Allyl Chloride	NGS	93	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-7  
Customer Sample ID: 17-03269-2-TL1-IN-7

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022304			71-43-2	Benzene	NGS	99	<1.5	22	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022304			100-47-0	Benzonitrile	NGS	92	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022304			123-72-8	Butanal	NGS	100	<3.6	15	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022304			109-74-0	Butanenitrile	NGS	95	<1.8	24	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022304			56-23-5	Carbon tetrachloride	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022304			108-90-7	Chlorobenzene	NGS	95	<1.3	4.7	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T022304			75-00-3	Chloroethane	NGS	70	<2.0	5.4	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022304			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022304			110-82-7	Cyclohexane	NGS	89	<2.4	3.8	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T022304			124-18-5	Decane	NGS	100	1.1	<0.82	n/a	n/a	n/a	n/a	0.82	n/a	U
S17T022304			64-17-5	Ethanol	NGS	90	<4.6	320	n/a	n/a	n/a	n/a	4.6	n/a	L
S17T022304			141-78-6	Ethyl acetate	NGS	95	<1.6	2.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022304			100-41-4	Ethylbenzene	NGS	97	<1.7	5.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022304			110-00-9	Furan	NGS	91	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022304			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T022304			528-73-9	Hexanenitrile	NGS	90	<2.3	12	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T022304			126-98-7	Methacrylonitrile	NGS	97	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022304			75-09-2	Methylene Chloride	NGS	100	3.6	21	n/a	n/a	n/a	n/a	3.0	n/a	
S17T022304			91-20-3	Naphthalene	NGS	87	2.1	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022304			98-95-3	Nitrobenzene	NGS	98	1.5	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022304			110-59-8	Pentanitrile	NGS	94	<1.4	15	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022304			107-12-0	Propanenitrile	NGS	89	<3.2	23	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022304			110-86-1	Pyridine	NGS	95	<1.9	3.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022304			100-42-5	Styrene	NGS	95	<1.7	1.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022304			127-18-4	Tetrachloroethene	NGS	98	<1.1	3.3	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022304			108-88-3	Toluene	NGS	97	<1.1	16	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022304			79-01-6	Trichloroethene	NGS	95	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022304			75-69-4	Trichlorofluoromethane	NGS	89	<2.9	540	n/a	n/a	n/a	n/a	2.9	n/a	E

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03269-2-TL1-IN-7  
Customer Sample ID: 17-03269-2-TL1-IN-7

Sample#	- R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022304			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S177022304			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S177022304			142-82-5	n-Heptane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S177022304			10061-02-6	trans-1,3-Dichloropropene	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BA-EF  
Customer Sample ID: 17-03273-2-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S17T022305		79-34-5		1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022305		79-00-5		1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022305		75-34-3		1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022305		75-35-4		1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022305		107-06-2		1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022305		642-75-6		1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022305		106-46-7		1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022305		123-91-1		1,4-Dioxane	NGS	96	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T022305		71-36-3		1-Butanol	NGS	99	<2.7	15	n/a	n/a	n/a	n/a	2.7		n/a J
S17T022305		111-70-6		1-Heptanol	NGS	110	<2.8	7.1	n/a	n/a	n/a	n/a	2.8		n/a J
S17T022305		71-23-8		1-Propanol	NGS	100	<5.2	5.2	n/a	n/a	n/a	n/a	5.2		n/a J
S17T022305		108-47-4		2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022305		1708-29-8		2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022305		78-93-3		2-Butanone	NGS	100	<2.3	11	n/a	n/a	n/a	n/a	2.3		n/a J
S17T022305		110-43-0		2-Heptanone	NGS	97	<1.5	15	n/a	n/a	n/a	n/a	1.5		n/a
S17T022305		591-78-6		2-Hexanone	NGS	95	<1.5	19	n/a	n/a	n/a	n/a	1.5		n/a
S17T022305		534-22-5		2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022305		78-94-4		3-Buten-2-one	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022305		106-35-4		3-Heptanone	NGS	87	<1.4	71	n/a	n/a	n/a	n/a	1.4		n/a
S17T022305		106-68-3		3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022305		105-42-0		4-Methyl-2-hexanone	NGS	90	<1.6	2.8	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022305		108-10-1		4-Methyl-2-Pentanone	NGS	96	<2.5	2.5	n/a	n/a	n/a	n/a	2.5		n/a J
S17T022305		67-64-1		Acetone	NGS	100	5.8	160	n/a	n/a	n/a	n/a	3.8		n/a
S17T022305		75-05-8		Acetonitrile	NGS	94	<2.9	760	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022305		98-86-2		Acetophenone	NGS	94	<2.0	33	n/a	n/a	n/a	n/a	2.0		n/a
S17T022305		107-13-1		Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022305		107-18-6		Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022305		107-05-1		Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BA-EF  
Customer Sample ID: 17-03273-2-TL2-BA-EF

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022305			71-43-2	Benzene	NGS	94	<1.5	11	n/a	n/a	n/a	n/a	1.5		n/a J
S17T022305			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022305			123-72-8	Butanal	NGS	89	<3.6	4.2	n/a	n/a	n/a	n/a	3.6		n/a J
S17T022305			109-74-0	Butanenitrile	NGS	93	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022305			56-23-5	Carbon tetrachloride	NGS	93	<1.3	1.8	n/a	n/a	n/a	n/a	1.3		n/a J
S17T022305			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022305			75-00-3	Chloroethane	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022305			87-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022305			110-82-7	Cyclohexane	NGS	99	<2.4	5.7	n/a	n/a	n/a	n/a	2.4		n/a J
S17T022305			124-18-5	Decane	NGS	98	<0.82	22	n/a	n/a	n/a	n/a	0.82		n/a
S17T022305			64-17-5	Ethanol	NGS	91	<4.6	130	n/a	n/a	n/a	n/a	4.6		n/a
S17T022305			141-78-6	Ethyl acetate	NGS	99	<1.6	1.6	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022305			100-41-4	Ethylbenzene	NGS	90	<1.7	6.7	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022305			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022305			110-54-3	Hexane	NGS	88	<2.1	18	n/a	n/a	n/a	n/a	2.1		n/a Q
S17T022305			628-73-9	Hexanenitrile	NGS	91	<2.3	6.2	n/a	n/a	n/a	n/a	2.3		n/a J
S17T022305			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T022305			75-09-2	Methylene Chloride	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022305			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022305			98-95-3	Nitrobenzene	NGS	97	<1.2	6.1	n/a	n/a	n/a	n/a	1.2		n/a J
S17T022305			110-59-8	Pentanitrile	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022305			107-12-0	Propanenitrile	NGS	97	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2		n/a U
S17T022305			110-86-1	Pyridine	NGS	92	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022305			100-42-5	Styrene	NGS	93	<1.7	4.6	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022305			127-18-4	Tetrachloroethene	NGS	96	<1.1	1.7	n/a	n/a	n/a	n/a	1.1		n/a J
S17T022305			108-88-3	Toluene	NGS	93	<1.1	30	n/a	n/a	n/a	n/a	1.1		n/a
S17T022305			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022305			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	8.9	n/a	n/a	n/a	n/a	2.9		n/a J

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BA-EF  
Customer Sample ID: 17-03273-2-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022305			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177022305			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177022305			142-82-5	n-Heptane	NGS	94	<1.5	10	n/a	n/a	n/a	n/a	1.5	n/a	J
S177022305			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BA-IN  
Customer Sample ID: 17-03273-2-TL2-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022306			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S177022306			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S177022306			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S177022306			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S177022306			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S177022306			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S177022306			108-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S177022306			123-91-1	1,4-Dioxane	NGS	96	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S177022306			71-36-3	1-Butanol	NGS	99	<2.7	4.0	n/a	n/a	n/a	n/a	2.7		n/a U
S177022306			111-70-6	1-Heptanol	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S177022306			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U
S177022306			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S177022306			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S177022306			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S177022306			110-43-0	2-Heptanone	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S177022306			591-78-6	2-Hexanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S177022306			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S177022306			78-94-4	3-Buten-2-one	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S177022306			106-35-4	3-Heptanone	NGS	87	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S177022306			108-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S177022306			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S177022306			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S177022306			67-64-1	Acetone	NGS	100	5.8	48	n/a	n/a	n/a	n/a	3.8		n/a
S177022306			75-05-8	Acetonitrile	NGS	94	<2.9	470	n/a	n/a	n/a	n/a	2.9		n/a E
S177022306			98-86-2	Acetophenone	NGS	94	<2.0	17	n/a	n/a	n/a	n/a	2.0		n/a
S177022306			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S177022306			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S177022306			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BA-IN  
Customer Sample ID: 17-03273-2-TL2-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022306			71-43-2	Benzene	NGS	94	<1.5	6.5	n/a	n/a	n/a	n/a	1.5		n/aJ
S17T022306			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/aU
S17T022306			123-72-8	Butanal	NGS	89	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/aU
S17T022306			109-74-0	Butanenitrile	NGS	93	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/aU
S17T022306			56-23-5	Carbon tetrachloride	NGS	93	<1.3	1.8	n/a	n/a	n/a	n/a	1.3		n/aJ
S17T022306			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/aU
S17T022306			75-00-3	Chloroethane	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/aU
S17T022306			87-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/aU
S17T022306			110-82-7	Cyclohexane	NGS	99	<2.4	4.2	n/a	n/a	n/a	n/a	2.4		n/aJ
S17T022306			124-18-5	Decane	NGS	98	<0.82	18	n/a	n/a	n/a	n/a	0.82		n/a
S17T022306			64-17-5	Ethanol	NGS	91	<4.6	100	n/a	n/a	n/a	n/a	4.6		n/a
S17T022306			141-78-6	Ethyl acetate	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/aU
S17T022306			100-41-4	Ethylbenzene	NGS	90	<1.7	2.1	n/a	n/a	n/a	n/a	1.7		n/aJ
S17T022306			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/aU
S17T022306			110-54-3	Hexane	NGS	88	<2.1	11	n/a	n/a	n/a	n/a	2.1		n/aJQ
S17T022306			628-73-9	Hexanenitrile	NGS	91	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/aU
S17T022306			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/aU
S17T022306			75-09-2	Methylene Chloride	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/aU
S17T022306			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/aU
S17T022306			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/aU
S17T022306			110-59-8	Pentanitrile	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/aU
S17T022306			107-12-0	Propanenitrile	NGS	97	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2		n/aU
S17T022306			110-86-1	Pyridine	NGS	92	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/aU
S17T022306			100-42-5	Styrene	NGS	93	<1.7	3.6	n/a	n/a	n/a	n/a	1.7		n/aJ
S17T022306			127-18-4	Tetrachloroethane	NGS	96	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/aU
S17T022306			108-88-3	Toluene	NGS	93	<1.1	19	n/a	n/a	n/a	n/a	1.1		n/a
S17T022306			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/aU
S17T022306			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	5.0	n/a	n/a	n/a	n/a	2.9		n/aJ

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J - Estimated  
E - Outside Calibration Range  
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NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BA-IN  
Customer Sample ID: 17-03273-2-TL2-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022306			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022306			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022306			142-82-5	n-Heptane	NGS	94	<1.5	6.2	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T022306			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BL-EF  
Customer Sample ID: 17-03273-2-TL2-BL-EF

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022307			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022307			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022307			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022307			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022307			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022307			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022307			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022307			123-91-1	1,4-Dioxane	NGS	96	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T022307			71-36-3	1-Butanol	NGS	99	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T022307			111-70-6	1-Heptanol	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022307			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U
S17T022307			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022307			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022307			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022307			110-43-0	2-Heptanone	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022307			591-78-6	2-Hexanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022307			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022307			78-94-4	3-Buten-2-one	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022307			106-35-4	3-Heptanone	NGS	87	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022307			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022307			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022307			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022307			67-64-1	Acetone	NGS	100	5.8	34	n/a	n/a	n/a	n/a	3.8		n/a
S17T022307			75-05-8	Acetonitrile	NGS	94	<2.9	460	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022307			98-86-2	Acetophenone	NGS	94	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022307			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022307			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022307			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BL-EF  
Customer Sample ID: 17-03273-2-TL2-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022307			71-43-2	Benzene	NGS	94	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022307			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022307			123-72-8	Butanal	NGS	89	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022307			109-74-0	Butanenitrile	NGS	93	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022307			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022307			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022307			75-00-3	Chloroethane	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022307			87-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022307			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022307			124-18-5	Decane	NGS	98	<0.82	<0.82	n/a	n/a	n/a	n/a	0.82		n/a U
S17T022307			84-17-5	Ethanol	NGS	91	<4.6	120	n/a	n/a	n/a	n/a	4.6		n/a
S17T022307			141-78-6	Ethyl acetate	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022307			100-41-4	Ethylbenzene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S17T022307			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022307			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a QU
S17T022307			628-73-9	Hexanenitrile	NGS	91	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022307			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T022307			75-09-2	Methylene Chloride	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022307			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022307			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022307			110-59-8	Pentanitrile	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022307			107-12-0	Propanenitrile	NGS	97	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2		n/a U
S17T022307			110-86-1	Pyridine	NGS	92	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022307			100-42-5	Styrene	NGS	93	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S17T022307			127-18-4	Tetrachloroethene	NGS	96	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022307			108-88-3	Toluene	NGS	93	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022307			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022307			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03273-2-TL2-BL-EF

Customer Sample ID: 17-03273-2-TL2-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022307			10061-01-5	dis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022307			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022307			142-82-5	n-Heptane	NGS	94	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022307			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BL-IN  
Customer Sample ID: 17-03273-2-TL2-BL-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022308			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022308			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022308			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022308			75-35-4	1,1-Dichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022308			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022308			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022308			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022308			123-91-1	1,4-Dioxane	NGS	96	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T022308			71-36-3	1-Butanol	NGS	99	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T022308			111-70-6	1-Heptanol	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022308			71-23-8	1-Propanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U
S17T022308			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022308			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022308			78-93-3	2-Butanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022308			110-43-0	2-Heptanone	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022308			591-78-6	2-Hexanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022308			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022308			78-94-4	3-Buten-2-one	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022308			106-35-4	3-Heptanone	NGS	87	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022308			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022308			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022308			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022308			67-64-1	Acetone	NGS	100	5.8	36	n/a	n/a	n/a	n/a	3.8		n/a
S17T022308			75-05-8	Acetonitrile	NGS	94	<2.9	510	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022308			98-86-2	Acetophenone	NGS	94	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022308			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022308			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022308			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BL-IN  
Customer Sample ID: 17-03273-2-TL2-BL-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022308			71-43-2	Benzene	NGS	94	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S17T022308			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022308			123-72-8	Butanal	NGS	89	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022308			109-74-0	Butanenitrile	NGS	93	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022308			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022308			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022308			75-00-3	Chloroethane	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022308			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022308			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022308			124-18-5	Decane	NGS	98	<0.82	<0.82	n/a	n/a	n/a	n/a	0.82		n/a U
S17T022308			64-17-5	Ethanol	NGS	91	<4.6	140	n/a	n/a	n/a	n/a	4.6		n/a
S17T022308			141-78-6	Ethyl acetate	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022308			100-41-4	Ethylbenzene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S17T022308			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022308			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a QU
S17T022308			628-73-9	Hexanenitrile	NGS	91	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022308			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T022308			75-09-2	Methylene Chloride	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022308			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022308			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022308			110-59-8	Pentanitrile	NGS	92	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022308			107-12-0	Propanenitrile	NGS	97	<3.2	<3.2	n/a	n/a	n/a	n/a	3.2		n/a U
S17T022308			110-86-1	Pyridine	NGS	92	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022308			100-42-5	Styrene	NGS	93	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S17T022308			127-18-4	Tetrachloroethene	NGS	96	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022308			108-88-3	Toluene	NGS	93	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022308			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022308			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9		n/a U

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-BL-IN  
Customer Sample ID: 17-03273-2-TL2-BL-IN

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022308			10061-01-5	dis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022308			123-86-4	n-Butyl acetate	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022308			142-82-5	n-Heptane	NGS	94	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022308			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-2  
Customer Sample ID: 17-03273-2-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022309			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022309			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022309			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022309			75-35-4	1,1-Dichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022309			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022309			542-75-6	1,3-Dichloropropene (Total)	NGS		n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022309			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022309			123-91-1	1,4-Dioxane	NGS	96	<3.8	21	n/a	n/a	n/a	n/a	3.8		n/a
S17T022309			71-36-3	1-Butanol	NGS	99	<2.7	190	n/a	n/a	n/a	n/a	2.7		n/a
S17T022309			111-70-6	1-Heptanol	NGS	110	<2.8	9.2	n/a	n/a	n/a	n/a	2.8		n/a U
S17T022309			71-23-8	1-Propanol	NGS	100	<5.2	100	n/a	n/a	n/a	n/a	5.2		n/a
S17T022309			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022309			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022309			78-93-3	2-Butanone	NGS	100	<2.3	240	n/a	n/a	n/a	n/a	2.3		n/a
S17T022309			110-43-0	2-Heptanone	NGS	97	<1.5	26	n/a	n/a	n/a	n/a	1.5		n/a
S17T022309			591-78-6	2-Hexanone	NGS	95	<1.5	88	n/a	n/a	n/a	n/a	1.5		n/a
S17T022309			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022309			78-94-4	3-Buten-2-one	NGS	96	<2.5	12	n/a	n/a	n/a	n/a	2.5		n/a U
S17T022309			106-35-4	3-Heptanone	NGS	87	<1.4	120	n/a	n/a	n/a	n/a	1.4		n/a
S17T022309			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022309			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	8.5	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022309			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	17	n/a	n/a	n/a	n/a	2.5		n/a
S17T022309			67-64-1	Acetone	NGS	100	5.8	2.3E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T022309			75-05-8	Acetonitrile	NGS	94	<2.9	2.9E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022309			96-86-2	Acetophenone	NGS	94	<2.0	27	n/a	n/a	n/a	n/a	2.0		n/a
S17T022309			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022309			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022309			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-2  
Customer Sample ID: 17-03273-2-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022309			71-43-2	Benzene	NGS	94	<1.5	20	n/a	n/a	n/a	n/a	1.5		n/a
S17T022309			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022309			123-72-8	Butanal	NGS	89	<3.6	13	n/a	n/a	n/a	n/a	3.6		n/a
S17T022309			109-74-0	Butanenitrile	NGS	93	<1.8	21	n/a	n/a	n/a	n/a	1.8		n/a
S17T022309			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S17T022309			108-90-7	Chlorobenzene	NGS	94	<1.3	2.6	n/a	n/a	n/a	n/a	1.3		n/a J
S17T022309			75-00-3	Chloroethane	NGS	96	<2.0	4.5	n/a	n/a	n/a	n/a	2.0		n/a J
S17T022309			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022309			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T022309			124-18-5	Decane	NGS	98	<0.82	21	n/a	n/a	n/a	n/a	0.82		n/a
S17T022309			64-17-5	Ethanol	NGS	91	<4.6	360	n/a	n/a	n/a	n/a	4.6		n/a
S17T022309			141-78-6	Ethyl acetate	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022309			100-41-4	Ethylbenzene	NGS	90	<1.7	7.0	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022309			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022309			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a QU
S17T022309			628-73-9	Hexanenitrile	NGS	91	<2.3	15	n/a	n/a	n/a	n/a	2.3		n/a
S17T022309			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T022309			75-08-2	Methylene Chloride	NGS	100	<3.0	3.3	n/a	n/a	n/a	n/a	3.0		n/a J
S17T022309			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S17T022309			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022309			110-59-8	Pentanitrile	NGS	92	<1.4	18	n/a	n/a	n/a	n/a	1.4		n/a
S17T022309			107-12-0	Propanenitrile	NGS	97	<3.2	16	n/a	n/a	n/a	n/a	3.2		n/a
S17T022309			110-86-1	Pyridine	NGS	92	<1.9	5.0	n/a	n/a	n/a	n/a	1.9		n/a J
S17T022309			100-42-5	Styrene	NGS	93	<1.7	4.8	n/a	n/a	n/a	n/a	1.7		n/a J
S17T022309			127-18-4	Tetrachloroethene	NGS	96	<1.1	3.9	n/a	n/a	n/a	n/a	1.1		n/a J
S17T022309			108-88-3	Toluene	NGS	83	<1.1	17	n/a	n/a	n/a	n/a	1.1		n/a
S17T022309			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S17T022309			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	440	n/a	n/a	n/a	n/a	2.9		n/a E

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-2

Customer Sample ID: 17-03273-2-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022309			10081-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022309			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022309			142-82-5	n-Heptane	NGS	94	<1.5	15	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022309			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-3  
Customer Sample ID: 17-03273-2-TL2-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022310			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S17T022310			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T022310			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022310			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T022310			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T022310			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S17T022310			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S17T022310			123-91-1	1,4-Dioxane	NGS	96	<3.8	28	n/a	n/a	n/a	n/a	3.8		n/a
S17T022310			71-36-3	1-Bulanol	NGS	99	<2.7	200	n/a	n/a	n/a	n/a	2.7		n/a
S17T022310			111-70-6	1-Heptanol	NGS	110	<2.8	8.6	n/a	n/a	n/a	n/a	2.8		n/a J
S17T022310			71-23-8	1-Propanol	NGS	100	<5.2	130	n/a	n/a	n/a	n/a	5.2		n/a
S17T022310			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T022310			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7		n/a U
S17T022310			78-93-3	2-Butanone	NGS	100	<2.3	410	n/a	n/a	n/a	n/a	2.3		n/a E
S17T022310			110-43-0	2-Heptanone	NGS	97	<1.5	26	n/a	n/a	n/a	n/a	1.5		n/a
S17T022310			591-78-6	2-Hexanone	NGS	96	<1.5	90	n/a	n/a	n/a	n/a	1.5		n/a
S17T022310			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S17T022310			78-94-4	3-Buten-2-one	NGS	96	<2.5	14	n/a	n/a	n/a	n/a	2.5		n/a
S17T022310			106-35-4	3-Heptanone	NGS	87	<1.4	130	n/a	n/a	n/a	n/a	1.4		n/a
S17T022310			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T022310			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	9.1	n/a	n/a	n/a	n/a	1.6		n/a J
S17T022310			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	16	n/a	n/a	n/a	n/a	2.5		n/a
S17T022310			67-64-1	Acetone	NGS	100	5.8	2.7E+03	n/a	n/a	n/a	n/a	3.8		n/a E
S17T022310			75-05-6	Acetonitrile	NGS	94	<2.9	1.2E+03	n/a	n/a	n/a	n/a	2.9		n/a E
S17T022310			98-86-2	Acetophenone	NGS	94	<2.0	12	n/a	n/a	n/a	n/a	2.0		n/a
S17T022310			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T022310			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S17T022310			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2		n/a U

T - Tentatively Identified Compound  
U - Less Than Detection Limit  
Q - Qualitative  
L - LLS Outside Range  
J - Estimated  
E - Outside Calibration Range  
N - Named TIC  
NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-3  
Customer Sample ID: 17-03273-2-TL2-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022310			71-43-2	Benzene	NGS	94	<1.5	19	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022310			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022310			123-72-8	Butanal	NGS	89	<3.6	15	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022310			109-74-0	Butanenitrile	NGS	93	<1.8	28	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022310			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022310			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022310			75-00-3	Chloroethane	NGS	96	<2.0	5.6	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022310			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022310			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022310			124-18-5	Decane	NGS	98	<0.82	21	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022310			64-17-5	Ethanol	NGS	91	<4.6	620	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022310			141-78-6	Ethyl acetate	NGS	99	<1.6	2.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022310			100-41-4	Ethylbenzene	NGS	90	<1.7	7.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022310			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022310			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	QU
S17T022310			628-73-9	Hexanenitrile	NGS	91	<2.3	17	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022310			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022310			75-09-2	Methylene Chloride	NGS	100	<3.0	14	n/a	n/a	n/a	n/a	3.0	n/a	
S17T022310			91-20-3	Naphthalene	NGS	87	<1.9	2.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022310			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022310			110-59-8	Pentanitrile	NGS	92	<1.4	18	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022310			107-12-0	Propanenitrile	NGS	97	<3.2	19	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022310			110-86-1	Pyridine	NGS	92	<1.9	4.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022310			100-42-5	Styrene	NGS	93	<1.7	4.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022310			127-18-4	Tetrachloroethene	NGS	96	<1.1	4.2	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022310			108-88-3	Toluene	NGS	93	<1.1	16	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022310			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022310			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	450	n/a	n/a	n/a	n/a	2.9	n/a	E

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-3  
Customer Sample ID: 17-03273-2-TL2-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022310			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022310			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022310			142-82-5	n-Heptane	NGS	94	<1.5	14	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022310			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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E - Outside Calibration Range

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-4  
Customer Sample ID: 17-03273-2-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S17T022311			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022311			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022311			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022311			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022311			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022311			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022311			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022311			123-91-1	1,4-Dioxane	NGS	96	<3.8	30	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022311			71-36-3	1-Butanol	NGS	99	<2.7	210	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022311			111-70-6	1-Heptanol	NGS	110	<2.8	6.4	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T022311			71-23-8	1-Propanol	NGS	100	<5.2	140	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022311			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022311			1708-29-8	2,5-Dihydroturan	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022311			78-93-3	2-Butanone	NGS	100	<2.3	430	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T022311			110-43-0	2-Heptanone	NGS	97	<1.5	31	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022311			591-78-6	2-Hexanone	NGS	95	<1.5	110	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022311			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022311			78-94-4	3-Buten-2-one	NGS	96	<2.5	12	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022311			106-35-4	3-Heptanone	NGS	87	<1.4	150	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022311			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022311			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022311			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	18	n/a	n/a	n/a	n/a	2.5	n/a	
S17T022311			67-64-1	Acetone	NGS	100	5.8	2.3E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022311			75-05-8	Acetonitrile	NGS	94	<2.9	2.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022311			98-86-2	Acetophenone	NGS	94	<2.0	10	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022311			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022311			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022311			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-4  
Customer Sample ID: 17-03273-2-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022311			71-43-2	Benzene	NGS	94	<1.5	22	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022311			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022311			123-72-8	Butanal	NGS	89	<3.6	17	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022311			109-74-0	Butanenitrile	NGS	93	<1.8	30	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022311			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022311			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022311			75-00-3	Chloroethane	NGS	96	<2.0	5.6	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022311			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022311			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022311			124-18-5	Decane	NGS	98	<0.82	14	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022311			64-17-5	Ethanol	NGS	91	<4.6	640	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022311			141-78-6	Ethyl acetate	NGS	99	<1.6	2.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022311			100-41-4	Ethylbenzene	NGS	90	<1.7	8.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022311			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022311			110-54-3	Hexane	NGS	88	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	QU
S17T022311			628-73-9	Hexanenitrile	NGS	91	<2.3	20	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022311			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022311			75-09-2	Methylene Chloride	NGS	100	<3.0	6.3	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022311			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022311			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022311			110-59-8	Pentanitrile	NGS	92	<1.4	23	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022311			107-12-0	Propanenitrile	NGS	97	<3.2	18	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022311			110-86-1	Pyridine	NGS	92	<1.9	5.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022311			100-42-5	Styrene	NGS	93	<1.7	2.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022311			127-18-4	Tetrachloroethene	NGS	96	<1.1	4.8	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022311			108-88-3	Toluene	NGS	93	<1.1	17	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022311			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022311			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	520	n/a	n/a	n/a	n/a	2.9	n/a	E

NA = Not Analyzed, ND = Not Detected  
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J - Estimated  
E - Outside Calibration Range  
Q - Qualitative  
L - LLS Outside Range  
T - Tentatively Identified Compound  
U - Less Than Detection Limit



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-4

Customer Sample ID: 17-03273-2-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022311			10061-01-5	cls-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022311			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022311			142-82-5	n-Heptane	NGS	94	<1.5	16	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022311			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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J - Estimated  
E - Outside Calibration Range

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N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-5  
Customer Sample ID: 17-03273-2-TL2-IN-5

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022312			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022312			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022312			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022312			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022312			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022312			542-75-6	1,3-Dichloropropene (Total)	NGS		n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022312			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022312			123-91-1	1,4-Dioxane	NGS	96	<3.8	26	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022312			71-36-3	1-Butanol	NGS	99	<2.7	220	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022312			111-70-6	1-Heptanol	NGS	110	<2.8	8.0	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T022312			71-23-8	1-Propanol	NGS	100	<5.2	150	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022312			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022312			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022312			78-93-3	2-Butanone	NGS	100	<2.3	490	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T022312			110-43-0	2-Heptanone	NGS	97	<1.5	28	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022312			591-78-6	2-Hexanone	NGS	95	<1.5	110	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022312			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022312			78-94-4	3-Buten-2-one	NGS	96	<2.5	10	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022312			106-35-4	3-Heptanone	NGS	87	<1.4	140	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022312			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022312			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	9.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022312			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	17	n/a	n/a	n/a	n/a	2.5	n/a	
S17T022312			67-64-1	Acetone	NGS	100	5.8	2.3E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022312			75-05-8	Acetonitrile	NGS	94	<2.9	1.0E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022312			98-96-2	Acetophenone	NGS	94	<2.0	17	n/a	n/a	n/a	n/a	2.0	n/a	
S17T022312			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022312			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022312			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

T - Tentatively Identified Compound  
U - Less Than Detection Limit  
Q - Qualitative  
L - LLS Outside Range  
J - Estimated  
E - Outside Calibration Range  
NA = Not Analyzed, ND = Not Detected  
N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-5  
Customer Sample ID: 17-03273-2-TL2-IN-5

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022312			71-43-2	Benzene	NGS	94	<1.5	23	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022312			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022312			123-72-8	Butanal	NGS	89	<3.6	19	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022312			109-74-0	Butanenitrile	NGS	93	<1.8	30	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022312			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022312			106-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022312			75-00-3	Chloroethane	NGS	96	<2.0	3.4	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022312			67-56-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022312			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022312			124-18-5	Decane	NGS	98	<0.82	16	n/a	n/a	n/a	n/a	0.82	n/a	
S17T022312			64-17-5	Ethanol	NGS	91	<4.6	400	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022312			141-78-6	Ethyl acetate	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022312			100-41-4	Ethylbenzene	NGS	90	<1.7	7.3	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022312			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022312			110-54-3	Hexane	NGS	88	<2.1	24	n/a	n/a	n/a	n/a	2.1	n/a	Q
S17T022312			628-73-9	Hexanenitrile	NGS	91	<2.3	19	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022312			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022312			75-09-2	Methylene Chloride	NGS	100	<3.0	5.1	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022312			91-20-3	Naphthalene	NGS	87	<1.9	2.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022312			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022312			110-59-8	Pentanitrile	NGS	92	<1.4	22	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022312			107-12-0	Propanenitrile	NGS	97	<3.2	19	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022312			110-86-1	Pyridine	NGS	92	<1.9	5.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022312			100-42-5	Styrene	NGS	93	<1.7	2.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022312			127-18-4	Tetrachloroethene	NGS	96	<1.1	4.7	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022312			108-88-3	Toluene	NGS	93	<1.1	16	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022312			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022312			75-89-4	Trichlorofluoromethane	NGS	98	<2.9	250	n/a	n/a	n/a	n/a	2.9	n/a	

T - Tentatively Identified Compound  
 U - Less Than Detection Limit  
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 E - Outside Calibration Range  
 NA = Not Analyzed, ND = Not Detected  
 N - Named TIC



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-5  
Customer Sample ID: 17-03273-2-TL2-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022312			10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022312			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022312			142-82-5	n-Heptane	NGS	94	<1.5	16	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022312			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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U - Less Than Detection Limit

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L - LLS Outside Range

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-6  
Customer Sample ID: 17-03273-2-TL2-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022313			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022313			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022313			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022313			75-35-4	1,1-Dichloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022313			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022313			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022313			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022313			123-91-1	1,4-Dioxane	NGS	96	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T022313			71-36-3	1-Butanol	NGS	99	<2.7	230	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T022313			111-70-6	1-Heptanol	NGS	110	<2.8	6.9	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T022313			71-23-8	1-Propanol	NGS	100	<5.2	150	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T022313			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022313			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022313			78-93-3	2-Butanone	NGS	100	<2.3	520	n/a	n/a	n/a	n/a	2.3	n/a	E
S17T022313			110-43-0	2-Heptanone	NGS	97	<1.5	27	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022313			591-78-6	2-Hexanone	NGS	95	<1.5	120	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T022313			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022313			78-94-4	3-Buten-2-one	NGS	96	<2.5	11	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022313			106-35-4	3-Heptanone	NGS	87	<1.4	130	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022313			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022313			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022313			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	17	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T022313			67-64-1	Acetone	NGS	100	5.8	2.4E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022313			75-05-8	Acetonitrile	NGS	94	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022313			98-86-2	Acetophenone	NGS	94	<2.0	7.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022313			107-13-1	Acrylonitrile	NGS *	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022313			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022313			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

T - Tentatively Identified Compound  
U - Less Than Detection Limit  
Q - Qualitative  
L - ILS Outside Range  
J - Estimated  
E - Outside Calibration Range  
N - Named TIC  
NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-6

Customer Sample ID: 17-03273-2-TL2-IN-6

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022313			71-43-2	Benzene	NGS	94	<1.5	22	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022313			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022313			123-72-8	Butanal	NGS	89	<3.6	19	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022313			109-74-0	Butanenitrile	NGS	93	<1.8	30	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022313			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022313			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022313			75-00-3	Chloroethane	NGS	96	<2.0	3.4	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022313			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022313			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022313			124-18-5	Decane	NGS	98	<0.82	11	n/a	n/a	n/a	n/a	0.82	n/a	J
S17T022313			64-17-5	Ethanol	NGS	91	<4.6	410	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022313			141-78-6	Ethyl acetate	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022313			100-41-4	Ethylbenzene	NGS	90	<1.7	7.3	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022313			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022313			110-54-3	Hexane	NGS	88	<2.1	21	n/a	n/a	n/a	n/a	2.1	n/a	Q
S17T022313			628-73-9	Hexanenitrile	NGS	91	<2.3	19	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022313			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022313			75-09-2	Methylene Chloride	NGS	100	<3.0	4.3	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T022313			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022313			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022313			110-59-8	Pentanitrile	NGS	92	<1.4	25	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022313			107-12-0	Propanenitrile	NGS	97	<3.2	20	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022313			110-86-1	Pyridine	NGS	92	<1.9	5.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022313			100-42-5	Styrene	NGS	93	<1.7	2.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022313			127-18-4	Tetrachloroethene	NGS	96	<1.1	4.7	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022313			108-88-3	Toluene	NGS	93	<1.1	17	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022313			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022313			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	240	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

N - Named TIC

J - Estimated

E - Outside Calibration Range

Q - Qualitative

L - LLS Outside Range

T - Tentatively Identified Compound

U - Less Than Detection Limit



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-6

Customer Sample ID: 17-03273-2-TL2-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S177022313			10061-01-5	dis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S177022313			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S177022313			142-82-5	n-Heptane	NGS	94	<1.5	15	n/a	n/a	n/a	n/a	1.5	n/a	
S177022313			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
U - Less Than Detection Limit

Q - Qualitative  
L - LLS Outside Range

J - Estimated  
E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected  
N - Named TIC



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-7  
Customer Sample ID: 17-03273-2-TL2-IN-7

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022314			79-34-5	1,1,2,2-Tetrachloroethane	NGS	89	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022314			79-00-5	1,1,2-Trichloroethane	NGS	92	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022314			75-34-3	1,1-Dichloroethane	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022314			75-35-4	1,1-Dichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T022314			107-06-2	1,2-Dichloroethane	NGS	95	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022314			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022314			106-46-7	1,4-Dichlorobenzene	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022314			123-91-1	1,4-Dioxane	NGS	96	<3.8	23	n/a	n/a	n/a	n/a	3.8	n/a	
S17T022314			71-36-3	1-Butanol	NGS	99	<2.7	200	n/a	n/a	n/a	n/a	2.7	n/a	
S17T022314			111-70-6	1-Heptanol	NGS	110	<2.8	6.4	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T022314			71-23-8	1-Propanol	NGS	100	<5.2	130	n/a	n/a	n/a	n/a	5.2	n/a	
S17T022314			108-47-4	2,4-Dimethylpyridine	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022314			1708-29-8	2,5-Dihydrofuran	NGS	92	<5.7	<5.7	n/a	n/a	n/a	n/a	5.7	n/a	U
S17T022314			78-93-3	2-Butanone	NGS	100	<2.3	400	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022314			110-43-0	2-Heptanone	NGS	97	<1.5	22	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022314			591-78-6	2-Hexanone	NGS	95	<1.5	100	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022314			534-22-5	2-Methylfuran	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022314			78-94-4	3-Buten-2-one	NGS	96	<2.5	8.9	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T022314			106-35-4	3-Heptanone	NGS	87	<1.4	120	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022314			106-68-3	3-Octanone	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022314			105-42-0	4-Methyl-2-hexanone	NGS	90	<1.6	8.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T022314			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.5	13	n/a	n/a	n/a	n/a	2.5	n/a	
S17T022314			67-64-1	Acetone	NGS	100	5.8	1.6E+03	n/a	n/a	n/a	n/a	3.8	n/a	E
S17T022314			75-05-8	Acetonitrile	NGS	94	<2.9	1.1E+03	n/a	n/a	n/a	n/a	2.9	n/a	E
S17T022314			98-86-2	Acetophenone	NGS	94	<2.0	5.2	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T022314			107-13-1	Acrylonitrile	NGS	99	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T022314			107-18-6	Allyl Alcohol	NGS	91	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T022314			107-05-1	Allyl Chloride	NGS	96	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U

NA = Not Analyzed, ND = Not Detected

N - Named TIC

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
L - LLS Outside Range

T - Tentatively Identified Compound  
U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172164

SDG Number:

Customer Sample ID: 17-03273-2-TL2-IN-7  
Customer Sample ID: 17-03273-2-TL2-IN-7

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022314			71-43-2	Benzene	NGS	94	<1.5	19	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022314			100-47-0	Benzonitrile	NGS	93	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022314			123-72-8	Butanal	NGS	89	<3.6	16	n/a	n/a	n/a	n/a	3.6	n/a	
S17T022314			109-74-0	Butanenitrile	NGS	93	<1.8	24	n/a	n/a	n/a	n/a	1.8	n/a	
S17T022314			56-23-5	Carbon tetrachloride	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022314			108-90-7	Chlorobenzene	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T022314			75-00-3	Chloroethane	NGS	96	<2.0	2.6	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022314			67-66-3	Chloroform	NGS	99	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T022314			110-82-7	Cyclohexane	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T022314			124-18-5	Decane	NGS	98	<0.82	9.0	n/a	n/a	n/a	n/a	0.82	n/a	J
S17T022314			64-17-5	Ethanol	NGS	91	<4.6	430	n/a	n/a	n/a	n/a	4.6	n/a	
S17T022314			141-78-6	Ethyl acetate	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T022314			100-41-4	Ethylbenzene	NGS	90	<1.7	6.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S17T022314			110-00-9	Furan	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022314			110-54-3	Hexane	NGS	88	<2.1	17	n/a	n/a	n/a	n/a	2.1	n/a	Q
S17T022314			628-73-9	Hexanenitrile	NGS	91	<2.3	16	n/a	n/a	n/a	n/a	2.3	n/a	
S17T022314			126-98-7	Methacrylonitrile	NGS	94	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T022314			75-09-2	Methylene Chloride	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T022314			91-20-3	Naphthalene	NGS	87	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T022314			98-95-3	Nitrobenzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S17T022314			110-59-8	Pentanenitrile	NGS	92	<1.4	23	n/a	n/a	n/a	n/a	1.4	n/a	
S17T022314			107-12-0	Propanenitrile	NGS	97	<3.2	18	n/a	n/a	n/a	n/a	3.2	n/a	
S17T022314			110-86-1	Pyridine	NGS	92	<1.9	4.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T022314			100-42-5	Styrene	NGS	93	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T022314			127-18-4	Tetrachloroethene	NGS	96	<1.1	4.0	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022314			108-88-3	Toluene	NGS	93	<1.1	14	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022314			79-01-6	Trichloroethene	NGS	96	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T022314			75-69-4	Trichlorofluoromethane	NGS	98	<2.9	200	n/a	n/a	n/a	n/a	2.9	n/a	

NA = Not Analyzed, ND = Not Detected

N - Named TIC

J - Estimated  
E - Outside Calibration Range

Q - Qualitative  
L - LLS Outside Range

T - Tentatively Identified Compound  
U - Less Than Detection Limit



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172164  
SDG Number:  
Customer Sample ID: 17-03273-2-TL2-IN-7  
Customer Sample ID: 17-03273-2-TL2-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T022314			10061-01-5	dis-1,3-Dichloropropene	NGS	97	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T022314			123-86-4	n-Butyl acetate	NGS	95	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T022314			142-82-5	n-Heptane	NGS	94	<1.5	13	n/a	n/a	n/a	n/a	1.5	n/a	
S17T022314			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

T - Tentatively Identified Compound  
U - Less Than Detection Limit

Q - Qualitative  
L - LLS Outside Range

J - Estimated  
E - Outside Calibration Range

N - Named TIC

NA = Not Analyzed, ND = Not Detected



*OK - M. Williams  
9/14/17*

2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04563-2-SC1-EF-1

Customer Sample ID: 17-04563-2-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023883			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023883			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023883			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023883			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023883			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023883			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023883			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023883			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023883			71-36-3	1-Butanol	NGS	100	<5.3	10	n/a	n/a	n/a	n/a	5.3	n/a	J
S17T023883			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023883			71-23-8	1-Propanol	NGS	100	<4.7	22	n/a	n/a	n/a	n/a	4.7	n/a	J
S17T023883			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023883			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023883			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023883			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023883			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023883			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023883			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023883			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023883			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023883			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023883			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023883			67-64-1	Acetone	NGS	100	13	51	n/a	n/a	n/a	n/a	11	n/a	
S17T023883			75-05-8	Acetonitrile	NGS	100	<2.8	660	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023883			98-96-2	Acetophenone	NGS	100	<2.8	29	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023883			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023883			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023883			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

U - Less Than Detection Limit  
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J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-1  
Customer Sample ID: 17-04563-2-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023883			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023883			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023883			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023883			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023883			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023883			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023883			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023883			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023883			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023883			124-18-5	Decane	NGS	110	<3.1	15	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023883			64-17-5	Ethanol	NGS	110	<7.6	77	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023883			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023883			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023883			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023883			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023883			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023883			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023883			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023883			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023883			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023883			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023883			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023883			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023883			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023883			127-18-4	Tetrachloroethene	NGS	100	<2.3	28	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023883			106-88-3	Toluene	NGS	100	<2.2	6.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023883			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023883			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	16	n/a	n/a	n/a	n/a	3.3	n/a	

U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04563-2-SC1-EF-1

Customer Sample ID: 17-04563-2-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023883			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023883			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023883			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023883			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
L - LLS Outside Range

T - Tentatively Identified Compound  
J - Estimated

NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-2  
Customer Sample ID: 17-04563-2-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023884			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023884			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023884			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023884			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023884			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023884			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023884			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023884			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023884			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023884			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023884			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023884			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023884			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023884			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023884			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023884			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023884			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023884			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023884			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023884			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023884			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023884			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023884			67-64-1	Acetone	NGS	100	13	210	n/a	n/a	n/a	n/a	11	n/a	E
S17T023884			75-05-8	Acetonitrile	NGS	100	<2.8	1.3E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023884			98-86-2	Acetophenone	NGS	100	<2.8	38	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023884			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023884			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023884			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-2  
Customer Sample ID: 17-04563-2-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023884			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023884			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023884			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023884			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023884			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023884			106-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023884			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023884			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023884			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023884			124-18-5	Decane	NGS	110	<3.1	19	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023884			64-17-5	Ethanol	NGS	110	<7.6	220	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023884			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023884			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023884			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023884			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023884			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023884			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023884			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023884			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023884			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023884			110-59-8	Pentanitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023884			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023884			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023884			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023884			127-18-4	Tetrachloroethene	NGS	100	<2.3	33	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023884			106-88-3	Toluene	NGS	100	<2.2	4.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023884			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023884			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	36	n/a	n/a	n/a	n/a	3.3	n/a	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04563-2-SC1-EF-2

Customer Sample ID: 17-04563-2-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023884			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023884			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023884			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023884			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-3  
Customer Sample ID: 17-04563-2-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cot Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023885			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023885			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023885			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023885			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023885			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023885			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023885			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023885			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023885			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023885			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023885			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023885			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023885			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023885			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023885			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023885			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023885			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023885			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023885			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023885			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023885			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023885			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023885			67-64-1	Acetone	NGS	100	13	330	n/a	n/a	n/a	n/a	11	n/a	
S17T023885			75-05-8	Acetonitrile	NGS	100	<2.8	1.6E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023885			98-96-2	Acetophenone	NGS	100	<2.8	31	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023885			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023885			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023885			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-3  
Customer Sample ID: 17-04563-2-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023885			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023885			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023885			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023885			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023885			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023885			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023885			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023885			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023885			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023885			124-18-5	Decane	NGS	110	<3.1	14	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023885			64-17-5	Ethanol	NGS	110	<7.6	280	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023885			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023885			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023885			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023885			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023885			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023885			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023885			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023885			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023885			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023885			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023885			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023885			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023885			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023885			127-18-4	Tetrachloroethene	NGS	100	<2.3	31	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023885			106-88-3	Toluene	NGS	100	<2.2	3.5	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023885			79-01-8	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023885			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	48	n/a	n/a	n/a	n/a	3.3	n/a	

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-3  
Customer Sample ID: 17-04563-2-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023885			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023885			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023885			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023885			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U

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N - Named TIC  
E - Outside Calibration Range  
L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04563-2-SC1-EF-4

Customer Sample ID: 17-04563-2-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023886			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023886			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023886			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023886			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023886			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023886			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023886			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023886			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023886			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023886			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023886			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023886			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023886			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023886			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023886			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023886			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023886			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023886			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023886			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023886			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023886			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023886			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023886			67-64-1	Acetone	NGS	100	13	480	n/a	n/a	n/a	n/a	11	n/a	E
S17T023886			75-05-8	Acetonitrile	NGS	100	<2.8	1.9E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023886			98-86-2	Acetophenone	NGS	100	<2.8	18	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023886			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023886			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023886			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination

T - Tentatively Identified Compound

J - Estimated

E - Outside Calibration Range

L - LLS Outside Range

U - Less Than Detection Limit

N - Named TIC



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-4  
Customer Sample ID: 17-04563-2-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023886			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023886			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023886			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S17T023886			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023886			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T023886			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023886			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S17T023886			67-56-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9		n/a U
S17T023886			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023886			124-18-5	Decane	NGS	110	<3.1	25	n/a	n/a	n/a	n/a	3.1		n/a
S17T023886			64-17-5	Ethanol	NGS	110	<7.6	530	n/a	n/a	n/a	n/a	7.6		n/a
S17T023886			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T023886			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023886			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T023886			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1		n/a U
S17T023886			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S17T023886			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023886			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11		n/a LU
S17T023886			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S17T023886			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023886			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023886			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023886			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7		n/a U
S17T023886			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T023886			127-18-4	Tetrachloroethene	NGS	100	<2.3	29	n/a	n/a	n/a	n/a	2.3		n/a
S17T023886			108-88-3	Toluene	NGS	100	<2.2	4.0	n/a	n/a	n/a	n/a	2.2		n/a J
S17T023886			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023886			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	71	n/a	n/a	n/a	n/a	3.3		n/a

U - Less Than Detection Limit  
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B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-4  
Customer Sample ID: 17-04563-2-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023886			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023886			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023886			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023886			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-5  
Customer Sample ID: 17-04563-2-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023887			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023887			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023887			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023887			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023887			107-06-2	1,2-Dichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023887			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023887			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023887			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023887			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023887			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023887			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023887			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023887			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023887			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023887			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023887			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023887			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023887			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023887			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023887			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023887			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023887			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023887			67-64-1	Acetone	NGS	100	13	520	n/a	n/a	n/a	n/a	11	n/a	E
S17T023887			75-05-8	Acetonitrile	NGS	100	<2.8	1.9E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023887			98-96-2	Acetophenone	NGS	100	<2.8	17	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023887			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023887			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023887			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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E - Outside Calibration Range  
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T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-5  
Customer Sample ID: 17-04563-2-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023887			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023887			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023887			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023887			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023887			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023887			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023887			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023887			67-56-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023887			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023887			124-18-5	Decane	NGS	110	<3.1	9.0	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T023887			64-17-5	Ethanol	NGS	110	<7.6	610	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023887			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023887			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023887			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023887			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023887			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023887			126-98-7	Methylacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023887			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023887			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023887			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023887			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023887			107-12-0	Propanenitrile	NGS	100	<2.6	3.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T023887			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023887			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023887			127-18-4	Tetrachloroethene	NGS	100	<2.3	22	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023887			108-88-3	Toluene	NGS	100	<2.2	2.6	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023887			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023887			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	100	n/a	n/a	n/a	n/a	3.3	n/a	

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NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-5  
Customer Sample ID: 17-04563-2-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023887			10061-01-5	dis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023887			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023887			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023887			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-6  
Customer Sample ID: 17-04563-2-SC1-EF-6

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023888			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023888			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023888			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023888			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023888			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023888			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023888			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023888			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023888			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	n/a
S17T023888			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	n/a
S17T023888			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	n/a
S17T023888			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	n/a
S17T023888			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023888			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a
S17T023888			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023888			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	n/a
S17T023888			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023888			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	n/a
S17T023888			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023888			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S17T023888			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T023888			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023888			67-64-1	Acetone	NGS	100	13	260	n/a	n/a	n/a	n/a	11	n/a	n/a
S17T023888			75-05-8	Acetonitrile	NGS	100	<2.8	1.7E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023888			98-86-2	Acetophenone	NGS	100	<2.8	6.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023888			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023888			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023888			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	n/a

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-6  
Customer Sample ID: 17-04563-2-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023888			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023888			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023888			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023888			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023888			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023888			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023888			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023888			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023888			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023888			124-18-5	Decane	NGS	110	<3.1	8.8	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T023888			64-17-5	Ethanol	NGS	110	<7.6	520	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023888			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023888			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023888			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023888			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023888			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023888			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023888			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023888			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023888			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023888			110-59-8	Pentanitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023888			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023888			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023888			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023888			127-18-4	Tetrachloroethene	NGS	100	<2.3	12	n/a	n/a	n/a	n/a	2.3	n/a	
S17T023888			108-88-3	Toluene	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023888			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023888			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	140	n/a	n/a	n/a	n/a	3.3	n/a	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-6  
Customer Sample ID: 17-04563-2-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023888			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023888			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023888			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023888			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-7  
Customer Sample ID: 17-04563-2-SC1-EF-7

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023889			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023889			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023889			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023889			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023889			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023889			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023889			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023889			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023889			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	n/a
S17T023889			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	n/a
S17T023889			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	n/a
S17T023889			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	n/a
S17T023889			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023889			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a
S17T023889			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023889			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	n/a
S17T023889			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023889			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	n/a
S17T023889			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023889			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S17T023889			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T023889			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023889			67-64-1	Acetone	NGS	100	13	430	n/a	n/a	n/a	n/a	11	n/a	E
S17T023889			75-05-8	Acetonitrile	NGS	100	<2.8	1.6E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023889			98-96-2	Acetophenone	NGS	100	<2.8	5.4	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023889			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023889			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023889			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	n/a

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-7  
Customer Sample ID: 17-04563-2-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023889			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023889			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023889			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023889			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023889			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023889			106-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023889			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023889			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023889			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023889			124-18-5	Decane	NGS	110	<3.1	6.4	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T023889			64-17-5	Ethanol	NGS	110	<7.6	640	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023889			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023889			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023889			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023889			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023889			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023889			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023889			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023889			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023889			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023889			110-59-8	Pentanitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023889			107-12-0	Propanenitrile	NGS	100	<2.6	6.1	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T023889			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023889			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023889			127-18-4	Tetrachloroethene	NGS	100	<2.3	8.7	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023889			106-88-3	Toluene	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023889			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023889			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	210	n/a	n/a	n/a	n/a	3.3	n/a	

U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-7  
Customer Sample ID: 17-04563-2-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023889			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023889			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023889			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023889			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

U - Less Than Detection Limit  
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L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-8  
Customer Sample ID: 17-04563-2-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cot Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023890			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023890			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023890			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023890			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023890			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023890			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023890			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023890			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023890			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	n/a
S17T023890			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	n/a
S17T023890			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	n/a
S17T023890			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	n/a
S17T023890			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023890			78-83-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a
S17T023890			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023890			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	n/a
S17T023890			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023890			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	n/a
S17T023890			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023890			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S17T023890			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T023890			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023890			67-64-1	Acetone	NGS	100	13	410	n/a	n/a	n/a	n/a	11	n/a	E
S17T023890			75-05-8	Acetonitrile	NGS	100	<2.8	1.3E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023890			98-86-2	Acetophenone	NGS	100	<2.8	4.4	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023890			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023890			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023890			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	n/a

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L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-8  
Customer Sample ID: 17-04563-2-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023890			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023890			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023890			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023890			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023890			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023890			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023890			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023890			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023890			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023890			124-18-5	Decane	NGS	110	<3.1	5.7	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T023890			64-17-5	Ethanol	NGS	110	<7.6	390	n/a	n/a	n/a	n/a	7.6	n/a	U
S17T023890			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023890			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023890			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023890			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023890			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023890			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023890			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023890			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023890			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023890			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023890			107-12-0	Propanenitrile	NGS	100	<2.6	5.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T023890			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023890			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023890			127-18-4	Tetrachloroethene	NGS	100	<2.3	7.5	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023890			106-88-3	Toluene	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023890			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023890			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	200	n/a	n/a	n/a	n/a	3.3	n/a	U

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N - Named TIC  
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J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-EF-8  
Customer Sample ID: 17-04563-2-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023890			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023890			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023890			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023890			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
L - LLS Outside Range

T - Tentatively Identified Compound  
J - Estimated

NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-IN-1  
Customer Sample ID: 17-04563-2-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023891			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023891			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023891			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023891			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023891			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023891			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023891			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023891			123-91-1	1,4-Dioxane	NGS	100	<2.4	40	n/a	n/a	n/a	n/a	2.4	n/a	
S17T023891			71-36-3	1-Butanol	NGS	100	<5.3	170	n/a	n/a	n/a	n/a	5.3	n/a	
S17T023891			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023891			71-23-8	1-Propanol	NGS	100	<4.7	150	n/a	n/a	n/a	n/a	4.7	n/a	
S17T023891			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023891			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023891			78-93-3	2-Butanone	NGS	100	<3.1	420	n/a	n/a	n/a	n/a	3.1	n/a	E
S17T023891			110-43-0	2-Heptanone	NGS	100	<2.5	30	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023891			591-78-6	2-Hexanone	NGS	100	<2.2	100	n/a	n/a	n/a	n/a	2.2	n/a	
S17T023891			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023891			78-94-4	3-Buten-2-one	NGS	100	<3.5	11	n/a	n/a	n/a	n/a	3.5	n/a	J
S17T023891			106-35-4	3-Heptanone	NGS	100	<2.4	150	n/a	n/a	n/a	n/a	2.4	n/a	
S17T023891			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023891			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	11	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023891			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	21	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023891			67-64-1	Acetone	NGS	100	13	2.4E+03	n/a	n/a	n/a	n/a	11	n/a	E
S17T023891			75-05-8	Acetonitrile	NGS	100	<2.8	1.5E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023891			98-96-2	Acetophenone	NGS	100	<2.8	24	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023891			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023891			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023891			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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J - Estimated  
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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-IN-1  
Customer Sample ID: 17-04563-2-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023891			71-43-2	Benzene	NGS	100	<2.7	22	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023891			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023891			123-72-8	Butanal	NGS	110	<3.8	17	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023891			109-74-0	Butanenitrile	NGS	100	<2.6	37	n/a	n/a	n/a	n/a	2.6	n/a	
S17T023891			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023891			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023891			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023891			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023891			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023891			124-18-5	Decane	NGS	110	<3.1	23	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023891			64-17-5	Ethanol	NGS	110	<7.6	780	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023891			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023891			100-41-4	Ethylbenzene	NGS	100	<2.4	9.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023891			110-00-9	Furan	NGS	98	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023891			110-54-3	Hexane	NGS	100	<4.1	63	n/a	n/a	n/a	n/a	4.1	n/a	
S17T023891			628-73-9	Hexanenitrile	NGS	100	<2.1	20	n/a	n/a	n/a	n/a	2.1	n/a	
S17T023891			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023891			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023891			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023891			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023891			110-59-8	Pentanenitrile	NGS	100	<2.5	20	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023891			107-12-0	Propanenitrile	NGS	100	<2.6	17	n/a	n/a	n/a	n/a	2.6	n/a	
S17T023891			110-86-1	Pyridine	NGS	110	<4.7	6.5	n/a	n/a	n/a	n/a	4.7	n/a	J
S17T023891			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023891			127-18-4	Tetrachloroethene	NGS	100	<2.3	5.4	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023891			108-88-3	Toluene	NGS	100	<2.2	18	n/a	n/a	n/a	n/a	2.2	n/a	
S17T023891			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023891			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	430	n/a	n/a	n/a	n/a	3.3	n/a	E

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J - Estimated  
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B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04563-2-SC1-IN-1

Customer Sample ID: 17-04563-2-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023891			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023891			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023891			142-82-5	n-Heptane	NGS	100	<2.7	15	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023891			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-IN-8  
Customer Sample ID: 17-04563-2-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023892			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023892			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023892			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023892			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023892			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023892			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023892			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023892			123-91-1	1,4-Dioxane	NGS	100	<2.4	4.1	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023892			71-36-3	1-Butanol	NGS	100	<5.3	6.4	n/a	n/a	n/a	n/a	5.3	n/a	J
S17T023892			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023892			71-23-8	1-Propanol	NGS	100	<4.7	17	n/a	n/a	n/a	n/a	4.7	n/a	J
S17T023892			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023892			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023892			78-93-3	2-Butanone	NGS	100	<3.1	38	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023892			110-43-0	2-Heptanone	NGS	100	<2.5	8.4	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T023892			591-78-6	2-Hexanone	NGS	100	<2.2	14	n/a	n/a	n/a	n/a	2.2	n/a	
S17T023892			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023892			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023892			106-35-4	3-Heptanone	NGS	100	<2.4	41	n/a	n/a	n/a	n/a	2.4	n/a	
S17T023892			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023892			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023892			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023892			67-64-1	Acetone	NGS	100	13	310	n/a	n/a	n/a	n/a	11	n/a	
S17T023892			75-05-8	Acetonitrile	NGS	100	<2.8	320	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023892			98-96-2	Acetophenone	NGS	100	<2.8	3.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023892			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023892			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023892			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-IN-8  
Customer Sample ID: 17-04563-2-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023892			71-43-2	Benzene	NGS	100	<2.7	7.3	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T023892			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023892			123-72-8	Butanal	NGS	110	<3.8	5.0	n/a	n/a	n/a	n/a	3.8	n/a	J
S17T023892			109-74-0	Butanenitrile	NGS	100	<2.6	2.9	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T023892			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023892			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023892			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023892			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023892			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023892			124-18-5	Decane	NGS	110	<3.1	5.0	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T023892			64-17-5	Ethanol	NGS	110	<7.6	160	n/a	n/a	n/a	n/a	7.6	n/a	U
S17T023892			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023892			100-41-4	Ethylbenzene	NGS	100	<2.4	3.7	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023892			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023892			110-54-3	Hexane	NGS	100	<4.1	8.4	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T023892			628-73-9	Hexanenitrile	NGS	100	<2.1	4.3	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T023892			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023892			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023892			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023892			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023892			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023892			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023892			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023892			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023892			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023892			108-88-3	Toluene	NGS	100	<2.2	11	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023892			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023892			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	22	n/a	n/a	n/a	n/a	3.3	n/a	U

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B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04563-2-SC1-IN-8  
Customer Sample ID: 17-04563-2-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023892			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023892			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023892			142-82-5	n-Heptane	NGS	100	<2.7	3.3	n/a	n/a	n/a	n/a	2.7		n/a J
S17T023892			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-1  
Customer Sample ID: 17-04568-2-TL1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023873			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023873			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023873			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023873			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023873			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023873			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023873			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023873			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023873			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023873			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023873			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023873			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023873			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023873			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023873			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023873			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023873			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023873			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023873			106-35-4	3-Heptanone	NGS	100	<2.4	3.3	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023873			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023873			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023873			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023873			67-64-1	Acetone	NGS	100	13	19	n/a	n/a	n/a	n/a	11	n/a	U
S17T023873			75-05-8	Acetonitrile	NGS	100	<2.8	63	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023873			98-86-2	Acetophenone	NGS	100	<2.8	14	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023873			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023873			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023873			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-1

Customer Sample ID: 17-04568-2-TL1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023873			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023873			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023873			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023873			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023873			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023873			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023873			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023873			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023873			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023873			124-18-5	Decane	NGS	110	<3.1	28	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023873			64-17-5	Ethanol	NGS	110	<7.6	26	n/a	n/a	n/a	n/a	7.6	n/a	U
S17T023873			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023873			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023873			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023873			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023873			828-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023873			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023873			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023873			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023873			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023873			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023873			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023873			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023873			100-42-5	Styrene	NGS	100	<2.3	3.9	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023873			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023873			108-88-3	Toluene	NGS	100	<2.2	4.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023873			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023873			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-1

Customer Sample ID: 17-04568-2-TL1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023873			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023873			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023873			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023873			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-2

Customer Sample ID: 17-04568-2-TL1-EF-2

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023874			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023874			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023874			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023874			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023874			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023874			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023874			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S17T023874			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023874			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	n/a
S17T023874			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	n/a
S17T023874			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	n/a
S17T023874			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	n/a
S17T023874			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023874			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	n/a
S17T023874			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023874			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	n/a
S17T023874			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S17T023874			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	n/a
S17T023874			106-35-4	3-Heptanone	NGS	100	<2.4	3.0	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S17T023874			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S17T023874			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	n/a
S17T023874			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	n/a
S17T023874			67-84-1	Acetone	NGS	100	13	75	n/a	n/a	n/a	n/a	11	n/a	n/a
S17T023874			75-05-8	Acetonitrile	NGS	100	<2.8	730	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S17T023874			98-86-2	Acetophenone	NGS	100	<2.8	17	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S17T023874			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023874			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S17T023874			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	n/a

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-2  
Customer Sample ID: 17-04568-2-TL1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023874			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023874			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023874			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023874			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023874			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023874			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023874			75-00-3	Chloroethane	NGS	100	<3.6	3.9	n/a	n/a	n/a	n/a	3.6	n/a	J
S17T023874			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023874			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023874			124-18-5	Decane	NGS	110	<3.1	26	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023874			64-17-5	Ethanol	NGS	110	<7.6	120	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023874			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023874			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023874			110-00-9	Furan	NGS	98	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023874			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023874			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023874			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023874			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023874			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023874			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023874			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023874			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023874			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023874			100-42-5	Styrene	NGS	100	<2.3	5.6	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023874			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023874			106-88-3	Toluene	NGS	100	<2.2	4.8	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023874			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023874			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	3.9	n/a	n/a	n/a	n/a	3.3	n/a	J

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172256

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-2

Customer Sample ID: 17-04568-2-TL1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023874			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023874			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023874			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023874			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-3  
Customer Sample ID: 17-04568-2-TL1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023875			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023875			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023875			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023875			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023875			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023875			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023875			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023875			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023875			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023875			111-70-6	1-Heptanol	NGS	100	<5.2	5.6	n/a	n/a	n/a	n/a	5.2	n/a	J
S17T023875			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023875			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023875			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023875			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023875			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023875			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023875			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023875			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023875			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023875			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023875			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023875			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023875			67-64-1	Acetone	NGS	100	13	64	n/a	n/a	n/a	n/a	11	n/a	
S17T023875			75-05-8	Acetonitrile	NGS	100	<2.8	1000	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023875			98-86-2	Acetophenone	NGS	100	<2.8	15	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023875			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023875			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023875			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

U - Less Than Detection Limit  
N - Named TIC  
E - Outside Calibration Range  
L - LLS Outside Range  
T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-3  
Customer Sample ID: 17-04568-2-TL1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023875			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023875			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023875			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023875			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023875			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023875			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023875			75-00-3	Chloroethane	NGS	100	<3.6	4.4	n/a	n/a	n/a	n/a	3.6	n/a	J
S17T023875			67-56-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023875			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023875			124-18-5	Decane	NGS	110	<3.1	23	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023875			64-17-5	Ethanol	NGS	110	<7.6	280	n/a	n/a	n/a	n/a	7.6	n/a	U
S17T023875			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023875			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023875			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023875			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023875			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023875			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023875			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023875			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023875			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023875			110-59-8	Pentanitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023875			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023875			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023875			100-42-5	Styrene	NGS	100	<2.3	4.6	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023875			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023875			108-88-3	Toluene	NGS	100	<2.2	3.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023875			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023875			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	12	n/a	n/a	n/a	n/a	3.3	n/a	J

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T - Tentatively Identified Compound  
J - Estimated  
NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-3

Customer Sample ID: 17-04568-2-TL1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VQA #2															
S17T023875			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023875			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023875			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023875			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

U - Less Than Detection Limit  
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J - Estimated

NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-4  
Customer Sample ID: 17-04568-2-TL1-EF-4

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023876			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023876			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023876			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023876			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023876			107-06-2	1,2-Dichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023876			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023876			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023876			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023876			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023876			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023876			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023876			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023876			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023876			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023876			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023876			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023876			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023876			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023876			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023876			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023876			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023876			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023876			67-64-1	Acetone	NGS	100	13	71	n/a	n/a	n/a	n/a	11	n/a	
S17T023876			75-05-8	Acetonitrile	NGS	100	<2.8	1.1E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023876			98-96-2	Acetophenone	NGS	100	<2.8	15	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023876			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023876			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023876			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-4

Customer Sample ID: 17-04568-2-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023876			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023876			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023876			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023876			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023876			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023876			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023876			75-00-3	Chloroethane	NGS	100	<3.6	5.4	n/a	n/a	n/a	n/a	3.6	n/a	J
S17T023876			67-56-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023876			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023876			124-18-5	Decane	NGS	110	<3.1	21	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023876			64-17-5	Ethanol	NGS	110	<7.6	530	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023876			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023876			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023876			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023876			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023876			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023876			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023876			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023876			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023876			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023876			110-59-8	Pentanitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023876			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023876			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023876			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023876			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023876			108-88-3	Toluene	NGS	100	<2.2	3.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023876			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023876			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	27	n/a	n/a	n/a	n/a	3.3	n/a	

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NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-4  
Customer Sample ID: 17-04568-2-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023876			10061-01-5	dis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023876			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023876			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023876			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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E - Outside Calibration Range  
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J - Estimated

NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-5  
Customer Sample ID: 17-04568-2-TL1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023877			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023877			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023877			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023877			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T023877			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023877			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023877			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023877			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023877			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3		n/a U
S17T023877			111-70-6	1-Heptanol	NGS	100	<5.2	7.0	n/a	n/a	n/a	n/a	5.2		n/a J
S17T023877			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7		n/a U
S17T023877			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S17T023877			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023877			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1		n/a U
S17T023877			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023877			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2		n/a U
S17T023877			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023877			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5		n/a U
S17T023877			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023877			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T023877			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T023877			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023877			67-64-1	Acetone	NGS	100	13	73	n/a	n/a	n/a	n/a	11		n/a
S17T023877			75-05-8	Acetonitrile	NGS	100	<2.8	880	n/a	n/a	n/a	n/a	2.8		n/a E
S17T023877			98-96-2	Acetophenone	NGS	100	<2.8	9.0	n/a	n/a	n/a	n/a	2.8		n/a J
S17T023877			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T023877			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S17T023877			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1		n/a U

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-5  
Customer Sample ID: 17-04568-2-TL1-EF-5

Sample#	R	IA#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023877			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023877			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023877			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023877			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023877			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023877			106-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023877			75-00-3	Chloroethane	NGS	100	<3.6	4.5	n/a	n/a	n/a	n/a	3.6	n/a	J
S17T023877			67-56-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023877			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023877			124-18-5	Decane	NGS	110	<3.1	25	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023877			64-17-5	Ethanol	NGS	110	<7.6	570	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023877			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023877			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023877			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023877			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023877			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023877			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023877			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023877			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023877			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023877			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023877			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023877			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023877			100-42-5	Styrene	NGS	100	<2.3	2.4	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023877			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023877			106-88-3	Toluene	NGS	100	<2.2	3.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023877			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023877			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	49	n/a	n/a	n/a	n/a	3.3	n/a	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-5

Customer Sample ID: 17-04568-2-TL1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023877			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023877			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023877			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023877			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-6  
Customer Sample ID: 17-04568-2-TL1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023878			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023878			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023878			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023878			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023878			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023878			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023878			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023878			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023878			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023878			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023878			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023878			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023878			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023878			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023878			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023878			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023878			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023878			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023878			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023878			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023878			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023878			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023878			67-64-1	Acetone	NGS	100	13	34	n/a	n/a	n/a	n/a	11	n/a	
S17T023878			75-05-8	Acetonitrile	NGS	100	<2.8	690	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023878			98-96-2	Acetophenone	NGS	100	<2.8	4.6	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023878			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023878			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023878			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-6  
Customer Sample ID: 17-04568-2-TL1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023878			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023878			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023878			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023878			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023878			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023878			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023878			75-00-3	Chloroethane	NGS	100	<3.6	4.0	n/a	n/a	n/a	n/a	3.6	n/a	J
S17T023878			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023878			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023878			124-18-5	Decane	NGS	110	<3.1	15	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023878			64-17-5	Ethanol	NGS	110	<7.6	330	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023878			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023878			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023878			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023878			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023878			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023878			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023878			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023878			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023878			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023878			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023878			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023878			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023878			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023878			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023878			106-88-3	Toluene	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023878			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023878			75-68-4	Trichlorofluoromethane	NGS	100	<3.3	61	n/a	n/a	n/a	n/a	3.3	n/a	

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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-6  
Customer Sample ID: 17-04568-2-TL1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023878			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023878			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023878			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023878			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-7  
Customer Sample ID: 17-04568-2-TL1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Ont Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023879			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023879			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023879			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023879			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023879			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023879			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023879			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023879			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023879			71-36-3	1-Butanol	NGS	100	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T023879			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023879			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023879			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023879			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023879			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023879			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023879			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023879			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023879			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023879			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023879			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023879			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023879			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023879			67-64-1	Acetone	NGS	100	13	77	n/a	n/a	n/a	n/a	11	n/a	
S17T023879			75-05-8	Acetonitrile	NGS	100	<2.8	720	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023879			98-86-2	Acetophenone	NGS	100	<2.8	3.5	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023879			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023879			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023879			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-7

Customer Sample ID: 17-04568-2-TL1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023879			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023879			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023879			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023879			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023879			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023879			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023879			75-00-3	Chloroethane	NGS	100	<3.6	4.2	n/a	n/a	n/a	n/a	3.6	n/a	J
S17T023879			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023879			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023879			124-18-5	Decane	NGS	110	<3.1	11	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T023879			64-17-5	Ethanol	NGS	110	<7.6	310	n/a	n/a	n/a	n/a	7.6	n/a	U
S17T023879			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023879			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023879			110-00-9	Furan	NGS	98	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023879			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023879			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023879			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023879			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023879			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023879			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023879			110-59-8	Pentanitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023879			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023879			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023879			100-42-5	Styrene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023879			127-18-4	Tetrachloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023879			108-88-3	Toluene	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023879			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023879			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	92	n/a	n/a	n/a	n/a	3.3	n/a	U

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NA = Not Analyzed, ND = Not Detected  
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# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-EF-7

Customer Sample ID: 17-04568-2-TL1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023879			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023879			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023879			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023879			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-8  
Customer Sample ID: 17-04568-2-TL1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023880			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023880			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023880			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023880			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023880			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023880			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023880			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023880			123-91-1	1,4-Dioxane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023880			71-36-3	1-Butanol	NGS	100	<5.3	9.1	n/a	n/a	n/a	n/a	5.3	n/a	J
S17T023880			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023880			71-23-8	1-Propanol	NGS	100	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023880			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023880			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023880			78-93-3	2-Butanone	NGS	100	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T023880			110-43-0	2-Heptanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023880			591-78-6	2-Hexanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T023880			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023880			78-94-4	3-Buten-2-one	NGS	100	<3.5	<3.5	n/a	n/a	n/a	n/a	3.5	n/a	U
S17T023880			106-35-4	3-Heptanone	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023880			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023880			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023880			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023880			67-64-1	Acetone	NGS	100	13	120	n/a	n/a	n/a	n/a	11	n/a	
S17T023880			75-05-8	Acetonitrile	NGS	100	<2.8	670	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023880			98-86-2	Acetophenone	NGS	100	<2.8	4.6	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023880			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023880			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023880			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-8  
Customer Sample ID: 17-04568-2-TL1-EF-8

Sample#	R	A#	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023880			71-43-2	Benzene	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023880			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023880			123-72-8	Butanal	NGS	110	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S17T023880			109-74-0	Butanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023880			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023880			106-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023880			75-00-3	Chloroethane	NGS	100	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T023880			67-56-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023880			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023880			124-18-5	Decane	NGS	110	<3.1	19	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023880			64-17-5	Ethanol	NGS	110	<7.6	360	n/a	n/a	n/a	n/a	7.6	n/a	
S17T023880			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023880			100-41-4	Ethylbenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023880			110-00-9	Furan	NGS	99	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023880			110-54-3	Hexane	NGS	100	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T023880			628-73-9	Hexanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T023880			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023880			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023880			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023880			98-96-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023880			110-59-8	Pentanenitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023880			107-12-0	Propanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023880			110-86-1	Pyridine	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T023880			100-42-5	Styrene	NGS	100	<2.3	2.3	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023880			127-18-4	Tetrachloroethene	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023880			106-88-3	Toluene	NGS	100	<2.2	4.6	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T023880			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023880			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	120	n/a	n/a	n/a	n/a	3.3	n/a	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-EF-8  
Customer Sample ID: 17-04568-2-TL1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023880			10061-01-5	cls-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023880			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023880			142-82-5	n-Heptane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023880			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-IN-1  
Customer Sample ID: 17-04568-2-TL1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023881			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023881			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023881			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023881			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023881			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023881			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023881			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023881			123-91-1	1,4-Dioxane	NGS	100	<2.4	33	n/a	n/a	n/a	n/a	2.4	n/a	
S17T023881			71-36-3	1-Butanol	NGS	100	<5.3	780	n/a	n/a	n/a	n/a	5.3	n/a	
S17T023881			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023881			71-23-8	1-Propanol	NGS	100	<4.7	390	n/a	n/a	n/a	n/a	4.7	n/a	
S17T023881			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023881			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023881			78-93-3	2-Butanone	NGS	100	<3.1	240	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023881			110-43-0	2-Heptanone	NGS	100	<2.5	57	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023881			591-78-6	2-Hexanone	NGS	100	<2.2	84	n/a	n/a	n/a	n/a	2.2	n/a	
S17T023881			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023881			78-94-4	3-Buten-2-one	NGS	100	<3.5	13	n/a	n/a	n/a	n/a	3.5	n/a	
S17T023881			106-35-4	3-Heptanone	NGS	100	<2.4	250	n/a	n/a	n/a	n/a	2.4	n/a	
S17T023881			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023881			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	4.2	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023881			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.5	25	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023881			67-64-1	Acetone	NGS	100	13	3.7E+03	n/a	n/a	n/a	n/a	11	n/a	E
S17T023881			75-05-8	Acetonitrile	NGS	100	<2.8	850	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023881			98-96-2	Acetophenone	NGS	100	<2.8	23	n/a	n/a	n/a	n/a	2.8	n/a	
S17T023881			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023881			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023881			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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B - Blank Contamination



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-IN-1

Customer Sample ID: 17-04568-2-TL1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023881			71-43-2	Benzene	NGS	100	<2.7	27	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023881			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023881			123-72-8	Butanal	NGS	110	<3.8	74	n/a	n/a	n/a	n/a	3.8	n/a	
S17T023881			109-74-0	Butanenitrile	NGS	100	<2.6	42	n/a	n/a	n/a	n/a	2.6	n/a	
S17T023881			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T023881			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023881			75-00-3	Chloroethane	NGS	100	<3.6	4.7	n/a	n/a	n/a	n/a	3.6	n/a	J
S17T023881			67-66-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9	n/a	U
S17T023881			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023881			124-18-5	Decane	NGS	110	<3.1	20	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023881			64-17-5	Ethanol	NGS	110	<7.6	920	n/a	n/a	n/a	n/a	7.6	n/a	E
S17T023881			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023881			100-41-4	Ethylbenzene	NGS	100	<2.4	4.8	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T023881			110-00-9	Furan	NGS	98	<2.8	6.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023881			110-54-3	Hexane	NGS	100	<4.1	62	n/a	n/a	n/a	n/a	4.1	n/a	
S17T023881			628-73-9	Hexanenitrile	NGS	100	<2.1	9.3	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T023881			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023881			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11	n/a	LU
S17T023881			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023881			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023881			110-59-8	Pentanitrile	NGS	100	<2.5	9.4	n/a	n/a	n/a	n/a	2.5	n/a	J
S17T023881			107-12-0	Propanenitrile	NGS	100	<2.6	30	n/a	n/a	n/a	n/a	2.6	n/a	
S17T023881			110-86-1	Pyridine	NGS	110	<4.7	11	n/a	n/a	n/a	n/a	4.7	n/a	J
S17T023881			100-42-5	Styrene	NGS	100	<2.3	6.2	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023881			127-18-4	Tetrachloroethene	NGS	100	<2.3	3.1	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023881			108-88-3	Toluene	NGS	100	<2.2	20	n/a	n/a	n/a	n/a	2.2	n/a	
S17T023881			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023881			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	530	n/a	n/a	n/a	n/a	3.3	n/a	E

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B - Blank Contamination



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-IN-1

Customer Sample ID: 17-04568-2-TL1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023881			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023881			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023881			142-82-5	n-Heptane	NGS	100	<2.7	35	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023881			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-IN-8  
Customer Sample ID: 17-04568-2-TL1-IN-8

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023882			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023882			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023882			75-34-3	1,1-Dichloroethane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023882			75-35-4	1,1-Dichloroethene	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023882			107-06-2	1,2-Dichloroethane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023882			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023882			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023882			123-91-1	1,4-Dioxane	NGS	100	<2.4	29	n/a	n/a	n/a	n/a	2.4	n/a	
S17T023882			71-36-3	1-Butanol	NGS	100	<5.3	880	n/a	n/a	n/a	n/a	5.3	n/a	E
S17T023882			111-70-6	1-Heptanol	NGS	100	<5.2	<5.2	n/a	n/a	n/a	n/a	5.2	n/a	U
S17T023882			71-23-8	1-Propanol	NGS	100	<4.7	340	n/a	n/a	n/a	n/a	4.7	n/a	
S17T023882			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T023882			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T023882			78-93-3	2-Butanone	NGS	100	<3.1	290	n/a	n/a	n/a	n/a	3.1	n/a	
S17T023882			110-43-0	2-Heptanone	NGS	100	<2.5	57	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023882			591-78-6	2-Hexanone	NGS	100	<2.2	70	n/a	n/a	n/a	n/a	2.2	n/a	
S17T023882			534-22-5	2-Methylfuran	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T023882			78-94-4	3-Buten-2-one	NGS	100	<3.5	14	n/a	n/a	n/a	n/a	3.5	n/a	
S17T023882			106-35-4	3-Heptanone	NGS	100	<2.4	250	n/a	n/a	n/a	n/a	2.4	n/a	
S17T023882			106-68-3	3-Octanone	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T023882			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.3	3.7	n/a	n/a	n/a	n/a	2.3	n/a	J
S17T023882			108-10-1	4-Methyl-2-pentanone	NGS	100	<2.5	21	n/a	n/a	n/a	n/a	2.5	n/a	
S17T023882			67-64-1	Acetone	NGS	100	13	3.5E+03	n/a	n/a	n/a	n/a	11	n/a	E
S17T023882			75-05-8	Acetonitrile	NGS	100	<2.8	1.1E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T023882			98-86-2	Acetophenone	NGS	100	<2.8	4.6	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T023882			107-13-1	Acrylonitrile	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023882			107-18-6	Allyl Alcohol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T023882			107-05-1	Allyl Chloride	NGS	100	<5.1	<5.1	n/a	n/a	n/a	n/a	5.1	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266  
SDG Number:  
Customer Sample ID: 17-04568-2-TL1-IN-8  
Customer Sample ID: 17-04568-2-TL1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023882			71-43-2	Benzene	NGS	100	<2.7	29	n/a	n/a	n/a	n/a	2.7		n/a
S17T023882			100-47-0	Benzonitrile	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S17T023882			123-72-8	Butanal	NGS	110	<3.8	78	n/a	n/a	n/a	n/a	3.8		n/a
S17T023882			109-74-0	Butanenitrile	NGS	100	<2.6	45	n/a	n/a	n/a	n/a	2.6		n/a
S17T023882			56-23-5	Carbon tetrachloride	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3		n/a U
S17T023882			108-90-7	Chlorobenzene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S17T023882			75-00-3	Chloroethane	NGS	100	<3.6	4.8	n/a	n/a	n/a	n/a	3.6		n/a J
S17T023882			67-56-3	Chloroform	NGS	100	<2.9	<2.9	n/a	n/a	n/a	n/a	2.9		n/a U
S17T023882			110-82-7	Cyclohexane	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023882			124-18-5	Decane	NGS	110	<3.1	12	n/a	n/a	n/a	n/a	3.1		n/a
S17T023882			64-17-5	Ethanol	NGS	110	<7.6	850	n/a	n/a	n/a	n/a	7.6		n/a E
S17T023882			141-78-6	Ethyl acetate	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S17T023882			100-41-4	Ethylbenzene	NGS	100	<2.4	4.1	n/a	n/a	n/a	n/a	2.4		n/a J
S17T023882			110-00-9	Furan	NGS	99	<2.8	4.3	n/a	n/a	n/a	n/a	2.8		n/a J
S17T023882			110-54-3	Hexane	NGS	100	<4.1	65	n/a	n/a	n/a	n/a	4.1		n/a
S17T023882			628-73-9	Hexanenitrile	NGS	100	<2.1	8.7	n/a	n/a	n/a	n/a	2.1		n/a J
S17T023882			126-98-7	Methacrylonitrile	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5		n/a U
S17T023882			75-09-2	Methylene Chloride	NGS	110	<11	<11	n/a	n/a	n/a	n/a	11		n/a LU
S17T023882			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S17T023882			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023882			110-59-8	Pentanenitrile	NGS	100	<2.5	9.6	n/a	n/a	n/a	n/a	2.5		n/a J
S17T023882			107-12-0	Propanenitrile	NGS	100	<2.6	28	n/a	n/a	n/a	n/a	2.6		n/a
S17T023882			110-86-1	Pyridine	NGS	110	<4.7	10	n/a	n/a	n/a	n/a	4.7		n/a J
S17T023882			100-42-5	Styrene	NGS	100	<2.3	2.4	n/a	n/a	n/a	n/a	2.3		n/a J
S17T023882			127-18-4	Tetrachloroethene	NGS	100	<2.3	3.2	n/a	n/a	n/a	n/a	2.3		n/a J
S17T023882			108-88-3	Toluene	NGS	100	<2.2	19	n/a	n/a	n/a	n/a	2.2		n/a
S17T023882			79-01-6	Trichloroethene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S17T023882			75-69-4	Trichlorofluoromethane	NGS	100	<3.3	480	n/a	n/a	n/a	n/a	3.3		n/a E

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172266

SDG Number:

Customer Sample ID: 17-04568-2-TL1-IN-8

Customer Sample ID: 17-04568-2-TL1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T023882			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T023882			123-86-4	n-Butyl acetate	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T023882			142-82-5	n-Heptane	NGS	100	<2.7	31	n/a	n/a	n/a	n/a	2.7	n/a	
S17T023882			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U

U - Less Than Detection Limit  
N - Named TIC

E - Outside Calibration Range  
L - LLS Outside Range

T - Tentatively Identified Compound  
J - Estimated

NA = Not Analyzed, ND = Not Detected  
B - Blank Contamination



## C.4.3 Furans

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J. Kim

### 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172260

SDG Number:

Customer Sample ID: 17-04563-3-SC1-BA-EF

Customer Sample ID: 17-04563-3-SC1-BA-EF

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023753			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023753			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023753			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023753			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023753			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023753			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023753			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023753			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023753			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260

SDG Number:

Customer Sample ID: 17-04563-3-SC1-BA-IN

Customer Sample ID: 17-04563-3-SC1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023754			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U
S17T023754			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a U
S17T023754			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a U
S17T023754			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T023754			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a U
S17T023754			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T023754			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a U
S17T023754			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41		n/a U
S17T023754			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260

SDG Number:

Customer Sample ID: 17-04563-3-SC1-BL-EF

Customer Sample ID: 17-04563-3-SC1-BL-EF

Sample#	R	Ad	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023755			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023755			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023755			825-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023755			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023755			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023755			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023755			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023755			110-00-9	Furan	NGS	95	0.85	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023755			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-BL-IN  
Customer Sample ID: 17-04563-3-SC1-BL-IN

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023756			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023756			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023756			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023756			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023756			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023756			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023756			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023756			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023756			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260

SDG Number:

Customer Sample ID: 17-04563-3-SC1-EF-1

Customer Sample ID: 17-04563-3-SC1-EF-1

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023757			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023757			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023757			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023757			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023757			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023757			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023757			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023757			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023757			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260

SDG Number:

Customer Sample ID: 17-04563-3-SC1-EF-2

Customer Sample ID: 17-04563-3-SC1-EF-2

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023758			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023758			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023758			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023758			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023758			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023758			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023758			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023758			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023758			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-EF-3  
Customer Sample ID: 17-04563-3-SC1-EF-3

Sample#	R	At	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023759			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023759			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023759			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023759			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023759			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023759			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023759			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023759			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023759			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-EF-4  
Customer Sample ID: 17-04563-3-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023760			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a/U
S17T023760			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a/U
S17T023760			925-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a/U
S17T023760			3771-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a/U
S17T023760			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a/U
S17T023760			3771-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a/U
S17T023760			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a/U
S17T023760			110-00-9	Furan	NGS	95	0.85	<0.41	n/a	n/a	n/a	n/a	0.41		n/a/U
S17T023760			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a/U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-EF-5  
Customer Sample ID: 17-04563-3-SC1-EF-5

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023761			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023761			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023761			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023761			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023761			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023761			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023761			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023761			110-00-8	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023761			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-EF-6  
Customer Sample ID: 17-04563-3-SC1-EF-6

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023762			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023762			1708-29-6	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023762			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023762			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023762			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023762			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023762			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023762			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023762			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260

SDG Number:

Customer Sample ID: 17-04563-3-SC1-EF-8

Customer Sample ID: 17-04563-3-SC1-EF-8

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023764			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023764			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023764			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023764			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023764			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023764			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023764			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023764			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023764			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-IN-1  
Customer Sample ID: 17-04563-3-SC1-IN-1

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023765			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	0.98	n/a	n/a	n/a	n/a	0.36		n/a/J
S17T023765			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a/U
S17T023765			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a/U
S17T023765			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a/U
S17T023765			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a/U
S17T023765			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a/U
S17T023765			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a/U
S17T023765			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41		n/a/U
S17T023765			109-99-9	Tetrahydrofuran	NGS	110	<0.36	2.9	n/a	n/a	n/a	n/a	0.36		n/a/J

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260

SDG Number:

Customer Sample ID: 17-04563-3-SC1-IN-2

Customer Sample ID: 17-04563-3-SC1-IN-2

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023766			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	1.1	n/a	n/a	n/a	n/a	0.36		n/a,J
S17T023766			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a,U
S17T023766			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	2.2	n/a	n/a	n/a	n/a	0.93		n/a,J
S17T023766			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a,U
S17T023766			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a,U
S17T023766			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a,U
S17T023766			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a,U
S17T023766			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41		n/a,U
S17T023766			109-99-9	Tetrahydrofuran	NGS	110	<0.36	2.5	n/a	n/a	n/a	n/a	0.36		n/a,J

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-IN-3  
Customer Sample ID: 17-04563-3-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spt Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023767			1191-98-7	2,3-Dihydrofuran	NGS	110	<0.36	0.74	n/a	n/a	n/a	n/a	0.36	n/a	J
S17T023767			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023767			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023767			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023767			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023767			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023767			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023767			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023767			109-99-9	Tetrahydrofuran	NGS	110	<0.36	3.6	n/a	n/a	n/a	n/a	0.36	n/a	

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172260  
 SDG Number:  
 Customer Sample ID: 17-04563-3-SC1-IN-4  
 Customer Sample ID: 17-04563-3-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023768			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023768			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023768			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023768			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023768			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023768			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023768			4229-91-8	2-Propylfuran	NGS	110	<0.66	0.71	n/a	n/a	n/a	n/a	0.66	n/a	J
S17T023768			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023768			109-99-9	Tetrahydrofuran	NGS	110	<0.36	4.6	n/a	n/a	n/a	n/a	0.36	n/a	

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
 T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-IN-5  
Customer Sample ID: 17-04563-3-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023769			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023769			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023769			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023769			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023769			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023769			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023769			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023769			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023769			109-99-9	Tetrahydrofuran	NGS	110	<0.36	6.9	n/a	n/a	n/a	n/a	0.36	n/a	

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-IN-6  
Customer Sample ID: 17-04563-3-SC1-IN-6

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples															
S17T023770			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023770			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023770			625-96-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023770			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023770			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023770			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023770			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023770			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023770			109-99-9	Tetrahydrofuran	NGS	110	<0.36	10	n/a	n/a	n/a	n/a	0.36	n/a	

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-IN-7  
Customer Sample ID: 17-04563-3-SC1-IN-7

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples															
S17T023771			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023771			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023771			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023771			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023771			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023771			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023771			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023771			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023771			109-99-9	Tetrahydrofuran	NGS	110	<0.36	3.3	n/a	n/a	n/a	n/a	0.36	n/a	

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172260  
SDG Number:  
Customer Sample ID: 17-04563-3-SC1-IN-8  
Customer Sample ID: 17-04563-3-SC1-IN-8

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023772			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023772			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023772			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023772			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023772			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023772			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023772			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023772			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023772			109-99-9	Tetrahydrofuran	NGS	110	<0.36	0.85	n/a	n/a	n/a	n/a	0.36	n/a	J

N - Named TIC

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
Y - Tentatively Identified Compound



*Jan P. R. H. van*  
8-31-17

2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149

SDG Number:

Customer Sample ID: 17-03269-3-TL1-BA-EF

Customer Sample ID: 17-03269-3-TL1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Er %	Qual Flags
Furans in Vapor Samples															
S17T022071			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022071			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022071			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022071			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022071			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022071			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022071			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022071			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022071			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-BA-IN  
Customer Sample ID: 17-03269-3-TL1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022072			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022072			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022072			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022072			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022072			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022072			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022072			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022072			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022072			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149

SDG Number:

Customer Sample ID: 17-03269-3-TL1-BL-EF

Customer Sample ID: 17-03269-3-TL1-BL-EF

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022073			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022073			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022073			625-85-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022073			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022073			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022073			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022073			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022073			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022073			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-BL-IN  
Customer Sample ID: 17-03269-3-TL1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022074			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022074			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022074			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022074			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022074			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022074			3777-69-3	2-Pentylfuran	NGS	100	<1.1	1.4	n/a	n/a	n/a	n/a	1.1	n/a	JU
S17T022074			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022074			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022074			109-98-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-EF-1  
Customer Sample ID: 17-03269-3-TL1-EF-1

Sample#	R	AW	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples															
S17T022075			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022075			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022075			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022075			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022075			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022075			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022075			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022075			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022075			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-EF-2  
Customer Sample ID: 17-03269-3-TL1-EF-2

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Er %	Qual Flags
Furans in Vapor Samples															
S17T022076			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022076			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022076			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022076			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022076			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022076			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022076			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022076			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022076			109-98-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149

SDG Number:

Customer Sample ID: 17-03269-3-TL1-EF-3  
Customer Sample ID: 17-03269-3-TL1-EF-3

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022077			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022077			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022077			625-96-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022077			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022077			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022077			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022077			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022077			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022077			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-EF-4  
Customer Sample ID: 17-03269-3-TL1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022078			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022078			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022078			825-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022078			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022078			634-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022078			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022078			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022078			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022078			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-EF-5  
Customer Sample ID: 17-03269-3-TL1-EF-5

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022079			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022079			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022079			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022079			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022079			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022079			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022079			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022079			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022079			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-EF-6  
Customer Sample ID: 17-03269-3-TL1-EF-6

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples															
S17T022080			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022080			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022080			626-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022080			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022080			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022080			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022080			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022080			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022080			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149

SDG Number:

Customer Sample ID: 17-03269-3-TL1-EF-7

Customer Sample ID: 17-03269-3-TL1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022081			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022081			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022081			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022081			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022081			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022081			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022081			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022081			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022081			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149

SDG Number:

Customer Sample ID: 17-03269-3-TL1-EF-8

Customer Sample ID: 17-03269-3-TL1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022082			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022082			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022082			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022082			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022082			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022082			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022082			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022082			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022082			109-99-9	Tetrahydrofuran	NGS	100	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149

SDG Number:

Customer Sample ID: 17-03269-3-TL1-IN-1

Customer Sample ID: 17-03269-3-TL1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022083			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022083			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022083			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022083			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022083			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022083			3777-69-3	2-Pentylfuran	NGS	100	<1.1	1.9	n/a	n/a	n/a	n/a	1.1	n/a	J
S17T022083			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022083			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022083			109-99-9	Tetrahydrofuran	NGS	100	<0.36	3.4	n/a	n/a	n/a	n/a	0.36	n/a	U

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-IN-2  
Customer Sample ID: 17-03269-3-TL1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022084			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022084			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022084			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022084			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022084			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022084			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022084			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022084			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022084			109-99-9	Tetrahydrofuran	NGS	100	<0.36	3.9	n/a	n/a	n/a	n/a	0.36	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-IN-3  
Customer Sample ID: 17-03269-3-TL1-IN-3

Sample#	R	As#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
Furans in Vapor Samples															
S17T022085			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022085			1706-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022085			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022085			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022085			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022085			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022085			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022085			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022085			109-99-9	Tetrahydrofuran	NGS	100	<0.36	5.0	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-IN-4  
Customer Sample ID: 17-03269-3-TL1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022086			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022086			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022086			525-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022086			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022086			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022086			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022086			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022086			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022086			109-99-9	Tetrahydrofuran	NGS	100	<0.36	4.5	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-IN-5  
Customer Sample ID: 17-03269-3-TL1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022087			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022087			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022087			825-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022087			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022087			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022087			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022087			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022087			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022087			109-98-9	Tetrahydrofuran	NGS	100	<0.36	5.1	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-IN-6  
Customer Sample ID: 17-03269-3-TL1-IN-6

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022088			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022088			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022088			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022088			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022088			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022088			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022088			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022088			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022088			109-99-9	Tetrahydrofuran	NGS	100	<0.36	5.9	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149  
SDG Number:  
Customer Sample ID: 17-03269-3-TL1-IN-7  
Customer Sample ID: 17-03269-3-TL1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022089			1191-99-7	2,3-Dihydrofuran	NGS	100	0.87	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022089			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022089			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022089			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022089			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022089			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022089			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022089			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022089			109-99-9	Tetrahydrofuran	NGS	100	<0.36	7.1	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172149

SDG Number:

Customer Sample ID: 17-03269-3-TL1-IN-8

Customer Sample ID: 17-03269-3-TL1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022090			1191-99-7	2,3-Dihydrofuran	NGS	100	0.67	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022090			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	
S17T022090			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	
S17T022090			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	
S17T022090			534-22-5	2-Methylfuran	NGS	100	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	
S17T022090			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	
S17T022090			4229-91-8	2-Propylfuran	NGS	100	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	
S17T022090			110-00-9	Furan	NGS	110	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	
S17T022090			109-99-9	Tetrahydrofuran	NGS	100	<0.36	7.0	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected



DSRComment 3.0.13  
DSR.Jar v. 3.0.13

Furan 20172149 Ammended Comments

2017 Cartridge Evaluation  
8/24/2017 3:48:48PM

Verification Sample Group Comments  
Group:20172149  
Report ammended to add U flags.

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2017 Cartridge Evaluation  
Data Summary of All Results

*OK. N/A 8/30/17*

Sample Group: 20172263

SDG Number:

Customer Sample ID: 17-04569-3-TL2-BA-EF

Customer Sample ID: 17-04569-3-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S177023813			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U
S177023813			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a U
S177023813			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a U
S177023813			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S177023813			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a U
S177023813			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S177023813			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a U
S177023813			110-00-9	Furan	NGS	96	0.65	<0.41	n/a	n/a	n/a	n/a	0.41		n/a U
S177023813			109-99-9	Tetrahydrofuran	NGS	110	<0.36	0.62	n/a	n/a	n/a	n/a	0.36		n/a U

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-BA-IN  
Customer Sample ID: 17-04569-3-TL2-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023814			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U
S17T023814			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a U
S17T023814			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	1.8	n/a	n/a	n/a	n/a	0.93		n/a J
S17T023814			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T023814			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a U
S17T023814			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T023814			4225-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a U
S17T023814			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41		n/a U
S17T023814			409-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA - Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-BL-EF  
Customer Sample ID: 17-04569-3-TL2-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023815			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U
S17T023815			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a U
S17T023815			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a U
S17T023815			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T023815			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a U
S17T023815			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T023815			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a U
S17T023815			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41		n/a U
S17T023815			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-BL-IN  
Customer Sample ID: 17-04569-3-TL2-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023816			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023816			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023816			525-86-5	2,5-Dimethylfuran	NGS	100	<0.93	4.4	n/a	n/a	n/a	n/a	0.93	n/a	
S17T023816			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023816			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023816			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023816			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023816			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023816			109-99-9	Tetrahydrofuran	NGS	110	<0.36	0.49	n/a	n/a	n/a	n/a	0.36	n/a	J

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-EF-1  
Customer Sample ID: 17-04569-3-TL2-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023817			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U
S17T023817			1706-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a U
S17T023817			825-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a U
S17T023817			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a U
S17T023817			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a U
S17T023817			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a U
S17T023817			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a U
S17T023817			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41		n/a U
S17T023817			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a U

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-EF-2  
Customer Sample ID: 17-04569-3-TL2-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023818			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023818			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023818			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	3.9	n/a	n/a	n/a	n/a	0.93	n/a	
S17T023818			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023818			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023818			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023818			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023818			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023818			109-99-9	Tetrahydrofuran	NGS	110	<0.36	0.42	n/a	n/a	n/a	n/a	0.36	n/a	J

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T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-EF-3  
Customer Sample ID: 17-04569-3-TL2-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples															
S17T023819			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023819			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023819			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023819			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023819			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023819			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023819			4225-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023819			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023819			109-98-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-EF-4  
Customer Sample ID: 17-04569-3-TL2-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023820			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023820			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023820			525-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023820			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023820			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023820			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023820			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023820			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023820			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-EF-5  
Customer Sample ID: 17-04569-3-TL2-EF-5

Sample#	R	Alt	CAS #	Analyst	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023821			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023821			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023821			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023821			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023821			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023821			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023821			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023821			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023821			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-EF-6  
Customer Sample ID: 17-04569-3-TL2-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023822			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023822			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023822			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023822			3777-71-7	2-Heptylfuran	NGS	100	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023822			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023822			3777-69-3	2-Pentylfuran	NGS	100	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023822			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023822			110-00-9	Furan	NGS	95	0.65	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023822			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

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E - Outside Calibration Range

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-EF-7  
Customer Sample ID: 17-04569-3-TL2-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023823			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023823			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023823			625-86-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023823			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023823			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023823			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023823			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023823			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023823			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

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2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172263  
 SDG Number:  
 Customer Sample ID: 17-04569-3-TL2-EF-8  
 Customer Sample ID: 17-04569-3-TL2-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans In Vapor Samples															
S17T023824			1191-89-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023824			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023824			625-86-5	2,5-Dimethylfuran	NGS	130	<0.93	8.3	n/a	n/a	n/a	n/a	0.93	n/a	
S17T023824			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023824			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023824			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023824			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023824			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023824			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

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J - Estimated

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 T - Tentatively Identified Compound



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172263  
 SDG Number:  
 Customer Sample ID: 17-04569-3-TL2-IN-1  
 Customer Sample ID: 17-04569-3-TL2-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023825			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023825			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023825			625-86-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023825			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023825			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023825			3777-69-3	2-Pentylfuran	NGS	130	<1.1	1.4	n/a	n/a	n/a	n/a	1.1	n/a	
S17T023825			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023825			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023825			109-99-9	Tetrahydrofuran	NGS	110	<0.36	25	n/a	n/a	n/a	n/a	0.36	n/a	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-IN-2  
Customer Sample ID: 17-04569-3-TL2-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023826			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023826			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023826			525-86-5	2,5-Dimethylfuran	NGS	130	<0.93	6.3	n/a	n/a	n/a	n/a	0.93	n/a	
S17T023826			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023826			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023826			3777-69-3	2-Pentylfuran	NGS	130	<1.1	1.7	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023826			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023826			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023826			109-99-9	Tetrahydrofuran	NGS	110	<0.36	22	n/a	n/a	n/a	n/a	0.36	n/a	

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2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-IN-3  
Customer Sample ID: 17-04569-3-TL2-IN-3

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples															
S17T023827			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023827			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023827			625-96-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023827			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023827			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023827			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023827			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023827			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023827			109-99-9	Tetrahydrofuran	NGS	110	<0.36	19	n/a	n/a	n/a	n/a	0.36	n/a	

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-IN-4  
Customer Sample ID: 17-04569-3-TL2-IN-4

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cut Err %	Qual Flags
Furans in Vapor Samples															
S17T023828			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023828			1706-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023828			625-96-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023828			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023828			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023828			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023828			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023828			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023828			109-99-9	Tetrahydrofuran	NGS	110	<0.36	25	n/a	n/a	n/a	n/a	0.36	n/a	

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-IN-5  
Customer Sample ID: 17-04569-3-TL2-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023829			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023829			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023829			625-86-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023829			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023829			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023829			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023829			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023829			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023829			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-IN-6  
Customer Sample ID: 17-04569-3-TL2-IN-6

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023830			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023830			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023830			625-86-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023830			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023830			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023830			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023830			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023830			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023830			109-99-9	Tetrahydrofuran	NGS	110	<0.36	58	n/a	n/a	n/a	n/a	0.36	n/a	E

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-IN-7  
Customer Sample ID: 17-04569-3-TL2-IN-7

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023831			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023831			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023831			625-86-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023831			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023831			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023831			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023831			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023831			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023831			109-99-9	Tetrahydrofuran	NGS	110	<0.36	57	n/a	n/a	n/a	n/a	0.36	n/a	E

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172263  
SDG Number:  
Customer Sample ID: 17-04569-3-TL2-IN-8  
Customer Sample ID: 17-04569-3-TL2-IN-8

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T023832			1191-99-7	2,3-Dihydrofuran	NGS	120	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T023832			1708-29-8	2,5-Dihydrofuran	NGS	120	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T023832			625-86-5	2,5-Dimethylfuran	NGS	130	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T023832			3777-71-7	2-Heptylfuran	NGS	130	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T023832			534-22-5	2-Methylfuran	NGS	130	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T023832			3777-69-3	2-Pentylfuran	NGS	130	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T023832			4229-91-8	2-Propylfuran	NGS	130	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T023832			110-00-9	Furan	NGS	120	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T023832			109-99-9	Tetrahydrofuran	NGS	110	<0.36	63	n/a	n/a	n/a	n/a	0.36	n/a	E

N - Named TIC  
E - Outside Calibration Range

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected  
T - Tentatively Identified Compound



*K. J. Offner*  
 8-31-2017

2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172150

SDG Number:

Customer Sample ID: 17-03273-3-TL2-BA-EF

Customer Sample ID: 17-03273-3-TL2-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022091			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a UY
S17T022091			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a UY
S17T022091			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a UY
S17T022091			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a UY
S17T022091			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a UY
S17T022091			3777-89-3	2-Pentylfuran	NGS	110	<1.1	3.5	n/a	n/a	n/a	n/a	1.1		n/a Y
S17T022091			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a UY
S17T022091			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41		n/a UY
S17T022091			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-BA-IN  
Customer Sample ID: 17-03273-3-TL2-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022092			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022092			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022092			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022092			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022092			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022092			3777-69-3	2-Pentylfuran	NGS	110	<1.1	3.3	n/a	n/a	n/a	n/a	1.1	n/a	Y
S17T022092			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022092			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022092			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150

SDG Number:

Customer Sample ID: 17-03273-3-TL2-BL-EF

Customer Sample ID: 17-03273-3-TL2-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022093			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022093			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022093			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022093			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022093			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022093			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022093			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022093			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022093			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150

SDG Number:

Customer Sample ID: 17-03273-3-TL2-BL-IN

Customer Sample ID: 17-03273-3-TL2-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022094			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022094			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022094			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022094			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022094			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022094			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022094			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022094			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022094			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-EF-1  
Customer Sample ID: 17-03273-3-TL2-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022095			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022095			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022095			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022095			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022095			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022095			3777-69-3	2-Pentylfuran	NGS	110	<1.1	1.9	n/a	n/a	n/a	n/a	1.1	n/a	JY
S17T022095			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022095			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022095			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-EF-2  
Customer Sample ID: 17-03273-3-TL2-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022096			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	0.79	n/a	n/a	n/a	n/a	0.36		n/a JY
S17T022096			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a UY
S17T022096			525-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a UY
S17T022096			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a UY
S17T022096			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a UY
S17T022096			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a UY
S17T022096			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a UY
S17T022096			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41		n/a UY
S17T022096			109-96-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



# 2017 Cartridge Evaluation Data Summary of All Results

Sample Group: 20172150

SDG Number:

Customer Sample ID: 17-03273-3-TL2-EF-3

Customer Sample ID: 17-03273-3-TL2-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022097			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022097			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022097			825-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022097			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022097			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022097			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022097			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022097			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022097			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-EF-4  
Customer Sample ID: 17-03273-3-TL2-EF-4

Sample#	R	At	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples															
S17T022098			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022098			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022098			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022098			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022098			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022098			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022098			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022098			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022098			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-EF-5  
Customer Sample ID: 17-03273-3-TL2-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022099			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022099			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022099			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022099			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022099			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022099			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022099			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022099			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022099			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



**2017 Cartridge Evaluation  
Data Summary of All Results**

**Sample Group: 20172150**

**SDG Number:**

**Customer Sample ID: 17-03273-3-TL2-EF-6**

**Customer Sample ID: 17-03273-3-TL2-EF-6**

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022100			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022100			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022100			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022100			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022100			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022100			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022100			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022100			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022100			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-EF-7  
Customer Sample ID: 17-03273-3-TL2-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022101			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a UY
S17T022101			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42		n/a UY
S17T022101			825-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93		n/a UY
S17T022101			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0		n/a UY
S17T022101			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65		n/a UY
S17T022101			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1		n/a UY
S17T022101			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66		n/a UY
S17T022101			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41		n/a UY
S17T022101			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36		n/a UY

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-EF-8  
Customer Sample ID: 17-03273-3-TL2-EF-8

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022102			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022102			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022102			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022102			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022102			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022102			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022102			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022102			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022102			109-99-9	Tetrahydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY

NA = Not Analyzed, ND = Not Detected

Y - Comment

J - Estimated

U - Less Than Detection Limit



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150

SDG Number:

Customer Sample ID: 17-03273-3-TL2-IN-1

Customer Sample ID: 17-03273-3-TL2-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022103			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022103			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022103			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022103			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022103			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022103			3777-69-3	2-Pentylfuran	NGS	110	<1.1	2.5	n/a	n/a	n/a	n/a	1.1	n/a	JY
S17T022103			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022103			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022103			109-99-9	Tetrahydrofuran	NGS	110	<0.36	4.8	n/a	n/a	n/a	n/a	0.36	n/a	Y

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
 Data Summary of All Results

Sample Group: 20172150  
 SDG Number:  
 Customer Sample ID: 17-03273-3-TL2-IN-2  
 Customer Sample ID: 17-03273-3-TL2-IN-2

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022104			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022104			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022104			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022104			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022104			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022104			3777-69-3	2-Pentylfuran	NGS	110	<1.1	1.6	n/a	n/a	n/a	n/a	1.1	n/a	JY
S17T022104			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022104			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022104			109-99-9	Tetrahydrofuran	NGS	110	<0.36	3.8	n/a	n/a	n/a	n/a	0.36	n/a	Y

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-IN-3  
Customer Sample ID: 17-03273-3-TL2-IN-3

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022105			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022105			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022105			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022105			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022105			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022105			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022105			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022105			110-00-8	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022105			109-99-9	Tetrahydrofuran	NGS	110	<0.36	4.6	n/a	n/a	n/a	n/a	0.36	n/a	Y

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-IN-4  
Customer Sample ID: 17-03273-3-TL2-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022106			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022106			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022106			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022106			3771-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022106			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022106			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022106			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022106			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022106			109-99-9	Tetrahydrofuran	NGS	110	<0.36	6.4	n/a	n/a	n/a	n/a	0.36	n/a	Y

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-IN-5  
Customer Sample ID: 17-03273-3-TL2-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022107			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022107			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022107			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022107			3771-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022107			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022107			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022107			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022107			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022107			109-99-9	Tetrahydrofuran	NGS	110	<0.36	8.0	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-IN-6  
Customer Sample ID: 17-03273-3-TL2-IN-6

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022108			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022108			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022108			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022108			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022108			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022108			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022108			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022108			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022108			109-99-9	Tetrahydrofuran	NGS	110	<0.36	8.3	n/a	n/a	n/a	n/a	0.36	n/a	Y

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-IN-7  
Customer Sample ID: 17-03273-3-TL2-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022109			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	UY
S17T022109			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	UY
S17T022109			825-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	UY
S17T022109			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	UY
S17T022109			834-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	UY
S17T022109			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	UY
S17T022109			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	UY
S17T022109			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	UY
S17T022109			109-99-9	Tetrahydrofuran	NGS	110	<0.36	9.8	n/a	n/a	n/a	n/a	0.36	n/a	Y

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



2017 Cartridge Evaluation  
Data Summary of All Results

Sample Group: 20172150  
SDG Number:  
Customer Sample ID: 17-03273-3-TL2-IN-8  
Customer Sample ID: 17-03273-3-TL2-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T022110			1191-99-7	2,3-Dihydrofuran	NGS	110	<0.36	<0.36	n/a	n/a	n/a	n/a	0.36	n/a	U
S17T022110			1708-29-8	2,5-Dihydrofuran	NGS	110	<0.42	<0.42	n/a	n/a	n/a	n/a	0.42	n/a	U
S17T022110			625-86-5	2,5-Dimethylfuran	NGS	100	<0.93	<0.93	n/a	n/a	n/a	n/a	0.93	n/a	U
S17T022110			3777-71-7	2-Heptylfuran	NGS	110	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S17T022110			534-22-5	2-Methylfuran	NGS	110	<0.65	<0.65	n/a	n/a	n/a	n/a	0.65	n/a	U
S17T022110			3777-69-3	2-Pentylfuran	NGS	110	<1.1	<1.1	n/a	n/a	n/a	n/a	1.1	n/a	U
S17T022110			4229-91-8	2-Propylfuran	NGS	110	<0.66	<0.66	n/a	n/a	n/a	n/a	0.66	n/a	U
S17T022110			110-00-9	Furan	NGS	100	<0.41	<0.41	n/a	n/a	n/a	n/a	0.41	n/a	U
S17T022110			109-99-9	Tetrahydrofuran	NGS	110	<0.36	11	n/a	n/a	n/a	n/a	0.36	n/a	

U - Less Than Detection Limit

J - Estimated

Y - Comment

NA = Not Analyzed, ND = Not Detected



DSRComment 3.0.13  
DSR.Jar v. 3.0.13

Furan4 COMMENTS Ammended

2017 Cartridge Evaluation  
8/31/2017 9:25:17AM

Verification Sample Comments  
Sample: S17T022091 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022092 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022093 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022094 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022095 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022096 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022097 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022098 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022099 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022100 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022101 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022102 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022103 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022104 Group: 20172150



Furan4 COMMENTS Ammended  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022105 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022106 Group: 20172150

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DSRComment 3.0.13  
DSR.Jar v. 3.0.13

2017 Cartridge Evaluation  
8/31/2017 9:25:17AM  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022108 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Sample: S17T022109 Group: 20172150  
for Y = Tubes were not certified due to the certification tube malfunctioning  
this cleaning batch.  
Verification Sample Group Comments  
Group:20172150  
Ammended report to include U flags.

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## C.4.4 Amines



### ANALYTICAL REPORT

Report Date: July 07, 2017

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Washington River Protection So  
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Phone: (509) 373-1262

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20172243

Workorder: **34-1718139**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

#### Analytical Results

Sample ID: <b>S17T023395</b>		Collected: 06/23/2017		
Lab ID: 1718139001		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		<b>Analyzed:</b> 07/01/2017 (193709)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: S17T023396		Collected: 06/23/2017		
Lab ID: 1718139002		Received: 06/29/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
Analyzed: 07/01/2017 (193709)		Sampling Info: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023397</b>		Collected: 06/23/2017		
Lab ID: 1718139003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
Analyzed: 07/01/2017 (193709)				
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10

Results Continued on Next Page

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## ANALYTICAL REPORT

Workorder: **34-1718139**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023397</b>		Collected: 06/23/2017		
Lab ID: 1718139003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023398</b>		Collected: 06/23/2017		
Lab ID: 1718139004		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023399</b>		Collected: 06/23/2017		
Lab ID: 1718139005		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: S17T023400		Collected: 06/23/2017		
Lab ID: 1718139006		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718139**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023401</b>		Collected: 06/23/2017		
Lab ID: 1718139007		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023402</b>		Collected: 06/23/2017		
Lab ID: 1718139008		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023403</b>		Collected: 06/23/2017		
Lab ID: 1718139009		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023404</b>		Collected: 06/23/2017		
Lab ID: 1718139010		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718139**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023405</b>		Collected: 06/23/2017		
Lab ID: 1718139011		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023406</b>		Collected: 06/23/2017		
Lab ID: 1718139012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023407</b>		Collected: 06/23/2017		
Lab ID: 1718139013		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.21	NA	NA	0.10
Methylamine	1.2	NA	NA	0.10

Sample ID: <b>S17T023408</b>		Collected: 06/23/2017		
Lab ID: 1718139014		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.37	NA	NA	0.10
Methylamine	1.7	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718139**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023409</b>		Collected: 06/23/2017		
Lab ID: 1718139015		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.29	NA	NA	0.10
Methylamine	1.2	NA	NA	0.10

Sample ID: <b>S17T023410</b>		Collected: 06/23/2017		
Lab ID: 1718139016		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	<b>Analyzed:</b> 07/01/2017 (193709)	
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	0.12	NA	NA	0.10
Ethylamine	0.21	NA	NA	0.10
Methylamine	1.1	NA	NA	0.10

Sample ID: <b>S17T023411</b>		Collected: 06/23/2017		
Lab ID: 1718139017		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.23	NA	NA	0.10
Methylamine	1.3	NA	NA	0.10

Sample ID: <b>S17T023412</b>		Collected: 06/23/2017		
Lab ID: 1718139018		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.24	NA	NA	0.10
Methylamine	0.99	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718139**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T023413		Collected: 06/23/2017		
Lab ID: 1718139019		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.21	NA	NA	0.10
Methylamine	1.2	NA	NA	0.10

Sample ID: <b>S17T023414</b>		Collected: 06/23/2017		
Lab ID: 1718139020		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/01/2017 (193709)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.31	NA	NA	0.10
Methylamine	0.96	NA	NA	0.10

### Comments

Workorder: 1718139
Amines-VOA Aliphatic VAA-1 is a panel of amines analyzed by modified methods OSHA 34, OSHA 36, and OSHA 40. The modifications to both the prep and analytical procedures allow Dimethylamine, Ethylamine, and Methylamine to be analyzed together in a single analytical run.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Stephen Brose 07/07/2017 08:52	/S/ Thomas Bosch 07/07/2017 10:07

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alstl.lab@ALSGlobal.com](mailto:alstl.lab@ALSGlobal.com)  
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## ANALYTICAL REPORT

Workorder: **34-1718139**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718139

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: IH Aliphatic Amines

Batch: ILC/15125 (HBN: 193709)

Analyzed By: Stephen Brose

### Blank

LMB: 554489

Analyzed: 07/01/2017 00:00

Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554490

Analyzed: 07/01/2017 00:00

Dilution: 1

Units: ug/sample

LCSD: 554491

Analyzed: 07/01/2017 00:00

Dilution: 1

Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Dimethylamine	4.67	5.00	93.3	60.4 134.6	4.57	91.4	2.14	0.0 20.0
Ethylamine	5.82	5.00	116	40.0 160.0	5.31	106	9.23	0.0 20.0
Methylamine	4.90	5.00	98.0	40.0 160.0	4.45	88.9	9.70	0.0 20.0

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

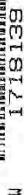
Analyst	Peer Review
/S/ Stephen Brose 07/07/2017 08:52	/S/ Thomas Bosch 07/07/2017 10:07

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





3

1718139

5484

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



Assembler		C.O.C. No.		Page 2 of 2	
N/A		20172243			
Collector		Telephone No.		MSIN	
N/A		373-6861		372-1878	
SAF No.		Purchase Order/Charge Code		Temp	
N/A		20306/CR20		ON JOE	
Project Title		Use Chest No.		Temp	
2017 CARTRIDGE EVALUATION		037		ON JOE	
Shipped To (Lab)		Bill of Lading/Air Bill No.		7795 145 8499	
Protocol		Parts and Return No.		42646	
N/A					
Sample No.	Lab ID	Date	No./Type Container	Sample Analysis	Preservative
	S17T023405	6/23/17	VA	AMINES 17-04568-4-TLL-BF-7	N/A
	S17T023406	6/23/17	VA	AMINES 17-04568-4-TLL-BF-8	N/A
	S17T023407	6/23/17	VA	AMINES 17-04568-4-TLL-IN-1	N/A
	S17T023408	6/23/17	VA	AMINES 17-04568-4-TLL-IN-2	N/A
	S17T023409	6/23/17	VA	AMINES 17-04568-4-TLL-IN-3	N/A
	S17T023410	6/23/17	VA	AMINES 17-04568-4-TLL-IN-4	N/A
	S17T023411	6/23/17	VA	AMINES 17-04568-4-TLL-IN-5	N/A
	S17T023412	6/23/17	VA	AMINES 17-04568-4-TLL-IN-6	N/A
	S17T023413	6/23/17	VA	AMINES 17-04568-4-TLL-IN-7	N/A
	S17T023414	6/23/17	VA	AMINES 17-04568-4-TLL-IN-8	N/A
<p>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>SPECIAL INSTRUCTIONS</p> <p>Send Results to Carl Howard &amp; Keisha Garcia Carl Howard: 373-6861 and Keisha Garcia: 372-1878 gov See SDW for email</p> <p>CONTRACT 55502</p> <p>RELEASE 15</p>					
Relinquished By	Print	Sign	Received By	Print	Sign
Sharon Welle	6/28/17	6/28/17	Scott Harder	6/28-17	1030
Relinquished By	SW Harder	WRPS	Received By	FEDEX	
Relinquished By	6/28/17	6/28/17	Received By	6/28/17	1030
Relinquished By	6/28/17	6/28/17	Received By	6/28/17	1030
<p>Disposal Method (e.g., Return to customer, per lab procedure) (used in process)</p> <p>Consumed</p> <p>Disposed By</p> <p>06/30/17</p>					
<p>FINAL SAMPLE DISPOSITION</p> <p>All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.</p> <p>A-6003-862 (03/05)</p>					





## ANALYTICAL REPORT

Report Date: June 28, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172101

Workorder: **34-1717315**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020925</b>		Collected: 06/16/2017		
Lab ID: 1717315001		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 06/26/2017 (193154)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020926</b>		Collected: 06/16/2017		
Lab ID: 1717315002		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 06/26/2017 (193154)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020927</b>		Collected: 06/16/2017		
Lab ID: 1717315003		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 06/26/2017 (193154)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10

Results Continued on Next Page

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## ANALYTICAL REPORT

Workorder: **34-1717315**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020927</b>		Collected: 06/16/2017		
Lab ID: 1717315003		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020928</b>		Collected: 06/16/2017		
Lab ID: 1717315004		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020929</b>		Collected: 06/16/2017		
Lab ID: 1717315005		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020930</b>		Collected: 06/16/2017		
Lab ID: 1717315006		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717315**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020931</b>		Collected: 06/16/2017		
Lab ID: 1717315007		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020932</b>		Collected: 06/16/2017		
Lab ID: 1717315008		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020933</b>		Collected: 06/16/2017		
Lab ID: 1717315009		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020934</b>		Collected: 06/16/2017		
Lab ID: 1717315010		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717315**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020935</b>		Collected: 06/16/2017		
Lab ID: 1717315011		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020936</b>		Collected: 06/16/2017		
Lab ID: 1717315012		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020937</b>		Collected: 06/16/2017		
Lab ID: 1717315013		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.11	NA	NA	0.10

Sample ID: <b>S17T020938</b>		Collected: 06/16/2017		
Lab ID: 1717315014		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.30	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717315**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020939</b>		Collected: 06/16/2017		
Lab ID: 1717315015		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020940</b>		Collected: 06/16/2017		
Lab ID: 1717315016		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	<b>Analyzed:</b> 06/26/2017 (193154)	
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.35	NA	NA	0.10

Sample ID: <b>S17T020941</b>		Collected: 06/16/2017		
Lab ID: 1717315017		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.25	NA	NA	0.10

Sample ID: <b>S17T020942</b>		Collected: 06/16/2017		
Lab ID: 1717315018		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/26/2017 (193154)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.26	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717315**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel 15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020943</b>		Collected: 06/16/2017		
Lab ID: 1717315019		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method:</b> Amines-VOA Aliphatic VAA-1		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	<b>Analyzed:</b> 06/26/2017 (193154)	
<b>Sampling Info:</b> Air Volume Not Provided				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.33	NA	NA	0.10

Sample ID: <b>S17T020944</b>		Collected: 06/16/2017		
Lab ID: 1717315020		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method:</b> Amines-VOA Aliphatic VAA-1		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	<b>Analyzed:</b> 06/26/2017 (193154)	
<b>Sampling Info:</b> Air Volume Not Provided				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.30	NA	NA	0.10

### Comments

Workorder: 1717315

Amines-VOA Aliphatic VAA-1 is a panel of amines analyzed by modified methods OSHA 34, OSHA 36, and OSHA 40. The modifications to both the prep and analytical procedures allow Dimethylamine, Ethylamine, and Methylamine to be analyzed together in a single analytical run.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Stephen Brose 06/27/2017 11:27	/S/ Thomas Bosch 06/28/2017 11:08

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
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Phone: (801) 266-7700  
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## ANALYTICAL REPORT

Workorder: **34-1717315**  
 Client Project ID: 2017 CARTRIDGE  
 EVALUATION  
 Purchase Order: 55502 Rel15  
 Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
 Samples were received in acceptable condition unless otherwise noted.  
 Samples have not been blank corrected unless otherwise noted.  
 This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

() This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1717315

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: IH Aliphatic Amines

Batch: ILC/15026 (HBN: 193154)

Analyzed By: Stephen Brose

### Blank

LMB: 553282 Analyzed: 06/26/2017 00:00 Units: ug/sample			
Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553283 Analyzed: 06/26/2017 00:00 Dilution: 1 Units: ug/sample					LCSD: 553284 Analyzed: 06/26/2017 00:00 Dilution: 1 Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Dimethylamine	5.11	5.00	102	60.4 134.6	5.24	105	2.49	0.0	20.0
Ethylamine	5.98	5.00	120	40.0 160.0	6.31	126	5.36	0.0	20.0
Methylamine	4.96	5.00	99.1	40.0 160.0	5.08	102	2.39	0.0	20.0

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Stephen Brose 06/27/2017 11:27	/S/ Thomas Bosch 06/28/2017 11:08

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1717315

A-6003-962 (03/05)



Assembler		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. No. 20172101	
N/A						Page 2 of 2	
Collector	JONES	Contact/Requestor	CARL HOWARD IV	Telephone No.	373-6861	MSIN	372-1878
SAF No.	N/A	Sample Origin	2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code	203006/CR20		
Project Title	2017 CARTRIDGE EVALUATION	Logbook/Work Package No.	N/A	Job Chest No.	WTS-033	Temp.	ON ICE
Shipped To (Lab)	ALS	Method of Shipment		Bill of Lading/Air Bill No.	7794 6050		4373
Protocol	N/A	Data Turnaround	10 DAYS	Parts and Return No.	42606		
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative	
	S17T020935	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-EF-7	N/A	
	S17T020936	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-EF-8	N/A	
	S17T020937	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-1	N/A	
	S17T020938	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-2	N/A	
	S17T020939	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-3	N/A	
	S17T020940	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-4	N/A	
	S17T020941	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-5	N/A	
	S17T020942	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-6	N/A	
	S17T020943	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-7	N/A	
	S17T020944	VA	6/16/17	XAD-7-NBD	AMINES 17-03269-4-TLL-IN-8	N/A	
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No <b>Hold Time</b>							
<b>SPECIAL INSTRUCTIONS</b> Send Results to Carl Howard & Keisha Garcia Carl Howard:rlh.gov and Keisha R. Garcia:rlh.gov See SON for email CONTRACT 35502 RELEASE 15							
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Matrix*
Sharon W. Harder	Sharon W. Harder	SW Harder	Scott Harder	Scott Harder	SW Harder	6-21-17/1030	S = Soil SE = Sediment SL = Sludge W = Water O = Oil A = Air DS = Drum Solids
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Matrix*
WRPS	WRPS	WRPS	FEDEX	FEDEX	FEDEX		DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Matrix*
<b>Disposal Method (e.g., Return to customer, per lab procedure used in process)</b>							<b>Disposed By</b>
<b>FINAL SAMPLE DISPOSITION</b>							<b>Date/Time</b>
All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.							6/23/17





## ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172244

Workorder: **34-1718142**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023415</b>		Collected: 06/24/2017		
Lab ID: 1718142001		Received: 06/29/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023416</b>		Collected: 06/24/2017		
Lab ID: 1718142002		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 07/03/2017 (193807)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023417</b>		Collected: 06/24/2017		
Lab ID: 1718142003		Received: 06/29/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 07/03/2017 (193807)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10

Results Continued on Next Page

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## ANALYTICAL REPORT

Workorder: **34-1718142**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023417</b>		Collected: 06/24/2017		
Lab ID: 1718142003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023418</b>		Collected: 06/24/2017		
Lab ID: 1718142004		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023419</b>		Collected: 06/24/2017		
Lab ID: 1718142005		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023420</b>		Collected: 06/24/2017		
Lab ID: 1718142006		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718142**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023421</b>		Collected: 06/24/2017		
Lab ID: 1718142007		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023422</b>		Collected: 06/24/2017		
Lab ID: 1718142008		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023423</b>		Collected: 06/24/2017		
Lab ID: 1718142009		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: S17T023424		Collected: 06/24/2017		
Lab ID: 1718142010		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718142**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023425</b>		Collected: 06/24/2017		
Lab ID: 1718142011		Received: 06/29/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 07/03/2017 (193807)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023426</b>		Collected: 06/24/2017		
Lab ID: 1718142012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		<b>Analyzed:</b> 07/03/2017 (193807)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T023427</b>		Collected: 06/24/2017		
Lab ID: 1718142013		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 07/03/2017 (193807)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.11	NA	NA	0.10
Methylamine	1.4	NA	NA	0.10

Sample ID: <b>S17T023428</b>		Collected: 06/24/2017		
Lab ID: 1718142014		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		<b>Analyzed:</b> 07/03/2017 (193807)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.26	NA	NA	0.10
Methylamine	1.3	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718142**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023429</b>		Collected: 06/24/2017		
Lab ID: 1718142015		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.30	NA	NA	0.10
Methylamine	1.0	NA	NA	0.10

Sample ID: <b>S17T023430</b>		Collected: 06/24/2017		
Lab ID: 1718142016		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.18	NA	NA	0.10
Methylamine	0.88	NA	NA	0.10

Sample ID: <b>S17T023431</b>		Collected: 06/24/2017		
Lab ID: 1718142017		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.26	NA	NA	0.10
Methylamine	0.91	NA	NA	0.10

Sample ID: <b>S17T023432</b>		Collected: 06/24/2017		
Lab ID: 1718142018		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	1.1	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1718142**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023433</b>		Collected: 06/24/2017		
Lab ID: 1718142019		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method:</b> Amines-VOA Aliphatic VAA-1		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	<b>Analyzed:</b> 07/03/2017 (193807)	
<b>Sampling Info:</b> Air Volume Not Provided				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.39	NA	NA	0.10
Methylamine	1.0	NA	NA	0.10

Sample ID: <b>S17T023434</b>		Collected: 06/24/2017		
Lab ID: 1718142020		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 07/03/2017 (193807)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	0.31	NA	NA	0.10
Methylamine	0.98	NA	NA	0.10

### Comments

Workorder: 1718142
Amines-VOA Aliphatic VAA-1 is a panel of amines analyzed by modified methods OSHA 34, OSHA 36, and OSHA 40. The modifications to both the prep and analytical procedures allow Dimethylamine, Ethylamine, and Methylamine to be analyzed together in a single analytical run.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Stephen Brose 07/07/2017 09:21	/S/ Thomas Bosch 07/07/2017 10:03

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alstl.lab@ALSGlobal.com](mailto:alstl.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)





## ANALYTICAL REPORT

Workorder: **34-1718142**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718142

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: IH Aliphatic Amines  
Batch: ILC/15140 (HBN: 193807)  
Analyzed By: Stephen Brose

### Blank

LMB: 554642 Analyzed: 07/03/2017 00:00 Units: ug/sample			
Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554643 Analyzed: 07/03/2017 00:00 Dilution: 1 Units: ug/sample					LCSD: 554644 Analyzed: 07/03/2017 00:00 Dilution: 1 Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Dimethylamine	4.78	5.00	95.5	60.4 134.6	4.71	94.1	1.47	0.0	20.0
Ethylamine	5.99	5.00	120	40.0 160.0	5.08	102	16.5	0.0	20.0
Methylamine	4.73	5.00	94.6	40.0 160.0	4.55	90.9	3.97	0.0	20.0

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

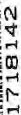
Analyst	Peer Review
/S/ Stephen Brose 07/07/2017 09:21	/S/ Thomas Bosch 07/07/2017 10:03

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable



A-6003-962 (03/05)



CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A		C.O.C. No. 20172244 Page 2 of 2							
Collector JONES		Telephone No. 373-6861 MSIN 16-02 FAX 372-1878							
SAF No. N/A		Purchase Order/Change Code 20306/CD20							
Project Title 2017 CARTRIDGE EVALUATION		Ice Chest No. <u>WLS-037</u> Temp. <u>ON ICE</u>							
Shipped To (Lab) ALS		Bill of Lading/Air Bill No. <u>7795 1445 8499</u>							
Protocol N/A		Parts and Return No. <u>42649</u>							
Data Turnaround 10 DAYS									
Contact/Requestor CARL HOWARD IV		Sample Analysis							
Sample Origin 2017 CARTRIDGE EVALUATION									
Logbook/Work Package No. N/A									
Method of Shipment									
No./Type Container									
Sample No.	Lab ID	*	Date	Time	MSDS	Yes	No	MSDS	Preservative
	S17T023425	VA	6/24/17		AMINES 17-04569-4-T12-BF-7				N/A
	S17T023426	VA	6/24/17		AMINES 17-04569-4-T12-BF-8				N/A
	S17T023427	VA	6/24/17		AMINES 17-04569-4-T12-IN-1				N/A
	S17T023428	VA	6/24/17		AMINES 17-04569-4-T12-IN-2				N/A
	S17T023429	VA	6/24/17		AMINES 17-04569-4-T12-IN-3				N/A
	S17T023430	VA	6/24/17		AMINES 17-04569-4-T12-IN-4				N/A
	S17T023431	VA	6/24/17		AMINES 17-04569-4-T12-IN-5				N/A
	S17T023432	VA	6/24/17		AMINES 17-04569-4-T12-IN-7				N/A
	S17T023433	VA	6/24/17		AMINES 17-04569-4-T12-IN-8				N/A
	S17T023434	VA	6/24/17		AMINES 17-04569-4-T12-IN-6				N/A
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl.W.Howard@rl.gov and Keisha.R.Garcia@rl.gov See SOW for email CONTRACT 55502 RELEASE 15									
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*	
Sharon Webb			6-25-17 1030	Scott Harder			6-28-17 1030	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids	DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
SW Harder			6-28-17 1400	FEDEX					
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
WRPS				WRPS					
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure) (used in process) Disposed By <u>Carl Howard</u> Date/Time <u>07/03/17</u> All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.									





## ANALYTICAL REPORT

Report Date: June 28, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172102

Workorder: **34-1717317**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020945</b>		Collected: 06/17/2017		
Lab ID: 1717317001		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 06/24/2017 (193177)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020946</b>		Collected: 06/17/2017		
Lab ID: 1717317002		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020947</b>		Collected: 06/17/2017		
Lab ID: 1717317003		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10

Results Continued on Next Page

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## ANALYTICAL REPORT

Workorder: **34-1717317**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020947</b>		Collected: 06/17/2017		
Lab ID: 1717317003		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020948</b>		Collected: 06/17/2017		
Lab ID: 1717317004		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020949</b>		Collected: 06/17/2017		
Lab ID: 1717317005		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020950</b>		Collected: 06/17/2017		
Lab ID: 1717317006		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717317**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020951</b>		Collected: 06/17/2017		
Lab ID: 1717317007		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020952</b>		Collected: 06/17/2017		
Lab ID: 1717317008		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		<b>Analyzed:</b> 06/24/2017 (193177)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020953</b>		Collected: 06/17/2017		
Lab ID: 1717317009		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020954</b>		Collected: 06/17/2017		
Lab ID: 1717317010		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717317**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020955</b>		Collected: 06/17/2017		
Lab ID: 1717317011		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 06/24/2017 (193177)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020956</b>		Collected: 06/17/2017		
Lab ID: 1717317012		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		<b>Analyzed:</b> 06/24/2017 (193177)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020957</b>		Collected: 06/17/2017		
Lab ID: 1717317013		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.32	NA	NA	0.10

Sample ID: <b>S17T020958</b>		Collected: 06/17/2017		
Lab ID: 1717317014		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.29	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717317**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020959</b>		Collected: 06/17/2017		
Lab ID: 1717317015		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.30	NA	NA	0.10

Sample ID: <b>S17T020960</b>		Collected: 06/17/2017		
Lab ID: 1717317016		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		<b>Analyzed:</b> 06/24/2017 (193177)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: <b>S17T020961</b>		Collected: 06/17/2017		
Lab ID: 1717317017		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: Amines-VOA Aliphatic VAA-1</b>		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		<b>Analyzed:</b> 06/24/2017 (193177)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<b>0.11</b>	NA	NA	0.10

Sample ID: <b>S17T020962</b>		Collected: 06/17/2017		
Lab ID: 1717317018		Received: 06/22/2017		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.20	NA	NA	0.10





## ANALYTICAL REPORT

Workorder: **34-1717317**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel 15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T020963</b>		Collected: 06/17/2017		
Lab ID: 1717317019		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method:</b> Amines-VOA Aliphatic VAA-1		<b>Media:</b> SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	<b>Analyzed:</b> 06/24/2017 (193177)	
<b>Sampling Info:</b> Air Volume Not Provided				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.24	NA	NA	0.10

Sample ID: <b>S17T020964</b>		Collected: 06/17/2017		
Lab ID: 1717317020		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]	Analyzed: 06/24/2017 (193177)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.33	NA	NA	0.10

### Comments

Workorder: 1717317

Amines-VOA Aliphatic VAA-1 is a panel of amines analyzed by modified methods OSHA 34, OSHA 36, and OSHA 40. The modifications to both the prep and analytical procedures allow Dimethylamine, Ethylamine, and Methylamine to be analyzed together in a single analytical

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Stephen Brose 06/27/2017 12:06	/S/ Thomas Bosch 06/28/2017 11:05

### Laboratory Contact Information

ALS Environmental  
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Salt Lake City, Utah 84123

Phone: (801) 266-7700  
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## ANALYTICAL REPORT

Workorder: **34-1717317**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1717317

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: IH Aliphatic Amines

Batch: ILC/15028 (HBN: 193177)

Analyzed By: Stephen Brose

### Blank

LMB: 553363

Analyzed: 06/24/2017 00:00

Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553364

Analyzed: 06/24/2017 00:00

Dilution: 1

Units: ug/sample

LCSD: 553365

Analyzed: 06/24/2017 00:00

Dilution: 1

Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Dimethylamine	4.82	5.00	96.3	60.4 134.6	4.79	95.7	0.627	0.0 20.0
Ethylamine	4.89	5.00	97.8	40.0 160.0	5.58	112	13.2	0.0 20.0
Methylamine	4.78	5.00	95.5	40.0 160.0	4.88	97.5	2.08	0.0 20.0

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

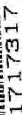
Analyst	Peer Review
/S/ Stephen Brose 06/27/2017 12:06	/S/ Thomas Bosch 06/28/2017 11:05

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.



Assembler		C.O.C. No.	
W/A		20172102	
Collector		MSIN	
JONES		16-62	
SAF No.		FAX	
W/A		373-1878	
Project Title		Purchase Order/Charge Code	
2017 CASUALTY EVALUATION		203067580	
Shipped To (Lab)		Ice Chest No.	
ALS		WHS-033	
Protocol		Bill of Lading/Air Bill No.	
W/A		7794 6050 4373	
		Parts and Return No.	
		42606	

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			
Sample No.	Lab ID	Date	Time
11	SL77020955	VA	6/17/17
12	SL77020956	VA	6/17/17
13	SL77020957	VA	6/17/17
14	SL77020958	VA	6/17/17
15	SL77020959	VA	6/17/17
16	SL77020960	VA	6/17/17
17	SL77020961	VA	6/17/17
18	SL77020962	VA	6/17/17
19	SL77020963	VA	6/17/17
20	SL77020964	VA	6/17/17

Sample Analysis		Preservative
ANALYSIS 17-03273-4-TL2-EP-7		N/A
ANALYSIS 17-03273-4-TL2-EP-8		N/A
ANALYSIS 17-03273-4-TL2-IN-1		N/A
ANALYSIS 17-03273-4-TL2-IN-2		N/A
ANALYSIS 17-03273-4-TL2-IN-3		N/A
ANALYSIS 17-03273-4-TL2-IN-4		N/A
ANALYSIS 17-03273-4-TL2-IN-5		N/A
ANALYSIS 17-03273-4-TL2-IN-6		N/A
ANALYSIS 17-03273-4-TL2-IN-7		N/A
ANALYSIS 17-03273-4-TL2-IN-8		N/A
ANALYSIS 17-03273-4-TL2-IN-9		N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)		MSDS	Yes	No	Hold Time
Send Results to Carl Howald & Keisha Garcia Carl.W.Howald@rl.gov and Keisha.R.Garcia@rl.gov gov See SOM for email					
CONFRACT 55502					
RELEASE 15					

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Material
Sharon W. Hester	Sharon W. Hester	Sharon W. Hester	6-21-17 1030	Scott Harder	Scott Harder	6-21-17 1030	S = Soil SE = Sediment SC = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids	
Relinquished By	SW Harder	SW Harder	6-21-17 1400	Received By	FEDEX			CL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By	Relief	Relief		Received By	Relief			

Final Sample Disposition	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Conrad	06/23/17

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-8003-982 (03/05)



## C.4.5 Acetonitrile



### ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov  
201472229

Workorder: **34-1718122**

Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

#### Analytical Results

Sample ID: <b>S17T023150</b>		Collected: 06/23/2017	
Lab ID: 1718122001		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Acetonitrile	<0.010	NA	NA    0.010

Sample ID: <b>S17T023151</b>		Collected: 06/23/2017		
Lab ID: 1718122002		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		
		Analyzed: 07/02/2017 (193763)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T023152</b>		Collected: 06/23/2017		
Lab ID: 1718122003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

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## ANALYTICAL REPORT

Workorder: **34-1718122**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023153</b>		Collected: 06/23/2017	
Lab ID: 1718122004		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023154</b>		Collected: 06/23/2017	
Lab ID: 1718122005		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023155</b>		Collected: 06/23/2017	
Lab ID: 1718122006		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023156</b>		Collected: 06/23/2017	
Lab ID: 1718122007		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1718122**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023157</b>		Collected: 06/23/2017	
Lab ID: 1718122008		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023158</b>		Collected: 06/23/2017	
Lab ID: 1718122009		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023159</b>		Collected: 06/23/2017	
Lab ID: 1718122010		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023160</b>		Collected: 06/23/2017	
Lab ID: 1718122011		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1718122**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023161</b>		Collected: 06/23/2017	
Lab ID: 1718122012		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023162</b>		Collected: 06/23/2017	
Lab ID: 1718122013		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023163</b>		Collected: 06/23/2017	
Lab ID: 1718122014		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023164</b>		Collected: 06/23/2017	
Lab ID: 1718122015		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1718122**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023165</b>		Collected: 06/23/2017		
Lab ID: 1718122016		Received: 06/29/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T023166</b>		Collected: 06/23/2017		
Lab ID: 1718122017		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method:</b> NIOSH 1606	<b>Media:</b> SKC 226-09, Charcoal Tube 400/200mg	<b>Analyzed:</b> 07/02/2017 (193763)		
<b>Sampling Info:</b> Air Volume Not Provided				
<b>Analyte</b>	<b>Result (mg/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (mg/sample)</b>
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T023167</b>		Collected: 06/23/2017		
Lab ID: 1718122018		Received: 06/29/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T023168</b>		Collected: 06/23/2017		
Lab ID: 1718122019		Received: 06/29/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1718122**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023169</b>		Collected: 06/23/2017	
Lab ID: 1718122020		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/02/2017 (193763)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Acetonitrile	<0.010	NA	NA    0.010

### Report Authorization (S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1606	S/ Young Hee Yoon 07/06/2017 14:19	S/ Lyle Edwards 07/07/2017 07:34

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)





## ANALYTICAL REPORT

Workorder: **34-1718122**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

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Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718122

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: IH GC-FID QC

Batch: IFID/8578 (HBN: 193763)

Analyzed By: Young Hee Yoon

### Blank

MB: 554540			
Analyzed: 07/02/2017 00:00			
Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554541					LCSD: 554542				
Analyzed: 07/02/2017 00:00					Analyzed: 07/02/2017 00:00				
Dilution: 1					Dilution: 1				
Units: mg/sample					Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.334	0.343	97.3	86.6 115.3	0.353	103	5.53	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Young Hee Yoon 07/06/2017 14:19	/S/ Lyle Edwards 07/07/2017 07:34

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1718122

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1718122

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A		C.O.G. No. 20172229 Page 1 of 2							
Collector JONES		Contact/Requestor CARL HOWARD IV		Telephone No. 373-6861		MSIN 16-02		FAX 372-1878	
SAF No. N/A		Sample Origin 2017 CARTRIDGE EVALUATION		Purchase Order/Charge Code 203009/C52C					
Project Title 2017 CARTRIDGE EVALUATION		Logbook/Work Package No. N/A		Ice Chest No. <i>WTS-037</i>		Temp. <i>ON ICE</i>			
Shipped To (Lab) AUS		Method of Shipment		Bill of Lading/Air Bill No. <i>7795 1445 8499</i>					
Protocol N/A		Data Turnaround 10 DAYS		Parts and Return No. <i>42646</i>					
Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis		Preservative	
	S17T023150	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-BA-EF-1		N/A	
	S17T023151	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-BA-IN-1		N/A	
	S17T023152	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-DL-EF-1		N/A	
	S17T023153	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-DL-IN-1		N/A	
	S17T023154	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-EF-1		N/A	
	S17T023155	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-EF-2		N/A	
	S17T023156	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-EF-3		N/A	
	S17T023157	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-EF-4		N/A	
	S17T023158	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-EF-5		N/A	
	S17T023159	VA	6/23/17		CHARCOAL TUBE	Acetonitrile 17-04568-5-TLL-EF-6		N/A	
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No Hold Time									
SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl W. Howard@rl.gov and Keisha R. Garcia@rl.gov gov see SON for email RELEASE 15 Reference Contract # 55502									
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*	
<i>Dianne Turner</i>	<i>SW Harder</i>	<i>WRPS</i>	<i>6/23/17 1400</i>	<i>Scott Harder</i>	<i>FEDEX</i>	<i>6-28-17/1330</i>	<i>6-28-17/1330</i>	S = Soil	DL = Drum Liquids
Relinquished By				Received By				SE = Sediment	T = Tissue
Relinquished By				Received By				SO = Solid	WI = Wipe
				Received By				SL = Sludge	L = Liquid
				Received By				W = Water	V = Vapor
				Received By				O = Oil	VA = Vapor
				Received By				A = Air	X = Other
				Received By				DS = Drum Solids	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)						Date/Time	
		<i>Gray the from July 2, 2017 8:10 AM</i>							

A-6003-962 (09/05)









## ANALYTICAL REPORT

Report Date: June 29, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov  
20172114

Workorder: **34-1717319**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021265</b>		Collected: 06/17/2017	
Lab ID: 1717319001		Received: 06/22/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

Sample ID: <b>S17T021266</b>		Collected: 06/17/2017	
Lab ID: 1717319002		Received: 06/22/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
		Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T021267</b>		Collected: 06/17/2017	
Lab ID: 1717319003		Received: 06/22/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
		Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992  
ALS GROUP USA, CORP. An ALS Limited Company

Environmental 

[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1717319**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021268</b>		Collected: 06/17/2017	
Lab ID: 1717319004		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T021269</b>		Collected: 06/17/2017	
Lab ID: 1717319005		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
Acetonitrile	0.015	NA	NA 0.010

Sample ID: <b>S17T021270</b>		Collected: 06/17/2017	
Lab ID: 1717319006		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

Sample ID: <b>S17T021271</b>		Collected: 06/17/2017	
Lab ID: 1717319007		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010





## ANALYTICAL REPORT

Workorder: **34-1717319**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021272</b>		Collected: 06/17/2017	
Lab ID: 1717319008		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T021273</b>		Collected: 06/17/2017	
Lab ID: 1717319009		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

Sample ID: <b>S17T021274</b>		Collected: 06/17/2017	
Lab ID: 1717319010		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T021275</b>		Collected: 06/17/2017	
Lab ID: 1717319011		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010





## ANALYTICAL REPORT

Workorder: **34-1717319**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021276</b>		Collected: 06/17/2017		
Lab ID: 1717319012		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021277</b>		Collected: 06/17/2017		
Lab ID: 1717319013		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021278</b>		Collected: 06/17/2017		
Lab ID: 1717319014		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	0.015	NA	NA	0.010

Sample ID: <b>S17T021279</b>		Collected: 06/17/2017		
Lab ID: 1717319015		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1717319**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021280</b>		Collected: 06/17/2017		
Lab ID: 1717319016		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021281</b>		Collected: 06/17/2017		
Lab ID: 1717319017		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021282</b>		Collected: 06/17/2017		
Lab ID: 1717319018		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021283</b>		Collected: 06/17/2017		
Lab ID: 1717319019		Received: 06/22/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1717319**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021284</b>		Collected: 06/17/2017	
Lab ID: 1717319020		Received: 06/22/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/23/2017 (193168)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

### Report Authorization (S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1606	/S/ Young Hee Yoon 06/29/2017 12:26	/S/ Lyle Edwards 06/29/2017 13:26

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alst.lab@ALSGlobal.com](mailto:alst.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)





## ANALYTICAL REPORT

Workorder: **34-1717319**  
 Client Project ID: 2017 CARTRIDGE  
 EVALUATION  
 Purchase Order: 55502 Rel15  
 Project Manager: Rand Potter

### General Lab Comments

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Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1717319

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** IH GC-FID QC

**Batch:** IFID/8541 (HBN: 193168)

**Analyzed By:** Young Hee Yoon

### Blank

MB: 553348			
Analyzed: 06/23/2017 00:00			
Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553349					LCSD: 553350				
Analyzed: 06/23/2017 00:00					Analyzed: 06/23/2017 00:00				
Dilution: 1					Dilution: 1				
Units: mg/sample					Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.328	0.312	105	86.6 115.3	0.320	103	2.47	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Young Hee Yoon 06/29/2017 12:26	/S/ Lyle Edwards 06/29/2017 13:26

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1717319

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembled N/A	C.O.C. No. 20172114 Page 1 of 2								
Collector JONES	Telephone No. 373-6861 MSIN 16-02 FAX 372-1878								
SAF No. N/A	Purchase Order/Charge Code 203006/CB20								
Project Title 2017 CARTRIDGE EVALUATION	Sample Origin 2017 CARTRIDGE EVALUATION								
Shipped To (Lab) AUS	Logbook/ Work Package No. N/A								
Protocol N/A	Method of Shipment								
Data Turnaround 10 DAYS									
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative			
	S17T021265	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-BB-EF	N/A			
	S17T021266	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-BB-IN	N/A			
	S17T021267	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-BL-EF	N/A			
	S17T021268	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-BL-IN	N/A			
	S17T021269	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-EF-1	N/A			
	S17T021270	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-EF-2	N/A			
	S17T021271	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-EF-3	N/A			
	S17T021272	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-EF-4	N/A			
	S17T021273	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-EF-5	N/A			
	S17T021274	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-T12-EF-6	N/A			
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No									
SPECIAL INSTRUCTIONS Send Results to Carl Howald & Keisha Garcia Carl.W.Howald@rl.gov and Keisha.R.Garcia@rl.gov see SW for email RELEASE 15 Reference Contract # 55502									
Relinquished By Sharon Waddell	Print SW Harder	Sign SW Harder	Date/Time 6-21-17 1030	Received By SCOTT Harder	Print FEDEX	Sign SCOTT	Date/Time 6-21-17 1030	Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other	
Relinquished By WRFS	Print WRFS	Sign SWHL	Date/Time 6-21-17 1400	Received By WRFS	Print WRFS	Sign SWHL	Date/Time 6-21-17 1400		
Relinquished By WRFS	Print WRFS	Sign SWHL	Date/Time 6-21-17 1400	Received By WRFS	Print WRFS	Sign SWHL	Date/Time 6-21-17 1400		
Relinquished By WRFS	Print WRFS	Sign SWHL	Date/Time 6-21-17 1400	Received By WRFS	Print WRFS	Sign SWHL	Date/Time 6-21-17 1400		
Disposal Method (e.g., Return to customer, per lab procedure used in process) Sent to customer, per lab procedure used in process									
FINAL SAMPLE DISPOSITION	Date/Time June 23, 2017 7:12 PM								

A-6003-962 (03/05)



Assembler N/A		C.O.C. No. 20172114 Page 2 of 2									
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST											
Collector JONES	Contact/Requestor CARL HOWARD IV	Telephone No. 373-6861		MSN 16-02		FAX 372-1878					
SAF No. N/A	Sample Origin 2017 CHARLOTTE EVALUATION	Purchase Order/Charge Code 203887 C820									
Project Title 2017 CHARLOTTE EVALUATION	Logbook/Work Package No. N/A	Ice Chest No. WTS-033		Temp. 60 F							
Shipped To (Lab) AUS	Method of Shipment	Bill of Lading/Air Bill No. 7794		6050		4373					
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 42606									
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative					
	S17T021275	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-EF-7	N/A					
	S17T021276	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-EF-8	N/A					
	S17T021277	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-1	N/A					
	S17T021278	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-2	N/A					
	S17T021279	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-3	N/A					
	S17T021280	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-4	N/A					
	S17T021281	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-5	N/A					
	S17T021282	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-6	N/A					
	S17T021283	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-7	N/A					
	S17T021284	VA	6/17/17	CHARCOAL TUBE	Acetonitrile 17-03273-5-TL2-IN-8	N/A					
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No											
SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl.W.Howard@rl.gov and Keisha.R.Garcia@rl.gov See SON for email RELEASE 15 Reference Contract # 55502											
Relinquished By Sharon Holden	Print SW Harder	Sign SW Harder	Date/Time 6-21-17/1030	Received By Scott Harder	Print FEDEX	Sign FEDEX	Date/Time 6-21-17/1030	Relinquished By WRPS	Print WRPS	Sign WRPS	Date/Time 6-21-17/1400
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Relinquished By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Relinquished By	Print	Sign	Date/Time
Disposal Method (e.g., Return to customer, per lab procedure, used in process)											
Date/Time June 23, 2017 7:12 PM											

A-8003-962 (03/05)





## ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172231

Workorder: **34-1718124**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023170</b>		Collected: 06/24/2017	
Lab ID: 1718124001		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
		Analyzed: 07/03/2017 (193804)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

Sample ID: <b>S17T023171</b>		Collected: 06/24/2017	
Lab ID: 1718124002		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
		Analyzed: 07/03/2017 (193804)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Acetonitrile	<0.010	NA	NA    0.010

Sample ID: <b>S17T023172</b>		Collected: 06/24/2017	
Lab ID: 1718124003		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
		Analyzed: 07/03/2017 (193804)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992

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Environmental 

[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1718124**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023173</b>		Collected: 06/24/2017	
Lab ID: 1718124004		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023174</b>		Collected: 06/24/2017	
Lab ID: 1718124005		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023175</b>		Collected: 06/24/2017	
Lab ID: 1718124006		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023176</b>		Collected: 06/24/2017	
Lab ID: 1718124007		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1718124**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023177</b>		Collected: 06/24/2017	
Lab ID: 1718124008		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023178</b>		Collected: 06/24/2017	
Lab ID: 1718124009		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023179</b>		Collected: 06/24/2017	
Lab ID: 1718124010		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

Sample ID: <b>S17T023180</b>		Collected: 06/24/2017	
Lab ID: 1718124011		Received: 06/29/2017	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1718124**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023181</b>		Collected: 06/24/2017	
Lab ID: 1718124012		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

Sample ID: <b>S17T023182</b>		Collected: 06/24/2017	
Lab ID: 1718124013		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Acetonitrile	<0.010	NA	NA            0.010

Sample ID: <b>S17T023183</b>		Collected: 06/24/2017	
Lab ID: 1718124014		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010

Sample ID: <b>S17T023184</b>		Collected: 06/24/2017	
Lab ID: 1718124015		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Acetonitrile	<0.010	NA	NA      0.010





## ANALYTICAL REPORT

Workorder: **34-1718124**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023185</b>		Collected: 06/24/2017		
Lab ID: 1718124016		Received: 06/29/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T023186</b>		Collected: 06/24/2017		
Lab ID: 1718124017		Received: 06/29/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T023187</b>		Collected: 06/24/2017		
Lab ID: 1718124018		Received: 06/29/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T023188</b>		Collected: 06/24/2017		
Lab ID: 1718124019		Received: 06/29/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1718124**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023189</b>		Collected: 06/24/2017	
Lab ID: 1718124020		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 07/03/2017 (193804)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Acetonitrile	<0.010	NA	NA    0.010

### Report Authorization (IS/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1606	/S/ Young Hee Yoon 07/06/2017 15:12	/S/ Lyle Edwards 07/07/2017 07:38

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)





## ANALYTICAL REPORT

Workorder: **34-1718124**  
 Client Project ID: 2017 CARTRIDGE  
 EVALUATION  
 Purchase Order: 55502 Rel15  
 Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
 Samples were received in acceptable condition unless otherwise noted.  
 Samples have not been blank corrected unless otherwise noted.  
 This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718124

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: IH GC-FID QC

Batch: IFID/8586 (HBN: 193804)

Analyzed By: Young Hee Yoon

### Blank

MB: 554637			
Analyzed: 07/03/2017 00:00			
Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554638					LCSD: 554639				
Analyzed: 07/03/2017 00:00					Analyzed: 07/03/2017 00:00				
Dilution: 1					Dilution: 1				
Units: mg/sample					Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.299	0.312	95.8	86.6 115.3	0.322	103	7.41	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

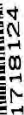
Analyst	Peer Review
/S/ Young Hee Yoon 07/06/2017 15:12	/S/ Lyle Edwards 07/07/2017 07:38

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable



A-6003-962 (03/05)









## ANALYTICAL REPORT

Report Date: June 28, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov  
20172113

Workorder: **34-1717336**

Client Project ID: 2107 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021245</b>		Collected: 06/16/2017		
Lab ID: 1717336001		Received: 06/22/2017		
Method: <b>NIOSH 1606</b>		Media: SKC 226-09, Charcoal Tube 400/200mg		
		Analyzed: 06/25/2017 (193229)		
Sampling Info: <b>Air Volume Not Provided</b>				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021246</b>		Collected: 06/16/2017		
Lab ID: 1717336002		Received: 06/22/2017		
Method: <b>NIOSH 1606</b>		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/25/2017 (193229)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021247</b>		Collected: 06/16/2017		
Lab ID: 1717336003		Received: 06/22/2017		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		
		Analyzed: 06/25/2017 (193229)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992  
ALS GROUP USA, CORP. An ALS Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1717336**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021248</b>	Collected: 06/16/2017
Lab ID: 1717336004	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021249</b>	Collected: 06/16/2017
Lab ID: 1717336005	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021250</b>	Collected: 06/16/2017
Lab ID: 1717336006	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021251</b>	Collected: 06/16/2017
Lab ID: 1717336007	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010





## ANALYTICAL REPORT

Workorder: **34-1717336**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021252</b>	Collected: 06/16/2017
Lab ID: 1717336008	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021253</b>	Collected: 06/16/2017
Lab ID: 1717336009	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021254</b>	Collected: 06/16/2017
Lab ID: 1717336010	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021255</b>	Collected: 06/16/2017
Lab ID: 1717336011	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010





## ANALYTICAL REPORT

Workorder: **34-1717336**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021256</b>	Collected: 06/16/2017
Lab ID: 1717336012	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021257</b>	Collected: 06/16/2017
Lab ID: 1717336013	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021258</b>	Collected: 06/16/2017
Lab ID: 1717336014	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010

Sample ID: <b>S17T021259</b>	Collected: 06/16/2017
Lab ID: 1717336015	Received: 06/22/2017
Method: <b>NIOSH 1606</b>	Media: SKC 226-09, Charcoal Tube 400/200mg
Sampling Info: Air Volume Not Provided	
Analyte	Result (mg/sample)
Acetonitrile	<0.010





## ANALYTICAL REPORT

Workorder: **34-1717336**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021260</b>		Collected: 06/16/2017		
Lab ID: 1717336016		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/26/2017 (193229)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021261</b>	Collected: 06/16/2017			
Lab ID: 1717336017	Received: 06/22/2017			
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg			
Analyzed: 06/26/2017 (193229)				
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021262</b>	Collected: 06/16/2017			
Lab ID: 1717336018	Received: 06/22/2017			
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg			
Analyzed: 06/26/2017 (193229)				
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: <b>S17T021263</b>	Collected: 06/16/2017			
Lab ID: 1717336019	Received: 06/22/2017			
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg			
Analyzed: 06/26/2017 (193229)				
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1717336**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021264</b>		Collected: 06/16/2017		
Lab ID: 1717336020		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 06/26/2017 (193229)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1606	/S/ Young Hee Yoon 06/28/2017 15:24	/S/ Lyle Edwards 06/28/2017 15:42

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)





## ANALYTICAL REPORT

Workorder: **34-1717336**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwlabservice.htm">http://ndep.nv.gov/bsdwlabservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/field/qa/lab_accred_certif.html">http://www.tceq.texas.gov/field/qa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.  
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.  
ND = Not Detected, Testing result not detected above the LOD or LOQ.  
NA = Not Applicable.  
\*\* No result could be reported, see sample comments for details.  
< This testing result is less than the numerical value.  
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1717336

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: IH GC-FID QC  
Batch: IFID/8551 (HBN: 193229)  
Analyzed By: Young Hee Yoon

### Blank

MB: 553461 Analyzed: 06/25/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553462 Analyzed: 06/25/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 553463 Analyzed: 06/25/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.302	0.312	96.8	86.6 115.3	0.288	92.3	4.75	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Young Hee Yoon 06/28/2017 15:24	/S/ Lyle Edwards 06/28/2017 15:42

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1717336

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembled N/A	COC No. 20172113 Page 1 of 2								
Collector JONES	Contact/Requestor CARL HOWARD IV	Telephone No. 373-6861 MSIN 372-1878 FAX 372-1878							
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 203056/CB20							
Project Title 2017 CARTRIDGE EVALUATION	Logbook/Work Package No. N/A	Ice Chest No. 425-033 Temp. 60 ICE							
Shipped To (Lab) RUS	Method of Shipment	Bill of Lading/Air Bill No. 7794 6050 4373							
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 42606							
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis				Preservative
1	S17T021245	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-BA-EF				N/A
2	S17T021246	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-BA-IN				N/A
3	S17T021247	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-BL-EF				N/A
4	S17T021248	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-BL-IN				N/A
5	S17T021249	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-1				N/A
6	S17T021250	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-2				N/A
7	S17T021251	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-3				N/A
8	S17T021252	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-4				N/A
9	S17T021253	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-5				N/A
10	S17T021254	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-6				N/A
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No									
SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl W Howard@rl.gov and Keisha R_Garcia@rl.gov gov. See SOW for email addresses and SOW Reference Contract # 55502									
Relinquished By Shawn Wolder	Print SW Harder	Sign WRPS	Date/Time 6-21-17/1030	Received By Scott Harder	Print Scott Harder	Sign Scott Harder	Date/Time 6-21-17/1030	Matrix* S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids	
Relinquished By Fodex	Print Fodex	Sign Fodex	Date/Time 6-21-17/1400	Received By Dimitris	Print Dimitris	Sign Dimitris	Date/Time 6-21-17/11:10		
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
Disposal Method (e.g., Return to customer, per lab procedure, used in process)								Date/Time June 26, 2017 10:00 AM	
All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.									

A-5003-962 (03/05)



Assembler		C.O.C. No.				
N/A		20172113				
		Page 2 of 2				
<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>						
Collector	Requestor	Telephone No.	MSIN			
Jones	Carl Howard IV	373-6861	16-02			
SAF No.	Sample Origin	Purchase Order/Charge Code	FAX			
N/A	2017 CHARGE EVALUATION	233067258	372-1878			
Project Title	Logbook/Work Package No.	Ice Chest No.	Temp.			
2017 CHARGE EVALUATION	N/A	WTS-033	ON ICE			
Shipped To (Lab)	Method of Shipment	Bill of Lading/Air Bill No.				
ALS		7794 6050 4373				
Protocol	Data Turnaround	Parts and Return No.				
N/A	10 DAYS	42606				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
11	S17T021235	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-7	N/A
12	S17T021256	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-EF-8	N/A
13	S17T021257	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-1	N/A
14	S17T021258	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-2	N/A
15	S17T021259	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-3	N/A
16	S17T021260	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-4	N/A
17	S17T021261	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-5	N/A
18	S17T021262	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-6	N/A
19	S17T021263	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-7	N/A
20	S17T021264	VA	6/16/17	CHARCOAL TUBE	Acetonitrile 17-03269-5-TL1-IN-8	N/A
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No <b>Hold Time</b>						
<b>SPECIAL INSTRUCTIONS</b> Send Results to Carl Howard & Keisha Garcia Carl.W.Howard@rl.gov and Keisha.R.Garcia@rl.gov gov see SOW for email RELEASE 15 Reference Contract # 55502						
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time
Steven Menden	6-21-17	1030	Scott Harder	6-21-17	1030	
Relinquished By	SW Harder	WRPS	Received By	FEDEX		
Relinquished By	FRIDOX	6-21-17	Received By	Deanne Hill	6-21-17	1400
Relinquished By			Received By			
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process) Used in process Disposed By Steven Menden 6-26-2017 10:20 AM						

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



## C.4.6 Mercury

20172217 Rev. 0

### FINAL REPORT ON MERCURY VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED JUNE 23 - 24, 2017

Document No.: 20172217 Rev. 0

**Michael A. Purcell**  
WAI Hanford Laboratory

**Date Published**  
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A handwritten signature in black ink, appearing to read "Purcell".

July 26, 2017

Michael A. Purcell, WHL Project Coordinator



**NARRATIVE**

**FINAL REPORT ON MERCURY VAPOR TUBES  
FOR CARTRIDGE EVALUATION  
COLLECTED JUNE 23 - 24 2017**

This final report presents the results of eighty mercury vapor tubes received at the 222-S Laboratory on June 26, 2017, in good condition and with adequate paperwork. The mercury vapor tubes were logged into sample delivery group 20172217

**DISCLAIMERS**

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys. Requirements or anomalies concerning field sampling are not addressed in this report.

**PROCEDURES**

<b>Method</b>	<b>Preparation Procedure</b>	<b>Analysis Procedure</b>
Mercury by OSHA ID-140	LA-325-109, Rev. 2-5	LA-325-109, Rev. 2-5

**ANALYTICAL SUMMARY**

The vapor tubes were tested for mercury, as specified on the chain of custody. Standard laboratory procedures for digestions and cold vapor atomic absorption for mercury were followed as well as the requirements in WHL-MP-1029, *WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory* (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control standards (LCS). For mercury, the results of 178 LCS determinations indicate a mean recovery of 98% with a standard deviation of 6%. Statistical process control limits for the LCS are 81 – 115%, with no significant bias. The overall estimate of uncertainty is 12%, with coverage factor ( $k$ ) = 2.

Background levels of mercury or interfering compounds can be present in the sorbent tube media used for collecting vapor samples. OSHA ID-140 recommends that the laboratory determine the average background for each lot of media and subtract it from the sample results prior to reporting. However, per agreement with the client, this background is being determined by the client using blank media submitted as blind samples to the laboratory. Any blank subtraction from the sample results will be performed by the client. The laboratory is using the same media



for QC samples. These QC samples may not match the lot numbers of the samples being submitted and the background for this QC sample media has not been determined. Over the past several years the results from preparation blanks, field blanks, and the vast majority of samples have been below the laboratory's method detection limit, which is an order of magnitude below the reporting limit. In general, the laboratory believes there is no need for background subtraction using the current sample media (Hydrar, SKC 226-17-1A).

Thirty-one of the eighty mercury results for this sample group were above the reporting limit of 0.05 µg/sample (see Attachment 1).



20172217 Rev. 0

Attachment 1

## DATA SUMMARY REPORT

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## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172217

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-04563-6-SC1-BA-EF	Total	S17T022941	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-SC1-BA-EF	Resin	S17T022942	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-SC1-BA-EF	Glass Wool	S17T022943	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-ba-in	Total	S17T022944	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ba-in	Resin	S17T022945	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-ba-in	Glass Wool	S17T022946	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-bl-ef	Total	S17T022947	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-bl-ef	Resin	S17T022989	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-bl-ef	Glass Wool	S17T022990	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-bl-in	Total	S17T023585	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-bl-in	Resin	S17T023586	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-bl-in	Glass Wool	S17T023587	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-1	Total	S17T023588	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-1	Resin	S17T023589	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-1	Glass Wool	S17T023590	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-2	Total	S17T023591	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-2	Resin	S17T023592	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-2	Glass Wool	S17T023593	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-3	Total	S17T023596	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-3	Resin	S17T023602	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-3	Glass Wool	S17T023603	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-4	Total	S17T023616	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-4	Resin	S17T023627	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-4	Glass Wool	S17T023628	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-5	Total	S17T023638	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-5	Resin	S17T023642	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-5	Glass Wool	S17T023643	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-6	Total	S17T023644	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-6	Resin	S17T023645	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-6	Glass Wool	S17T023646	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-7	Total	S17T023648	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-7	Resin	S17T023649	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-7	Glass Wool	S17T023650	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-8	Total	S17T023651	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-8	Resin	S17T023654	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-ef-8	Glass Wool	S17T023655	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-in-1	Total	S17T023659	Mercury	µg/sample	n/a	<0.0500	0.384	0.0500
17-04563-6-scl-in-1	Resin	S17T023663	Mercury	µg/sample	95.5	<0.0500	0.379	0.0500
17-04563-6-scl-in-1	Glass Wool	S17T023664	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-scl-in-2	Total	S17T023665	Mercury	µg/sample	n/a	<0.0500	0.483	0.0500
17-04563-6-scl-in-2	Resin	S17T023666	Mercury	µg/sample	95.5	<0.0500	0.478	0.0500
17-04563-6-scl-in-2	Glass Wool	S17T023667	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-SC1-IN-3	Total	S17T023668	Mercury	µg/sample	n/a	<0.0500	0.476	0.0500
17-04563-6-SC1-IN-3	Resin	S17T023669	Mercury	µg/sample	95.5	<0.0500	0.471	0.0500
17-04563-6-SC1-IN-3	Glass Wool	S17T023670	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500
17-04563-6-SC1-IN-4	Total	S17T023671	Mercury	µg/sample	n/a	<0.0500	0.502	0.0500
17-04563-6-SC1-IN-4	Resin	S17T023672	Mercury	µg/sample	95.5	<0.0500	0.497	0.0500
17-04563-6-SC1-IN-4	Glass Wool	S17T023673	Mercury	µg/sample	95.5	<0.0500	<0.0500	0.0500



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172217

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-04563-6-SC1-IN-5	Total	S17T023674	Mercury	µg/sample	n/a	<0.0500	0.422	0.0500
17-04563-6-SC1-IN-5	Resin	S17T023675	Mercury	µg/sample	93.5	<0.0500	0.417	0.0500
17-04563-6-SC1-IN-5	Glass Wool	S17T023676	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04563-6-SC1-IN-6	Total	S17T023677	Mercury	µg/sample	n/a	<0.0500	0.341	0.0500
17-04563-6-SC1-IN-6	Resin	S17T023678	Mercury	µg/sample	93.5	<0.0500	0.336	0.0500
17-04563-6-SC1-IN-6	Glass Wool	S17T023679	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04563-6-SC1-IN-7	Total	S17T023680	Mercury	µg/sample	n/a	<0.0500	0.166	0.0500
17-04563-6-SC1-IN-7	Resin	S17T023681	Mercury	µg/sample	93.5	<0.0500	0.161	0.0500
17-04563-6-SC1-IN-7	Glass Wool	S17T023682	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04563-6-SC1-IN-8	Total	S17T023683	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04563-6-SC1-IN-8	Resin	S17T023684	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04563-6-SC1-IN-8	Glass Wool	S17T023685	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BA-EF	Total	S17T023686	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BA-EF	Resin	S17T023687	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BA-EF	Glass Wool	S17T023688	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BA-IN	Total	S17T023689	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BA-IN	Resin	S17T023690	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BA-IN	Glass Wool	S17T023691	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BL-EF	Total	S17T023692	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BL-EF	Resin	S17T023693	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BL-EF	Glass Wool	S17T023694	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BL-IN	Total	S17T023695	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BL-IN	Resin	S17T023696	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-BL-IN	Glass Wool	S17T023697	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-1	Total	S17T023698	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-1	Resin	S17T023699	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-1	Glass Wool	S17T023700	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-2	Total	S17T023701	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-2	Resin	S17T023702	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-2	Glass Wool	S17T023703	Mercury	µg/sample	93.5	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-3	Total	S17T023704	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-3	Resin	S17T023705	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-3	Glass Wool	S17T023706	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-4	Total	S17T023707	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-4	Resin	S17T023708	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-4	Glass Wool	S17T023709	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-5	Total	S17T023710	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-5	Resin	S17T023711	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-5	Glass Wool	S17T023712	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-6	Total	S17T023713	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-6	Resin	S17T023714	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-6	Glass Wool	S17T023715	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-7	Total	S17T023716	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-7	Resin	S17T023717	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-7	Glass Wool	S17T023718	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-8	Total	S17T023719	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-8	Resin	S17T023720	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-EF-8	Glass Wool	S17T023721	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172217

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-04564-6-SD1-IN-1	Total	S17T023722	Mercury	µg/sample	n/a	<0.0500	0.343	0.0500
17-04564-6-SD1-IN-1	Resin	S17T023723	Mercury	µg/sample	94.2	<0.0500	0.338	0.0500
17-04564-6-SD1-IN-1	Glass Wool	S17T023724	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-SD1-IN-2	Total	S17T023725	Mercury	µg/sample	n/a	<0.0500	0.444	0.0500
17-04564-6-SD1-IN-2	Resin	S17T023726	Mercury	µg/sample	94.2	<0.0500	0.439	0.0500
17-04564-6-SD1-IN-2	Glass Wool	S17T023727	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-sd1-in-3	Total	S17T023728	Mercury	µg/sample	n/a	<0.0500	0.452	0.0500
17-04564-6-sd1-in-3	Resin	S17T023729	Mercury	µg/sample	94.2	<0.0500	0.447	0.0500
17-04564-6-sd1-in-3	Glass Wool	S17T023730	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-sd1-in-4	Total	S17T023731	Mercury	µg/sample	n/a	<0.0500	0.434	0.0500
17-04564-6-sd1-in-4	Resin	S17T023732	Mercury	µg/sample	94.2	<0.0500	0.428	0.0500
17-04564-6-sd1-in-4	Glass Wool	S17T023733	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500
17-04564-6-sd1-in-5	Total	S17T023734	Mercury	µg/sample	n/a	<0.0500	0.355	0.0500
17-04564-6-sd1-in-5	Resin	S17T023735	Mercury	µg/sample	95.2	<0.0500	0.350	0.0500
17-04564-6-sd1-in-5	Glass Wool	S17T023736	Mercury	µg/sample	95.2	<0.0500	<0.0500	0.0500
17-04564-6-sd1-in-6	Total	S17T023737	Mercury	µg/sample	n/a	<0.0500	0.307	0.0500
17-04564-6-sd1-in-6	Resin	S17T023738	Mercury	µg/sample	95.2	<0.0500	0.302	0.0500
17-04564-6-sd1-in-6	Glass Wool	S17T023739	Mercury	µg/sample	95.2	<0.0500	<0.0500	0.0500
17-04564-6-sd1-in-7	Total	S17T023740	Mercury	µg/sample	n/a	<0.0500	0.280	0.0500
17-04564-6-sd1-in-7	Resin	S17T023741	Mercury	µg/sample	91.8	<0.0500	0.275	0.0500
17-04564-6-sd1-in-7	Glass Wool	S17T023742	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04564-6-sd1-in-8	Total	S17T023743	Mercury	µg/sample	n/a	<0.0500	0.285	0.0500
17-04564-6-sd1-in-8	Resin	S17T023744	Mercury	µg/sample	91.8	<0.0500	0.280	0.0500
17-04564-6-sd1-in-8	Glass Wool	S17T023745	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BA-EF	Total	S17T024214	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BA-EF	Resin	S17T024215	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BA-EF	Glass Wool	S17T024216	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BA-IN	Total	S17T024217	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BA-IN	Resin	S17T024218	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BA-IN	Glass Wool	S17T024219	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BL-EF	Total	S17T024220	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BL-EF	Resin	S17T024221	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BL-EF	Glass Wool	S17T024222	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BL-IN	Total	S17T024223	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BL-IN	Resin	S17T024224	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-BL-IN	Glass Wool	S17T024225	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-1	Total	S17T024226	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-1	Resin	S17T024227	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-1	Glass Wool	S17T024228	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-2	Total	S17T024229	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-2	Resin	S17T024230	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-2	Glass Wool	S17T024231	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-3	Total	S17T024232	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-3	Resin	S17T024233	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-3	Glass Wool	S17T024234	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-4	Total	S17T024235	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-4	Resin	S17T024236	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-4	Glass Wool	S17T024237	Mercury	µg/sample	91.8	<0.0500	<0.0500	0.0500



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172217

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-04568-6-TL1-EF-5	Total	S17T024238	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-5	Resin	S17T024239	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-5	Glass Wool	S17T024240	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-6	Total	S17T024241	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-6	Resin	S17T024242	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-6	Glass Wool	S17T024243	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-7	Total	S17T024244	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-7	Resin	S17T024245	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-7	Glass Wool	S17T024246	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-8	Total	S17T024247	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-8	Resin	S17T024248	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-EF-8	Glass Wool	S17T024249	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-1	Total	S17T024250	Mercury	µg/sample	n/a	<0.0500	0.108	0.0500
17-04568-6-TL1-IN-1	Resin	S17T024251	Mercury	µg/sample	92.3	<0.0500	0.103	0.0500
17-04568-6-TL1-IN-1	Glass Wool	S17T024252	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-2	Total	S17T024254	Mercury	µg/sample	n/a	<0.0500	0.115	0.0500
17-04568-6-TL1-IN-2	Resin	S17T024257	Mercury	µg/sample	92.3	<0.0500	0.110	0.0500
17-04568-6-TL1-IN-2	Glass Wool	S17T024258	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-3	Total	S17T024260	Mercury	µg/sample	n/a	<0.0500	0.111	0.0500
17-04568-6-TL1-IN-3	Resin	S17T024264	Mercury	µg/sample	92.3	<0.0500	0.106	0.0500
17-04568-6-TL1-IN-3	Glass Wool	S17T024265	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-4	Total	S17T024275	Mercury	µg/sample	n/a	<0.0500	0.115	0.0500
17-04568-6-TL1-IN-4	Resin	S17T024278	Mercury	µg/sample	92.3	<0.0500	0.110	0.0500
17-04568-6-TL1-IN-4	Glass Wool	S17T024279	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-5	Total	S17T024284	Mercury	µg/sample	n/a	<0.0500	0.108	0.0500
17-04568-6-TL1-IN-5	Resin	S17T024288	Mercury	µg/sample	92.3	<0.0500	0.103	0.0500
17-04568-6-TL1-IN-5	Glass Wool	S17T024289	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-6	Total	S17T024292	Mercury	µg/sample	n/a	<0.0500	0.0919	0.0500
17-04568-6-TL1-IN-6	Resin	S17T024296	Mercury	µg/sample	92.3	<0.0500	0.0869	0.0500
17-04568-6-TL1-IN-6	Glass Wool	S17T024297	Mercury	µg/sample	92.3	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-7	Total	S17T024301	Mercury	µg/sample	n/a	<0.0500	0.102	0.0500
17-04568-6-TL1-IN-7	Resin	S17T024305	Mercury	µg/sample	93.7	<0.0500	0.0968	0.0500
17-04568-6-TL1-IN-7	Glass Wool	S17T024306	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04568-6-TL1-IN-8	Total	S17T024311	Mercury	µg/sample	n/a	<0.0500	0.0912	0.0500
17-04568-6-TL1-IN-8	Resin	S17T024314	Mercury	µg/sample	93.7	<0.0500	0.0862	0.0500
17-04568-6-TL1-IN-8	Glass Wool	S17T024316	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BA-EF	Total	S17T024323	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BA-EF	Resin	S17T024327	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BA-EF	Glass Wool	S17T024329	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BA-IN	Total	S17T024334	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BA-IN	Resin	S17T024337	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BA-IN	Glass Wool	S17T024339	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BL-EF	Total	S17T024340	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BL-EF	Resin	S17T024341	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BL-EF	Glass Wool	S17T024342	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BL-IN	Total	S17T024346	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BL-IN	Resin	S17T024348	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-BL-IN	Glass Wool	S17T024350	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172217

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-04569-6-TL2-EF-1	Total	S17T024355	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-1	Resin	S17T024357	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-1	Glass Wool	S17T024359	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-2	Total	S17T024360	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-2	Resin	S17T024363	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-2	Glass Wool	S17T024364	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-3	Total	S17T024370	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-3	Resin	S17T024372	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-3	Glass Wool	S17T024373	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-4	Total	S17T024374	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-4	Resin	S17T024375	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-4	Glass Wool	S17T024376	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-5	Total	S17T024388	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-5	Resin	S17T024390	Mercury	µg/sample	97.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-5	Glass Wool	S17T024391	Mercury	µg/sample	97.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-6	Total	S17T024394	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-6	Resin	S17T024398	Mercury	µg/sample	97.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-6	Glass Wool	S17T024399	Mercury	µg/sample	97.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-7	Total	S17T024403	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-7	Resin	S17T024404	Mercury	µg/sample	97.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-7	Glass Wool	S17T024405	Mercury	µg/sample	97.7	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-8	Total	S17T024406	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-8	Resin	S17T024407	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-EF-8	Glass Wool	S17T024408	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-1	Total	S17T024409	Mercury	µg/sample	n/a	<0.0500	0.100	0.0500
17-04569-6-TL2-IN-1	Resin	S17T024410	Mercury	µg/sample	87.4	<0.0500	0.0954	0.0500
17-04569-6-TL2-IN-1	Glass Wool	S17T024411	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-2	Total	S17T024412	Mercury	µg/sample	n/a	<0.0500	0.113	0.0500
17-04569-6-TL2-IN-2	Resin	S17T024413	Mercury	µg/sample	87.4	<0.0500	0.108	0.0500
17-04569-6-TL2-IN-2	Glass Wool	S17T024414	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-3	Total	S17T024415	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-3	Resin	S17T024416	Mercury	µg/sample	87.4	<0.0500	0.0971	0.0500
17-04569-6-TL2-IN-3	Resin	S17T024417	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-4	Total	S17T024418	Mercury	µg/sample	n/a	<0.0500	0.0980	0.0500
17-04569-6-TL2-IN-4	Resin	S17T024420	Mercury	µg/sample	87.4	<0.0500	0.0930	0.0500
17-04569-6-TL2-IN-4	Glass Wool	S17T024421	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-5	Total	S17T024424	Mercury	µg/sample	n/a	<0.0500	0.101	0.0500
17-04569-6-TL2-IN-5	Resin	S17T024428	Mercury	µg/sample	87.4	<0.0500	0.0962	0.0500
17-04569-6-TL2-IN-5	Glass Wool	S17T024429	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-7	Total	S17T024431	Mercury	µg/sample	n/a	<0.0500	0.0832	0.0500
17-04569-6-TL2-IN-7	Resin	S17T024434	Mercury	µg/sample	87.4	<0.0500	0.0782	0.0500
17-04569-6-TL2-IN-7	Glass Wool	S17T024436	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2-IN-8	Total	S17T024439	Mercury	µg/sample	n/a	<0.0500	0.0784	0.0500
17-04569-6-TL2-IN-8	Resin	S17T024440	Mercury	µg/sample	87.4	<0.0500	0.0734	0.0500
17-04569-6-TL2-IN-8	Glass Wool	S17T024442	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500
17-04569-6-TL2IN-6	Total	S17T024448	Mercury	µg/sample	n/a	<0.0500	0.0849	0.0500
17-04569-6-TL2IN-6	Resin	S17T024450	Mercury	µg/sample	87.4	<0.0500	0.0799	0.0500
17-04569-6-TL2IN-6	Glass Wool	S17T024451	Mercury	µg/sample	87.4	<0.0500	<0.0500	0.0500



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## Attachment 2

### ANALYSIS DATE REPORT

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## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172217

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T022942	17-04563-6-SC1-BA-EF	Mercury	06/28/2017 13:00	06/29/2017 09:38
S17T022943	17-04563-6-SC1-BA-EF	Mercury	06/28/2017 13:00	06/29/2017 09:40
S17T022945	17-04563-6-scl-ba-in	Mercury	06/28/2017 13:00	06/29/2017 09:41
S17T022946	17-04563-6-scl-ba-in	Mercury	06/28/2017 13:00	06/29/2017 09:43
S17T022989	17-04563-6-scl-bl-ef	Mercury	06/28/2017 13:00	06/29/2017 09:45
S17T022990	17-04563-6-scl-bl-ef	Mercury	06/28/2017 13:00	06/29/2017 09:46
S17T023586	17-04563-6-scl-bl-in	Mercury	06/28/2017 13:00	06/29/2017 09:48
S17T023587	17-04563-6-scl-bl-in	Mercury	06/28/2017 13:00	06/29/2017 09:50
S17T023589	17-04563-6-scl-ef-1	Mercury	06/28/2017 13:00	06/29/2017 09:55
S17T023590	17-04563-6-scl-ef-1	Mercury	06/28/2017 13:00	06/29/2017 09:56
S17T023592	17-04563-6-scl-ef-2	Mercury	06/28/2017 13:00	06/29/2017 09:58
S17T023593	17-04563-6-scl-ef-2	Mercury	06/28/2017 13:00	06/29/2017 10:00
S17T023602	17-04563-6-scl-ef-3	Mercury	06/28/2017 13:00	06/29/2017 10:07
S17T023603	17-04563-6-scl-ef-3	Mercury	06/28/2017 13:00	06/29/2017 10:08
S17T023627	17-04563-6-scl-ef-4	Mercury	06/28/2017 13:00	06/29/2017 10:13
S17T023628	17-04563-6-scl-ef-4	Mercury	06/28/2017 13:00	06/29/2017 10:15
S17T023642	17-04563-6-scl-ef-5	Mercury	06/28/2017 13:00	06/29/2017 10:17
S17T023643	17-04563-6-scl-ef-5	Mercury	06/28/2017 13:00	06/29/2017 10:18
S17T023645	17-04563-6-scl-ef-6	Mercury	06/28/2017 13:00	06/29/2017 10:20
S17T023646	17-04563-6-scl-ef-6	Mercury	06/28/2017 13:00	06/29/2017 10:21
S17T023649	17-04563-6-scl-ef-7	Mercury	06/28/2017 13:00	06/29/2017 10:23
S17T023650	17-04563-6-scl-ef-7	Mercury	06/28/2017 13:00	06/29/2017 10:25
S17T023654	17-04563-6-scl-ef-8	Mercury	06/28/2017 13:00	06/29/2017 10:26
S17T023655	17-04563-6-scl-ef-8	Mercury	06/28/2017 13:00	06/29/2017 10:28
S17T023663	17-04563-6-scl-in-1	Mercury	06/28/2017 13:00	06/29/2017 10:33
S17T023664	17-04563-6-scl-in-1	Mercury	06/28/2017 13:00	06/29/2017 10:34
S17T023666	17-04563-6-scl-in-2	Mercury	06/28/2017 13:00	06/29/2017 10:36
S17T023667	17-04563-6-scl-in-2	Mercury	06/28/2017 13:00	06/29/2017 10:38
S17T023669	17-04563-6-SC1-IN-3	Mercury	06/28/2017 13:00	06/29/2017 10:39
S17T023670	17-04563-6-SC1-IN-3	Mercury	06/28/2017 13:00	06/29/2017 10:41
S17T023672	17-04563-6-SC1-IN-4	Mercury	06/28/2017 13:00	06/29/2017 10:43
S17T023673	17-04563-6-SC1-IN-4	Mercury	06/28/2017 13:00	06/29/2017 10:45
S17T023675	17-04563-6-SC1-IN-5	Mercury	06/28/2017 13:00	06/29/2017 11:05
S17T023676	17-04563-6-SC1-IN-5	Mercury	06/28/2017 13:00	06/29/2017 11:07
S17T023678	17-04563-6-SC1-IN-6	Mercury	06/28/2017 13:00	06/29/2017 11:09
S17T023679	17-04563-6-SC1-IN-6	Mercury	06/28/2017 13:00	06/29/2017 11:10
S17T023681	17-04563-6-SC1-IN-7	Mercury	06/28/2017 13:00	06/29/2017 11:12
S17T023682	17-04563-6-SC1-IN-7	Mercury	06/28/2017 13:00	06/29/2017 11:14
S17T023684	17-04563-6-SC1-IN-8	Mercury	06/28/2017 13:00	06/29/2017 11:19
S17T023685	17-04563-6-SC1-IN-8	Mercury	06/28/2017 13:00	06/29/2017 11:21
S17T023687	17-04564-6-SD1-BA-EF	Mercury	06/28/2017 13:00	06/29/2017 11:22
S17T023688	17-04564-6-SD1-BA-EF	Mercury	06/28/2017 13:00	06/29/2017 11:24
S17T023690	17-04564-6-SD1-BA-IN	Mercury	06/28/2017 13:00	06/29/2017 11:25
S17T023691	17-04564-6-SD1-BA-IN	Mercury	06/28/2017 13:00	06/29/2017 11:27
S17T023693	17-04564-6-SD1-BL-EF	Mercury	06/28/2017 13:00	06/29/2017 11:28
S17T023694	17-04564-6-SD1-BL-EF	Mercury	06/28/2017 13:00	06/29/2017 11:30



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172217

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T023696	17-04564-6-SD1-BL-IN	Mercury	06/28/2017 13:00	06/29/2017 11:32
S17T023697	17-04564-6-SD1-BL-IN	Mercury	06/28/2017 13:00	06/29/2017 11:33
S17T023699	17-04564-6-SD1-EF-1	Mercury	06/28/2017 13:00	06/29/2017 11:38
S17T023700	17-04564-6-SD1-EF-1	Mercury	06/28/2017 13:00	06/29/2017 11:40
S17T023702	17-04564-6-SD1-EF-2	Mercury	06/28/2017 13:00	06/29/2017 11:41
S17T023703	17-04564-6-SD1-EF-2	Mercury	06/28/2017 13:00	06/29/2017 11:43
S17T023705	17-04564-6-SD1-EF-3	Mercury	06/28/2017 13:00	06/29/2017 11:49
S17T023706	17-04564-6-SD1-EF-3	Mercury	06/28/2017 13:00	06/29/2017 11:51
S17T023708	17-04564-6-SD1-EF-4	Mercury	06/28/2017 13:00	06/29/2017 11:56
S17T023709	17-04564-6-SD1-EF-4	Mercury	06/28/2017 13:00	06/29/2017 11:58
S17T023711	17-04564-6-SD1-EF-5	Mercury	06/28/2017 13:00	06/29/2017 11:59
S17T023712	17-04564-6-SD1-EF-5	Mercury	06/28/2017 13:00	06/29/2017 12:01
S17T023714	17-04564-6-SD1-EF-6	Mercury	06/28/2017 13:00	06/29/2017 12:02
S17T023715	17-04564-6-SD1-EF-6	Mercury	06/28/2017 13:00	06/29/2017 12:04
S17T023717	17-04564-6-SD1-EF-7	Mercury	06/28/2017 13:00	06/29/2017 12:05
S17T023718	17-04564-6-SD1-EF-7	Mercury	06/28/2017 13:00	06/29/2017 12:07
S17T023720	17-04564-6-SD1-EF-8	Mercury	06/28/2017 13:00	06/29/2017 12:08
S17T023721	17-04564-6-SD1-EF-8	Mercury	06/28/2017 13:00	06/29/2017 12:10
S17T023723	17-04564-6-SD1-IN-1	Mercury	06/28/2017 13:00	06/29/2017 12:15
S17T023724	17-04564-6-SD1-IN-1	Mercury	06/28/2017 13:00	06/29/2017 12:17
S17T023726	17-04564-6-SD1-IN-2	Mercury	06/28/2017 13:00	06/29/2017 12:18
S17T023727	17-04564-6-SD1-IN-2	Mercury	06/28/2017 13:00	06/29/2017 12:20
S17T023729	17-04564-6-sd1-in-3	Mercury	06/28/2017 13:00	06/29/2017 12:22
S17T023730	17-04564-6-sd1-in-3	Mercury	06/28/2017 13:00	06/29/2017 12:24
S17T023732	17-04564-6-sd1-in-4	Mercury	06/28/2017 13:00	06/29/2017 12:25
S17T023733	17-04564-6-sd1-in-4	Mercury	06/28/2017 13:00	06/29/2017 12:27
S17T023735	17-04564-6-sd1-in-5	Mercury	06/29/2017 12:30	07/03/2017 14:09
S17T023736	17-04564-6-sd1-in-5	Mercury	06/29/2017 12:30	07/03/2017 14:11
S17T023738	17-04564-6-sd1-in-6	Mercury	06/29/2017 12:30	07/03/2017 14:13
S17T023739	17-04564-6-sd1-in-6	Mercury	06/29/2017 12:30	07/03/2017 14:15
S17T023741	17-04564-6-sd1-in-7	Mercury	06/29/2017 12:30	07/05/2017 09:35
S17T023742	17-04564-6-sd1-in-7	Mercury	06/29/2017 12:30	07/05/2017 09:37
S17T023744	17-04564-6-sd1-in-8	Mercury	06/29/2017 12:30	07/05/2017 09:38
S17T023745	17-04564-6-sd1-in-8	Mercury	06/29/2017 12:30	07/05/2017 09:40
S17T024215	17-04568-6-TL1-BA-EF	Mercury	06/29/2017 12:30	07/05/2017 09:42
S17T024216	17-04568-6-TL1-BA-EF	Mercury	06/29/2017 12:30	07/05/2017 09:43
S17T024218	17-04568-6-TL1-BA-IN	Mercury	06/29/2017 12:30	07/05/2017 09:48
S17T024219	17-04568-6-TL1-BA-IN	Mercury	06/29/2017 12:30	07/05/2017 09:50
S17T024221	17-04568-6-TL1-BL-EF	Mercury	06/29/2017 12:30	07/05/2017 09:51
S17T024222	17-04568-6-TL1-BL-EF	Mercury	06/29/2017 12:30	07/05/2017 09:53
S17T024224	17-04568-6-TL1-BL-IN	Mercury	06/29/2017 12:30	07/05/2017 09:55
S17T024225	17-04568-6-TL1-BL-IN	Mercury	06/29/2017 12:30	07/05/2017 09:56
S17T024227	17-04568-6-TL1-EF-1	Mercury	06/29/2017 12:30	07/05/2017 09:58
S17T024228	17-04568-6-TL1-EF-1	Mercury	06/29/2017 12:30	07/05/2017 09:59
S17T024230	17-04568-6-TL1-EF-2	Mercury	06/29/2017 12:30	07/05/2017 10:01
S17T024231	17-04568-6-TL1-EF-2	Mercury	06/29/2017 12:30	07/05/2017 10:03



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172217

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T024233	17-04568-6-TL1-EF-3	Mercury	06/29/2017 12:30	07/05/2017 10:08
S17T024234	17-04568-6-TL1-EF-3	Mercury	06/29/2017 12:30	07/05/2017 10:10
S17T024236	17-04568-6-TL1-EF-4	Mercury	06/29/2017 12:30	07/05/2017 10:11
S17T024237	17-04568-6-TL1-EF-4	Mercury	06/29/2017 12:30	07/05/2017 10:13
S17T024239	17-04568-6-TL1-EF-5	Mercury	06/29/2017 12:30	07/05/2017 10:20
S17T024240	17-04568-6-TL1-EF-5	Mercury	06/29/2017 12:30	07/05/2017 10:22
S17T024242	17-04568-6-TL1-EF-6	Mercury	06/29/2017 12:30	07/05/2017 10:27
S17T024243	17-04568-6-TL1-EF-6	Mercury	06/29/2017 12:30	07/05/2017 10:28
S17T024245	17-04568-6-TL1-EF-7	Mercury	06/29/2017 12:30	07/05/2017 10:30
S17T024246	17-04568-6-TL1-EF-7	Mercury	06/29/2017 12:30	07/05/2017 10:32
S17T024248	17-04568-6-TL1-EF-8	Mercury	06/29/2017 12:30	07/05/2017 10:33
S17T024249	17-04568-6-TL1-EF-8	Mercury	06/29/2017 12:30	07/05/2017 10:35
S17T024251	17-04568-6-TL1-IN-1	Mercury	06/29/2017 12:30	07/05/2017 10:36
S17T024252	17-04568-6-TL1-IN-1	Mercury	06/29/2017 12:30	07/05/2017 10:38
S17T024257	17-04568-6-TL1-IN-2	Mercury	06/29/2017 12:30	07/05/2017 10:40
S17T024258	17-04568-6-TL1-IN-2	Mercury	06/29/2017 12:30	07/05/2017 10:42
S17T024264	17-04568-6-TL1-IN-3	Mercury	06/29/2017 12:30	07/05/2017 10:47
S17T024265	17-04568-6-TL1-IN-3	Mercury	06/29/2017 12:30	07/05/2017 10:49
S17T024278	17-04568-6-TL1-IN-4	Mercury	06/29/2017 12:30	07/05/2017 10:50
S17T024279	17-04568-6-TL1-IN-4	Mercury	06/29/2017 12:30	07/05/2017 10:52
S17T024288	17-04568-6-TL1-IN-5	Mercury	06/29/2017 12:30	07/05/2017 10:54
S17T024289	17-04568-6-TL1-IN-5	Mercury	06/29/2017 12:30	07/05/2017 10:55
S17T024296	17-04568-6-TL1-IN-6	Mercury	06/29/2017 12:30	07/05/2017 10:57
S17T024297	17-04568-6-TL1-IN-6	Mercury	06/29/2017 12:30	07/05/2017 10:59
S17T024305	17-04568-6-TL1-IN-7	Mercury	07/05/2017 07:30	07/05/2017 13:06
S17T024306	17-04568-6-TL1-IN-7	Mercury	07/05/2017 07:30	07/05/2017 13:08
S17T024314	17-04568-6-TL1-IN-8	Mercury	07/05/2017 07:30	07/05/2017 13:10
S17T024316	17-04568-6-TL1-IN-8	Mercury	07/05/2017 07:30	07/05/2017 13:11
S17T024327	17-04569-6-TL2-BA-EF	Mercury	07/05/2017 07:30	07/05/2017 13:13
S17T024329	17-04569-6-TL2-BA-EF	Mercury	07/05/2017 07:30	07/05/2017 13:14
S17T024337	17-04569-6-TL2-BA-IN	Mercury	07/05/2017 07:30	07/05/2017 13:19
S17T024339	17-04569-6-TL2-BA-IN	Mercury	07/05/2017 07:30	07/05/2017 13:21
S17T024341	17-04569-6-TL2-BL-EF	Mercury	07/05/2017 07:30	07/05/2017 13:23
S17T024342	17-04569-6-TL2-BL-EF	Mercury	07/05/2017 07:30	07/05/2017 13:24
S17T024348	17-04569-6-TL2-BL-IN	Mercury	07/05/2017 07:30	07/05/2017 13:26
S17T024350	17-04569-6-TL2-BL-IN	Mercury	07/05/2017 07:30	07/05/2017 13:27
S17T024357	17-04569-6-TL2-EF-1	Mercury	07/05/2017 07:30	07/05/2017 13:29
S17T024359	17-04569-6-TL2-EF-1	Mercury	07/05/2017 07:30	07/05/2017 13:30
S17T024363	17-04569-6-TL2-EF-2	Mercury	07/05/2017 07:30	07/05/2017 13:32
S17T024364	17-04569-6-TL2-EF-2	Mercury	07/05/2017 07:30	07/05/2017 13:33
S17T024372	17-04569-6-TL2-EF-3	Mercury	07/05/2017 07:30	07/05/2017 13:38
S17T024373	17-04569-6-TL2-EF-3	Mercury	07/05/2017 07:30	07/05/2017 13:40
S17T024375	17-04569-6-TL2-EF-4	Mercury	07/05/2017 07:30	07/05/2017 13:42
S17T024376	17-04569-6-TL2-EF-4	Mercury	07/05/2017 07:30	07/05/2017 13:44
S17T024390	17-04569-6-TL2-EF-5	Mercury	07/05/2017 07:30	07/05/2017 13:50
S17T024391	17-04569-6-TL2-EF-5	Mercury	07/05/2017 07:30	07/05/2017 13:52



**ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172217**

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T024398	17-04569-6-TL2-EF-6	Mercury	07/05/2017 07:30	07/05/2017 13:57
S17T024399	17-04569-6-TL2-EF-6	Mercury	07/05/2017 07:30	07/05/2017 13:59
S17T024404	17-04569-6-TL2-EF-7	Mercury	07/05/2017 07:30	07/05/2017 14:01
S17T024405	17-04569-6-TL2-EF-7	Mercury	07/05/2017 07:30	07/05/2017 14:02
S17T024407	17-04569-6-TL2-EF-8	Mercury	07/05/2017 13:00	07/06/2017 09:24
S17T024408	17-04569-6-TL2-EF-8	Mercury	07/05/2017 13:00	07/06/2017 09:26
S17T024410	17-04569-6-TL2-IN-1	Mercury	07/05/2017 13:00	07/06/2017 09:27
S17T024411	17-04569-6-TL2-IN-1	Mercury	07/05/2017 13:00	07/06/2017 09:29
S17T024413	17-04569-6-TL2-IN-2	Mercury	07/05/2017 13:00	07/06/2017 09:31
S17T024414	17-04569-6-TL2-IN-2	Mercury	07/05/2017 13:00	07/06/2017 09:32
S17T024416	17-04569-6-TL2-IN-3	Mercury	07/05/2017 13:00	07/06/2017 09:37
S17T024417	17-04569-6-TL2-IN-3	Mercury	07/05/2017 13:00	07/06/2017 09:39
S17T024420	17-04569-6-TL2-IN-4	Mercury	07/05/2017 13:00	07/06/2017 09:41
S17T024421	17-04569-6-TL2-IN-4	Mercury	07/05/2017 13:00	07/06/2017 09:43
S17T024428	17-04569-6-TL2-IN-5	Mercury	07/05/2017 13:00	07/06/2017 09:44
S17T024429	17-04569-6-TL2-IN-5	Mercury	07/05/2017 13:00	07/06/2017 09:46
S17T024434	17-04569-6-TL2-IN-7	Mercury	07/05/2017 13:00	07/06/2017 09:48
S17T024436	17-04569-6-TL2-IN-7	Mercury	07/05/2017 13:00	07/06/2017 09:49
S17T024440	17-04569-6-TL2-IN-8	Mercury	07/05/2017 13:00	07/06/2017 09:51
S17T024442	17-04569-6-TL2-IN-8	Mercury	07/05/2017 13:00	07/06/2017 09:53
S17T024450	17-04569-6-TL2IN-6	Mercury	07/05/2017 13:00	07/06/2017 09:58
S17T024451	17-04569-6-TL2IN-6	Mercury	07/05/2017 13:00	07/06/2017 10:00



20172217 Rev. ()

Attachment 3

RECEIPT PAPERWORK

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C.611



222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST			ATS-LO-090-101 Rev DH-1
Date Samples Received: <u>6/26/17</u>		Total Number of Samples: <u>1000</u>		Group No.: <u>20172217</u>
Sample Custodian: <u>Lester J. J. Jr.</u>		IH Technician: <u>Robert J. J.</u> <u>6-26-17</u>		
<b>Sample Custodian to Complete</b>				
Action	Yes	No	N/A	Comments
RSR provided?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
Verify GKI is complete	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/> In Project File
Received from an alpha facility?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/> Contact PC for approval to release
Check that outer custody seal is intact, if present	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
Record cooler temperature in centigrade, as appropriate	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/> Check if no cooler and/or no ice <u>1.4</u>
Samples are intact and in good condition	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	If No, provide comments below.
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Date and time of sampling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Sampling location or origin	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Container type, size, and number	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Preservatives (if used) noted on the COC/RSA and sample bottles	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
• Analysis request is clear	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Signature of persons relinquishing and receiving samples	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Date and/or time of sample custody exchange	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Verify that sample numbers on containers match the COC and/or RSA	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Samples stored properly (e.g., refrigeration)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.				
Samples acceptable for release? <input checked="" type="radio"/> Yes <input type="radio"/> No PC/SC initials: <u>RS</u> Date: <u>6-26-17</u>				
If No, comment on communication and resolution:				
<u>WRPS - ship - 600</u> <u>RUN - 240</u> <u>WHL - N113 - 80</u> <u>Hg - 80</u> <u>80 - Acetonitrile</u>				
<b>Number of IH Samples Received:</b>				
Aldehyde Screen: <u>80</u>	Amines: <u>80</u>	Ammonia: <u>80</u>	Aromatic HC: _____	Asbestos: _____
Beryllium: _____	Be-Bulk: _____	Be-Filter: _____	Be-Wipe: _____	1, 3-Butadiene: <u>160</u>
Formaldehyde: _____	Furans: <u>80</u>	Mercury: <u>80</u>	Methanol: <u>40</u>	Nitrosamines: <u>80</u>
Nitrous Oxide: _____	Pyridines: <u>80</u>	SVOA: <u>80</u>	VOA: <u>80</u>	Other-IH: _____



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6/24/17	
<b>CACN:</b> 202875 203629		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04563 - Cartridge Testing Sat-Sun Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
	17-04563-3-SC1-IN-8 / TDU (Tenax)			Furans Source	
	NA OB 6/21/17				
517T022941	17-04563-6-SC1-BA-EF / Hydrar (SKC 226-17-1A) ✓ 517T022942			Hg-Elemental Source	
	517T022943				
517T022944	17-04563-6-SC1-BA-IN / Hydrar (SKC 226-17-1A) ✓ 517T022945			Hg-Elemental Source	
	517T022946				
517T022947	17-04563-6-SC1-BL-EF / Hydrar (SKC 226-17-1A) ✓ 517T022989			Hg-Elemental Source	
	517T022990				
517T023585	17-04563-6-SC1-BL-IN / Hydrar (SKC 226-17-1A) ✓ 517T023586			Hg-Elemental Source	
	517T023587				
517T023588	17-04563-6-SC1-EF-1 / Hydrar (SKC 226-17-1A) ✓ 517T023589			Hg-Elemental Source	
	517T023590				
517T023591	17-04563-6-SC1-EF-2 / Hydrar (SKC 226-17-1A) ✓ 517T023592			Hg-Elemental Source	
	517T023593				
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
<b>Delivered to Storage:</b>		Chanelle Brink	2704 HV Lab	6-25-17	0600
<b>Retrieved from Storage:</b>		BRETT GARNER		6/26/17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
<b>Relinquished By:</b>		BRETT GARNER	6/26/17	11:30	
<b>Received By:</b>		Leslie Ditt	6-26-17	11:30	
<b>Relinquished By:</b>					
<b>Received By:</b>					
<b>Relinquished By:</b>					
<b>Received By:</b>					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6/24/17	
CACN: 202643 263006		COA: CB20		Survey No.: 17-04563 - Cartridge Testing Sat-Sun Yellow Mac	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
SI77023596	17-04563-6-SC1-EF-3 / Hydrar (SKC 226-17-1A) ✓ SI77023602 SI77023603			Hg-Elemental Source	
SI77023616	17-04563-6-SC1-EF-4 / Hydrar (SKC 226-17-1A) ✓ SI77023627 SI77023628			Hg-Elemental Source	
SI77023638	17-04563-6-SC1-EF-5 / Hydrar (SKC 226-17-1A) ✓ SI77023642 SI77023643			Hg-Elemental Source	
SI77023644	17-04563-6-SC1-EF-6 / Hydrar (SKC 226-17-1A) ✓ SI77023645 SI77023646			Hg-Elemental Source	
SI77023648	17-04563-6-SC1-EF-7 / Hydrar (SKC 226-17-1A) ✓ SI77023649 SI77023650			Hg-Elemental Source	
SI77023651	17-04563-6-SC1-EF-8 / Hydrar (SKC 226-17-1A) ✓ SI77023654 SI77023655			Hg-Elemental Source	
SI77023659	17-04563-6-SC1-IN-1 / Hydrar (SKC 226-17-1A) ✓ SI77023663 SI77023664			Hg-Elemental Source	
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Janette Brink	2704 HN Lab	6-25-17	0600
Retrieved from Storage:		BRETT GARNER		6/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:		BRETT GARNER	6/26/17	11:30	
Received By:		Leslie DIAZ	6-27-17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 6/24/17		
CACN: 102843 203009		COA: CB20	Survey No.: 17-04563 - Cartridge Testing Sat-Sun Yellow Mac		
Contact Name: Jones, Parker L		Phone: (509)373-4966	Turnaround: N/A		
Return Report To: Maxwell, Sally A			MSIN: R1-06	Phone: (509)373-3324	
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
5177023665	17-04563-6-SC1-IN-2 / Hydrar (SKC 226-17-1A) ✓ 5177023666 5177023667			Hg-Elemental Source	
5177023668	17-04563-6-SC1-IN-3 / Hydrar (SKC 226-17-1A) ✓ 5177023669 5177023670			Hg-Elemental Source	
5177023671	17-04563-6-SC1-IN-4 / Hydrar (SKC 226-17-1A) ✓ 5177023672 5177023673			Hg-Elemental Source	
5177023674	17-04563-6-SC1-IN-5 / Hydrar (SKC 226-17-1A) ✓ 5177023675 5177023676			Hg-Elemental Source	
5177023677	17-04563-6-SC1-IN-6 / Hydrar (SKC 226-17-1A) ✓ 5177023678 5177023679			Hg-Elemental Source	
5177023680	17-04563-6-SC1-IN-7 / Hydrar (SKC 226-17-1A) ✓ 5177023681 5177023682			Hg-Elemental Source	
5177023683	17-04563-6-SC1-IN-8 / Hydrar (SKC 226-17-1A) ✓ 5177023684 5177023685			Hg-Elemental Source	
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>[Signature]</i>	Janette Brink	2704 HW Lab	6-25-17	0600
Retrieved from Storage:	<i>[Signature]</i>	BRETT GARNER		6/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	BRETT GARNER	6/26/17	11:30	
Received By:	<i>[Signature]</i>	LASHEDIAZ	6/26/17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6/24/17	
CACN: 203006	COA: CB20		Survey No.: 17-04564 - Cartridge Testing Fri-Sat Yellow Mac		
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Maxwell, Sally A			MSIN: R1-06	Phone: (509)373-3324	
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
	17-04564-3-SD1-IN-8 / TDU (Tenax) <i>FR 6-23-17</i>			Furans Source	
<i>517023686</i>	17-04564-6-SD1-BA-EF / Hydrar (SKC 226-17-1A) <i>517023687</i> <i>✓ 517023688</i>			Hg-Elemental Source	
<i>517023699</i>	17-04564-6-SD1-BA-IN / Hydrar (SKC 226-17-1A) <i>517023690</i> <i>✓ 517023691</i>			Hg-Elemental Source	
<i>517023692</i>	17-04564-6-SD1-BL-EF / Hydrar (SKC 226-17-1A) <i>517023693</i> <i>✓ 517023694</i>			Hg-Elemental Source	
<i>517023695</i>	17-04564-6-SD1-BL-IN / Hydrar (SKC 226-17-1A) <i>517023696</i> <i>✓ 517023697</i>			Hg-Elemental Source	
<i>517023698</i>	17-04564-6-SD1-EF-1 / Hydrar (SKC 226-17-1A) <i>517023699</i> <i>✓ 517023700</i>			Hg-Elemental Source	
<i>517023701</i>	17-04564-6-SD1-EF-2 / Hydrar (SKC 226-17-1A) <i>517023702</i> <i>✓ 517023703</i>			Hg-Elemental Source	
Special Instructions: <i>N/A</i>					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>[Signature]</i>	Josh Wilhelme	2704 HV/H104	6/24/17	0450
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6/26/17	1130	
Received By:	<i>[Signature]</i>	Sharon Wilhelme	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6/24/17	
CACN: 202843 6/26/17 203006		COA: CB20		Survey No.: 17-04564 - Cartridge Testing Fri-Sat Yellow Mac	
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
5177023704	17-04564-6-SD1-EF-3 / Hydrar (SKC 226-17-1A) 5177023705 ✓ 5177023706			Hg-Elemental Source	
5177023707	17-04564-6-SD1-EF-4 / Hydrar (SKC 226-17-1A) 5177023708 ✓ 5177023709			Hg-Elemental Source	
5177023710	17-04564-6-SD1-EF-5 / Hydrar (SKC 226-17-1A) 5177023711 ✓ 5177023712			Hg-Elemental Source	
5177023713	17-04564-6-SD1-EF-6 / Hydrar (SKC 226-17-1A) 5177023714 ✓ 5177023715			Hg-Elemental Source	
5177023716	17-04564-6-SD1-EF-7 / Hydrar (SKC 226-17-1A) 5177023717 ✓ 5177023718			Hg-Elemental Source	
5177023719	17-04564-6-SD1-EF-8 / Hydrar (SKC 226-17-1A) 5177023720 ✓ 5177023721			Hg-Elemental Source	
5177023722	17-04564-6-SD1-IN-1 / Hydrar (SKC 226-17-1A) 5177023723 ✓ 5177023724			Hg-Elemental Source	
Special Instructions: N/A					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelmsen	2204 HV/H104	6/24/17	0450
Retrieved from Storage:		Brett Garner		6/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:		Brett Garner	6/26/17	1130	
Received By:		Sharon Wilhelmsen	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					










## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6/24/17	
CACN: 203006		COA: CB20	Survey No.: 17-04564 - Cartridge Testing Fri-Sat Yellow Mac		
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Maxwell, Sally A			MSIN: R1-06	Phone: (509)373-3324	
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
SI77023725	17-04564-6-SD1-IN-2 / Hydrar (SKC 226-17-1A) ✓ SI77023726 SI77023727			Hg-Elemental Source	
SI77023726	17-04564-6-SD1-IN-3 / Hydrar (SKC 226-17-1A) ✓ SI77023729 SI77023730			Hg-Elemental Source	
SI77023731	17-04564-6-SD1-IN-4 / Hydrar (SKC 226-17-1A) ✓ SI77023732 SI77023733			Hg-Elemental Source	
SI77023734	17-04564-6-SD1-IN-5 / Hydrar (SKC 226-17-1A) ✓ SI77023735 SI77023736			Hg-Elemental Source	
SI77023737	17-04564-6-SD1-IN-6 / Hydrar (SKC 226-17-1A) ✓ SI77023738 SI77023739			Hg-Elemental Source	
SI77023740	17-04564-6-SD1-IN-7 / Hydrar (SKC 226-17-1A) ✓ SI77023741 SI77023742			Hg-Elemental Source	
SI77023743	17-04564-6-SD1-IN-8 / Hydrar (SKC 226-17-1A) ✓ SI77023744 SI77023745			Hg-Elemental Source	
Special Instructions: N/A					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HV/H104	6/24/17	0450
Retrieved from Storage:		Brett Garner		6/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:		Brett Garner	6/26/17	1130	
Received By:		Sharon L. Holder	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 06-23-2017	
CACN: <del>202843</del> 203006 1-4-17		COA: CB20		Survey No.: 17-04568 - Cartridge Testing Fri-Sat Green Mac	
Contact Name: Jones, Parker L.		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Maxwell, Sally A			MSIN: R1-06		Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
	17-04568-3-TL1-IN-8 / TDU (Tenax)			Furans Source	
	 <i>NA</i> <i>09/6/2017</i>				
5177024214	17-04568-6-TL1-BA-EF / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	 <i>5177024215</i> <i>5177024216</i>				
5177024217	17-04568-6-TL1-BA-IN / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	 <i>5177024218</i> <i>5177024219</i>				
5177024220	17-04568-6-TL1-BL-EF / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	 <i>5177024221</i> <i>5177024222</i>				
5177024223	17-04568-6-TL1-BL-IN / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	 <i>5177024224</i> <i>5177024225</i>				
5177024226	17-04568-6-TL1-EF-1 / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	 <i>5177024227</i> <i>5177024228</i>				
5177024229	17-04568-6-TL1-EF-2 / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	 <i>5177024230</i> <i>5177024231</i>				
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Enza Wheeler</i>	Enza Wheeler	2704 HV / H104	06-24-17	0615
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-26-17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-26-17	1130	
Received By:	<i>Teresa Forrester</i>	TERESA FORRESTER	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 06-23-2017	
CACN: <del>202843</del> 203006 6-24-17		COA: CB20	Survey No.: 17-04568 - Cartridge Testing Fri-Sat Green Mac		
Contact Name: Jones, Parker L		Phone: (509)373-4966	Turnaround: N/A		
Return Report To: Maxwell, Sally A			MSIN: R1-06	Phone: (509)373-3324	
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
5177024232	17-04568-6-TL1-EF-3 / Hydrar (SKC 226-17-1A) 5177024233 5177024234			Hg-Elemental Source	
5177024235	17-04568-6-TL1-EF-4 / Hydrar (SKC 226-17-1A) 5177024236 5177024237			Hg-Elemental Source	
5177024238	17-04568-6-TL1-EF-5 / Hydrar (SKC 226-17-1A) 5177024239 5177024240			Hg-Elemental Source	
5177024241	17-04568-6-TL1-EF-6 / Hydrar (SKC 226-17-1A) 5177024242 5177024243			Hg-Elemental Source	
5177024244	17-04568-6-TL1-EF-7 / Hydrar (SKC 226-17-1A) 5177024245 5177024246			Hg-Elemental Source	
5177024247	17-04568-6-TL1-EF-8 / Hydrar (SKC 226-17-1A) 5177024248 5177024249			Hg-Elemental Source	
5177024250	17-04568-6-TL1-IN-1 / Hydrar (SKC 226-17-1A) 5177024251 5177024252			Hg-Elemental Source	
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Erica Wheeler</i>	Erica Wheeler	2704 HV / H104	06-24-17	0615
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-26-17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-26-17	1130	
Received By:	<i>Teresa Forrester</i>	TERESA FORRESTER	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-23-2017	
<b>CACN:</b> 202948 203006 6-24-17		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04568 - Cartridge Testing Fri-Sat Green Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
5177024254	17-04568-6-TL1-IN-2 / Hydrar (SKC 226-17-1A) 5177024257 5177024258			Hg-Elemental Source	
5177024260	17-04568-6-TL1-IN-3 / Hydrar (SKC 226-17-1A) 5177024264 5177024265			Hg-Elemental Source	
5177024275	17-04568-6-TL1-IN-4 / Hydrar (SKC 226-17-1A) 5177024278 5177024279			Hg-Elemental Source	
5177024284	17-04568-6-TL1-IN-5 / Hydrar (SKC 226-17-1A) 5177024288 5177024289			Hg-Elemental Source	
5177024292 5177024296 5177024297	17-04568-6-TL1-IN-6 / Hydrar (SKC 226-17-1A) 5177024296 5177024297			Hg-Elemental Source	
5177024301	17-04568-6-TL1-IN-7 / Hydrar (SKC 226-17-1A) 5177024305 5177024306			Hg-Elemental Source	
5177024311	17-04568-6-TL1-IN-8 / Hydrar (SKC 226-17-1A) 5177024314 5177024316			Hg-Elemental Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Erica Wheeler</i>	Erica Wheeler	2704 HV / H104	06-24-17	0615
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-26-17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-26-17	1130	
Received By:	<i>Teresa Forrester</i>	TERESA FORRESTER	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 06-24-17	
CACN: <del>203006</del> 203006		COA: CB20		Survey No.: 17-04569 - Cartridge Testing Sat-Sun Green Mac	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
	17-04569-3-TL2-IN-8 / TDU (Tenax)			Furans Source	
	NA OB 6/24/17				
5177024329	17-04569-6-TL2-BA-EF / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	5177024327 5177024329				
5177024334	17-04569-6-TL2-BA-IN / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	5177024332 5177024339				
5177024340	17-04569-6-TL2-BL-EF / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	5177024341 5177024342				
5177024346	17-04569-6-TL2-BL-IN / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	5177024348 5177024350				
5177024355	17-04569-6-TL2-EF-1 / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	5177024357 5177024359				
5177024360	17-04569-6-TL2-EF-2 / Hydrar (SKC 226-17-1A)			Hg-Elemental Source	
	5177024363 5177024364				
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704 HV / H104	06-25-17	0640
Retrieved from Storage:	Brett Garner	Brett Garner		06/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:	Brett Garner	BRETT GARNER	6-26-17	1130	
Received By:	Don Sorenson	DON SORENSON	6/26/17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 06-24-17		
CACN: <i>203006</i>	COA: CB20	Survey No.: 17-04569 - Cartridge Testing Sat-Sun Green Mac			
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Maxwell, Sally A			MSIN: R1-06	Phone: (509)373-3324	
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
<i>5177024370</i>	17-04569-6-TL2-EF-3 / Hydrar (SKC 226-17-1A) <i>5177024372</i> <i>5177024373</i>			Hg-Elemental Source	
<i>5177024374</i>	17-04569-6-TL2-EF-4 / Hydrar (SKC 226-17-1A) <i>5177024375</i> <i>5177024376</i>			Hg-Elemental Source	
<i>5177024388</i>	17-04569-6-TL2-EF-5 / Hydrar (SKC 226-17-1A) <i>5177024390</i> <i>5177024391</i>			Hg-Elemental Source	
<i>5177024394</i>	17-04569-6-TL2-EF-6 / Hydrar (SKC 226-17-1A) <i>5177024398</i> <i>5177024399</i> <i>5177024400</i>			Hg-Elemental Source	
<i>5177024403</i>	17-04569-6-TL2-EF-7 / Hydrar (SKC 226-17-1A) <i>5177024404</i> <i>5177024405</i>			Hg-Elemental Source	
<i>5177024406</i>	17-04569-6-TL2-EF-8 / Hydrar (SKC 226-17-1A) <i>5177024407</i> <i>5177024408</i>			Hg-Elemental Source	
<i>5177024409</i>	17-04569-6-TL2-IN-1 / Hydrar (SKC 226-17-1A) <i>5177024410</i> <i>5177024411</i>			Hg-Elemental Source	
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Enca Wheeler</i>	Enca Wheeler	2704 HV / H104	06-25-17	0640
Retrieved from Storage:	<i>Brett Garner</i>	BRETT GARNER		06/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Brett Garner</i>	BRETT GARNER	6-26-17	1130	
Received By:	<i>Don Sprenson</i>	Don Sprenson	6/26/17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 06-24-17		
CACN: <i>68843 203006</i>	COA: CB20	Survey No.: 17-04569 - Cartridge Testing Sat-Sun Green Mac			
Contact Name: Jones, Parker L	Phone: (509)373-4966	Turnaround: N/A			
Return Report To: Maxwell, Sally A			MSIN: R1-06	Phone: (509)373-3324	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
<i>SI7T024412</i>	17-04569-6-TL2-IN-2 / Hydrar (SKC 226-17-1A) <i>SI7T024413</i> <i>SI7T024414</i>	Hg-Elemental Source			
<i>SI7T024415</i>	17-04569-6-TL2-IN-3 / Hydrar (SKC 226-17-1A) <i>SI7T024416</i> <i>SI7T024417</i>	Hg-Elemental Source			
<i>SI7T024418</i>	17-04569-6-TL2-IN-4 / Hydrar (SKC 226-17-1A) <i>SI7T024420</i> <i>SI7T024421</i>	Hg-Elemental Source			
<i>SI7T024424</i>	17-04569-6-TL2-IN-5 / Hydrar (SKC 226-17-1A) <i>SI7T024428</i> <i>SI7T024429</i>	Hg-Elemental Source			
<i>SI7T024431</i>	17-04569-6-TL2-IN-7 / Hydrar (SKC 226-17-1A) <i>SI7T024434</i> <i>SI7T024436</i>	Hg-Elemental Source			
<i>SI7T024439</i>	17-04569-6-TL2-IN-8 / Hydrar (SKC 226-17-1A) <i>SI7T024440</i> <i>SI7T024442</i>	Hg-Elemental Source			
<i>SI7T024448</i>	17-04569-6-TL2-IN-6 / Hydrar (SKC 226-17-1A) <i>SI7T024450</i> <i>SI7T024451</i>	Hg-Elemental Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Enza Wheeler</i>	Enza Wheeler	2704 HN / H104	06-25-17	0640
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	BRETT GARNER	6-26-17	1130	
Received By:	<i>[Signature]</i>	Don Sorenson	6/26/17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



**FINAL REPORT ON MERCURY VAPOR TUBES  
FOR CARTRIDGE EVALUATION  
COLLECTED JUNE 16 - 17, 2017**

**Document No.: 20172092 Rev. 0**

**Michael A. Purcell**  
WAI Hanford Laboratory

**Date Published**  
July 19, 2017



LAB #184777

Prepared for:




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July 19, 2017  
Michael A. Purcell, WHL Project Coordinator



**NARRATIVE**

**FINAL REPORT ON MERCURY VAPOR TUBES  
FOR CARTRIDGE EVALUATION  
COLLECTED JUNE 16 - 17, 2017**

This final report presents the results of eighty mercury vapor tubes received at the 222-S Laboratory on June 19, 2017, in good condition and with adequate paperwork. The mercury vapor tubes were logged into sample delivery group 20172092.

**DISCLAIMERS**

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys. Requirements or anomalies concerning field sampling are not addressed in this report.

**PROCEDURES**

<b>Method</b>	<b>Preparation Procedure</b>	<b>Analysis Procedure</b>
Mercury by OSHA ID-140	LA-325-109, Rev. 2-5	LA-325-109, Rev. 2-5

**ANALYTICAL SUMMARY**

The vapor tubes were tested for mercury, as specified on the chain of custody. Standard laboratory procedures for digestions and cold vapor atomic absorption for mercury were followed as well as the requirements in WHL-MP-1029, *WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory* (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control standards (LCS). For mercury, the results of 178 LCS determinations indicate a mean recovery of 98% with a standard deviation of 6%. Statistical process control limits for the LCS are 81 – 115%, with no significant bias. The overall estimate of uncertainty is 12%, with coverage factor ( $k$ ) = 2.

Background levels of mercury or interfering compounds can be present in the sorbent tube media used for collecting vapor samples. OSHA ID-140 recommends that the laboratory determine the average background for each lot of media and subtract it from the sample results prior to reporting. However, per agreement with the client, this background is being determined by the client using blank media submitted as blind samples to the laboratory. Any blank subtraction from the sample results will be performed by the client. The laboratory is using the same media



for QC samples. These QC samples may not match the lot numbers of the samples being submitted and the background for this QC sample media has not been determined. Over the past several years the results from preparation blanks, field blanks, and the vast majority of samples have been below the laboratory's method detection limit, which is an order of magnitude below the reporting limit. In general, the laboratory believes there is no need for background subtraction using the current sample media (Hydrar, SKC 226-17-1A).

Thirty-two mercury results for this sample group were above the reporting limit of 0.05 µg/sample (see Attachment 1).



20172092 Rev. ()

Attachment 1

## DATA SUMMARY REPORT

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## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172092

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03009-6-sd1-ba-ef	Total	S17T020627	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ba-ef	Resin	S17T020628	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ba-ef	Glass Wool	S17T020629	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ba-in	Total	S17T020630	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ba-in	Resin	S17T020631	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ba-in	Glass Wool	S17T020632	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-bl-ef	Total	S17T020633	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-sd1-bl-ef	Resin	S17T020634	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-bl-ef	Glass Wool	S17T020635	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-bl-in	Total	S17T020636	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-sd1-bl-in	Resin	S17T020637	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-bl-in	Glass Wool	S17T020638	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-1	Total	S17T020639	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-1	Resin	S17T020640	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-1	Glass Wool	S17T020641	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-2	Total	S17T020642	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-2	Resin	S17T020643	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-2	Glass Wool	S17T020644	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-3	Total	S17T020645	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-3	Resin	S17T020646	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-sd1-ef-3	Glass Wool	S17T020647	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-4	Total	S17T020651	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-4	Resin	S17T020652	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-4	Glass Wool	S17T020653	Mercury	µg/sample	94.7	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-5	Total	S17T020654	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-5	Resin	S17T020655	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-5	Glass Wool	S17T020656	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-6	Total	S17T020658	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-6	Resin	S17T020661	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-6	Glass Wool	S17T020662	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-7	Total	S17T020675	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-7	Resin	S17T020677	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-7	Glass Wool	S17T020678	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-8	Total	S17T020684	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-8	Resin	S17T020688	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-EF-8	Glass Wool	S17T020689	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-IN-1	Total	S17T020693	Mercury	µg/sample	n/a	<0.0500	0.0923	0.0500
17-03009-6-SD1-IN-1	Resin	S17T020694	Mercury	µg/sample	98.0	<0.0500	0.0873	0.0500
17-03009-6-SD1-IN-1	Glass Wool	S17T020695	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-IN-2	Total	S17T020699	Mercury	µg/sample	n/a	<0.0500	0.0890	0.0500
17-03009-6-SD1-IN-2	Resin	S17T020703	Mercury	µg/sample	98.0	<0.0500	0.0840	0.0500
17-03009-6-SD1-IN-2	Glass Wool	S17T020704	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-IN-3	Total	S17T020712	Mercury	µg/sample	n/a	<0.0500	0.0769	0.0500
17-03009-6-SD1-IN-3	Resin	S17T020715	Mercury	µg/sample	98.0	<0.0500	0.0719	0.0500
17-03009-6-SD1-IN-3	Glass Wool	S17T020716	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-IN-4	Total	S17T020720	Mercury	µg/sample	n/a	<0.0500	0.0912	0.0500
17-03009-6-SD1-IN-4	Resin	S17T020722	Mercury	µg/sample	98.0	<0.0500	0.0862	0.0500
17-03009-6-SD1-IN-4	Glass Wool	S17T020723	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03009-6-SD1-IN-5	Total	S17T020727	Mercury	µg/sample	n/a	<0.0500	0.0874	0.0500
17-03009-6-SD1-IN-5	Resin	S17T020730	Mercury	µg/sample	98.0	<0.0500	0.0824	0.0500
17-03009-6-SD1-IN-5	Glass Wool	S17T020731	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-IN-6	Total	S17T020735	Mercury	µg/sample	n/a	<0.0500	0.0946	0.0500
17-03009-6-SD1-IN-6	Resin	S17T020739	Mercury	µg/sample	98.0	<0.0500	0.0896	0.0500
17-03009-6-SD1-IN-6	Glass Wool	S17T020740	Mercury	µg/sample	98.0	<0.0500	<0.0500	0.0500
17-03009-6-SD1-IN-7	Total	S17T020742	Mercury	µg/sample	n/a	<0.0500	0.0870	0.0500
17-03009-6-SD1-IN-7	Resin	S17T020745	Mercury	µg/sample	93.7	<0.0500	0.0820	0.0500
17-03009-6-SD1-IN-7	Glass Wool	S17T020746	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-03009-6-SD1-IN-8	Total	S17T020747	Mercury	µg/sample	n/a	<0.0500	0.0901	0.0500
17-03009-6-SD1-IN-8	Resin	S17T020748	Mercury	µg/sample	93.7	<0.0500	0.0851	0.0500
17-03009-6-SD1-IN-8	Glass Wool	S17T020749	Mercury	µg/sample	93.7	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BA-EF	Total	S17T020786	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BA-EF	Resin	S17T020790	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BA-EF	Glass Wool	S17T020791	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BA-IN	Total	S17T021420	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BA-IN	Resin	S17T021421	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BA-IN	Glass Wool	S17T021422	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BL-EF	Total	S17T021423	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BL-EF	Resin	S17T021424	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BL-EF	Glass Wool	S17T021425	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BL-IN	Total	S17T021426	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BL-IN	Resin	S17T021427	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-BL-IN	Glass Wool	S17T021428	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-1	Total	S17T021432	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-1	Resin	S17T021434	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-1	Glass Wool	S17T021435	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-2	Total	S17T021438	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-2	Resin	S17T021440	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-2	Glass Wool	S17T021441	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-3	Total	S17T021447	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-3	Resin	S17T021448	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-3	Glass Wool	S17T021449	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-4	Total	S17T021450	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-4	Resin	S17T021451	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-4	Glass Wool	S17T021452	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-5	Total	S17T021453	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-5	Resin	S17T021454	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-5	Glass Wool	S17T021455	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-6	Total	S17T021508	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-6	Resin	S17T021509	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-6	Glass Wool	S17T021510	Mercury	µg/sample	95.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-7	Total	S17T021511	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-7	Resin	S17T021512	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-7	Glass Wool	S17T021513	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-8	Total	S17T021514	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-8	Resin	S17T021515	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-EF-8	Glass Wool	S17T021516	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03010-6-SC1-IN-1	Total	S17T021517	Mercury	µg/sample	n/a	<0.0500	0.104	0.0500
17-03010-6-SC1-IN-1	Resin	S17T021518	Mercury	µg/sample	94.6	<0.0500	0.0992	0.0500
17-03010-6-SC1-IN-1	Glass Wool	S17T021519	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-IN-2	Total	S17T021556	Mercury	µg/sample	n/a	<0.0500	0.0998	0.0500
17-03010-6-SC1-IN-2	Resin	S17T021558	Mercury	µg/sample	94.6	<0.0500	0.0948	0.0500
17-03010-6-SC1-IN-2	Glass Wool	S17T021559	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-IN-3	Total	S17T021562	Mercury	µg/sample	n/a	<0.0500	0.102	0.0500
17-03010-6-SC1-IN-3	Resin	S17T021566	Mercury	µg/sample	94.6	<0.0500	0.0974	0.0500
17-03010-6-SC1-IN-3	Glass Wool	S17T021567	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-IN-4	Total	S17T021569	Mercury	µg/sample	n/a	<0.0500	0.102	0.0500
17-03010-6-SC1-IN-4	Resin	S17T021572	Mercury	µg/sample	94.6	<0.0500	0.0968	0.0500
17-03010-6-SC1-IN-4	Glass Wool	S17T021573	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-IN-5	Total	S17T021575	Mercury	µg/sample	n/a	<0.0500	0.0906	0.0500
17-03010-6-SC1-IN-5	Resin	S17T021578	Mercury	µg/sample	94.6	<0.0500	0.0856	0.0500
17-03010-6-SC1-IN-5	Glass Wool	S17T021579	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-IN-6	Total	S17T021581	Mercury	µg/sample	n/a	<0.0500	0.0914	0.0500
17-03010-6-SC1-IN-6	Resin	S17T021585	Mercury	µg/sample	94.6	<0.0500	0.0864	0.0500
17-03010-6-SC1-IN-6	Glass Wool	S17T021586	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-IN-7	Total	S17T021588	Mercury	µg/sample	n/a	<0.0500	0.0936	0.0500
17-03010-6-SC1-IN-7	Resin	S17T021591	Mercury	µg/sample	94.6	<0.0500	0.0886	0.0500
17-03010-6-SC1-IN-7	Glass Wool	S17T021592	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03010-6-SC1-IN-8	Total	S17T021595	Mercury	µg/sample	n/a	<0.0500	0.0908	0.0500
17-03010-6-SC1-IN-8	Resin	S17T021597	Mercury	µg/sample	94.6	<0.0500	0.0858	0.0500
17-03010-6-SC1-IN-8	Glass Wool	S17T021598	Mercury	µg/sample	94.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BA-EF	Total	S17T021607	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BA-EF	Resin	S17T021609	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BA-EF	Glass Wool	S17T021610	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BA-IN	Total	S17T021613	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BA-IN	Resin	S17T021617	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BA-IN	Glass Wool	S17T021618	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BL-EF	Total	S17T021621	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BL-EF	Resin	S17T021624	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BL-EF	Glass Wool	S17T021625	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BL-IN	Total	S17T021631	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BL-IN	Resin	S17T021634	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-BL-IN	Glass Wool	S17T021636	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-1	Total	S17T021637	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-1	Resin	S17T021641	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-1	Glass Wool	S17T021642	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-2	Total	S17T021644	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-2	Resin	S17T021647	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-2	Glass Wool	S17T021648	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-3	Total	S17T021649	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-3	Resin	S17T021650	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-3	Glass Wool	S17T021651	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-4	Total	S17T021652	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-4	Resin	S17T021654	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-4	Glass Wool	S17T021655	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03269-6-TL1-EF-5	Total	S17T021658	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-5	Resin	S17T021659	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-5	Glass Wool	S17T021660	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-6	Total	S17T021662	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-6	Resin	S17T021663	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-6	Glass Wool	S17T021665	Mercury	µg/sample	98.6	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-7	Total	S17T021666	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-7	Resin	S17T021667	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-7	Glass Wool	S17T021668	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-8	Total	S17T021670	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-8	Resin	S17T021672	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-EF-8	Glass Wool	S17T021673	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-1	Total	S17T021676	Mercury	µg/sample	n/a	<0.0500	0.165	0.0500
17-03269-6-TL1-IN-1	Resin	S17T021678	Mercury	µg/sample	106	<0.0500	0.160	0.0500
17-03269-6-TL1-IN-1	Glass Wool	S17T021684	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-2	Total	S17T021686	Mercury	µg/sample	n/a	<0.0500	0.175	0.0500
17-03269-6-TL1-IN-2	Resin	S17T021689	Mercury	µg/sample	106	<0.0500	0.170	0.0500
17-03269-6-TL1-IN-2	Glass Wool	S17T021690	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-3	Total	S17T021694	Mercury	µg/sample	n/a	<0.0500	0.172	0.0500
17-03269-6-TL1-IN-3	Resin	S17T021696	Mercury	µg/sample	106	<0.0500	0.167	0.0500
17-03269-6-TL1-IN-3	Glass Wool	S17T021698	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-4	Total	S17T021700	Mercury	µg/sample	n/a	<0.0500	0.184	0.0500
17-03269-6-TL1-IN-4	Resin	S17T021703	Mercury	µg/sample	106	<0.0500	0.180	0.0500
17-03269-6-TL1-IN-4	Glass Wool	S17T021705	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-5	Total	S17T021707	Mercury	µg/sample	n/a	<0.0500	0.176	0.0500
17-03269-6-TL1-IN-5	Resin	S17T021710	Mercury	µg/sample	106	<0.0500	0.171	0.0500
17-03269-6-TL1-IN-5	Glass Wool	S17T021711	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-6	Total	S17T021715	Mercury	µg/sample	n/a	<0.0500	0.184	0.0500
17-03269-6-TL1-IN-6	Resin	S17T021717	Mercury	µg/sample	106	<0.0500	0.179	0.0500
17-03269-6-TL1-IN-6	Glass Wool	S17T021718	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-7	Total	S17T021727	Mercury	µg/sample	n/a	<0.0500	0.180	0.0500
17-03269-6-TL1-IN-7	Resin	S17T021728	Mercury	µg/sample	106	<0.0500	0.175	0.0500
17-03269-6-TL1-IN-7	Glass Wool	S17T021729	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03269-6-TL1-IN-8	Total	S17T021730	Mercury	µg/sample	n/a	<0.0500	0.179	0.0500
17-03269-6-TL1-IN-8	Resin	S17T021731	Mercury	µg/sample	106	<0.0500	0.174	0.0500
17-03269-6-TL1-IN-8	Glass Wool	S17T021732	Mercury	µg/sample	106	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BA-EF	Total	S17T021733	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BA-EF	Resin	S17T021734	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BA-EF	Glass Wool	S17T021735	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BA-IN	Total	S17T021736	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BA-IN	Resin	S17T021737	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BA-IN	Glass Wool	S17T021738	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BL-EF	Total	S17T021739	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BL-EF	Resin	S17T021740	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BL-EF	Glass Wool	S17T021741	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BL-IN	Total	S17T021742	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BL-IN	Resin	S17T021743	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-BL-IN	Glass Wool	S17T021744	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172092

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03273-6-TL2-EF-1	Total	S17T021746	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-1	Resin	S17T021749	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-1	Glass Wool	S17T021750	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-2	Total	S17T021752	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-2	Resin	S17T021755	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-2	Glass Wool	S17T021756	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-3	Total	S17T021761	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-3	Resin	S17T021764	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-3	Glass Wool	S17T021765	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-4	Total	S17T021769	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-4	Resin	S17T021770	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-4	Glass Wool	S17T021771	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-5	Total	S17T021772	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-5	Resin	S17T021773	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-5	Glass Wool	S17T021774	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-6	Total	S17T021775	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-6	Resin	S17T021776	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-6	Glass Wool	S17T021777	Mercury	µg/sample	96.5	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-7	Total	S17T021778	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-7	Resin	S17T021779	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-7	Glass Wool	S17T021780	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-8	Total	S17T021781	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-8	Resin	S17T021782	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-EF-8	Glass Wool	S17T021783	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-IN-1	Total	S17T021784	Mercury	µg/sample	n/a	<0.0500	0.178	0.0500
17-03273-6-TL2-IN-1	Resin	S17T021785	Mercury	µg/sample	97.6	<0.0500	0.173	0.0500
17-03273-6-TL2-IN-1	Glass Wool	S17T021786	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-IN-2	Total	S17T021787	Mercury	µg/sample	n/a	<0.0500	0.181	0.0500
17-03273-6-TL2-IN-2	Resin	S17T021788	Mercury	µg/sample	97.6	<0.0500	0.176	0.0500
17-03273-6-TL2-IN-2	Glass Wool	S17T021789	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-IN-3	Total	S17T021790	Mercury	µg/sample	n/a	<0.0500	0.197	0.0500
17-03273-6-TL2-IN-3	Resin	S17T021791	Mercury	µg/sample	97.6	<0.0500	0.192	0.0500
17-03273-6-TL2-IN-3	Glass Wool	S17T021792	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-IN-4	Total	S17T021793	Mercury	µg/sample	n/a	<0.0500	0.193	0.0500
17-03273-6-TL2-IN-4	Resin	S17T021794	Mercury	µg/sample	97.6	<0.0500	0.188	0.0500
17-03273-6-TL2-IN-4	Glass Wool	S17T021795	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-IN-5	Total	S17T021796	Mercury	µg/sample	n/a	<0.0500	0.189	0.0500
17-03273-6-TL2-IN-5	Resin	S17T021797	Mercury	µg/sample	97.6	<0.0500	0.184	0.0500
17-03273-6-TL2-IN-5	Glass Wool	S17T021798	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2IN-6	Total	S17T021799	Mercury	µg/sample	n/a	<0.0500	0.187	0.0500
17-03273-6-TL2IN-6	Resin	S17T021800	Mercury	µg/sample	97.6	<0.0500	0.182	0.0500
17-03273-6-TL2IN-6	Glass Wool	S17T021801	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-IN-7	Total	S17T021802	Mercury	µg/sample	n/a	<0.0500	0.177	0.0500
17-03273-6-TL2-IN-7	Resin	S17T021803	Mercury	µg/sample	97.6	<0.0500	0.172	0.0500
17-03273-6-TL2-IN-7	Glass Wool	S17T021804	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500
17-03273-6-TL2-IN-8	Total	S17T021805	Mercury	µg/sample	n/a	<0.0500	0.184	0.0500
17-03273-6-TL2-IN-8	Resin	S17T021806	Mercury	µg/sample	97.6	<0.0500	0.179	0.0500
17-03273-6-TL2-IN-8	Glass Wool	S17T021807	Mercury	µg/sample	97.6	<0.0500	<0.0500	0.0500



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Attachment 2

ANALYSIS DATE REPORT

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C.634



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172092

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T020628	17-03009-6-sd1-ba-ef	Mercury	06/20/2017 07:30	06/20/2017 10:39
S17T020629	17-03009-6-sd1-ba-ef	Mercury	06/20/2017 07:30	06/20/2017 10:41
S17T020631	17-03009-6-sd1-ba-in	Mercury	06/20/2017 07:30	06/20/2017 10:46
S17T020632	17-03009-6-sd1-ba-in	Mercury	06/20/2017 07:30	06/20/2017 10:47
S17T020634	17-03009-6-sd1-bl-ef	Mercury	06/20/2017 07:30	06/20/2017 10:49
S17T020635	17-03009-6-sd1-bl-ef	Mercury	06/20/2017 07:30	06/20/2017 10:51
S17T020637	17-03009-6-sd1-bl-in	Mercury	06/20/2017 07:30	06/20/2017 10:52
S17T020638	17-03009-6-sd1-bl-in	Mercury	06/20/2017 07:30	06/20/2017 10:54
S17T020640	17-03009-6-sd1-ef-1	Mercury	06/20/2017 07:30	06/20/2017 10:55
S17T020641	17-03009-6-sd1-ef-1	Mercury	06/20/2017 07:30	06/20/2017 10:57
S17T020643	17-03009-6-sd1-ef-2	Mercury	06/20/2017 07:30	06/20/2017 10:58
S17T020644	17-03009-6-sd1-ef-2	Mercury	06/20/2017 07:30	06/20/2017 11:00
S17T020646	17-03009-6-sd1-ef-3	Mercury	06/20/2017 07:30	06/20/2017 11:05
S17T020647	17-03009-6-sd1-ef-3	Mercury	06/20/2017 07:30	06/20/2017 11:07
S17T020652	17-03009-6-SD1-EF-4	Mercury	06/20/2017 07:30	06/20/2017 11:08
S17T020653	17-03009-6-SD1-EF-4	Mercury	06/20/2017 07:30	06/20/2017 11:10
S17T020655	17-03009-6-SD1-EF-5	Mercury	06/20/2017 07:30	06/20/2017 11:17
S17T020656	17-03009-6-SD1-EF-5	Mercury	06/20/2017 07:30	06/20/2017 11:18
S17T020661	17-03009-6-SD1-EF-6	Mercury	06/20/2017 07:30	06/20/2017 11:23
S17T020662	17-03009-6-SD1-EF-6	Mercury	06/20/2017 07:30	06/20/2017 11:25
S17T020677	17-03009-6-SD1-EF-7	Mercury	06/20/2017 07:30	06/20/2017 11:26
S17T020678	17-03009-6-SD1-EF-7	Mercury	06/20/2017 07:30	06/20/2017 11:28
S17T020688	17-03009-6-SD1-EF-8	Mercury	06/20/2017 07:30	06/20/2017 11:29
S17T020689	17-03009-6-SD1-EF-8	Mercury	06/20/2017 07:30	06/20/2017 11:31
S17T020694	17-03009-6-SD1-IN-1	Mercury	06/20/2017 07:30	06/20/2017 11:32
S17T020695	17-03009-6-SD1-IN-1	Mercury	06/20/2017 07:30	06/20/2017 11:34
S17T020703	17-03009-6-SD1-IN-2	Mercury	06/20/2017 07:30	06/20/2017 11:36
S17T020704	17-03009-6-SD1-IN-2	Mercury	06/20/2017 07:30	06/20/2017 11:38
S17T020715	17-03009-6-SD1-IN-3	Mercury	06/20/2017 07:30	06/20/2017 11:43
S17T020716	17-03009-6-SD1-IN-3	Mercury	06/20/2017 07:30	06/20/2017 11:44
S17T020722	17-03009-6-SD1-IN-4	Mercury	06/20/2017 07:30	06/20/2017 11:46
S17T020723	17-03009-6-SD1-IN-4	Mercury	06/20/2017 07:30	06/20/2017 11:48
S17T020730	17-03009-6-SD1-IN-5	Mercury	06/20/2017 07:30	06/20/2017 11:49
S17T020731	17-03009-6-SD1-IN-5	Mercury	06/20/2017 07:30	06/20/2017 11:51
S17T020739	17-03009-6-SD1-IN-6	Mercury	06/20/2017 07:30	06/20/2017 11:53
S17T020740	17-03009-6-SD1-IN-6	Mercury	06/20/2017 07:30	06/20/2017 11:55
S17T020745	17-03009-6-SD1-IN-7	Mercury	06/22/2017 07:30	06/22/2017 10:37
S17T020746	17-03009-6-SD1-IN-7	Mercury	06/22/2017 07:30	06/22/2017 10:39
S17T020748	17-03009-6-SD1-IN-8	Mercury	06/22/2017 07:30	06/22/2017 10:40
S17T020749	17-03009-6-SD1-IN-8	Mercury	06/22/2017 07:30	06/22/2017 10:42
S17T020790	17-03010-6-SC1-BA-EF	Mercury	06/26/2017 07:45	06/26/2017 10:38
S17T020791	17-03010-6-SC1-BA-EF	Mercury	06/26/2017 07:45	06/26/2017 10:39
S17T021421	17-03010-6-SC1-BA-IN	Mercury	06/26/2017 07:45	06/26/2017 10:41
S17T021422	17-03010-6-SC1-BA-IN	Mercury	06/26/2017 07:45	06/26/2017 10:42
S17T021424	17-03010-6-SC1-BL-EF	Mercury	06/26/2017 07:45	06/26/2017 10:44
S17T021425	17-03010-6-SC1-BL-EF	Mercury	06/26/2017 07:45	06/26/2017 10:46



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172092

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T021427	17-03010-6-SC1-BL-IN	Mercury	06/26/2017 07:45	06/26/2017 10:50
S17T021428	17-03010-6-SC1-BL-IN	Mercury	06/26/2017 07:45	06/26/2017 10:52
S17T021434	17-03010-6-SC1-EF-1	Mercury	06/26/2017 07:45	06/26/2017 10:54
S17T021435	17-03010-6-SC1-EF-1	Mercury	06/26/2017 07:45	06/26/2017 10:55
S17T021440	17-03010-6-SC1-EF-2	Mercury	06/26/2017 07:45	06/26/2017 10:57
S17T021441	17-03010-6-SC1-EF-2	Mercury	06/26/2017 07:45	06/26/2017 10:59
S17T021448	17-03010-6-SC1-EF-3	Mercury	06/26/2017 07:45	06/26/2017 11:00
S17T021449	17-03010-6-SC1-EF-3	Mercury	06/26/2017 07:45	06/26/2017 11:02
S17T021451	17-03010-6-SC1-EF-4	Mercury	06/26/2017 07:45	06/26/2017 11:03
S17T021452	17-03010-6-SC1-EF-4	Mercury	06/26/2017 07:45	06/26/2017 11:05
S17T021454	17-03010-6-SC1-EF-5	Mercury	06/26/2017 07:45	06/26/2017 11:10
S17T021455	17-03010-6-SC1-EF-5	Mercury	06/26/2017 07:45	06/26/2017 11:11
S17T021509	17-03010-6-SC1-EF-6	Mercury	06/26/2017 07:45	06/26/2017 11:13
S17T021510	17-03010-6-SC1-EF-6	Mercury	06/26/2017 07:45	06/26/2017 11:14
S17T021512	17-03010-6-SC1-EF-7	Mercury	06/26/2017 07:45	06/26/2017 11:21
S17T021513	17-03010-6-SC1-EF-7	Mercury	06/26/2017 07:45	06/26/2017 11:23
S17T021515	17-03010-6-SC1-EF-8	Mercury	06/26/2017 07:45	06/26/2017 11:28
S17T021516	17-03010-6-SC1-EF-8	Mercury	06/26/2017 07:45	06/26/2017 11:29
S17T021518	17-03010-6-SC1-IN-1	Mercury	06/26/2017 07:45	06/26/2017 11:31
S17T021519	17-03010-6-SC1-IN-1	Mercury	06/26/2017 07:45	06/26/2017 11:33
S17T021558	17-03010-6-SC1-IN-2	Mercury	06/26/2017 07:45	06/26/2017 11:34
S17T021559	17-03010-6-SC1-IN-2	Mercury	06/26/2017 07:45	06/26/2017 11:36
S17T021566	17-03010-6-SC1-IN-3	Mercury	06/26/2017 07:45	06/26/2017 11:38
S17T021567	17-03010-6-SC1-IN-3	Mercury	06/26/2017 07:45	06/26/2017 11:39
S17T021572	17-03010-6-SC1-IN-4	Mercury	06/26/2017 07:45	06/26/2017 11:41
S17T021573	17-03010-6-SC1-IN-4	Mercury	06/26/2017 07:45	06/26/2017 11:43
S17T021578	17-03010-6-SC1-IN-5	Mercury	06/26/2017 07:45	06/26/2017 11:48
S17T021579	17-03010-6-SC1-IN-5	Mercury	06/26/2017 07:45	06/26/2017 11:50
S17T021585	17-03010-6-SC1-IN-6	Mercury	06/26/2017 07:45	06/26/2017 11:51
S17T021586	17-03010-6-SC1-IN-6	Mercury	06/26/2017 07:45	06/26/2017 11:53
S17T021591	17-03010-6-SC1-IN-7	Mercury	06/26/2017 07:45	06/26/2017 11:55
S17T021592	17-03010-6-SC1-IN-7	Mercury	06/26/2017 07:45	06/26/2017 11:57
S17T021597	17-03010-6-SC1-IN-8	Mercury	06/26/2017 07:45	06/26/2017 11:58
S17T021598	17-03010-6-SC1-IN-8	Mercury	06/26/2017 07:45	06/26/2017 12:00
S17T021609	17-03269-6-TL1-BA-EF	Mercury	06/27/2017 07:45	06/27/2017 10:10
S17T021610	17-03269-6-TL1-BA-EF	Mercury	06/27/2017 07:45	06/27/2017 10:11
S17T021617	17-03269-6-TL1-BA-IN	Mercury	06/27/2017 07:45	06/27/2017 10:13
S17T021618	17-03269-6-TL1-BA-IN	Mercury	06/27/2017 07:45	06/27/2017 10:14
S17T021624	17-03269-6-TL1-BL-EF	Mercury	06/27/2017 07:45	06/27/2017 10:16
S17T021625	17-03269-6-TL1-BL-EF	Mercury	06/27/2017 07:45	06/27/2017 10:17
S17T021634	17-03269-6-TL1-BL-IN	Mercury	06/27/2017 07:45	06/27/2017 10:22
S17T021636	17-03269-6-TL1-BL-IN	Mercury	06/27/2017 07:45	06/27/2017 10:24
S17T021641	17-03269-6-TL1-EF-1	Mercury	06/27/2017 07:45	06/27/2017 10:25
S17T021642	17-03269-6-TL1-EF-1	Mercury	06/27/2017 07:45	06/27/2017 10:27
S17T021647	17-03269-6-TL1-EF-2	Mercury	06/27/2017 07:45	06/27/2017 10:29
S17T021648	17-03269-6-TL1-EF-2	Mercury	06/27/2017 07:45	06/27/2017 10:30



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172092

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T021650	17-03269-6-TL1-EF-3	Mercury	06/27/2017 07:45	06/27/2017 10:32
S17T021651	17-03269-6-TL1-EF-3	Mercury	06/27/2017 07:45	06/27/2017 10:33
S17T021654	17-03269-6-TL1-EF-4	Mercury	06/27/2017 07:45	06/27/2017 10:35
S17T021655	17-03269-6-TL1-EF-4	Mercury	06/27/2017 07:45	06/27/2017 10:37
S17T021659	17-03269-6-TL1-EF-5	Mercury	06/27/2017 07:45	06/27/2017 10:42
S17T021660	17-03269-6-TL1-EF-5	Mercury	06/27/2017 07:45	06/27/2017 10:43
S17T021663	17-03269-6-TL1-EF-6	Mercury	06/27/2017 07:45	06/27/2017 10:45
S17T021665	17-03269-6-TL1-EF-6	Mercury	06/27/2017 07:45	06/27/2017 10:46
S17T021667	17-03269-6-TL1-EF-7	Mercury	06/27/2017 07:45	06/27/2017 10:53
S17T021668	17-03269-6-TL1-EF-7	Mercury	06/27/2017 07:45	06/27/2017 10:55
S17T021672	17-03269-6-TL1-EF-8	Mercury	06/27/2017 07:45	06/27/2017 10:59
S17T021673	17-03269-6-TL1-EF-8	Mercury	06/27/2017 07:45	06/27/2017 11:01
S17T021678	17-03269-6-TL1-IN-1	Mercury	06/27/2017 07:45	06/27/2017 11:03
S17T021684	17-03269-6-TL1-IN-1	Mercury	06/27/2017 07:45	06/27/2017 11:04
S17T021689	17-03269-6-TL1-IN-2	Mercury	06/27/2017 07:45	06/27/2017 11:06
S17T021690	17-03269-6-TL1-IN-2	Mercury	06/27/2017 07:45	06/27/2017 11:08
S17T021696	17-03269-6-TL1-IN-3	Mercury	06/27/2017 07:45	06/27/2017 11:09
S17T021698	17-03269-6-TL1-IN-3	Mercury	06/27/2017 07:45	06/27/2017 11:11
S17T021703	17-03269-6-TL1-IN-4	Mercury	06/27/2017 07:45	06/27/2017 11:13
S17T021705	17-03269-6-TL1-IN-4	Mercury	06/27/2017 07:45	06/27/2017 11:15
S17T021710	17-03269-6-TL1-IN-5	Mercury	06/27/2017 07:45	06/27/2017 11:20
S17T021711	17-03269-6-TL1-IN-5	Mercury	06/27/2017 07:45	06/27/2017 11:22
S17T021717	17-03269-6-TL1-IN-6	Mercury	06/27/2017 07:45	06/27/2017 11:23
S17T021718	17-03269-6-TL1-IN-6	Mercury	06/27/2017 07:45	06/27/2017 11:25
S17T021728	17-03269-6-TL1-IN-7	Mercury	06/27/2017 07:45	06/27/2017 11:27
S17T021729	17-03269-6-TL1-IN-7	Mercury	06/27/2017 07:45	06/27/2017 11:28
S17T021731	17-03269-6-TL1-IN-8	Mercury	06/27/2017 07:45	06/27/2017 11:30
S17T021732	17-03269-6-TL1-IN-8	Mercury	06/27/2017 07:45	06/27/2017 11:32
S17T021734	17-03273-6-TL2-BA-EF	Mercury	06/27/2017 09:10	06/27/2017 13:41
S17T021735	17-03273-6-TL2-BA-EF	Mercury	06/27/2017 09:10	06/27/2017 13:43
S17T021737	17-03273-6-TL2-BA-IN	Mercury	06/27/2017 09:10	06/27/2017 13:45
S17T021738	17-03273-6-TL2-BA-IN	Mercury	06/27/2017 09:10	06/27/2017 13:46
S17T021740	17-03273-6-TL2-BL-EF	Mercury	06/27/2017 09:10	06/27/2017 13:48
S17T021741	17-03273-6-TL2-BL-EF	Mercury	06/27/2017 09:10	06/27/2017 13:50
S17T021743	17-03273-6-TL2-BL-IN	Mercury	06/27/2017 09:10	06/27/2017 13:55
S17T021744	17-03273-6-TL2-BL-IN	Mercury	06/27/2017 09:10	06/27/2017 13:56
S17T021749	17-03273-6-TL2-EF-1	Mercury	06/27/2017 09:10	06/27/2017 13:58
S17T021750	17-03273-6-TL2-EF-1	Mercury	06/27/2017 09:10	06/27/2017 14:00
S17T021755	17-03273-6-TL2-EF-2	Mercury	06/27/2017 09:10	06/27/2017 14:01
S17T021756	17-03273-6-TL2-EF-2	Mercury	06/27/2017 09:10	06/27/2017 14:03
S17T021764	17-03273-6-TL2-EF-3	Mercury	06/27/2017 09:10	06/27/2017 14:05
S17T021765	17-03273-6-TL2-EF-3	Mercury	06/27/2017 09:10	06/27/2017 14:06
S17T021770	17-03273-6-TL2-EF-4	Mercury	06/27/2017 09:10	06/27/2017 14:08
S17T021771	17-03273-6-TL2-EF-4	Mercury	06/27/2017 09:10	06/27/2017 14:10
S17T021773	17-03273-6-TL2-EF-5	Mercury	06/27/2017 09:10	06/27/2017 14:15
S17T021774	17-03273-6-TL2-EF-5	Mercury	06/27/2017 09:10	06/27/2017 14:16



**ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172092**

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T021776	17-03273-6-TL2-EF-6	Mercury	06/27/2017 09:10	06/27/2017 14:18
S17T021777	17-03273-6-TL2-EF-6	Mercury	06/27/2017 09:10	06/27/2017 14:20
S17T021779	17-03273-6-TL2-EF-7	Mercury	06/27/2017 09:10	06/27/2017 14:27
S17T021780	17-03273-6-TL2-EF-7	Mercury	06/27/2017 09:10	06/27/2017 14:29
S17T021782	17-03273-6-TL2-EF-8	Mercury	06/27/2017 09:10	06/27/2017 14:34
S17T021783	17-03273-6-TL2-EF-8	Mercury	06/27/2017 09:10	06/27/2017 14:35
S17T021785	17-03273-6-TL2-IN-1	Mercury	06/27/2017 09:10	06/27/2017 14:37
S17T021786	17-03273-6-TL2-IN-1	Mercury	06/27/2017 09:10	06/27/2017 14:38
S17T021788	17-03273-6-TL2-IN-2	Mercury	06/27/2017 09:10	06/27/2017 14:40
S17T021789	17-03273-6-TL2-IN-2	Mercury	06/27/2017 09:10	06/27/2017 14:42
S17T021791	17-03273-6-TL2-IN-3	Mercury	06/27/2017 09:10	06/27/2017 14:43
S17T021792	17-03273-6-TL2-IN-3	Mercury	06/27/2017 09:10	06/27/2017 14:45
S17T021794	17-03273-6-TL2-IN-4	Mercury	06/27/2017 09:10	06/27/2017 14:47
S17T021795	17-03273-6-TL2-IN-4	Mercury	06/27/2017 09:10	06/27/2017 14:49
S17T021797	17-03273-6-TL2-IN-5	Mercury	06/27/2017 09:10	06/27/2017 14:54
S17T021798	17-03273-6-TL2-IN-5	Mercury	06/27/2017 09:10	06/27/2017 14:56
S17T021800	17-03273-6-TL2IN-6	Mercury	06/27/2017 09:10	06/27/2017 14:57
S17T021801	17-03273-6-TL2IN-6	Mercury	06/27/2017 09:10	06/27/2017 14:59
S17T021803	17-03273-6-TL2-IN-7	Mercury	06/27/2017 09:10	06/27/2017 15:01
S17T021804	17-03273-6-TL2-IN-7	Mercury	06/27/2017 09:10	06/27/2017 15:02
S17T021806	17-03273-6-TL2-IN-8	Mercury	06/27/2017 09:10	06/27/2017 15:04
S17T021807	17-03273-6-TL2-IN-8	Mercury	06/27/2017 09:10	06/27/2017 15:06



20172092 Rev. ()

Attachment 3

RECEIPT PAPERWORK

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C.639



222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST			ATS-LO-090-101 Rev DH-1
Date Samples Received: <u>6-19-17</u> Total Number of Samples: <u>1000</u> Group #: <u>20172092</u>				
Sample Custodian: <u>L. Mahli</u> IH Technician: <u>B. J. 6/19/17</u>				
Sample Custodian to Complete:				
Action	Yes	No	N/A	Comments
RSR provided?			<input checked="" type="checkbox"/>	
Verify GKI is complete			<input checked="" type="checkbox"/>	<input type="checkbox"/> In Project File
Received from an alpha facility?		<input checked="" type="checkbox"/>		<input type="checkbox"/> Contact PC for approval to release
Check that outer custody seal is intact, if present			<input checked="" type="checkbox"/>	
Record cooler temperature in centigrade, as appropriate	<u>5.0</u>			<input type="checkbox"/> Check if no cooler and/or no ice
Samples are intact and in good condition	<input checked="" type="checkbox"/>			If No, provide comments below
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	<input checked="" type="checkbox"/>			
• Date and time of sampling	<input checked="" type="checkbox"/>			
• Sampling location or origin	<input checked="" type="checkbox"/>			
• Container type, size, and number	<input checked="" type="checkbox"/>			
• Preservatives (if used) noted on the COC/RSA and sample bottles			<input checked="" type="checkbox"/>	
• Analysis request is clear	<input checked="" type="checkbox"/>			
• Signature of persons relinquishing and receiving samples	<input checked="" type="checkbox"/>			
• Date and/or time of sample custody exchange	<input checked="" type="checkbox"/>			
Verify that sample numbers on containers match the COC and/or RSA	<input checked="" type="checkbox"/>			
Samples stored properly (e.g., refrigeration)	<input checked="" type="checkbox"/>			
Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.				
Samples acceptable for release? <u>yes</u> PC/SC Initials <u>SLM</u> Date <u>6-19-17</u>				
If No, comment on communication and resolution:				
WRPS - Skid - 600 Run - 240 WHL - NH3 - 80 17g - 80				
Number of IH Samples Received: <u>Acetonitrile - 80</u>				
Aldehyde Screen: <u>80</u>	Amines: <u>80</u>	Ammonia: <u>80</u>	Aromatic HC: _____	Asbestos: _____
Beryllium: _____	Be-Bulk: _____	Be-Filter: _____	Be-Wipe _____	1,3-Butadiene: <u>160</u>
Formaldehyde: _____	Furans: <u>80</u>	Mercury: <u>80</u>	Methanol: <u>40</u>	Nitrosamines: <u>160</u>
Nitrous Oxide: _____	Pyridines: <u>80</u>	SVOA: <u>80</u>	VOA: <u>80</u>	Other-IH: _____

A-6005-302 (REV 4)



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions			<b>Date Sampled:</b> 06-16-17		
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03009 - Cartridge Testing Fri-Sat 6/16/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
	17-03009-3-SD1-IN-8 / TDU (Tenax) <i>SPW 06-17-17</i>			Furans Source	
<i>SI77020627</i>	17-03009-6-SD1-BA-EF / Hydrar (SKC 226-17-1A) <i>SI77020628</i> <i>SI77020629</i>			Hg-Elemental Source	
<i>SI77020630</i>	17-03009-6-SD1-BA-IN / Hydrar (SKC 226-17-1A) <i>SI77020631</i> <i>SI77020632</i>			Hg-Elemental Source	
<i>SI77020633</i>	17-03009-6-SD1-BL-EF / Hydrar (SKC 226-17-1A) <i>SI77020634</i> <i>SI77020635</i>			Hg-Elemental Source	
<i>SI77020636</i>	17-03009-6-SD1-BL-IN / Hydrar (SKC 226-17-1A) <i>SI77020637</i> <i>SI77020638</i>			Hg-Elemental Source	
<i>SI77020639</i>	17-03009-6-SD1-EF-1 / Hydrar (SKC 226-17-1A) <i>SI77020640</i> <i>SI77020641</i>			Hg-Elemental Source	
<i>SI77020642</i>	17-03009-6-SD1-EF-2 / Hydrar (SKC 226-17-1A) <i>SI77020643</i> <i>SI77020644</i>			Hg-Elemental Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Erica Wheeler</i>	Erica Wheeler	2704 HV / H104	06-17-17	0700
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	6-19-17	1100	
Received By:	<i>Sharon L. Holden</i>	Sharon L. Holden	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions			<b>Date Sampled:</b> 06-16-17		
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03009 - Cartridge Testing Fri-Sat 6/16/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
517T020645	17-03009-6-SD1-EF-3 / Hydrar (SKC 226-17-1A) 517T020646 517T020647			Hg-Elemental Source	
517T020651	17-03009-6-SD1-EF-4 / Hydrar (SKC 226-17-1A) 517T020652 517T020653			Hg-Elemental Source	
517T020654	17-03009-6-SD1-EF-5 / Hydrar (SKC 226-17-1A) 517T020655 517T020656			Hg-Elemental Source	
517T020658	17-03009-6-SD1-EF-6 / Hydrar (SKC 226-17-1A) 517T020661 517T020662			Hg-Elemental Source	
517T020675	17-03009-6-SD1-EF-7 / Hydrar (SKC 226-17-1A) 517T020677 517T020678			Hg-Elemental Source	
517T020684	17-03009-6-SD1-EF-8 / Hydrar (SKC 226-17-1A) 517T020688 517T020689			Hg-Elemental Source	
517T020693	17-03009-6-SD1-IN-1 / Hydrar (SKC 226-17-1A) 517T020694 517T020695			Hg-Elemental Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Erica Wheeler</i>	Erica Wheeler	7704 HV / H104	06-17-17	0700
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	6-19-17	1100	
Received By:	<i>Shawn L. Hildebrand</i>	Shawn L. Hildebrand	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions		<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843	<b>COA:</b> CB20	<b>Survey No.:</b> 17-03009 - Cartridge Testing Fri-Sat 6/16/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L		<b>Phone:</b> (509)373-4966	<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A		<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
517T020699	17-03009-6-SD1-IN-2 / Hydrar (SKC 226-17-1A) , 517T020703 517T020704	Hg-Elemental Source
517T020712	17-03009-6-SD1-IN-3 / Hydrar (SKC 226-17-1A) , 517T020715 517T020716	Hg-Elemental Source
517T020720	17-03009-6-SD1-IN-4 / Hydrar (SKC 226-17-1A) , 517T020722 517T020723	Hg-Elemental Source
517T020727	17-03009-6-SD1-IN-5 / Hydrar (SKC 226-17-1A) , 517T020730 517T020731	Hg-Elemental Source
517T020735	17-03009-6-SD1-IN-6 / Hydrar (SKC 226-17-1A) , 517T020739 517T020740	Hg-Elemental Source
517T020742	17-03009-6-SD1-IN-7 / Hydrar (SKC 226-17-1A) , 517T020745 517T020746	Hg-Elemental Source
517T020747	17-03009-6-SD1-IN-8 / Hydrar (SKC 226-17-1A) , 517T020748 517T020749	Hg-Elemental Source

**Special Instructions:**

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Eric Wheeler</i>	Eric Wheeler	2704 HV / #104	06-17-17	0700
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		6-19-17	0700

	Signature	Printed Name	Date	Time
Relinquished By:	<i>Brett Garner</i>	Brett Garner	6-19-17	1100
Received By:	<i>Sharon Wilder</i>	Sharon Wilder	6-19-17	1100
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

**Additional Comments:**



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6-17-17	
CACN: 202843		COA: CB20		Survey No.: 17-03010 - Cartridge Testing Sat-Sun 6/17/2017 Yellow Mac	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description				Required Analysis
	17-03010-3-SC1-IN-8 / TDU (Tenax)				Furans-Source
5177020756	17-03010-6-SC1-BA-EF / Hydrar (SKC 226-17-1A)				Hg-Elemental Source
5177021420	17-03010-6-SC1-BA-IN / Hydrar (SKC 226-17-1A)				Hg-Elemental Source
5177021423	17-03010-6-SC1-BL-EF / Hydrar (SKC 226-17-1A)				Hg-Elemental Source
5177021426	17-03010-6-SC1-BL-IN / Hydrar (SKC 226-17-1A)				Hg-Elemental Source
5177021432	17-03010-6-SC1-EF-1 / Hydrar (SKC 226-17-1A)				Hg-Elemental Source
5177021438	17-03010-6-SC1-EF-2 / Hydrar (SKC 226-17-1A)				Hg-Elemental Source
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>[Signature]</i>	Gerrado Saenz	2704HV/H104	6-18-17	0625
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6-17-17	
CACN: 202843		COA: CB20		Survey No.: 17-03010 - Cartridge Testing Sat-Sun 6/17/2017 Yellow Mac	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description				Required Analysis
5177021447	17-03010-6-SC1-EF-3 / Hydrar (SKC 226-17-1A) 5177021448 5177021449				Hg-Elemental Source
5177021450	17-03010-6-SC1-EF-4 / Hydrar (SKC 226-17-1A) 5177021451 5177021452				Hg-Elemental Source
5177021453	17-03010-6-SC1-EF-5 / Hydrar (SKC 226-17-1A) 5177021454 5177021455				Hg-Elemental Source
5177021508	17-03010-6-SC1-EF-6 / Hydrar (SKC 226-17-1A) 5177021509 5177021510				Hg-Elemental Source
5177021511	17-03010-6-SC1-EF-7 / Hydrar (SKC 226-17-1A) 5177021512 5177021513				Hg-Elemental Source
5177021514	17-03010-6-SC1-EF-8 / Hydrar (SKC 226-17-1A) 5177021515 5177021516				Hg-Elemental Source
5177021517	17-03010-6-SC1-IN-1 / Hydrar (SKC 226-17-1A) 5177021518 5177021519				Hg-Elemental Source
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>[Signature]</i>	Gerrardo Suarez	2704 Hv/H-104	6-18-17	0625
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		06-19-17	0700
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	Brett Garner	06-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6-17-17	
CACN: 202843		COA: CB20		Survey No.: 17-03010 - Cartridge Testing Sat-Sun 6/17/2017 Yellow Mac	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description				Required Analysis
5177021556	17-03010-6-SC1-IN-2 / Hydrar (SKC 226-17-1A) 5177021558 5177021559				Hg-Elemental Source
5177021562	17-03010-6-SC1-IN-3 / Hydrar (SKC 226-17-1A) 5177021564 5177021567				Hg-Elemental Source
5177021569	17-03010-6-SC1-IN-4 / Hydrar (SKC 226-17-1A) 5177021572 5177021573				Hg-Elemental Source
5177021575	17-03010-6-SC1-IN-5 / Hydrar (SKC 226-17-1A) 5177021578 5177021579				Hg-Elemental Source
5177021581	17-03010-6-SC1-IN-6 / Hydrar (SKC 226-17-1A) 5177021585 5177021586				Hg-Elemental Source
5177021586	17-03010-6-SC1-IN-7 / Hydrar (SKC 226-17-1A) 5177021591 5177021592				Hg-Elemental Source
5177021595	17-03010-6-SC1-IN-8 / Hydrar (SKC 226-17-1A) 5177021597 5177021598				Hg-Elemental Source
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Gerardo Suarez	2704HV/H104	6-18-17	0625
Retrieved from Storage:		Brett Garner		06-19-17	0700
	Signature	Printed Name	Date	Time	
Relinquished By:		Brett Garner	06-19-17	1100	
Received By:		TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03269 - Cartridge Testing Fri-Sat Green Mac 6/16/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
	17-03269-3-TL1-IN-8 / TDU (Tenax) <i>SPW 06-17-17</i>				Furans Source
<i>517T021607</i>	17-03269-6-TL1-BA-EF / Hydrar (SKC 226-17-1A) <i>517T021609</i> <i>517T021610</i>				Hg-Elemental Source
<i>517T021613</i>	17-03269-6-TL1-BA-IN / Hydrar (SKC 226-17-1A) <i>517T021617</i> <i>517T021618</i>				Hg-Elemental Source
<i>517T021621</i>	17-03269-6-TL1-BL-EF / Hydrar (SKC 226-17-1A) <i>517T021624</i> <i>517T021625</i>				Hg-Elemental Source
<i>517T021631</i>	17-03269-6-TL1-BL-IN / Hydrar (SKC 226-17-1A) <i>517T021634</i> <i>517T021636</i>				Hg-Elemental Source
<i>517T021637</i>	17-03269-6-TL1-EF-1 / Hydrar (SKC 226-17-1A) <i>517T021641</i> <i>517T021642</i>				Hg-Elemental Source
<i>517T021644</i>	17-03269-6-TL1-EF-2 / Hydrar (SKC 226-17-1A) <i>517T021647</i> <i>517T021648</i>				Hg-Elemental Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>[Signature]</i>	Logan Williams	2704 H <sub>0</sub> /H104	6-17-17	0620
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions			<b>Date Sampled:</b> 6/6-16-17		
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03269 - Cartridge Testing Fri-Sat Green Mac 6/16/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
517T021649	17-03269-6-TL1-EF-3 / Hydrar (SKC 226-17-1A) 517T021650 517T021651			Hg-Elemental Source	
517T021652	17-03269-6-TL1-EF-4 / Hydrar (SKC 226-17-1A) 517T021654 517T021655			Hg-Elemental Source	
517T021658	17-03269-6-TL1-EF-5 / Hydrar (SKC 226-17-1A) 517T021659 517T021660			Hg-Elemental Source	
517T021662	17-03269-6-TL1-EF-6 / Hydrar (SKC 226-17-1A) 517T021663 517T021665			Hg-Elemental Source	
517T021666	17-03269-6-TL1-EF-7 / Hydrar (SKC 226-17-1A) 517T021667 517T021668			Hg-Elemental Source	
517T021670	17-03269-6-TL1-EF-8 / Hydrar (SKC 226-17-1A) 517T021672 517T021673			Hg-Elemental Source	
517T021676	17-03269-6-TL1-IN-1 / Hydrar (SKC 226-17-1A) 517T021678 517T021684			Hg-Elemental Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:		Logan Williams	2704 Hu/H-104	6-17-17	0620
Retrieved from Storage:		Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:		Brett Garner	6-19-17	1100	
Received By:		TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions			<b>Date Sampled:</b> 06-16-17		
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03269 - Cartridge Testing Fri-Sat Green Mac 6/16/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
SI7T021686	17-03269-6-TL1-IN-2 / Hydrar (SKC 226-17-1A) SI7T021689 SI7T021690			Hg-Elemental Source	
SI7T021694	17-03269-6-TL1-IN-3 / Hydrar (SKC 226-17-1A) SI7T021696 SI7T021698			Hg-Elemental Source	
SI7T021708	17-03269-6-TL1-IN-4 / Hydrar (SKC 226-17-1A) SI7T021703 SI7T021705			Hg-Elemental Source	
SI7T021707 SI7T021710 Sum 6-201	17-03269-6-TL1-IN-5 / Hydrar (SKC 226-17-1A) SI7T021710 SI7T021711			Hg-Elemental Source	
SI7T021715	17-03269-6-TL1-IN-6 / Hydrar (SKC 226-17-1A) SI7T021717 SI7T021718			Hg-Elemental Source	
SI7T021727	17-03269-6-TL1-IN-7 / Hydrar (SKC 226-17-1A) SI7T021728 SI7T021729			Hg-Elemental Source	
SI7T021730	17-03269-6-TL1-IN-8 / Hydrar (SKC 226-17-1A) SI7T021731 SI7T021732			Hg-Elemental Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:		Logan Williams	2704 HU/H104	6-17-17	0620
Retrieved from Storage:		Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:		Brett Garner	6-19-17	8:11:00	
Received By:		TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6-17-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03273 - Cartridge Testing Sat-Sun Green Mac 6/17/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
	17-03273-3-TL2-IN-8 / TDU (Tenax) <i>8/15 06-18-17</i>				Furans-Source
<i>517T021733</i>	17-03273-6-TL2-BA-EF / Hydrar (SKC 226-17-1A) <i>517T021734</i>				Hg-Elemental Source
	<i>517T021735</i>				
<i>517T021736</i>	17-03273-6-TL2-BA-IN / Hydrar (SKC 226-17-1A) <i>517T021737</i>				Hg-Elemental Source
	<i>517T021738</i>				
<i>517T021739</i>	17-03273-6-TL2-BL-EF / Hydrar (SKC 226-17-1A) <i>517T021740</i>				Hg-Elemental Source
	<i>517T021741</i>				
<i>517T021742</i>	17-03273-6-TL2-BL-IN / Hydrar (SKC 226-17-1A) <i>517T021743</i>				Hg-Elemental Source
	<i>517T021744</i>				
<i>517T021746</i>	17-03273-6-TL2-EF-1 / Hydrar (SKC 226-17-1A) <i>517T021749</i>				Hg-Elemental Source
	<i>517T021750</i>				
<i>517T021752</i>	17-03273-6-TL2-EF-2 / Hydrar (SKC 226-17-1A) <i>517T021755</i>				Hg-Elemental Source
	<i>517T021756</i>				
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>[Signature]</i>	Gerardo Suarez	2704HV/H-104	6-18-17	0610
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions		<b>Date Sampled:</b> 6-17-17	
<b>CACN:</b> 202843	<b>COA:</b> CB20	<b>Survey No.:</b> 17-03273 - Cartridge Testing Sat-Sun Green Mac 6/17/2017	
<b>Contact Name:</b> Jones, Parker L		<b>Phone:</b> (509)373-4966	<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A		<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>	<b>Required Analysis</b>	
5177021761	17-03273-6-TL2-EF-3 / Hydrar (SKC 226-17-1A) 5177021764 5177021765	Hg-Elemental Source	
5177021769	17-03273-6-TL2-EF-4 / Hydrar (SKC 226-17-1A) 5177021770 5177021771	Hg-Elemental Source	
5177021772	17-03273-6-TL2-EF-5 / Hydrar (SKC 226-17-1A) 5177021773 5177021774	Hg-Elemental Source	
5177021775	17-03273-6-TL2-EF-6 / Hydrar (SKC 226-17-1A) 5177021776 5177021777	Hg-Elemental Source	
5177021778	17-03273-6-TL2-EF-7 / Hydrar (SKC 226-17-1A) 5177021779 5177021780	Hg-Elemental Source	
5177021781	17-03273-6-TL2-EF-8 / Hydrar (SKC 226-17-1A) 5177021782 5177021783	Hg-Elemental Source	
5177021784	17-03273-6-TL2-IN-1 / Hydrar (SKC 226-17-1A) 5177021785 5177021786	Hg-Elemental Source	
<b>Special Instructions:</b>			
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>
<b>Delivered to Storage:</b>		Gerardo Suenz	2704 Hv/H-104
<b>Retrieved from Storage:</b>		Brett Garner	6-18-17 0610
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>
<b>Relinquished By:</b>		Brett Garner	6-19-17
<b>Received By:</b>		TERESA FORRESTER	6-19-17
<b>Relinquished By:</b>			
<b>Received By:</b>			
<b>Relinquished By:</b>			
<b>Received By:</b>			
<b>Additional Comments:</b>			



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6-17-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03273 - Cartridge Testing Sat-Sun Green Mac 6/17/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
5177021787	17-03273-6-TL2-IN-2 / Hydrar (SKC 226-17-1A) 5177021788 5177021789				Hg-Elemental Source
5177021790	17-03273-6-TL2-IN-3 / Hydrar (SKC 226-17-1A) 5177021791 5177021792				Hg-Elemental Source
5177021793	17-03273-6-TL2-IN-4 / Hydrar (SKC 226-17-1A) 5177021794 5177021795				Hg-Elemental Source
5177021794	17-03273-6-TL2-IN-5 / Hydrar (SKC 226-17-1A) 5177021797 5177021798				Hg-Elemental Source
5177021802	17-03273-6-TL2-IN-7 / Hydrar (SKC 226-17-1A) 5177021803 5177021804				Hg-Elemental Source
5177021805	17-03273-6-TL2-IN-8 / Hydrar (SKC 226-17-1A) 5177021806 5177021807				Hg-Elemental Source
5177021799	17-03273-6-TL2IN-6 / Hydrar (SKC 226-17-1A) 5177021800 5177021801				Hg-Elemental Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>[Signature]</i>	Gerardo Sanchez	2704HV/H-104	6-18-17	0610
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## C.4.7 Ammonia

20172216 Rev. 0

### FINAL REPORT ON AMMONIA VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED JUNE 23 - 24, 2017

Document No.: 20172216 Rev. 0

**Michael A. Purcell**  
WAI Hanford Laboratory

**Date Published**  
August 2, 2017



LAB #184777

Prepared for:




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509-373-3240

 August 2, 2017  
Michael A. Purcell, WHL Project Coordinator



**NARRATIVE****FINAL REPORT ON AMMONIA VAPOR TUBES  
FOR CARTRIDGE EVALUATION  
COLLECTED JUNE 23 - 24, 2017**

This final report presents the results of eighty ammonia vapor tubes received at the 222-S Laboratory on June 26, 2017, in good condition and with adequate paperwork. The samples were logged into sample delivery group 20172216.

**DISCLAIMERS**

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys. Requirements or anomalies concerning field sampling are not addressed in this report.

**PROCEDURES**

Method	Preparation Procedure	Analysis Procedure
Ammonia by OSHA ID-188	LA-533-117, Rev. 3-1	LA-533-117, Rev. 3-1 LA-503-157, Rev. 2-7

**ANALYTICAL SUMMARY**

The vapor tubes were tested for ammonia, as specified on the chain of custody. Standard laboratory procedures for ion chromatography were followed as well as the requirements in WHL-MP-1029, *WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory (QAPP)*. Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein.

For several samples, the time between sampling and analysis exceeded thirty days. However, those samples were removed from their tubes for sample preparation in less than the thirty day stability time cited by the tube manufacturer.

For one analytical batch of samples, the first LCS and LCS-DUP were not within statistical control limits. The results indicate that the LCS-DUP vial was inadvertently spiked twice while the LCS vial did not receive any standard. The second LCS and LCS-DUP were within control limits. The associated samples were "a" flagged.

In another analytical batch, the first LCS and LCS-DUP had a Relative Percent Deviation (RPD) of 6.5%, exceeding the limit of 6%. The second LCS and LCS-DUP were within control limits. The associated samples were "c" flagged.



All other quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control samples (LCS). The results of 373 LCS determinations indicate a mean recovery of 98% with a standard deviation of 3.3%. Statistical process control limits for the LCS are 81 - 111% for instrument IC-09 and 83 - 112 for instrument IC-13, with no significant bias. The overall estimate of uncertainty is 6.7%, with coverage factor ( $k$ ) = 2.

Due to background levels of ammonium (or interfering compounds) that are typically present in the media used in the sorbent tubes for collecting the vapor samples, positive results are obtained for the preparation blank. Laboratories typically correct the LCS and all field samples for these background levels, when detected. However, per agreement with the customer, no blank subtraction was performed. The client-requested reporting limit is 10 µg per sample, which makes the analysis of additional blanks and subsequent blank subtraction unnecessary. It is the laboratory's opinion that including the media contribution, which is well below the client's requested reporting limit, provides results that are more conservative than when blank subtractions are performed. Sixty-eight of the eighty ammonia results for sample group 20172216 were above the reporting limit of 10 µg per sample. For all samples above the reporting limit, both the front and back resin measurements are included in the total amount reported (see Attachment 1).



20172216 Rev. 0

Attachment 1

## DATA SUMMARY REPORT

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## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172216

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-04563-7-SC1-BA-EI	Total	S17T023993	Ammonia	ug/sample	n/a	<10.0	11.3	10.0	
17-04563-7-SC1-BA-EI	Front Resin	S17T023994	Ammonia	ug/sample	95.1	<10.0	11.0	10.0	
17-04563-7-SC1-BA-EI	Back Resin	S17T023995	Ammonia	ug/sample	95.1	<10.0	<10.0	10.0	
17-04563-7-SC1-BA-IN	Total	S17T024253	Ammonia	ug/sample	n/a	<10.0	22.0	10.0	
17-04563-7-SC1-BA-IN	Front Resin	S17T024255	Ammonia	ug/sample	95.1	<10.0	21.6	10.0	
17-04563-7-SC1-BA-IN	Back Resin	S17T024256	Ammonia	ug/sample	95.1	<10.0	<10.0	10.0	
17-04563-7-SC1-BL-EI	Total	S17T024259	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0	
17-04563-7-SC1-BL-EI	Front Resin	S17T024261	Ammonia	ug/sample	95.1	<10.0	<10.0	10.0	
17-04563-7-SC1-BL-EI	Back Resin	S17T024262	Ammonia	ug/sample	95.1	<10.0	<10.0	10.0	
17-04563-7-SC1-BL-IN	Total	S17T024263	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0	
17-04563-7-SC1-BL-IN	Front Resin	S17T024266	Ammonia	ug/sample	95.1	<10.0	<10.0	10.0	
17-04563-7-SC1-BL-IN	Back Resin	S17T024267	Ammonia	ug/sample	95.1	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-1	Total	S17T024268	Ammonia	ug/sample	n/a	<10.0	48.2	10.0	
17-04563-7-SC1-EF-1	Front Resin	S17T024269	Ammonia	ug/sample	102	<10.0	47.7	10.0	
17-04563-7-SC1-EF-1	Back Resin	S17T024270	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-2	Total	S17T024271	Ammonia	ug/sample	n/a	<10.0	1.27E+03	10.0	
17-04563-7-SC1-EF-2	Front Resin	S17T024272	Ammonia	ug/sample	102	<10.0	1.27E+03	10.0	
17-04563-7-SC1-EF-2	Back Resin	S17T024273	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-3	Total	S17T024274	Ammonia	ug/sample	n/a	<10.0	2.34E+03	10.0	
17-04563-7-SC1-EF-3	Front Resin	S17T024276	Ammonia	ug/sample	102	<10.0	2.34E+03	10.0	
17-04563-7-SC1-EF-3	Back Resin	S17T024277	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-4	Total	S17T024280	Ammonia	ug/sample	n/a	<10.0	3.01E+03	10.0	
17-04563-7-SC1-EF-4	Front Resin	S17T024281	Ammonia	ug/sample	102	<10.0	3.01E+03	10.0	
17-04563-7-SC1-EF-4	Back Resin	S17T024282	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-5	Total	S17T024283	Ammonia	ug/sample	n/a	<10.0	2.79E+03	10.0	
17-04563-7-SC1-EF-5	Front Resin	S17T024285	Ammonia	ug/sample	102	<10.0	2.79E+03	10.0	
17-04563-7-SC1-EF-5	Back Resin	S17T024286	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-6	Total	S17T024287	Ammonia	ug/sample	n/a	<10.0	2.70E+03	10.0	
17-04563-7-SC1-EF-6	Front Resin	S17T024290	Ammonia	ug/sample	102	<10.0	2.70E+03	10.0	
17-04563-7-SC1-EF-6	Back Resin	S17T024291	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-7	Total	S17T024293	Ammonia	ug/sample	n/a	<10.0	2.47E+03	10.0	
17-04563-7-SC1-EF-7	Front Resin	S17T024294	Ammonia	ug/sample	102	<10.0	2.47E+03	10.0	
17-04563-7-SC1-EF-7	Back Resin	S17T024295	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-EF-8	Total	S17T024298	Ammonia	ug/sample	n/a	<10.0	1.92E+03	10.0	
17-04563-7-SC1-EF-8	Front Resin	S17T024299	Ammonia	ug/sample	102	<10.0	1.92E+03	10.0	
17-04563-7-SC1-EF-8	Back Resin	S17T024300	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-IN-1	Total	S17T024302	Ammonia	ug/sample	n/a	<10.0	3.14E+03	10.0	
17-04563-7-SC1-IN-1	Front Resin	S17T024303	Ammonia	ug/sample	102	<10.0	3.14E+03	10.0	
17-04563-7-SC1-IN-1	Back Resin	S17T024304	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-IN-2	Total	S17T024307	Ammonia	ug/sample	n/a	<10.0	3.28E+03	10.0	
17-04563-7-SC1-IN-2	Front Resin	S17T024308	Ammonia	ug/sample	102	<10.0	3.28E+03	10.0	
17-04563-7-SC1-IN-2	Back Resin	S17T024309	Ammonia	ug/sample	102	<10.0	<10.0	10.0	
17-04563-7-SC1-IN-3	Total	S17T024310	Ammonia	ug/sample	n/a	<10.0	3.23E+03	10.0	
17-04563-7-SC1-IN-3	Front Resin	S17T024312	Ammonia	ug/sample	105	<10.0	3.23E+03	10.0	
17-04563-7-SC1-IN-3	Back Resin	S17T024313	Ammonia	ug/sample	105	<10.0	<10.0	10.0	
17-04563-7-SC1-IN-4	Total	S17T024315	Ammonia	ug/sample	n/a	<10.0	3.29E+03	10.0	
17-04563-7-SC1-IN-4	Front Resin	S17T024317	Ammonia	ug/sample	105	<10.0	3.29E+03	10.0	
17-04563-7-SC1-IN-4	Back Resin	S17T024318	Ammonia	ug/sample	105	<10.0	<10.0	10.0	



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-04563-7-SC1-IN-5	Total	S17T024319	Ammonia	µg/sample	n/a	<10.0	3.24E+03	10.0	
17-04563-7-SC1-IN-5	Front Resin	S17T024320	Ammonia	µg/sample	105	<10.0	3.24E+03	10.0	
17-04563-7-SC1-IN-5	Back Resin	S17T024321	Ammonia	µg/sample	105	<10.0	<10.0	10.0	
17-04563-7-SC1-IN-6	Total	S17T024322	Ammonia	µg/sample	n/a	<10.0	3.08E+03	10.0	
17-04563-7-SC1-IN-6	Front Resin	S17T024324	Ammonia	µg/sample	105	<10.0	3.08E+03	10.0	
17-04563-7-SC1-IN-6	Back Resin	S17T024325	Ammonia	µg/sample	105	<10.0	<10.0	10.0	
17-04563-7-SC1-IN-7	Total	S17T024326	Ammonia	µg/sample	n/a	<10.0	1.15E+03	10.0	
17-04563-7-SC1-IN-7	Front Resin	S17T024328	Ammonia	µg/sample	105	<10.0	1.15E+03	10.0	
17-04563-7-SC1-IN-7	Back Resin	S17T024330	Ammonia	µg/sample	105	<10.0	<10.0	10.0	
17-04563-7-SC1-IN-8	Total	S17T024331	Ammonia	µg/sample	n/a	<10.0	170	10.0	
17-04563-7-SC1-IN-8	Front Resin	S17T024332	Ammonia	µg/sample	106	<10.0	169	10.0	
17-04563-7-SC1-IN-8	Back Resin	S17T024333	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BA-E	Total	S17T024335	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	
17-04564-7-SD1-BA-E	Front Resin	S17T024336	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BA-E	Back Resin	S17T024338	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BA-IN	Total	S17T024343	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	
17-04564-7-SD1-BA-IN	Front Resin	S17T024344	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BA-IN	Back Resin	S17T024345	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BL-E	Total	S17T024347	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	
17-04564-7-SD1-BL-E	Front Resin	S17T024349	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BL-E	Back Resin	S17T024351	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BL-IN	Total	S17T024352	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	
17-04564-7-SD1-BL-IN	Front Resin	S17T024353	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-BL-IN	Back Resin	S17T024354	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-EF-1	Total	S17T024356	Ammonia	µg/sample	n/a	<10.0	70.0	10.0	
17-04564-7-SD1-EF-1	Front Resin	S17T024358	Ammonia	µg/sample	106	<10.0	69.4	10.0	
17-04564-7-SD1-EF-1	Back Resin	S17T024361	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-EF-2	Total	S17T024362	Ammonia	µg/sample	n/a	<10.0	1.32E+03	10.0	
17-04564-7-SD1-EF-2	Front Resin	S17T024365	Ammonia	µg/sample	106	<10.0	1.32E+03	10.0	
17-04564-7-SD1-EF-2	Back Resin	S17T024366	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-EF-3	Total	S17T024367	Ammonia	µg/sample	n/a	<10.0	2.41E+03	10.0	
17-04564-7-SD1-EF-3	Front Resin	S17T024368	Ammonia	µg/sample	106	<10.0	2.41E+03	10.0	
17-04564-7-SD1-EF-3	Back Resin	S17T024369	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-EF-4	Total	S17T024371	Ammonia	µg/sample	n/a	<10.0	2.97E+03	10.0	
17-04564-7-SD1-EF-4	Front Resin	S17T024377	Ammonia	µg/sample	106	<10.0	2.97E+03	10.0	
17-04564-7-SD1-EF-4	Back Resin	S17T024378	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-EF-5	Total	S17T024379	Ammonia	µg/sample	n/a	<10.0	2.65E+03	10.0	
17-04564-7-SD1-EF-5	Front Resin	S17T024380	Ammonia	µg/sample	106	<10.0	2.65E+03	10.0	
17-04564-7-SD1-EF-5	Back Resin	S17T024381	Ammonia	µg/sample	106	<10.0	<10.0	10.0	
17-04564-7-SD1-EF-6	Total	S17T024382	Ammonia	µg/sample	n/a	<10.0	2.44E+03	10.0	a
17-04564-7-SD1-EF-6	Front Resin	S17T024383	Ammonia	µg/sample	0.0	<10.0	2.44E+03	10.0	a
17-04564-7-SD1-EF-6	Back Resin	S17T024384	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-EF-7	Total	S17T024385	Ammonia	µg/sample	n/a	<10.0	2.34E+03	10.0	a
17-04564-7-SD1-EF-7	Front Resin	S17T024386	Ammonia	µg/sample	0.0	<10.0	2.33E+03	10.0	a
17-04564-7-SD1-EF-7	Back Resin	S17T024387	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-EF-8	Total	S17T024389	Ammonia	µg/sample	n/a	<10.0	2.64E+03	10.0	a
17-04564-7-SD1-EF-8	Front Resin	S17T024392	Ammonia	µg/sample	0.0	<10.0	2.64E+03	10.0	a
17-04564-7-SD1-EF-8	Back Resin	S17T024393	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-04564-7-SD1-IN-1	Total	S17T024395	Ammonia	µg/sample	n/a	<10.0	3.27E+03	10.0	a
17-04564-7-SD1-IN-1	Front Resin	S17T024396	Ammonia	µg/sample	0.0	<10.0	3.27E+03	10.0	a
17-04564-7-SD1-IN-1	Back Resin	S17T024397	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-IN-2	Total	S17T024400	Ammonia	µg/sample	n/a	<10.0	3.48E+03	10.0	a
17-04564-7-SD1-IN-2	Front Resin	S17T024401	Ammonia	µg/sample	0.0	<10.0	3.48E+03	10.0	a
17-04564-7-SD1-IN-2	Back Resin	S17T024402	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-IN-3	Total	S17T024419	Ammonia	µg/sample	n/a	<10.0	3.30E+03	10.0	a
17-04564-7-SD1-IN-3	Front Resin	S17T024422	Ammonia	µg/sample	0.0	<10.0	3.30E+03	10.0	a
17-04564-7-SD1-IN-3	Back Resin	S17T024423	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-IN-4	Total	S17T024425	Ammonia	µg/sample	n/a	<10.0	3.39E+03	10.0	a
17-04564-7-SD1-IN-4	Front Resin	S17T024426	Ammonia	µg/sample	0.0	<10.0	3.39E+03	10.0	a
17-04564-7-SD1-IN-4	Back Resin	S17T024427	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-IN-5	Total	S17T024430	Ammonia	µg/sample	n/a	<10.0	2.90E+03	10.0	a
17-04564-7-SD1-IN-5	Front Resin	S17T024432	Ammonia	µg/sample	0.0	<10.0	2.90E+03	10.0	a
17-04564-7-SD1-IN-5	Back Resin	S17T024433	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-IN-6	Total	S17T024435	Ammonia	µg/sample	n/a	<10.0	2.94E+03	10.0	a
17-04564-7-SD1-IN-6	Front Resin	S17T024437	Ammonia	µg/sample	0.0	<10.0	2.94E+03	10.0	a
17-04564-7-SD1-IN-6	Back Resin	S17T024438	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-IN-7	Total	S17T024441	Ammonia	µg/sample	n/a	<10.0	2.84E+03	10.0	a
17-04564-7-SD1-IN-7	Front Resin	S17T024443	Ammonia	µg/sample	0.0	<10.0	2.84E+03	10.0	a
17-04564-7-SD1-IN-7	Back Resin	S17T024444	Ammonia	µg/sample	0.0	<10.0	<10.0	10.0	a
17-04564-7-SD1-IN-8	Total	S17T024445	Ammonia	µg/sample	n/a	<10.0	2.59E+03	10.0	a
17-04564-7-SD1-IN-8	Front Resin	S17T024446	Ammonia	µg/sample	101	<10.0	2.59E+03	10.0	a
17-04564-7-SD1-IN-8	Back Resin	S17T024447	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-BA-EI	Total	S17T024449	Ammonia	µg/sample	n/a	<10.0	12.0	10.0	a
17-04568-7-TL1-BA-EI	Front Resin	S17T024452	Ammonia	µg/sample	101	<10.0	11.3	10.0	a
17-04568-7-TL1-BA-EI	Back Resin	S17T024453	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-BA-IN	Total	S17T024454	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	a
17-04568-7-TL1-BA-IN	Front Resin	S17T024455	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-BA-IN	Back Resin	S17T024456	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-BL-EI	Total	S17T024457	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	a
17-04568-7-TL1-BL-EI	Front Resin	S17T024458	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-BL-EI	Back Resin	S17T024459	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-BL-IN	Total	S17T024460	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	a
17-04568-7-TL1-BL-IN	Front Resin	S17T024461	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-BL-IN	Back Resin	S17T024462	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-EF-1	Total	S17T024463	Ammonia	µg/sample	n/a	<10.0	42.6	10.0	a
17-04568-7-TL1-EF-1	Front Resin	S17T024464	Ammonia	µg/sample	101	<10.0	41.9	10.0	a
17-04568-7-TL1-EF-1	Back Resin	S17T024465	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-EF-2	Total	S17T024466	Ammonia	µg/sample	n/a	<10.0	2.96E+03	10.0	a
17-04568-7-TL1-EF-2	Front Resin	S17T024467	Ammonia	µg/sample	101	<10.0	2.96E+03	10.0	a
17-04568-7-TL1-EF-2	Back Resin	S17T024468	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-EF-3	Total	S17T024469	Ammonia	µg/sample	n/a	<10.0	4.87E+03	10.0	a
17-04568-7-TL1-EF-3	Front Resin	S17T024470	Ammonia	µg/sample	101	<10.0	4.87E+03	10.0	a
17-04568-7-TL1-EF-3	Back Resin	S17T024471	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a
17-04568-7-TL1-EF-4	Total	S17T024472	Ammonia	µg/sample	n/a	<10.0	4.87E+03	10.0	a
17-04568-7-TL1-EF-4	Front Resin	S17T024473	Ammonia	µg/sample	101	<10.0	4.87E+03	10.0	a
17-04568-7-TL1-EF-4	Back Resin	S17T024474	Ammonia	µg/sample	101	<10.0	<10.0	10.0	a



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-04568-7-TL1-EF-5	Total	S17T024475	Ammonia	µg/sample	n/a	<10.0	4.40E+03	10.0	
17-04568-7-TL1-EF-5	Front Resin	S17T024476	Ammonia	µg/sample	103	<10.0	4.40E+03	10.0	
17-04568-7-TL1-EF-5	Back Resin	S17T024477	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-EF-6	Total	S17T024478	Ammonia	µg/sample	n/a	<10.0	3.64E+03	10.0	
17-04568-7-TL1-EF-6	Front Resin	S17T024479	Ammonia	µg/sample	103	<10.0	3.64E+03	10.0	
17-04568-7-TL1-EF-6	Back Resin	S17T024480	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-EF-7	Total	S17T024481	Ammonia	µg/sample	n/a	<10.0	4.53E+03	10.0	
17-04568-7-TL1-EF-7	Front Resin	S17T024482	Ammonia	µg/sample	103	<10.0	4.53E+03	10.0	
17-04568-7-TL1-EF-7	Back Resin	S17T024483	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-EF-8	Total	S17T024484	Ammonia	µg/sample	n/a	<10.0	3.91E+03	10.0	
17-04568-7-TL1-EF-8	Front Resin	S17T024485	Ammonia	µg/sample	103	<10.0	3.91E+03	10.0	
17-04568-7-TL1-EF-8	Back Resin	S17T024486	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-1	Total	S17T024487	Ammonia	µg/sample	n/a	<10.0	4.53E+03	10.0	
17-04568-7-TL1-IN-1	Front Resin	S17T024488	Ammonia	µg/sample	103	<10.0	4.52E+03	10.0	
17-04568-7-TL1-IN-1	Back Resin	S17T024489	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-2	Total	S17T024490	Ammonia	µg/sample	n/a	<10.0	4.83E+03	10.0	
17-04568-7-TL1-IN-2	Front Resin	S17T024491	Ammonia	µg/sample	103	<10.0	4.83E+03	10.0	
17-04568-7-TL1-IN-2	Back Resin	S17T024492	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-3	Total	S17T024493	Ammonia	µg/sample	n/a	<10.0	4.78E+03	10.0	
17-04568-7-TL1-IN-3	Front Resin	S17T024494	Ammonia	µg/sample	103	<10.0	4.77E+03	10.0	
17-04568-7-TL1-IN-3	Back Resin	S17T024495	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-4	Total	S17T024669	Ammonia	µg/sample	n/a	<10.0	4.73E+03	10.0	
17-04568-7-TL1-IN-4	Front Resin	S17T024670	Ammonia	µg/sample	103	<10.0	4.73E+03	10.0	
17-04568-7-TL1-IN-4	Back Resin	S17T024671	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-5	Total	S17T024672	Ammonia	µg/sample	n/a	<10.0	4.53E+03	10.0	
17-04568-7-TL1-IN-5	Front Resin	S17T024673	Ammonia	µg/sample	103	<10.0	4.53E+03	10.0	
17-04568-7-TL1-IN-5	Back Resin	S17T024674	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-6	Total	S17T024675	Ammonia	µg/sample	n/a	<10.0	4.50E+03	10.0	
17-04568-7-TL1-IN-6	Front Resin	S17T024676	Ammonia	µg/sample	103	<10.0	4.50E+03	10.0	
17-04568-7-TL1-IN-6	Back Resin	S17T024677	Ammonia	µg/sample	103	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-7	Total	S17T024678	Ammonia	µg/sample	n/a	<10.0	3.67E+03	10.0	
17-04568-7-TL1-IN-7	Front Resin	S17T024679	Ammonia	µg/sample	96.2	<10.0	3.67E+03	10.0	
17-04568-7-TL1-IN-7	Back Resin	S17T024680	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04568-7-TL1-IN-8	Total	S17T024681	Ammonia	µg/sample	n/a	<10.0	4.26E+03	10.0	
17-04568-7-TL1-IN-8	Front Resin	S17T024682	Ammonia	µg/sample	96.2	<10.0	4.26E+03	10.0	
17-04568-7-TL1-IN-8	Back Resin	S17T024683	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-BA-IN	Total	S17T024684	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	
17-04569-7-TL2-BA-IN	Front Resin	S17T024685	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-BA-IN	Back Resin	S17T024686	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-BL-EF	Total	S17T024687	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	
17-04569-7-TL2-BL-EF	Front Resin	S17T024688	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-BL-EF	Back Resin	S17T024689	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-BL-IN	Total	S17T024690	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0	
17-04569-7-TL2-BL-IN	Front Resin	S17T024691	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-BL-IN	Back Resin	S17T024692	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-EF-1	Total	S17T024693	Ammonia	µg/sample	n/a	<10.0	1.80E+03	10.0	
17-04569-7-TL2-EF-1	Front Resin	S17T024694	Ammonia	µg/sample	96.2	<10.0	1.79E+03	10.0	
17-04569-7-TL2-EF-1	Back Resin	S17T024695	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172216

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-04569-7-TL2-EF-2	Total	S17T024697	Ammonia	µg/sample	n/a	<10.0	2.87E+03	10.0	
17-04569-7-TL2-EF-2	Front Resin	S17T024698	Ammonia	µg/sample	96.2	<10.0	2.87E+03	10.0	
17-04569-7-TL2-EF-2	Back Resin	S17T024699	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-EF-3	Total	S17T024700	Ammonia	µg/sample	n/a	<10.0	4.42E+03	10.0	
17-04569-7-TL2-EF-3	Front Resin	S17T024702	Ammonia	µg/sample	96.2	<10.0	4.41E+03	10.0	
17-04569-7-TL2-EF-3	Back Resin	S17T024704	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-EF-4	Total	S17T024705	Ammonia	µg/sample	n/a	<10.0	4.57E+03	10.0	
17-04569-7-TL2-EF-4	Front Resin	S17T024706	Ammonia	µg/sample	96.2	<10.0	4.57E+03	10.0	
17-04569-7-TL2-EF-4	Back Resin	S17T024707	Ammonia	µg/sample	96.2	<10.0	<10.0	10.0	
17-04569-7-TL2-BA-EI	Total	S17T024708	Ammonia	µg/sample	n/a	<10.0	13.8	10.0	c
17-04569-7-TL2-BA-EI	Front Resin	S17T024709	Ammonia	µg/sample	101	<10.0	13.2	10.0	c
17-04569-7-TL2-BA-EI	Back Resin	S17T024710	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-IN-4	Total	S17T024712	Ammonia	µg/sample	n/a	<10.0	1.89E+03	10.0	c
17-04569-7-TL2-IN-4	Front Resin	S17T024713	Ammonia	µg/sample	101	<10.0	1.89E+03	10.0	c
17-04569-7-TL2-IN-4	Back Resin	S17T024716	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-IN-5	Total	S17T024717	Ammonia	µg/sample	n/a	<10.0	4.78E+03	10.0	c
17-04569-7-TL2-IN-5	Front Resin	S17T024718	Ammonia	µg/sample	101	<10.0	4.78E+03	10.0	c
17-04569-7-TL2-IN-5	Back Resin	S17T024719	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-IN-6	Total	S17T024720	Ammonia	µg/sample	n/a	<10.0	4.52E+03	10.0	c
17-04569-7-TL2-IN-6	Front Resin	S17T024721	Ammonia	µg/sample	101	<10.0	4.52E+03	10.0	c
17-04569-7-TL2-IN-6	Back Resin	S17T024722	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-IN-7	Total	S17T024723	Ammonia	µg/sample	n/a	<10.0	5.14E+03	10.0	c
17-04569-7-TL2-IN-7	Front Resin	S17T024724	Ammonia	µg/sample	101	<10.0	5.14E+03	10.0	c
17-04569-7-TL2-IN-7	Back Resin	S17T024725	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-IN-8	Total	S17T024726	Ammonia	µg/sample	n/a	<10.0	4.57E+03	10.0	c
17-04569-7-TL2-IN-8	Front Resin	S17T024727	Ammonia	µg/sample	101	<10.0	4.57E+03	10.0	c
17-04569-7-TL2-IN-8	Back Resin	S17T024728	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-EF-5	Total	S17T024730	Ammonia	µg/sample	n/a	<10.0	4.45E+03	10.0	c
17-04569-7-TL2-EF-5	Front Resin	S17T024731	Ammonia	µg/sample	101	<10.0	4.45E+03	10.0	c
17-04569-7-TL2-EF-5	Back Resin	S17T024732	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-EF-6	Total	S17T024735	Ammonia	µg/sample	n/a	<10.0	1.56E+03	10.0	c
17-04569-7-TL2-EF-6	Front Resin	S17T024737	Ammonia	µg/sample	101	<10.0	1.55E+03	10.0	c
17-04569-7-TL2-EF-6	Back Resin	S17T024738	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-EF-7	Total	S17T024741	Ammonia	µg/sample	n/a	<10.0	4.24E+03	10.0	c
17-04569-7-TL2-EF-7	Front Resin	S17T024742	Ammonia	µg/sample	101	<10.0	4.24E+03	10.0	c
17-04569-7-TL2-EF-7	Back Resin	S17T024743	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-EF-8	Total	S17T024744	Ammonia	µg/sample	n/a	<10.0	4.88E+03	10.0	c
17-04569-7-TL2-EF-8	Front Resin	S17T024745	Ammonia	µg/sample	101	<10.0	4.88E+03	10.0	c
17-04569-7-TL2-EF-8	Back Resin	S17T024746	Ammonia	µg/sample	101	<10.0	<10.0	10.0	c
17-04569-7-TL2-IN-1	Total	S17T024748	Ammonia	µg/sample	n/a	<10.0	4.25E+03	10.0	
17-04569-7-TL2-IN-1	Front Resin	S17T024749	Ammonia	µg/sample	94.9	<10.0	4.25E+03	10.0	
17-04569-7-TL2-IN-1	Back Resin	S17T024750	Ammonia	µg/sample	94.9	<10.0	<10.0	10.0	
17-04569-7-TL2-IN-2	Total	S17T024753	Ammonia	µg/sample	n/a	<10.0	5.10E+03	10.0	
17-04569-7-TL2-IN-2	Front Resin	S17T024757	Ammonia	µg/sample	94.9	<10.0	5.08E+03	10.0	
17-04569-7-TL2-IN-2	Back Resin	S17T024758	Ammonia	µg/sample	94.9	<10.0	15.5	10.0	
17-04569-7-TL2-IN-3	Total	S17T024759	Ammonia	µg/sample	n/a	<10.0	4.59E+03	10.0	
17-04569-7-TL2-IN-3	Front Resin	S17T024760	Ammonia	µg/sample	94.9	<10.0	4.59E+03	10.0	
17-04569-7-TL2-IN-3	Back Resin	S17T024761	Ammonia	µg/sample	94.9	<10.0	<10.0	10.0	



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Attachment 2

ANALYSIS DATE REPORT

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## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172216

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T023994	17-04563-7-SC1-BA-EF	Ammonia	07/10/2017 09:00	07/11/2017 07:02
S17T023995	17-04563-7-SC1-BA-EF	Ammonia	07/10/2017 09:00	07/11/2017 07:18
S17T024255	17-04563-7-SC1-BA-IN	Ammonia	07/10/2017 09:00	07/11/2017 07:35
S17T024256	17-04563-7-SC1-BA-IN	Ammonia	07/10/2017 09:00	07/11/2017 07:52
S17T024261	17-04563-7-SC1-BL-EF	Ammonia	07/10/2017 09:00	07/11/2017 08:09
S17T024262	17-04563-7-SC1-BL-EF	Ammonia	07/10/2017 09:00	07/11/2017 08:26
S17T024266	17-04563-7-SC1-BL-IN	Ammonia	07/10/2017 09:00	07/11/2017 15:16
S17T024267	17-04563-7-SC1-BL-IN	Ammonia	07/10/2017 09:00	07/11/2017 15:33
S17T024269	17-04563-7-SC1-EF-1	Ammonia	07/11/2017 10:00	07/11/2017 20:40
S17T024270	17-04563-7-SC1-EF-1	Ammonia	07/11/2017 10:00	07/11/2017 20:58
S17T024272	17-04563-7-SC1-EF-2	Ammonia	07/11/2017 10:00	07/12/2017 13:50
S17T024273	17-04563-7-SC1-EF-2	Ammonia	07/11/2017 10:00	07/11/2017 21:34
S17T024276	17-04563-7-SC1-EF-3	Ammonia	07/11/2017 10:00	07/12/2017 14:08
S17T024277	17-04563-7-SC1-EF-3	Ammonia	07/11/2017 10:00	07/11/2017 22:10
S17T024281	17-04563-7-SC1-EF-4	Ammonia	07/11/2017 10:00	07/12/2017 14:26
S17T024282	17-04563-7-SC1-EF-4	Ammonia	07/11/2017 10:00	07/11/2017 23:41
S17T024285	17-04563-7-SC1-EF-5	Ammonia	07/11/2017 10:00	07/12/2017 14:44
S17T024286	17-04563-7-SC1-EF-5	Ammonia	07/11/2017 10:00	07/12/2017 00:17
S17T024290	17-04563-7-SC1-EF-6	Ammonia	07/11/2017 10:00	07/12/2017 15:02
S17T024291	17-04563-7-SC1-EF-6	Ammonia	07/11/2017 10:00	07/12/2017 00:53
S17T024294	17-04563-7-SC1-EF-7	Ammonia	07/11/2017 10:00	07/12/2017 15:20
S17T024295	17-04563-7-SC1-EF-7	Ammonia	07/11/2017 10:00	07/12/2017 01:29
S17T024299	17-04563-7-SC1-EF-8	Ammonia	07/11/2017 10:00	07/12/2017 15:38
S17T024300	17-04563-7-SC1-EF-8	Ammonia	07/11/2017 10:00	07/12/2017 02:05
S17T024303	17-04563-7-SC1-IN-1	Ammonia	07/11/2017 10:00	07/12/2017 15:56
S17T024304	17-04563-7-SC1-IN-1	Ammonia	07/11/2017 10:00	07/12/2017 03:35
S17T024308	17-04563-7-SC1-IN-2	Ammonia	07/11/2017 10:00	07/12/2017 17:09
S17T024309	17-04563-7-SC1-IN-2	Ammonia	07/11/2017 10:00	07/12/2017 04:12
S17T024312	17-04563-7-SC1-IN-3	Ammonia	07/11/2017 10:00	07/12/2017 17:27
S17T024313	17-04563-7-SC1-IN-3	Ammonia	07/11/2017 10:00	07/12/2017 06:54
S17T024317	17-04563-7-SC1-IN-4	Ammonia	07/11/2017 10:00	07/12/2017 17:45
S17T024318	17-04563-7-SC1-IN-4	Ammonia	07/11/2017 10:00	07/12/2017 07:30
S17T024320	17-04563-7-SC1-IN-5	Ammonia	07/11/2017 10:00	07/12/2017 18:03
S17T024321	17-04563-7-SC1-IN-5	Ammonia	07/11/2017 10:00	07/12/2017 08:06
S17T024324	17-04563-7-SC1-IN-6	Ammonia	07/11/2017 10:00	07/12/2017 18:21
S17T024325	17-04563-7-SC1-IN-6	Ammonia	07/11/2017 10:00	07/12/2017 09:37
S17T024328	17-04563-7-SC1-IN-7	Ammonia	07/11/2017 10:00	07/12/2017 18:39
S17T024330	17-04563-7-SC1-IN-7	Ammonia	07/11/2017 10:00	07/12/2017 10:13
S17T024332	17-04563-7-SC1-IN-8	Ammonia	07/12/2017 14:00	07/13/2017 09:49
S17T024333	17-04563-7-SC1-IN-8	Ammonia	07/12/2017 14:00	07/12/2017 23:10
S17T024336	17-04564-7-SD1-BA-EF	Ammonia	07/12/2017 14:00	07/12/2017 23:28
S17T024338	17-04564-7-SD1-BA-EF	Ammonia	07/12/2017 14:00	07/12/2017 23:46
S17T024344	17-04564-7-SD1-BA-IN	Ammonia	07/12/2017 14:00	07/13/2017 00:04
S17T024345	17-04564-7-SD1-BA-IN	Ammonia	07/12/2017 14:00	07/13/2017 00:22
S17T024349	17-04564-7-SD1-BL-EF	Ammonia	07/12/2017 14:00	07/13/2017 01:34
S17T024351	17-04564-7-SD1-BL-EF	Ammonia	07/12/2017 14:00	07/13/2017 01:53



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172216

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T024353	17-04564-7-SD1-BL-IN	Ammonia	07/12/2017 14:00	07/13/2017 02:11
S17T024354	17-04564-7-SD1-BL-IN	Ammonia	07/12/2017 14:00	07/13/2017 02:29
S17T024358	17-04564-7-SD1-EF-1	Ammonia	07/12/2017 14:00	07/13/2017 02:47
S17T024361	17-04564-7-SD1-EF-1	Ammonia	07/12/2017 14:00	07/13/2017 03:05
S17T024365	17-04564-7-SD1-EF-2	Ammonia	07/12/2017 14:00	07/13/2017 10:07
S17T024366	17-04564-7-SD1-EF-2	Ammonia	07/12/2017 14:00	07/13/2017 03:41
S17T024368	17-04564-7-SD1-EF-3	Ammonia	07/12/2017 14:00	07/13/2017 11:21
S17T024369	17-04564-7-SD1-EF-3	Ammonia	07/12/2017 14:00	07/13/2017 04:17
S17T024377	17-04564-7-SD1-EF-4	Ammonia	07/12/2017 14:00	07/13/2017 10:43
S17T024378	17-04564-7-SD1-EF-4	Ammonia	07/12/2017 14:00	07/13/2017 05:47
S17T024380	17-04564-7-SD1-EF-5	Ammonia	07/12/2017 14:00	07/13/2017 11:01
S17T024381	17-04564-7-SD1-EF-5	Ammonia	07/12/2017 14:00	07/13/2017 06:24
S17T024383	17-04564-7-SD1-EF-6	Ammonia	07/17/2017 08:35	07/18/2017 11:59
S17T024384	17-04564-7-SD1-EF-6	Ammonia	07/17/2017 08:35	07/17/2017 18:13
S17T024386	17-04564-7-SD1-EF-7	Ammonia	07/17/2017 08:35	07/18/2017 12:17
S17T024387	17-04564-7-SD1-EF-7	Ammonia	07/17/2017 08:35	07/17/2017 18:49
S17T024392	17-04564-7-SD1-EF-8	Ammonia	07/17/2017 08:35	07/18/2017 12:35
S17T024393	17-04564-7-SD1-EF-8	Ammonia	07/17/2017 08:35	07/17/2017 19:25
S17T024396	17-04564-7-SD1-IN-1	Ammonia	07/17/2017 08:35	07/18/2017 12:53
S17T024397	17-04564-7-SD1-IN-1	Ammonia	07/17/2017 08:35	07/17/2017 20:56
S17T024401	17-04564-7-SD1-IN-2	Ammonia	07/17/2017 08:35	07/18/2017 13:11
S17T024402	17-04564-7-SD1-IN-2	Ammonia	07/17/2017 08:35	07/17/2017 21:32
S17T024422	17-04564-7-SD1-IN-3	Ammonia	07/17/2017 08:35	07/18/2017 13:29
S17T024423	17-04564-7-SD1-IN-3	Ammonia	07/17/2017 08:35	07/17/2017 22:08
S17T024426	17-04564-7-SD1-IN-4	Ammonia	07/17/2017 08:35	07/18/2017 13:47
S17T024427	17-04564-7-SD1-IN-4	Ammonia	07/17/2017 08:35	07/17/2017 22:44
S17T024432	17-04564-7-SD1-IN-5	Ammonia	07/17/2017 08:35	07/18/2017 14:05
S17T024433	17-04564-7-SD1-IN-5	Ammonia	07/17/2017 08:35	07/17/2017 23:20
S17T024437	17-04564-7-SD1-IN-6	Ammonia	07/17/2017 08:35	07/18/2017 14:23
S17T024438	17-04564-7-SD1-IN-6	Ammonia	07/17/2017 08:35	07/18/2017 00:50
S17T024443	17-04564-7-SD1-IN-7	Ammonia	07/17/2017 08:35	07/18/2017 14:42
S17T024444	17-04564-7-SD1-IN-7	Ammonia	07/17/2017 08:35	07/18/2017 01:27
S17T024446	17-04564-7-SD1-IN-8	Ammonia	07/17/2017 08:35	07/18/2017 15:54
S17T024447	17-04564-7-SD1-IN-8	Ammonia	07/17/2017 08:35	07/18/2017 04:09
S17T024452	17-04568-7-TL1-BA-EF	Ammonia	07/17/2017 08:35	07/18/2017 04:27
S17T024453	17-04568-7-TL1-BA-EF	Ammonia	07/17/2017 08:35	07/18/2017 04:45
S17T024455	17-04568-7-TL1-BA-IN	Ammonia	07/17/2017 08:35	07/18/2017 05:03
S17T024456	17-04568-7-TL1-BA-IN	Ammonia	07/17/2017 08:35	07/18/2017 05:21
S17T024458	17-04568-7-TL1-BL-EF	Ammonia	07/17/2017 08:35	07/18/2017 06:34
S17T024459	17-04568-7-TL1-BL-EF	Ammonia	07/17/2017 08:35	07/18/2017 06:52
S17T024461	17-04568-7-TL1-BL-IN	Ammonia	07/17/2017 08:35	07/18/2017 07:10
S17T024462	17-04568-7-TL1-BL-IN	Ammonia	07/17/2017 08:35	07/18/2017 07:28
S17T024464	17-04568-7-TL1-EF-1	Ammonia	07/17/2017 08:35	07/18/2017 07:46
S17T024465	17-04568-7-TL1-EF-1	Ammonia	07/17/2017 08:35	07/18/2017 08:04
S17T024467	17-04568-7-TL1-EF-2	Ammonia	07/17/2017 08:35	07/18/2017 16:12
S17T024468	17-04568-7-TL1-EF-2	Ammonia	07/17/2017 08:35	07/18/2017 08:40



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172216

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T024470	17-04568-7-TL1-EF-3	Ammonia	07/17/2017 08:35	07/18/2017 16:30
S17T024471	17-04568-7-TL1-EF-3	Ammonia	07/17/2017 08:35	07/18/2017 09:16
S17T024473	17-04568-7-TL1-EF-4	Ammonia	07/17/2017 08:35	07/18/2017 16:48
S17T024474	17-04568-7-TL1-EF-4	Ammonia	07/17/2017 08:35	07/18/2017 10:47
S17T024476	17-04568-7-TL1-EF-5	Ammonia	07/18/2017 09:12	07/18/2017 17:06
S17T024476	17-04568-7-TL1-EF-5	Ammonia	07/18/2017 09:12	07/19/2017 09:59
S17T024479	17-04568-7-TL1-EF-6	Ammonia	07/18/2017 09:12	07/18/2017 17:40
S17T024479	17-04568-7-TL1-EF-6	Ammonia	07/18/2017 09:12	07/19/2017 10:16
S17T024482	17-04568-7-TL1-EF-7	Ammonia	07/18/2017 09:12	07/18/2017 18:13
S17T024482	17-04568-7-TL1-EF-7	Ammonia	07/18/2017 09:12	07/19/2017 10:33
S17T024485	17-04568-7-TL1-EF-8	Ammonia	07/18/2017 09:12	07/18/2017 19:38
S17T024485	17-04568-7-TL1-EF-8	Ammonia	07/18/2017 09:12	07/19/2017 10:49
S17T024488	17-04568-7-TL1-IN-1	Ammonia	07/18/2017 09:12	07/18/2017 20:12
S17T024488	17-04568-7-TL1-IN-1	Ammonia	07/18/2017 09:12	07/19/2017 11:06
S17T024491	17-04568-7-TL1-IN-2	Ammonia	07/18/2017 09:12	07/18/2017 20:45
S17T024491	17-04568-7-TL1-IN-2	Ammonia	07/18/2017 09:12	07/19/2017 11:23
S17T024494	17-04568-7-TL1-IN-3	Ammonia	07/18/2017 09:12	07/18/2017 21:19
S17T024494	17-04568-7-TL1-IN-3	Ammonia	07/18/2017 09:12	07/19/2017 11:40
S17T024670	17-04568-7-TL1-IN-4	Ammonia	07/18/2017 09:12	07/18/2017 21:53
S17T024670	17-04568-7-TL1-IN-4	Ammonia	07/18/2017 09:12	07/19/2017 11:57
S17T024673	17-04568-7-TL1-IN-5	Ammonia	07/18/2017 09:12	07/18/2017 23:17
S17T024673	17-04568-7-TL1-IN-5	Ammonia	07/18/2017 09:12	07/19/2017 12:14
S17T024676	17-04568-7-TL1-IN-6	Ammonia	07/18/2017 09:12	07/18/2017 23:51
S17T024676	17-04568-7-TL1-IN-6	Ammonia	07/18/2017 09:12	07/19/2017 12:31
S17T024679	17-04568-7-TL1-IN-7	Ammonia	07/18/2017 09:12	07/19/2017 02:23
S17T024679	17-04568-7-TL1-IN-7	Ammonia	07/18/2017 09:12	07/19/2017 13:38
S17T024682	17-04568-7-TL1-IN-8	Ammonia	07/18/2017 09:12	07/19/2017 02:57
S17T024682	17-04568-7-TL1-IN-8	Ammonia	07/18/2017 09:12	07/19/2017 13:55
S17T024685	17-04569-7-TL2-BA-IN	Ammonia	07/18/2017 09:12	07/19/2017 03:31
S17T024686	17-04569-7-TL2-BA-IN	Ammonia	07/18/2017 09:12	07/19/2017 03:47
S17T024688	17-04569-7-TL2-BL-EF	Ammonia	07/18/2017 09:12	07/19/2017 04:55
S17T024689	17-04569-7-TL2-BL-EF	Ammonia	07/18/2017 09:12	07/19/2017 05:12
S17T024691	17-04569-7-TL2-BL-IN	Ammonia	07/18/2017 09:12	07/19/2017 05:29
S17T024692	17-04569-7-TL2-BL-IN	Ammonia	07/18/2017 09:12	07/19/2017 05:46
S17T024694	17-04569-7-TL2-EF-1	Ammonia	07/18/2017 09:12	07/19/2017 06:03
S17T024694	17-04569-7-TL2-EF-1	Ammonia	07/18/2017 09:12	07/19/2017 14:12
S17T024698	17-04569-7-TL2-EF-2	Ammonia	07/18/2017 09:12	07/19/2017 06:36
S17T024698	17-04569-7-TL2-EF-2	Ammonia	07/18/2017 09:12	07/19/2017 14:29
S17T024702	17-04569-7-TL2-EF-3	Ammonia	07/18/2017 09:12	07/19/2017 07:10
S17T024702	17-04569-7-TL2-EF-3	Ammonia	07/18/2017 09:12	07/19/2017 14:46
S17T024706	17-04569-7-TL2-EF-4	Ammonia	07/18/2017 09:12	07/19/2017 08:34
S17T024706	17-04569-7-TL2-EF-4	Ammonia	07/18/2017 09:12	07/19/2017 15:03
S17T024709	17-04569-7-TL2-BA-EF	Ammonia	07/21/2017 07:00	07/25/2017 11:43
S17T024710	17-04569-7-TL2-BA-EF	Ammonia	07/21/2017 07:00	07/25/2017 12:00
S17T024713	17-04569-7-TL2-IN-4	Ammonia	07/21/2017 07:00	07/26/2017 03:46
S17T024716	17-04569-7-TL2-IN-4	Ammonia	07/21/2017 07:00	07/25/2017 12:34



**ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172216**

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T024718	17-04569-7-TL2-IN-5	Ammonia	07/21/2017 07:00	07/26/2017 04:02
S17T024719	17-04569-7-TL2-IN-5	Ammonia	07/21/2017 07:00	07/25/2017 13:08
S17T024721	17-04569-7-TL2-IN-6	Ammonia	07/21/2017 07:00	07/26/2017 04:19
S17T024722	17-04569-7-TL2-IN-6	Ammonia	07/21/2017 07:00	07/25/2017 14:32
S17T024724	17-04569-7-TL2-IN-7	Ammonia	07/21/2017 07:00	07/26/2017 04:36
S17T024725	17-04569-7-TL2-IN-7	Ammonia	07/21/2017 07:00	07/25/2017 15:06
S17T024727	17-04569-7-TL2-IN-8	Ammonia	07/21/2017 07:00	07/26/2017 04:53
S17T024728	17-04569-7-TL2-IN-8	Ammonia	07/21/2017 07:00	07/25/2017 15:39
S17T024731	17-04569-7-TL2-EF-5	Ammonia	07/21/2017 07:00	07/26/2017 05:10
S17T024732	17-04569-7-TL2-EF-5	Ammonia	07/21/2017 07:00	07/25/2017 16:13
S17T024737	17-04569-7-TL2-EF-6	Ammonia	07/21/2017 07:00	07/26/2017 05:27
S17T024738	17-04569-7-TL2-EF-6	Ammonia	07/21/2017 07:00	07/25/2017 16:47
S17T024742	17-04569-7-TL2-EF-7	Ammonia	07/21/2017 07:00	07/26/2017 08:18
S17T024743	17-04569-7-TL2-EF-7	Ammonia	07/21/2017 07:00	07/25/2017 18:11
S17T024745	17-04569-7-TL2-EF-8	Ammonia	07/21/2017 07:00	07/26/2017 06:51
S17T024746	17-04569-7-TL2-EF-8	Ammonia	07/21/2017 07:00	07/25/2017 18:45
S17T024749	17-04569-7-TL2-IN-1	Ammonia	07/21/2017 07:00	07/26/2017 08:35
S17T024750	17-04569-7-TL2-IN-1	Ammonia	07/21/2017 07:00	07/25/2017 21:17
S17T024757	17-04569-7-TL2-IN-2	Ammonia	07/21/2017 07:00	07/26/2017 07:25
S17T024758	17-04569-7-TL2-IN-2	Ammonia	07/21/2017 07:00	07/25/2017 21:51
S17T024760	17-04569-7-TL2-IN-3	Ammonia	07/21/2017 07:00	07/26/2017 07:42
S17T024761	17-04569-7-TL2-IN-3	Ammonia	07/21/2017 07:00	07/25/2017 22:25



20172216 Rev. 0

Attachment 3

RECEIPT PAPERWORK

15 of 30

C.667



222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST			ATS-LO-090-101 Rev DH-1
Date Samples Received: <u>6/26/17</u>		Total Number of Samples: <u>1060</u>		Group No.: <u>70172216</u>
Sample Custodian: <u>Leslie Diaz</u>		IH Technician: <u>Robt. Diaz</u> <u>6-26-17</u>		
<b>Sample Custodian to Complete</b>				
Action	Yes	No	N/A	Comments
RSR provided?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
Verify GKI is complete	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/> In Project File
Received from an alpha facility?	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/> Contact PC for approval to release
Check that outer custody seal is intact, if present	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
Record cooler temperature in centigrade, as appropriate	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/> Check if no cooler and/or no ice <u>1.4</u>
Samples are intact and in good condition	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	If No, provide comments below.
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Date and time of sampling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Sampling location or origin	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Container type, size, and number	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Preservatives (if used) noted on the COC/RSA and sample bottles	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
• Analysis request is clear	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Signature of persons relinquishing and receiving samples	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
• Date and/or time of sample custody exchange	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Verify that sample numbers on containers match the COC and/or RSA	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Samples stored properly (e.g., refrigeration)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.				
Samples acceptable for release? <input checked="" type="radio"/> Yes <input type="radio"/> No PC/SC Initials: <u>RD</u> Date: <u>6-26-17</u>				
If No, comment on communication and resolution: <u>WRPS - ship - 600</u> <u>Run - 240</u> <u>WHL - N143 - 80</u> <u>Hg - 80</u>				
Number of IH Samples Received: <u>80 - Acetonitrile</u>				
Aldehyde Screen: <u>80</u>	Amines: <u>80</u>	Ammonia: <u>80</u>	Aromatic HC: _____	Asbestos: _____
Beryllium: _____	Be-Bulk: _____	Be-Filter: _____	Be-Wipe: _____	1, 3-Butadiene: <u>160</u>
Formaldehyde: _____	Furans: <u>80</u>	Mercury: <u>80</u>	Methanol: <u>40</u>	Nitrosamines: <u>80</u>
Nitrous Oxide: _____	Pyridines: <u>80</u>	SVOA: <u>80</u>	VOA: <u>80</u>	Other-IH: _____



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions		<b>Date Sampled:</b> 6/24/17	
<b>CACN:</b> 202843 20300	<b>COA:</b> CB20	<b>Survey No.:</b> 17-04563 - Cartridge Testing Sat-Sun Yellow Mac	
<b>Contact Name:</b> Jones, Parker L		<b>Phone:</b> (509)373-4966	<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A		<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
517T023943	17-04563-7-SC1-BA-EF / CISA (SKC 226-29) ✓ 517T023944 517T023945	NH3 Source
517T024253	17-04563-7-SC1-BA-IN / CISA (SKC 226-29) ✓ 517T024255 517T024256	NH3 Source
517T024259	17-04563-7-SC1-BL-EF / CISA (SKC 226-29) ✓ 517T024261 517T024262	NH3 Source
517T024263	17-04563-7-SC1-BL-IN / CISA (SKC 226-29) ✓ 517T024266 517T024267	NH3 Source
517T024268	17-04563-7-SC1-EF-1 / CISA (SKC 226-29) ✓ 517T024269 517T024270	NH3 Source
517T024271	17-04563-7-SC1-EF-2 / CISA (SKC 226-29) ✓ 517T024272 517T024273	NH3 Source
517T024274	17-04563-7-SC1-EF-3 / CISA (SKC 226-29) ✓ 517T024276 517T024277	NH3 Source

**Special Instructions:**

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	[Signature]	TRAC MCEPHER	2704TH LAB	6-25-17	0600
Retrieved from Storage:	[Signature]	BRETT GARNER		6-26-17	0730

	Signature	Printed Name	Date	Time
Relinquished By:	[Signature]	BRETT GARNER	6-26-17	11:30
Received By:	[Signature]	Leslie DIAZ	6-26-17	11:30
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

**Additional Comments:**



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions		Date Sampled: 6-24-17	
CACN: 203009	COA: CB20	Survey No.: 17-04563 - Cartridge Testing Sat-Sun Yellow Mac	
Contact Name: Jones, Parker L	Phone: (509)373-4966	Turnaround: N/A	
Return Report To: Maxwell, Sally A		MSIN: R1-06	Phone: (509)373-3324

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
517024280	17-04563-7-SC1-EF-4 / CISA (SKC 226-29) ✓ 517024281 517024282	NH3 Source
517024283	17-04563-7-SC1-EF-5 / CISA (SKC 226-29) ✓ 517024285 517024286	NH3 Source
517024287	17-04563-7-SC1-EF-6 / CISA (SKC 226-29) ✓ 517024290 517024291	NH3 Source
517024293	17-04563-7-SC1-EF-7 / CISA (SKC 226-29) ✓ 517024294 517024295	NH3 Source
517024298	17-04563-7-SC1-EF-8 / CISA (SKC 226-29) ✓ 517024299 517024300	NH3 Source
517024302	17-04563-7-SC1-IN-1 / CISA (SKC 226-29) ✓ 517024303 517024304	NH3 Source
517024307	17-04563-7-SC1-IN-2 / CISA (SKC 226-29) ✓ 517024308 517024309	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		BRETT GARNER	2704th LAB	6-25-17	0600
Retrieved from Storage:		BRETT GARNER		6-26-17	0730

	Signature	Printed Name	Date	Time
Relinquished By:		BRETT GARNER	6-26-17	11:30
Received By:		Leslie Diaz	6-26-17	11:30
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions		Date Sampled: 6-24-17	
CACN: 40163001 203006	COA: CB20	Survey No.: 17-04563 - Cartridge Testing Sat-Sun Yellow Mac	
Contact Name: Jones, Parker L	Phone: (509)373-4966	Turnaround: N/A	
Return Report To: Maxwell, Sally A		MSIN: R1-06	Phone: (509)373-3324

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
517T024310	17-04563-7-SC1-IN-3 / CISA (SKC 226-29) ✓ 517T024312 517T024313	NH3 Source
517T024315	17-04563-7-SC1-IN-4 / CISA (SKC 226-29) ✓ 517T024317 517T024318	NH3 Source
517T024319 203 6/24/17	17-04563-7-SC1-IN-5 / CISA (SKC 226-29) ✓ 517T024320 517T024321	NH3 Source
517T024322	17-04563-7-SC1-IN-6 / CISA (SKC 226-29) ✓ 517T024324 517T024325	NH3 Source
517T024326 203 6/24/17	17-04563-7-SC1-IN-7 / CISA (SKC 226-29) ✓ 517T024328 517T024330	NH3 Source
517T024331 203 6/24/17	17-04563-7-SC1-IN-8 / CISA (SKC 226-29) ✓ 517T024332 517T024333	NH3 Source
	17-04563-12-SC1-BA-EF / Thermosorb-N (TDX) NA OB 6/24/17	Nitrosamines Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	[Signature]	CHRISTOPHER	2704N LAB	6-25-17	0600
Retrieved from Storage:	[Signature]	BRETT GARVER		6-26-17	0730

	Signature	Printed Name	Date	Time
Relinquished By:	[Signature]	BRETT GARVER	6-26-17	11:30
Received By:	[Signature]	LOSLIE DIAZ	6-26-17	11:30
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6-23-17	
CACN: 20304		COA: CB20		Survey No.: 17-04564 - Cartridge Testing Fri-Sat Yellow Mac	
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Maxwell, Sally A				MSIN: R1-06	
Phone: (509)373-3324					

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
517T024335	17-04564-7-SD1-BA-EF / CISA (SKC 226-29) ✓ 517T024336 517T024338	NH3 Source
517T024343	17-04564-7-SD1-BA-IN / CISA (SKC 226-29) ✓ 517T024344 517T024345	NH3 Source
517T024347	17-04564-7-SD1-BL-EF / CISA (SKC 226-29) ✓ 517T024349 517T024351	NH3 Source
517T024352	17-04564-7-SD1-BL-IN / CISA (SKC 226-29) ✓ 517T024353 517T024354	NH3 Source
517T024356	17-04564-7-SD1-EF-1 / CISA (SKC 226-29) ✓ 517T024358 517T024361	NH3 Source
517T024362	17-04564-7-SD1-EF-2 / CISA (SKC 226-29) ✓ 517T024365 517T024366	NH3 Source
517T024367	17-04564-7-SD1-EF-3 / CISA (SKC 226-29) ✓ 517T024368 517T024369	NH3 Source

Special Instructions: N/A

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HW/H104	6/24/17	0450
Retrieved from Storage:		Brett Garner		6/26/17	0730

	Signature	Printed Name	Date	Time
Relinquished By:		Brett Garner	6/26/17	0730 1130
Received By:		Shawn L. Holden	6-26-17	1130
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6-23-17	
<b>CACN:</b> 202006		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04564 - Cartridge Testing Fri-Sat Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517T024371	17-04564-7-SD1-EF-4 / CISA (SKC 226-29) ✓ 517T024377 517T024378				NH3 Source
517T024379	17-04564-7-SD1-EF-5 / CISA (SKC 226-29) ✓ 517T024380 517T024381				NH3 Source
517T024382	17-04564-7-SD1-EF-6 / CISA (SKC 226-29) ✓ 517T024383 517T024384				NH3 Source
517T024385	17-04564-7-SD1-EF-7 / CISA (SKC 226-29) ✓ 517T024386 517T024387				NH3 Source
517T024389	17-04564-7-SD1-EF-8 / CISA (SKC 226-29) ✓ 517T024392 517T024393				NH3 Source
517T024395	17-04564-7-SD1-IN-1 / CISA (SKC 226-29) ✓ 517T024396 517T024397				NH3 Source
517T024390	17-04564-7-SD1-IN-2 / CISA (SKC 226-29) ✓ 517T024390 517T024392				NH3 Source
<b>Special Instructions:</b> N/A 6/24/17					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	[Signature]	Josh Wilhelm	2707HU/H104	6/24/17	0450
Retrieved from Storage:	[Signature]	Brett Garner		6/26/17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	[Signature]	Brett Garner	6/26/17	1130	
Received By:	[Signature]	Shawn Liddle	6/26/17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6-23-17	
CACN: 17-04564-203006		COA: CB20		Survey No.: 17-04564 - Cartridge Testing Fri-Sat Yellow Mac	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description				Required Analysis
517024419	17-04564-7-SD1-IN-3 / CISA (SKC 226-29) ✓ 517024422 517024423				NH3 Source
517024425	17-04564-7-SD1-IN-4 / CISA (SKC 226-29) ✓ 517024426 517024427				NH3 Source
517024430	17-04564-7-SD1-IN-5 / CISA (SKC 226-29) ✓ 517024432 517024433				NH3 Source
517024435	17-04564-7-SD1-IN-6 / CISA (SKC 226-29) ✓ 517024437 517024438				NH3 Source
517024441	17-04564-7-SD1-IN-7 / CISA (SKC 226-29) ✓ 517024443 517024444				NH3 Source
517024445	17-04564-7-SD1-IN-8 / CISA (SKC 226-29) ✓ 517024446 517024447				NH3 Source
	17-04564-12-SD1-BA-EF / Thermosorb-N (TDX) FTR 6-23-17				Nitrosamines Source
Special Instructions: N/A					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Josh Wilhelm	2704 HW/H1041	6/24/17	0450
Retrieved from Storage:		Brett Garner		6/26/17	0730
	Signature	Printed Name	Date	Time	
Relinquished By:		Brett Garner	6/26/17	0730 1130	
Received By:		Shava Lululu	6/26/17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-23-2017	
<b>CACN:</b> 202843 203006 6-21-17		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04568 - Cartridge Testing Fri-Sat Green Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
	17-04568-13-TL1-IN-3 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04568-13-TL1-IN-4 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04568-13-TL1-IN-5 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04568-13-TL1-IN-6 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04568-13-TL1-IN-7 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04568-13-TL1-IN-8 / Silica Gel (SKC-226-51)			Methanol Source	
51702449	17-04568-7-TL1-BA-EF / CISA (SKC 226-29)			NH3 Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Erica Wheeler</i>	Erica Wheeler	2704 HV / H104	06-24-17	0625
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-26-17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-26-17	1130	
Received By:	<i>Teresa Pomester</i>	TERESA POMESTER	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions			<b>Date Sampled:</b> 06-23-2017		
<b>CACN:</b> <del>202049</del> 203006 6-26-17		<b>COA:</b> CB20	<b>Survey No.:</b> 17-04568 - Cartridge Testing Fri-Sat Green Mac		
<b>Contact Name:</b> Jones, Parker L		<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A	
<b>Return Report To:</b> Maxwell, Sally A			<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324	
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
S17T024454	17-04568-7-TL1-BA-IN / CISA (SKC 226-29) S17T024455 S17T024456			NH3 Source	
S17T024457	17-04568-7-TL1-BL-EF / CISA (SKC 226-29) S17T024458 S17T024459			NH3 Source	
S17T024460	17-04568-7-TL1-BL-IN / CISA (SKC 226-29) S17T024461 S17T024462			NH3 Source	
S17T024463	17-04568-7-TL1-EF-1 / CISA (SKC 226-29) S17T024464 S17T024465			NH3 Source	
S17T024466	17-04568-7-TL1-EF-2 / CISA (SKC 226-29) S17T024467 S17T024468			NH3 Source	
S17T024469	17-04568-7-TL1-EF-3 / CISA (SKC 226-29) S17T024470 S17T024471			NH3 Source	
S17T024472	17-04568-7-TL1-EF-4 / CISA (SKC 226-29) S17T024473 S17T024474			NH3 Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Enca Wheeler</i>	Enca Wheeler	2704 HW / #104	06-24-17	0625
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-26-17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-26-17	1130	
Received By:	<i>Teresa Forrester</i>	TERESA FORRESTER	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 06-23-2017	
CACN: <del>202843</del> 203006 <sup>6-26-17</sup>		COA: CB20	Survey No.: 17-04568 - Cartridge Testing Fri-Sat Green Mac		
Contact Name: Jones, Parker L		Phone: (509)373-4966	Turnaround: N/A		
Return Report To: Maxwell, Sally A			MSIN: R1-06	Phone: (509)373-3324	
Laboratory Log No.	Sample ID/Type/Description			Required Analysis	
517024475	17-04568-7-TL1-EF-5 / CISA (SKC 226-29) 517024476 517024477			NH3 Source	
517024478	17-04568-7-TL1-EF-6 / CISA (SKC 226-29) 517024479 517024480			NH3 Source	
517024481	17-04568-7-TL1-EF-7 / CISA (SKC 226-29) 517024482 517024483			NH3 Source	
517024484	17-04568-7-TL1-EF-8 / CISA (SKC 226-29) 517024485 517024486			NH3 Source	
517024487	17-04568-7-TL1-IN-1 / CISA (SKC 226-29) 517024488 517024489			NH3 Source	
517024490	17-04568-7-TL1-IN-2 / CISA (SKC 226-29) 517024491 517024492			NH3 Source	
517024493	17-04568-7-TL1-IN-3 / CISA (SKC 226-29) 517024494 517024495			NH3 Source	
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Eric Wheeler</i>	Eric Wheeler	2704 HV / H104	06-24-17	0625
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-26-17	0720
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-26-17	1130	
Received By:	<i>Teresa Forrester</i>	TERESA FORRESTER	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-23-2017	
<b>CACN:</b> 202849 203006 6-26-17		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04568 - Cartridge Testing Fri-Sat Green Mac	
<b>Contact Name:</b> Jones, Parker L		<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A	
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517T024669	17-04568-7-TL1-IN-4 / CISA (SKC 226-29) 517T024670 517T024671				NH3 Source
517T024672	17-04568-7-TL1-IN-5 / CISA (SKC 226-29) 517T024673 517T024674				NH3 Source
517T024675	17-04568-7-TL1-IN-6 / CISA (SKC 226-29) 517T024676 517T024677				NH3 Source
517T024678	17-04568-7-TL1-IN-7 / CISA (SKC 226-29) 517T024679 517T024680				NH3 Source
517T024681	17-04568-7-TL1-IN-8 / CISA (SKC 226-29) 517T024682 517T024683				NH3 Source
	17-04568-12-TL1-BA-EF / Thermosorb-N (TDX) NA				Nitrosamines Source
	17-04568-12-TL1-BA-IN / Thermosorb-N (TDX) OB 6/21/17				Nitrosamines Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Enza Wheeler</i>	Enza Wheeler	2704 HV / 4104	06-24-17	0625
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-26-17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-26-17	1130	
Received By:	<i>Teresa Forrester</i>	TERESA FORRESTER	6-26-17	1130	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-24-2017	
<b>CACN:</b> 263006		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04569 - Cartridge Testing Sat-Sun Green Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517024684	17-04569-7-TL2-BA-IN / CISA (SKC 226-29) 517024685 517024686				NH3 Source
517024687	17-04569-7-TL2-BL-EF / CISA (SKC 226-29) 517024688 517024689				NH3 Source
517024690	17-04569-7-TL2-BL-IN / CISA (SKC 226-29) 517024691 517024692				NH3 Source
517024693	17-04569-7-TL2-EF-1 / CISA (SKC 226-29) 517024694 517024695				NH3 Source
517024697	17-04569-7-TL2-EF-2 / CISA (SKC 226-29) 517024698 517024699				NH3 Source
517024700	17-04569-7-TL2-EF-3 / CISA (SKC 226-29) 517024702 517024704				NH3 Source
517024705	17-04569-7-TL2-EF-4 / CISA (SKC 226-29) 517024706 517024707				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Enca Wheeler</i>	Enca Wheeler	2704 HV / H104	06-25-17	0635
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06/26/17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06/26/17	1150	
Received By:	<i>Don Sorenson</i>	Don Sorenson	6/26/17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-24-2017	
<b>CACN:</b> 382843 203006		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04569 - Cartridge Testing Sat-Sun Green Mac	
<b>Contact Name:</b> Jones, Parker L		<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A	
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	
				<b>Phone:</b> (509)373-3324	
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
	17-04569-13-TL2-IN-3 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04569-13-TL2-IN-4 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04569-13-TL2-IN-5 / Silica Gel (SKC-226-51)			Methanol Source	
	17-04569-13-TL2-IN-6 / Silica Gel (SKC-226-51) N/A			Methanol Source	
	17-04569-13-TL2-IN-7 / Silica Gel (SKC-226-51) OB 6/21/17			Methanol Source	
	17-04569-13-TL2-IN-8 / Silica Gel (SKC-226-51)			Methanol Source	
5177624708	17-04569-7-TL2-BA-EF / CISA (SKC 226-29) 5177624709 5177624710			NH3 Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	Eric Wheeler	Eric Wheeler	2704 HV / H104	06-25-17	0635
Retrieved from Storage:	Brett Garner	Brett Garner		06/26/17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	Brett Garner	Brett Garner	06/26/17	1630	
Received By:	Don Sorenson	Don Sorenson	6/26/17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions			<b>Date Sampled:</b> 06-24-2017		
<b>CACN:</b> 203006		<b>COA:</b> CB20	<b>Survey No.:</b> 17-04569 - Cartridge Testing Sat-Sun Green Mac		
<b>Contact Name:</b> Jones, Parker L		<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A	
<b>Return Report To:</b> Maxwell, Sally A			<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324	
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
517024712	17-04569-7-TL2-IN-4 / CISA (SKC 226-29) 517024713 517024716			NH3 Source	
517024717	17-04569-7-TL2-IN-5 / CISA (SKC 226-29) 517024718 517024719			NH3 Source	
517024720	17-04569-7-TL2-IN-6 / CISA (SKC 226-29) 517024721 517024722			NH3 Source	
517024723	17-04569-7-TL2-IN-7 / CISA (SKC 226-29) 517024724 517024725			NH3 Source	
517024726	17-04569-7-TL2-IN-8 / CISA (SKC 226-29) 517024727 517024728			NH3 Source	
	17-04569-12-TL2-BA-EF / Thermosorb-N (TDX) NA			Nitrosamines Source	
	17-04569-12-TL2-BA-IN / Thermosorb-N (TDX) OB 6/21/17			Nitrosamines Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704 HV / H104	06-25-17	0635
Retrieved from Storage:	Brett Garner	Brett Garner		06/26/17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	Brett Garner	Brett Garner	06/26/17	1130	
Received By:	Don Sorenson	Don Sorenson	6/26/17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-24-2017	
<b>CACN:</b> 203006		<b>COA:</b> CB20		<b>Survey No.:</b> 17-04569 - Cartridge Testing Sat-Sun Green Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517024730	17-04569-7-TL2-EF-5 / CISA (SKC 226-29) 517024731 517024732				NH3 Source
517024735	17-04569-7-TL2-EF-6 / CISA (SKC 226-29) 517024737 517024738				NH3 Source
517024741	17-04569-7-TL2-EF-7 / CISA (SKC 226-29) 517024742 517024743				NH3 Source
517024744	17-04569-7-TL2-EF-8 / CISA (SKC 226-29) 517024745 517024746				NH3 Source
517024748	17-04569-7-TL2-IN-1 / CISA (SKC 226-29) 517024749 517024750				NH3 Source
517024753	17-04569-7-TL2-IN-2 / CISA (SKC 226-29) 517024754 517024758				NH3 Source
517024759	17-04569-7-TL2-IN-3 / CISA (SKC 226-29) 517024760 517024761				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	Enca Wheeler	Enca Wheeler	2704 HV / H104	06-25-17	0635
Retrieved from Storage:	Brett Garner	BRETT Garner		06/26/17	0730
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	Brett Garner	BRETT Garner	06/26/17	1130	
Received By:	Don Sorenson	Don Sorenson	6/26/17	11:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



**FINAL REPORT ON AMMONIA VAPOR TUBES  
FOR CARTRIDGE EVALUATION  
COLLECTED JUNE 16 - 17, 2017**

**Document No.: 20172091 Rev. 0**

**Michael A. Purcell**  
WAI Hanford Laboratory

**Date Published**  
July 19, 2017



LAB # 184777

Prepared for:




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Prepared by:



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 July 19, 2017  
Michael A. Purcell, WHL Project Coordinator



**NARRATIVE****FINAL REPORT ON AMMONIA VAPOR TUBES  
FOR CARTRIDGE EVALUATION  
COLLECTED JUNE 16 - 17, 2017**

This final report presents the results of eighty ammonia vapor tubes received at the 222-S Laboratory on June 19, 2017, in good condition and with adequate paperwork. The samples were logged into sample delivery group 20172091.

**DISCLAIMERS**

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys. Requirements or anomalies concerning field sampling are not addressed in this report.

**PROCEDURES**

Method	Preparation Procedure	Analysis Procedure
Ammonia by OSHA ID-188	LA-533-117, Rev. 3-1	LA-533-117, Rev. 3-1

**ANALYTICAL SUMMARY**

The vapor tubes were tested for ammonia, as specified on the chain of custody. Standard laboratory procedures for ion chromatography were followed as well as the requirements in WHL-MP-1029, *WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory* (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control samples (LCS). The results of 373 LCS determinations indicate a mean recovery of 98% with a standard deviation of 3.3%. Statistical process control limits for the LCS are 81 - 111% for instrument IC-09 and 83 - 112 for instrument IC-13, with no significant bias. The overall estimate of uncertainty is 6.7%, with coverage factor (k) = 2.

Due to background levels of ammonium (or interfering compounds) that are typically present in the media used in the sorbent tubes for collecting the vapor samples, positive results are obtained for the preparation blank. Laboratories typically correct the LCS and all field samples for these background levels, when detected. However, per agreement with the customer, no blank subtraction was performed. The client-requested reporting limit is 10 µg per sample, which makes the analysis of additional blanks and subsequent blank subtraction unnecessary. It is the



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laboratory's opinion that including the media contribution, which is well below the client's requested reporting limit, provides results that are more conservative than when blank subtractions are performed. Sixty-six of the ammonia results for sample group 20172091 were above the reporting limit of 10 µg per sample (see Attachment 1).



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Attachment 1

## DATA SUMMARY REPORT

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C.686



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172091

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03273-7-TL2-BA-EF	Total	S17T020648	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03273-7-TL2-BA-EF	Front Resin	S17T020649	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-BA-EF	Back Resin	S17T020650	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-tl2-ba-in	Total	S17T020657	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03273-7-tl2-ba-in	Front Resin	S17T020659	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-tl2-ba-in	Back Resin	S17T020660	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-tl2-bl-ef	Total	S17T020663	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03273-7-tl2-bl-ef	Front Resin	S17T020664	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-tl2-bl-ef	Back Resin	S17T020665	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-tl2-bl-in	Total	S17T020666	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03273-7-tl2-bl-in	Front Resin	S17T020667	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-tl2-bl-in	Back Resin	S17T020668	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-1	Total	S17T020669	Ammonia	µg/sample	n/a	<10.0	634	100
17-03273-7-TL2-EF-1	Front Resin	S17T020670	Ammonia	µg/sample	105	<10.0	633	100
17-03273-7-TL2-EF-1	Back Resin	S17T020671	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-2	Total	S17T020672	Ammonia	µg/sample	n/a	<10.0	1.61E+03	500
17-03273-7-TL2-EF-2	Front Resin	S17T020673	Ammonia	µg/sample	105	<10.0	1.61E+03	500
17-03273-7-TL2-EF-2	Back Resin	S17T020674	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-3	Total	S17T020676	Ammonia	µg/sample	n/a	<10.0	2.86E+03	500
17-03273-7-TL2-EF-3	Front Resin	S17T020679	Ammonia	µg/sample	105	<10.0	2.85E+03	500
17-03273-7-TL2-EF-3	Back Resin	S17T020680	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-4	Total	S17T020681	Ammonia	µg/sample	n/a	<10.0	3.03E+03	500
17-03273-7-TL2-EF-4	Front Resin	S17T020682	Ammonia	µg/sample	105	<10.0	3.03E+03	500
17-03273-7-TL2-EF-4	Back Resin	S17T020683	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-5	Total	S17T020685	Ammonia	µg/sample	n/a	<10.0	2.90E+03	500
17-03273-7-TL2-EF-5	Front Resin	S17T020686	Ammonia	µg/sample	105	<10.0	2.90E+03	500
17-03273-7-TL2-EF-5	Back Resin	S17T020687	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-6	Total	S17T020690	Ammonia	µg/sample	n/a	<10.0	3.00E+03	500
17-03273-7-TL2-EF-6	Front Resin	S17T020691	Ammonia	µg/sample	105	<10.0	3.00E+03	500
17-03273-7-TL2-EF-6	Back Resin	S17T020692	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-7	Total	S17T020696	Ammonia	µg/sample	n/a	<10.0	2.92E+03	500
17-03273-7-TL2-EF-7	Front Resin	S17T020697	Ammonia	µg/sample	105	<10.0	2.92E+03	500
17-03273-7-TL2-EF-7	Back Resin	S17T020698	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-EF-8	Total	S17T020700	Ammonia	µg/sample	n/a	<10.0	3.36E+03	500
17-03273-7-TL2-EF-8	Front Resin	S17T020701	Ammonia	µg/sample	105	<10.0	3.36E+03	500
17-03273-7-TL2-EF-8	Back Resin	S17T020702	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-IN-1	Total	S17T020705	Ammonia	µg/sample	n/a	<10.0	3.12E+03	500
17-03273-7-TL2-IN-1	Front Resin	S17T020706	Ammonia	µg/sample	105	<10.0	3.12E+03	500
17-03273-7-TL2-IN-1	Back Resin	S17T020707	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-IN-2	Total	S17T020708	Ammonia	µg/sample	n/a	<10.0	3.10E+03	500
17-03273-7-TL2-IN-2	Front Resin	S17T020709	Ammonia	µg/sample	105	<10.0	3.10E+03	500
17-03273-7-TL2-IN-2	Back Resin	S17T020710	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-IN-3	Total	S17T020711	Ammonia	µg/sample	n/a	<10.0	2.71E+03	500
17-03273-7-TL2-IN-3	Front Resin	S17T020713	Ammonia	µg/sample	105	<10.0	2.71E+03	500
17-03273-7-TL2-IN-3	Back Resin	S17T020714	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03273-7-TL2-IN-4	Total	S17T020717	Ammonia	µg/sample	n/a	<10.0	3.06E+03	500
17-03273-7-TL2-IN-4	Front Resin	S17T020718	Ammonia	µg/sample	105	<10.0	3.06E+03	500
17-03273-7-TL2-IN-4	Back Resin	S17T020719	Ammonia	µg/sample	105	<10.0	<10.0	10.0



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03273-7-TL2-IN-5	Total	S17T020721	Ammonia	µg/sample	n/a	11.5	3.24E+03	10.0
17-03273-7-TL2-IN-5	Front Resin	S17T020724	Ammonia	µg/sample	106	11.5	3.24E+03	10.0
17-03273-7-TL2-IN-5	Back Resin	S17T020725	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03273-7-TL2-IN-6	Total	S17T020726	Ammonia	µg/sample	n/a	11.5	3.26E+03	10.0
17-03273-7-TL2-IN-6	Front Resin	S17T020728	Ammonia	µg/sample	106	11.5	3.26E+03	10.0
17-03273-7-TL2-IN-6	Back Resin	S17T020729	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03273-7-TL2-IN-7	Total	S17T020732	Ammonia	µg/sample	n/a	11.5	3.00E+03	10.0
17-03273-7-TL2-IN-7	Front Resin	S17T020733	Ammonia	µg/sample	106	11.5	2.99E+03	10.0
17-03273-7-TL2-IN-7	Back Resin	S17T020734	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03273-7-TL2-IN-8	Total	S17T020736	Ammonia	µg/sample	n/a	11.5	3.33E+03	10.0
17-03273-7-TL2-IN-8	Front Resin	S17T020737	Ammonia	µg/sample	106	11.5	3.33E+03	10.0
17-03273-7-TL2-IN-8	Back Resin	S17T020738	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03009-7-SD1-IN-3	Total	S17T020741	Ammonia	µg/sample	n/a	11.5	4.73E+03	10.0
17-03009-7-SD1-IN-3	Front Resin	S17T020743	Ammonia	µg/sample	106	11.5	4.73E+03	10.0
17-03009-7-SD1-IN-3	Back Resin	S17T020744	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03009-7-SD1-IN-4	Total	S17T020750	Ammonia	µg/sample	n/a	11.5	4.95E+03	10.0
17-03009-7-SD1-IN-4	Front Resin	S17T020751	Ammonia	µg/sample	106	11.5	4.95E+03	10.0
17-03009-7-SD1-IN-4	Back Resin	S17T020752	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03009-7-SD1-IN-5	Total	S17T020753	Ammonia	µg/sample	n/a	11.5	5.13E+03	10.0
17-03009-7-SD1-IN-5	Front Resin	S17T020754	Ammonia	µg/sample	106	11.5	5.13E+03	10.0
17-03009-7-SD1-IN-5	Back Resin	S17T020755	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03009-7-SD1-IN-6	Total	S17T020756	Ammonia	µg/sample	n/a	11.5	5.07E+03	10.0
17-03009-7-SD1-IN-6	Front Resin	S17T020757	Ammonia	µg/sample	106	11.5	5.07E+03	10.0
17-03009-7-SD1-IN-6	Back Resin	S17T020758	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03009-7-SD1-IN-7	Total	S17T020759	Ammonia	µg/sample	n/a	11.5	4.81E+03	10.0
17-03009-7-SD1-IN-7	Front Resin	S17T020760	Ammonia	µg/sample	106	11.5	4.81E+03	10.0
17-03009-7-SD1-IN-7	Back Resin	S17T020761	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03009-7-SD1-IN-8	Total	S17T020762	Ammonia	µg/sample	n/a	11.5	4.85E+03	10.0
17-03009-7-SD1-IN-8	Front Resin	S17T020763	Ammonia	µg/sample	106	11.5	4.85E+03	10.0
17-03009-7-SD1-IN-8	Back Resin	S17T020764	Ammonia	µg/sample	106	11.5	<10.0	10.0
17-03009-7-SD1-EF-4	Total	S17T020765	Ammonia	µg/sample	n/a	<10.0	53.5	10.0
17-03009-7-SD1-EF-4	Front Resin	S17T020766	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-EF-4	Back Resin	S17T020767	Ammonia	µg/sample	106	<10.0	48.6	10.0
17-03009-7-SD1-EF-5	Total	S17T020768	Ammonia	µg/sample	n/a	<10.0	3.94E+03	10.0
17-03009-7-SD1-EF-5	Front Resin	S17T020769	Ammonia	µg/sample	106	<10.0	3.94E+03	10.0
17-03009-7-SD1-EF-5	Back Resin	S17T020770	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-EF-6	Total	S17T020771	Ammonia	µg/sample	n/a	<10.0	4.70E+03	10.0
17-03009-7-SD1-EF-6	Front Resin	S17T020772	Ammonia	µg/sample	106	<10.0	4.69E+03	10.0
17-03009-7-SD1-EF-6	Back Resin	S17T020773	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-EF-7	Total	S17T020774	Ammonia	µg/sample	n/a	<10.0	3.69E+03	10.0
17-03009-7-SD1-EF-7	Front Resin	S17T020775	Ammonia	µg/sample	106	<10.0	3.69E+03	10.0
17-03009-7-SD1-EF-7	Back Resin	S17T020776	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-EF-8	Total	S17T020777	Ammonia	µg/sample	n/a	<10.0	4.39E+03	10.0
17-03009-7-SD1-EF-8	Front Resin	S17T020778	Ammonia	µg/sample	106	<10.0	4.39E+03	10.0
17-03009-7-SD1-EF-8	Back Resin	S17T020779	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-IN-1	Total	S17T020780	Ammonia	µg/sample	n/a	<10.0	4.80E+03	10.0
17-03009-7-SD1-IN-1	Front Resin	S17T020781	Ammonia	µg/sample	106	<10.0	4.80E+03	10.0
17-03009-7-SD1-IN-1	Back Resin	S17T020782	Ammonia	µg/sample	106	<10.0	<10.0	10.0



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03009-7-SD1-IN-2	Total	S17T020783	Ammonia	µg/sample	n/a	<10.0	5.84E+03	10.0
17-03009-7-SD1-IN-2	Front Resin	S17T020784	Ammonia	µg/sample	106	<10.0	5.14E+03	10.0
17-03009-7-SD1-IN-2	Back Resin	S17T020785	Ammonia	µg/sample	106	<10.0	707	10.0
17-03009-7-SD1-BA-EF	Total	S17T020787	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03009-7-SD1-BA-EF	Front Resin	S17T020788	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-BA-EF	Back Resin	S17T020789	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-BA-IN	Total	S17T020792	Ammonia	µg/sample	n/a	<10.0	21.1	10.0
17-03009-7-SD1-BA-IN	Front Resin	S17T020793	Ammonia	µg/sample	106	<10.0	19.9	10.0
17-03009-7-SD1-BA-IN	Back Resin	S17T020794	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03009-7-SD1-BL-EF	Total	S17T020795	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03009-7-SD1-BL-EF	Front Resin	S17T020796	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03009-7-SD1-BL-EF	Back Resin	S17T020797	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03009-7-SD1-BL-IN	Total	S17T021429	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03009-7-SD1-BL-IN	Front Resin	S17T021430	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03009-7-SD1-BL-IN	Back Resin	S17T021431	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03009-7-SD1-EF-1	Total	S17T021433	Ammonia	µg/sample	n/a	<10.0	118	10.0
17-03009-7-SD1-EF-1	Front Resin	S17T021436	Ammonia	µg/sample	104	<10.0	117	10.0
17-03009-7-SD1-EF-1	Back Resin	S17T021437	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03009-7-SD1-EF-2	Total	S17T021439	Ammonia	µg/sample	n/a	<10.0	2.66E+03	10.0
17-03009-7-SD1-EF-2	Front Resin	S17T021442	Ammonia	µg/sample	104	<10.0	2.66E+03	10.0
17-03009-7-SD1-EF-2	Back Resin	S17T021443	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03009-7-SD1-EF-3	Total	S17T021444	Ammonia	µg/sample	n/a	<10.0	4.28E+03	10.0
17-03009-7-SD1-EF-3	Front Resin	S17T021445	Ammonia	µg/sample	104	<10.0	4.28E+03	10.0
17-03009-7-SD1-EF-3	Back Resin	S17T021446	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-BA-EF	Total	S17T021520	Ammonia	µg/sample	n/a	<10.0	10.9	10.0
17-03010-7-SC1-BA-EF	Front Resin	S17T021521	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-BA-EF	Back Resin	S17T021522	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-BA-IN	Total	S17T021523	Ammonia	µg/sample	n/a	<10.0	31.6	10.0
17-03010-7-SC1-BA-IN	Front Resin	S17T021524	Ammonia	µg/sample	104	<10.0	30.5	10.0
17-03010-7-SC1-BA-IN	Back Resin	S17T021525	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-BL-EF	Total	S17T021526	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03010-7-SC1-BL-EF	Front Resin	S17T021527	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-BL-EF	Back Resin	S17T021528	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-BL-IN	Total	S17T021557	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03010-7-SC1-BL-IN	Front Resin	S17T021560	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-BL-IN	Back Resin	S17T021561	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-EF-1	Total	S17T021563	Ammonia	µg/sample	n/a	<10.0	559	10.0
17-03010-7-SC1-EF-1	Front Resin	S17T021564	Ammonia	µg/sample	104	<10.0	558	10.0
17-03010-7-SC1-EF-1	Back Resin	S17T021565	Ammonia	µg/sample	104	<10.0	<10.0	10.0
17-03010-7-SC1-EF-2	Total	S17T021568	Ammonia	µg/sample	n/a	<10.0	3.63E+03	10.0
17-03010-7-SC1-EF-2	Front Resin	S17T021570	Ammonia	µg/sample	105	<10.0	3.63E+03	10.0
17-03010-7-SC1-EF-2	Back Resin	S17T021571	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-SC1-EF-3	Total	S17T021574	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03010-7-SC1-EF-3	Front Resin	S17T021576	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-SC1-EF-3	Back Resin	S17T021577	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-in-3	Total	S17T021580	Ammonia	µg/sample	n/a	<10.0	5.28E+03	10.0
17-03010-7-scl-in-3	Front Resin	S17T021582	Ammonia	µg/sample	105	<10.0	5.28E+03	10.0
17-03010-7-scl-in-3	Back Resin	S17T021583	Ammonia	µg/sample	105	<10.0	<10.0	10.0



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Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03010-7-scl-in-4	Total	S17T021584	Ammonia	µg/sample	n/a	<10.0	5.09E+03	10.0
17-03010-7-scl-in-4	Front Resin	S17T021587	Ammonia	µg/sample	105	<10.0	5.09E+03	10.0
17-03010-7-scl-in-4	Back Resin	S17T021589	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-in-5	Total	S17T021590	Ammonia	µg/sample	n/a	<10.0	5.19E+03	10.0
17-03010-7-scl-in-5	Front Resin	S17T021593	Ammonia	µg/sample	105	<10.0	5.19E+03	10.0
17-03010-7-scl-in-5	Back Resin	S17T021594	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-in-6	Total	S17T021596	Ammonia	µg/sample	n/a	<10.0	4.70E+03	10.0
17-03010-7-scl-in-6	Front Resin	S17T021599	Ammonia	µg/sample	105	<10.0	4.70E+03	10.0
17-03010-7-scl-in-6	Back Resin	S17T021600	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-in-7	Total	S17T021601	Ammonia	µg/sample	n/a	<10.0	5.47E+03	10.0
17-03010-7-scl-in-7	Front Resin	S17T021602	Ammonia	µg/sample	105	<10.0	5.47E+03	10.0
17-03010-7-scl-in-7	Back Resin	S17T021603	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-in-8	Total	S17T021604	Ammonia	µg/sample	n/a	<10.0	5.54E+03	10.0
17-03010-7-scl-in-8	Front Resin	S17T021605	Ammonia	µg/sample	105	<10.0	5.54E+03	10.0
17-03010-7-scl-in-8	Back Resin	S17T021606	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-ef-4	Total	S17T021608	Ammonia	µg/sample	n/a	<10.0	4.44E+03	10.0
17-03010-7-scl-ef-4	Front Resin	S17T021611	Ammonia	µg/sample	105	<10.0	4.44E+03	10.0
17-03010-7-scl-ef-4	Back Resin	S17T021612	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-ef-5	Total	S17T021614	Ammonia	µg/sample	n/a	<10.0	3.55E+03	10.0
17-03010-7-scl-ef-5	Front Resin	S17T021615	Ammonia	µg/sample	105	<10.0	3.55E+03	10.0
17-03010-7-scl-ef-5	Back Resin	S17T021616	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-ef-6	Total	S17T021619	Ammonia	µg/sample	n/a	<10.0	3.98E+03	10.0
17-03010-7-scl-ef-6	Front Resin	S17T021620	Ammonia	µg/sample	105	<10.0	3.98E+03	10.0
17-03010-7-scl-ef-6	Back Resin	S17T021622	Ammonia	µg/sample	105	<10.0	<10.0	10.0
17-03010-7-scl-ef-7	Total	S17T021623	Ammonia	µg/sample	n/a	<10.0	4.62E+03	10.0
17-03010-7-scl-ef-7	Front Resin	S17T021626	Ammonia	µg/sample	106	<10.0	4.61E+03	10.0
17-03010-7-scl-ef-7	Back Resin	S17T021627	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03010-7-scl-ef-8	Total	S17T021628	Ammonia	µg/sample	n/a	<10.0	5.01E+03	10.0
17-03010-7-scl-ef-8	Front Resin	S17T021629	Ammonia	µg/sample	106	<10.0	5.01E+03	10.0
17-03010-7-scl-ef-8	Back Resin	S17T021630	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03010-7-scl-in-1	Total	S17T021632	Ammonia	µg/sample	n/a	<10.0	5.36E+03	10.0
17-03010-7-scl-in-1	Front Resin	S17T021633	Ammonia	µg/sample	106	<10.0	5.36E+03	10.0
17-03010-7-scl-in-1	Back Resin	S17T021635	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03010-7-scl-in-2	Total	S17T021638	Ammonia	µg/sample	n/a	<10.0	5.04E+03	10.0
17-03010-7-scl-in-2	Front Resin	S17T021639	Ammonia	µg/sample	106	<10.0	5.04E+03	10.0
17-03010-7-scl-in-2	Back Resin	S17T021640	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-ttl-ba-ef	Total	S17T021643	Ammonia	µg/sample	n/a	<10.0	12.5	10.0
17-03269-7-ttl-ba-ef	Front Resin	S17T021645	Ammonia	µg/sample	106	<10.0	11.9	10.0
17-03269-7-ttl-ba-ef	Back Resin	S17T021646	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-ttl-ba-in	Total	S17T021653	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03269-7-ttl-ba-in	Front Resin	S17T021656	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-ttl-ba-in	Back Resin	S17T021657	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-ttl-bl-ef	Total	S17T021661	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03269-7-ttl-bl-ef	Front Resin	S17T021664	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-ttl-bl-ef	Back Resin	S17T021669	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-ttl-bl-in	Total	S17T021671	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03269-7-ttl-bl-in	Front Resin	S17T021674	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-ttl-bl-in	Back Resin	S17T021675	Ammonia	µg/sample	106	<10.0	<10.0	10.0



## DATA SUMMARY REPORT FOR SAMPLE GROUP 20172091

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-03269-7-tl1-ef-1	Total	S17T021677	Ammonia	µg/sample	n/a	<10.0	20.5	10.0
17-03269-7-tl1-ef-1	Front Resin	S17T021679	Ammonia	µg/sample	106	<10.0	19.9	10.0
17-03269-7-tl1-ef-1	Back Resin	S17T021680	Ammonia	µg/sample	106	<10.0	<10.0	10.0
17-03269-7-tl1-ef-2	Total	S17T021681	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-03269-7-tl1-ef-2	Front Resin	S17T021682	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-ef-2	Back Resin	S17T021683	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-ef-3	Total	S17T021685	Ammonia	µg/sample	n/a	<10.0	539	10.0
17-03269-7-tl1-ef-3	Front Resin	S17T021687	Ammonia	µg/sample	98.5	<10.0	539	10.0
17-03269-7-tl1-ef-3	Back Resin	S17T021688	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-ef-4	Total	S17T021691	Ammonia	µg/sample	n/a	<10.0	1.73E+03	10.0
17-03269-7-tl1-ef-4	Front Resin	S17T021692	Ammonia	µg/sample	98.5	<10.0	1.73E+03	10.0
17-03269-7-tl1-ef-4	Back Resin	S17T021693	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-ef-5	Total	S17T021695	Ammonia	µg/sample	n/a	<10.0	1.86E+03	10.0
17-03269-7-tl1-ef-5	Front Resin	S17T021697	Ammonia	µg/sample	98.5	<10.0	1.86E+03	10.0
17-03269-7-tl1-ef-5	Back Resin	S17T021699	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-ef-6	Total	S17T021701	Ammonia	µg/sample	n/a	<10.0	2.03E+03	10.0
17-03269-7-tl1-ef-6	Front Resin	S17T021702	Ammonia	µg/sample	98.5	<10.0	2.03E+03	10.0
17-03269-7-tl1-ef-6	Back Resin	S17T021704	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-ef-7	Total	S17T021706	Ammonia	µg/sample	n/a	<10.0	1.91E+03	10.0
17-03269-7-tl1-ef-7	Front Resin	S17T021708	Ammonia	µg/sample	98.5	<10.0	1.91E+03	10.0
17-03269-7-tl1-ef-7	Back Resin	S17T021709	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-ef-8	Total	S17T021712	Ammonia	µg/sample	n/a	<10.0	1.97E+03	10.0
17-03269-7-tl1-ef-8	Front Resin	S17T021713	Ammonia	µg/sample	98.5	<10.0	1.97E+03	10.0
17-03269-7-tl1-ef-8	Back Resin	S17T021714	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-in-1	Total	S17T021716	Ammonia	µg/sample	n/a	<10.0	2.34E+03	10.0
17-03269-7-tl1-in-1	Front Resin	S17T021719	Ammonia	µg/sample	98.5	<10.0	2.34E+03	10.0
17-03269-7-tl1-in-1	Back Resin	S17T021720	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-in-2	Total	S17T021721	Ammonia	µg/sample	n/a	<10.0	2.48E+03	10.0
17-03269-7-tl1-in-2	Front Resin	S17T021722	Ammonia	µg/sample	98.5	<10.0	2.48E+03	10.0
17-03269-7-tl1-in-2	Back Resin	S17T021723	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-tl1-in-3	Total	S17T021724	Ammonia	µg/sample	n/a	<10.0	2.44E+03	10.0
17-03269-7-tl1-in-3	Front Resin	S17T021725	Ammonia	µg/sample	98.5	<10.0	2.44E+03	10.0
17-03269-7-tl1-in-3	Back Resin	S17T021726	Ammonia	µg/sample	98.5	<10.0	<10.0	10.0
17-03269-7-TL1-IN-4	Total	S17T021745	Ammonia	µg/sample	n/a	<10.0	2.55E+03	10.0
17-03269-7-TL1-IN-4	Front Resin	S17T021747	Ammonia	µg/sample	95.1	<10.0	2.55E+03	10.0
17-03269-7-TL1-IN-4	Back Resin	S17T021748	Ammonia	µg/sample	95.1	<10.0	<10.0	10.0
17-03269-7-TL1-IN-5	Total	S17T021751	Ammonia	µg/sample	n/a	<10.0	2.58E+03	10.0
17-03269-7-TL1-IN-5	Front Resin	S17T021753	Ammonia	µg/sample	95.1	<10.0	2.58E+03	10.0
17-03269-7-TL1-IN-5	Back Resin	S17T021754	Ammonia	µg/sample	95.1	<10.0	<10.0	10.0
17-03269-7-TL1-IN-6	Total	S17T021757	Ammonia	µg/sample	n/a	<10.0	2.66E+03	10.0
17-03269-7-TL1-IN-6	Front Resin	S17T021758	Ammonia	µg/sample	95.1	<10.0	2.66E+03	10.0
17-03269-7-TL1-IN-6	Back Resin	S17T021759	Ammonia	µg/sample	95.1	<10.0	<10.0	10.0
17-03269-7-TL1-IN-7	Total	S17T021760	Ammonia	µg/sample	n/a	<10.0	2.51E+03	10.0
17-03269-7-TL1-IN-7	Front Resin	S17T021762	Ammonia	µg/sample	95.1	<10.0	2.51E+03	10.0
17-03269-7-TL1-IN-7	Back Resin	S17T021763	Ammonia	µg/sample	95.1	<10.0	<10.0	10.0
17-03269-7-TL1-IN-8	Total	S17T021766	Ammonia	µg/sample	n/a	<10.0	2.66E+03	10.0
17-03269-7-TL1-IN-8	Front Resin	S17T021767	Ammonia	µg/sample	95.1	<10.0	2.66E+03	10.0
17-03269-7-TL1-IN-8	Back Resin	S17T021768	Ammonia	µg/sample	95.1	<10.0	<10.0	10.0



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Attachment 2

ANALYSIS DATE REPORT

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## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172091

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T020649	17-03273-7-TL2-BA-EF	Ammonia	06/20/2017 08:25	06/20/2017 18:27
S17T020650	17-03273-7-TL2-BA-EF	Ammonia	06/20/2017 08:25	06/20/2017 18:45
S17T020659	17-03273-7-TL2-ba-in	Ammonia	06/20/2017 08:25	06/20/2017 19:03
S17T020660	17-03273-7-TL2-ba-in	Ammonia	06/20/2017 08:25	06/20/2017 19:21
S17T020664	17-03273-7-TL2-bl-ef	Ammonia	06/20/2017 08:25	06/20/2017 19:39
S17T020665	17-03273-7-TL2-bl-ef	Ammonia	06/20/2017 08:25	06/20/2017 19:58
S17T020667	17-03273-7-TL2-bl-in	Ammonia	06/20/2017 08:25	06/20/2017 20:16
S17T020668	17-03273-7-TL2-bl-in	Ammonia	06/20/2017 08:25	06/20/2017 20:34
S17T020670	17-03273-7-TL2-EF-1	Ammonia	06/20/2017 08:25	06/21/2017 08:55
S17T020671	17-03273-7-TL2-EF-1	Ammonia	06/20/2017 08:25	06/20/2017 21:10
S17T020673	17-03273-7-TL2-EF-2	Ammonia	06/20/2017 08:25	06/21/2017 09:13
S17T020674	17-03273-7-TL2-EF-2	Ammonia	06/20/2017 08:25	06/20/2017 22:40
S17T020679	17-03273-7-TL2-EF-3	Ammonia	06/20/2017 08:25	06/21/2017 09:31
S17T020680	17-03273-7-TL2-EF-3	Ammonia	06/20/2017 08:25	06/20/2017 23:16
S17T020682	17-03273-7-TL2-EF-4	Ammonia	06/20/2017 08:25	06/21/2017 09:49
S17T020683	17-03273-7-TL2-EF-4	Ammonia	06/20/2017 08:25	06/21/2017 01:59
S17T020686	17-03273-7-TL2-EF-5	Ammonia	06/20/2017 08:25	06/21/2017 10:07
S17T020687	17-03273-7-TL2-EF-5	Ammonia	06/20/2017 08:25	06/21/2017 02:35
S17T020691	17-03273-7-TL2-EF-6	Ammonia	06/20/2017 08:25	06/21/2017 10:25
S17T020692	17-03273-7-TL2-EF-6	Ammonia	06/20/2017 08:25	06/21/2017 03:11
S17T020697	17-03273-7-TL2-EF-7	Ammonia	06/20/2017 08:25	06/21/2017 10:43
S17T020698	17-03273-7-TL2-EF-7	Ammonia	06/20/2017 08:25	06/21/2017 04:42
S17T020701	17-03273-7-TL2-EF-8	Ammonia	06/20/2017 08:25	06/21/2017 11:01
S17T020702	17-03273-7-TL2-EF-8	Ammonia	06/20/2017 08:25	06/21/2017 05:18
S17T020706	17-03273-7-TL2-IN-1	Ammonia	06/20/2017 08:25	06/21/2017 12:13
S17T020707	17-03273-7-TL2-IN-1	Ammonia	06/20/2017 08:25	06/21/2017 05:54
S17T020709	17-03273-7-TL2-IN-2	Ammonia	06/20/2017 08:25	06/21/2017 12:31
S17T020710	17-03273-7-TL2-IN-2	Ammonia	06/20/2017 08:25	06/21/2017 06:30
S17T020713	17-03273-7-TL2-IN-3	Ammonia	06/20/2017 08:25	06/21/2017 12:49
S17T020714	17-03273-7-TL2-IN-3	Ammonia	06/20/2017 08:25	06/21/2017 07:06
S17T020718	17-03273-7-TL2-IN-4	Ammonia	06/20/2017 08:25	06/21/2017 13:07
S17T020719	17-03273-7-TL2-IN-4	Ammonia	06/20/2017 08:25	06/21/2017 08:36
S17T020724	17-03273-7-TL2-IN-5	Ammonia	06/21/2017 08:30	07/11/2017 03:10
S17T020725	17-03273-7-TL2-IN-5	Ammonia	06/21/2017 08:30	07/10/2017 19:38
S17T020728	17-03273-7-TL2-IN-6	Ammonia	06/21/2017 08:30	07/11/2017 03:28
S17T020729	17-03273-7-TL2-IN-6	Ammonia	06/21/2017 08:30	07/10/2017 20:15
S17T020733	17-03273-7-TL2-IN-7	Ammonia	06/21/2017 08:30	07/11/2017 03:46
S17T020734	17-03273-7-TL2-IN-7	Ammonia	06/21/2017 08:30	07/10/2017 20:51
S17T020737	17-03273-7-TL2-IN-8	Ammonia	06/21/2017 08:30	07/11/2017 04:04
S17T020738	17-03273-7-TL2-IN-8	Ammonia	06/21/2017 08:30	07/10/2017 22:21
S17T020743	17-03009-7-SD1-IN-3	Ammonia	06/21/2017 08:30	07/11/2017 04:22
S17T020744	17-03009-7-SD1-IN-3	Ammonia	06/21/2017 08:30	07/10/2017 22:57
S17T020751	17-03009-7-SD1-IN-4	Ammonia	06/21/2017 08:30	07/11/2017 04:41
S17T020752	17-03009-7-SD1-IN-4	Ammonia	06/21/2017 08:30	07/10/2017 23:33
S17T020754	17-03009-7-SD1-IN-5	Ammonia	06/21/2017 08:30	07/11/2017 05:53
S17T020755	17-03009-7-SD1-IN-5	Ammonia	06/21/2017 08:30	07/11/2017 00:09



## ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172091

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T020757	17-03009-7-SD1-IN-6	Ammonia	06/21/2017 08:30	07/11/2017 06:11
S17T020758	17-03009-7-SD1-IN-6	Ammonia	06/21/2017 08:30	07/11/2017 00:46
S17T020760	17-03009-7-SD1-IN-7	Ammonia	06/21/2017 08:30	07/11/2017 06:29
S17T020761	17-03009-7-SD1-IN-7	Ammonia	06/21/2017 08:30	07/11/2017 02:16
S17T020763	17-03009-7-SD1-IN-8	Ammonia	06/21/2017 08:30	07/11/2017 06:47
S17T020764	17-03009-7-SD1-IN-8	Ammonia	06/21/2017 08:30	07/11/2017 02:52
S17T020766	17-03009-7-SD1-EF-4	Ammonia	06/21/2017 08:30	06/22/2017 05:32
S17T020767	17-03009-7-SD1-EF-4	Ammonia	06/21/2017 08:30	06/22/2017 05:50
S17T020769	17-03009-7-SD1-EF-5	Ammonia	06/21/2017 08:30	06/22/2017 16:41
S17T020770	17-03009-7-SD1-EF-5	Ammonia	06/21/2017 08:30	06/22/2017 06:27
S17T020772	17-03009-7-SD1-EF-6	Ammonia	06/21/2017 08:30	06/22/2017 16:59
S17T020773	17-03009-7-SD1-EF-6	Ammonia	06/21/2017 08:30	06/22/2017 07:03
S17T020775	17-03009-7-SD1-EF-7	Ammonia	06/21/2017 08:30	06/22/2017 17:17
S17T020776	17-03009-7-SD1-EF-7	Ammonia	06/21/2017 08:30	06/22/2017 08:33
S17T020778	17-03009-7-SD1-EF-8	Ammonia	06/21/2017 08:30	06/22/2017 17:35
S17T020779	17-03009-7-SD1-EF-8	Ammonia	06/21/2017 08:30	06/22/2017 09:09
S17T020781	17-03009-7-SD1-IN-1	Ammonia	06/21/2017 08:30	06/22/2017 17:53
S17T020782	17-03009-7-SD1-IN-1	Ammonia	06/21/2017 08:30	06/22/2017 09:45
S17T020784	17-03009-7-SD1-IN-2	Ammonia	06/21/2017 08:30	06/22/2017 18:11
S17T020785	17-03009-7-SD1-IN-2	Ammonia	06/21/2017 08:30	06/22/2017 18:29
S17T020788	17-03009-7-SD1-BA-EF	Ammonia	06/21/2017 08:30	06/22/2017 10:39
S17T020789	17-03009-7-SD1-BA-EF	Ammonia	06/21/2017 08:30	06/22/2017 10:58
S17T020793	17-03009-7-SD1-BA-IN	Ammonia	06/21/2017 08:30	06/22/2017 12:10
S17T020794	17-03009-7-SD1-BA-IN	Ammonia	06/21/2017 08:30	06/22/2017 12:28
S17T020796	17-03009-7-SD1-BL-EF	Ammonia	07/06/2017 11:00	07/06/2017 14:38
S17T020797	17-03009-7-SD1-BL-EF	Ammonia	07/06/2017 11:00	07/06/2017 14:56
S17T021430	17-03009-7-SD1-BL-IN	Ammonia	07/06/2017 11:00	07/06/2017 15:15
S17T021431	17-03009-7-SD1-BL-IN	Ammonia	07/06/2017 11:00	07/06/2017 15:33
S17T021436	17-03009-7-SD1-EF-1	Ammonia	07/06/2017 11:00	07/10/2017 11:49
S17T021437	17-03009-7-SD1-EF-1	Ammonia	07/06/2017 11:00	07/06/2017 16:09
S17T021442	17-03009-7-SD1-EF-2	Ammonia	07/06/2017 11:00	07/10/2017 12:07
S17T021443	17-03009-7-SD1-EF-2	Ammonia	07/06/2017 11:00	07/06/2017 17:39
S17T021445	17-03009-7-SD1-EF-3	Ammonia	07/06/2017 11:00	07/10/2017 12:25
S17T021446	17-03009-7-SD1-EF-3	Ammonia	07/06/2017 11:00	07/06/2017 18:15
S17T021521	17-03010-7-SC1-BA-EF	Ammonia	07/06/2017 11:00	07/06/2017 18:33
S17T021522	17-03010-7-SC1-BA-EF	Ammonia	07/06/2017 11:00	07/06/2017 18:51
S17T021524	17-03010-7-SC1-BA-IN	Ammonia	07/06/2017 11:00	07/06/2017 19:09
S17T021525	17-03010-7-SC1-BA-IN	Ammonia	07/06/2017 11:00	07/06/2017 19:27
S17T021527	17-03010-7-SC1-BL-EF	Ammonia	07/06/2017 11:00	07/06/2017 19:46
S17T021528	17-03010-7-SC1-BL-EF	Ammonia	07/06/2017 11:00	07/06/2017 20:04
S17T021560	17-03010-7-SC1-BL-IN	Ammonia	07/06/2017 11:00	07/06/2017 21:16
S17T021561	17-03010-7-SC1-BL-IN	Ammonia	07/06/2017 11:00	07/06/2017 21:34
S17T021564	17-03010-7-SC1-EF-1	Ammonia	07/06/2017 11:00	07/10/2017 12:43
S17T021565	17-03010-7-SC1-EF-1	Ammonia	07/06/2017 11:00	07/06/2017 22:10
S17T021570	17-03010-7-SC1-EF-2	Ammonia	07/06/2017 11:00	07/10/2017 13:01
S17T021571	17-03010-7-SC1-EF-2	Ammonia	07/06/2017 11:00	07/07/2017 00:53



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Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T021576	17-03010-7-SC1-EF-3	Ammonia	07/06/2017 11:00	07/07/2017 01:11
S17T021577	17-03010-7-SC1-EF-3	Ammonia	07/06/2017 11:00	07/07/2017 01:29
S17T021582	17-03010-7-sc1-in-3	Ammonia	07/06/2017 11:00	07/10/2017 13:19
S17T021583	17-03010-7-sc1-in-3	Ammonia	07/06/2017 11:00	07/07/2017 02:05
S17T021587	17-03010-7-sc1-in-4	Ammonia	07/06/2017 11:00	07/10/2017 14:31
S17T021589	17-03010-7-sc1-in-4	Ammonia	07/06/2017 11:00	07/07/2017 03:35
S17T021593	17-03010-7-sc1-in-5	Ammonia	07/06/2017 11:00	07/10/2017 14:49
S17T021594	17-03010-7-sc1-in-5	Ammonia	07/06/2017 11:00	07/07/2017 04:11
S17T021599	17-03010-7-sc1-in-6	Ammonia	07/06/2017 11:00	07/10/2017 15:07
S17T021600	17-03010-7-sc1-in-6	Ammonia	07/06/2017 11:00	07/07/2017 04:48
S17T021602	17-03010-7-sc1-in-7	Ammonia	07/06/2017 11:00	07/10/2017 15:25
S17T021603	17-03010-7-sc1-in-7	Ammonia	07/06/2017 11:00	07/07/2017 05:24
S17T021605	17-03010-7-sc1-in-8	Ammonia	07/06/2017 11:00	07/10/2017 15:44
S17T021606	17-03010-7-sc1-in-8	Ammonia	07/06/2017 11:00	07/07/2017 06:00
S17T021611	17-03010-7-sc1-ef-4	Ammonia	07/06/2017 11:00	07/10/2017 16:02
S17T021612	17-03010-7-sc1-ef-4	Ammonia	07/06/2017 11:00	07/07/2017 07:30
S17T021615	17-03010-7-sc1-ef-5	Ammonia	07/05/2017 08:55	07/06/2017 08:09
S17T021616	17-03010-7-sc1-ef-5	Ammonia	07/05/2017 08:55	07/05/2017 21:32
S17T021620	17-03010-7-sc1-ef-6	Ammonia	07/05/2017 08:55	07/06/2017 08:27
S17T021622	17-03010-7-sc1-ef-6	Ammonia	07/05/2017 08:55	07/05/2017 22:08
S17T021626	17-03010-7-sc1-ef-7	Ammonia	07/05/2017 08:55	07/06/2017 08:45
S17T021627	17-03010-7-sc1-ef-7	Ammonia	07/05/2017 08:55	07/06/2017 00:51
S17T021629	17-03010-7-sc1-ef-8	Ammonia	07/05/2017 08:55	07/06/2017 09:03
S17T021630	17-03010-7-sc1-ef-8	Ammonia	07/05/2017 08:55	07/06/2017 01:27
S17T021633	17-03010-7-sc1-in-1	Ammonia	07/05/2017 08:55	07/06/2017 09:21
S17T021635	17-03010-7-sc1-in-1	Ammonia	07/05/2017 08:55	07/06/2017 02:03
S17T021639	17-03010-7-sc1-in-2	Ammonia	07/05/2017 08:55	07/06/2017 09:39
S17T021640	17-03010-7-sc1-in-2	Ammonia	07/05/2017 08:55	07/06/2017 03:33
S17T021645	17-03269-7-tll-ba-ef	Ammonia	07/05/2017 08:55	07/06/2017 03:51
S17T021646	17-03269-7-tll-ba-ef	Ammonia	07/05/2017 08:55	07/06/2017 04:09
S17T021656	17-03269-7-tll-ba-in	Ammonia	07/05/2017 08:55	07/06/2017 04:27
S17T021657	17-03269-7-tll-ba-in	Ammonia	07/05/2017 08:55	07/06/2017 04:45
S17T021664	17-03269-7-tll-bl-ef	Ammonia	07/05/2017 08:55	07/06/2017 05:03
S17T021669	17-03269-7-tll-bl-ef	Ammonia	07/05/2017 08:55	07/06/2017 05:22
S17T021674	17-03269-7-tll-bl-in	Ammonia	07/05/2017 08:55	07/06/2017 05:40
S17T021675	17-03269-7-tll-bl-in	Ammonia	07/05/2017 08:55	07/06/2017 05:58
S17T021679	17-03269-7-tll-ef-1	Ammonia	07/05/2017 08:55	07/06/2017 07:10
S17T021680	17-03269-7-tll-ef-1	Ammonia	07/05/2017 08:55	07/06/2017 07:28
S17T021682	17-03269-7-tll-ef-2	Ammonia	07/10/2017 09:00	07/10/2017 18:05
S17T021683	17-03269-7-tll-ef-2	Ammonia	07/10/2017 09:00	07/10/2017 18:22
S17T021687	17-03269-7-tll-ef-3	Ammonia	07/10/2017 09:00	07/11/2017 15:50
S17T021688	17-03269-7-tll-ef-3	Ammonia	07/10/2017 09:00	07/10/2017 18:56
S17T021692	17-03269-7-tll-ef-4	Ammonia	07/10/2017 09:00	07/12/2017 10:18
S17T021693	17-03269-7-tll-ef-4	Ammonia	07/10/2017 09:00	07/10/2017 19:29
S17T021697	17-03269-7-tll-ef-5	Ammonia	07/10/2017 09:00	07/12/2017 10:35
S17T021699	17-03269-7-tll-ef-5	Ammonia	07/10/2017 09:00	07/10/2017 20:54



**ANALYSIS DATE REPORT FOR SAMPLE GROUP 20172091**

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T021702	17-03269-7-tl1-ef-6	Ammonia	07/10/2017 09:00	07/11/2017 16:40
S17T021704	17-03269-7-tl1-ef-6	Ammonia	07/10/2017 09:00	07/10/2017 21:28
S17T021708	17-03269-7-tl1-ef-7	Ammonia	07/10/2017 09:00	07/11/2017 16:57
S17T021709	17-03269-7-tl1-ef-7	Ammonia	07/10/2017 09:00	07/10/2017 22:01
S17T021713	17-03269-7-tl1-ef-8	Ammonia	07/10/2017 09:00	07/11/2017 17:14
S17T021714	17-03269-7-tl1-ef-8	Ammonia	07/10/2017 09:00	07/10/2017 22:35
S17T021719	17-03269-7-tl1-in-1	Ammonia	07/10/2017 09:00	07/11/2017 17:31
S17T021720	17-03269-7-tl1-in-1	Ammonia	07/10/2017 09:00	07/10/2017 23:09
S17T021722	17-03269-7-tl1-in-2	Ammonia	07/10/2017 09:00	07/11/2017 17:48
S17T021723	17-03269-7-tl1-in-2	Ammonia	07/10/2017 09:00	07/11/2017 00:33
S17T021725	17-03269-7-tl1-in-3	Ammonia	07/10/2017 09:00	07/11/2017 18:55
S17T021726	17-03269-7-tl1-in-3	Ammonia	07/10/2017 09:00	07/11/2017 01:07
S17T021747	17-03269-7-TL1-IN-4	Ammonia	07/10/2017 09:00	07/11/2017 19:12
S17T021748	17-03269-7-TL1-IN-4	Ammonia	07/10/2017 09:00	07/11/2017 03:39
S17T021753	17-03269-7-TL1-IN-5	Ammonia	07/10/2017 09:00	07/11/2017 19:29
S17T021754	17-03269-7-TL1-IN-5	Ammonia	07/10/2017 09:00	07/11/2017 04:13
S17T021758	17-03269-7-TL1-IN-6	Ammonia	07/10/2017 09:00	07/11/2017 19:46
S17T021759	17-03269-7-TL1-IN-6	Ammonia	07/10/2017 09:00	07/11/2017 04:47
S17T021762	17-03269-7-TL1-IN-7	Ammonia	07/10/2017 09:00	07/11/2017 20:03
S17T021763	17-03269-7-TL1-IN-7	Ammonia	07/10/2017 09:00	07/11/2017 06:11
S17T021767	17-03269-7-TL1-IN-8	Ammonia	07/10/2017 09:00	07/11/2017 20:20
S17T021768	17-03269-7-TL1-IN-8	Ammonia	07/10/2017 09:00	07/11/2017 06:45



20172091 Rev. ()

Attachment 3

RECEIPT PAPERWORK

15 of 30

C.697



222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST			ATS-LO-090-101 Rev DH-1
Date Samples Received: <u>6-19-17</u> Total Number of Samples: <u>1000</u> Group #: <u>20172091</u>				
Sample Custodian: <u>L. Mahu</u> IH Technician: <u>Butler 6/19/17</u>				
Sample Custodian to Complete:				
Action	Yes	No	N/A	Comments
RSR provided?			<input checked="" type="checkbox"/>	
Verify GKI is complete			<input checked="" type="checkbox"/>	<input type="checkbox"/> In Project File
Received from an alpha facility?		<input checked="" type="checkbox"/>		<input type="checkbox"/> Contact PC for approval to release
Check that outer custody seal is intact, if present			<input checked="" type="checkbox"/>	
Record cooler temperature in centigrade, as appropriate	<u>5.0</u>			<input type="checkbox"/> Check if no cooler and/or no ice
Samples are intact and in good condition	<input checked="" type="checkbox"/>			If No, provide comments below
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	<input checked="" type="checkbox"/>			
• Date and time of sampling	<input checked="" type="checkbox"/>			
• Sampling location or origin	<input checked="" type="checkbox"/>			
• Container type, size, and number	<input checked="" type="checkbox"/>			
• Preservatives (if used) noted on the COC/RSA and sample bottles			<input checked="" type="checkbox"/>	
• Analysis request is clear	<input checked="" type="checkbox"/>			
• Signature of persons relinquishing and receiving samples	<input checked="" type="checkbox"/>			
• Date and/or time of sample custody exchange	<input checked="" type="checkbox"/>			
Verify that sample numbers on containers match the COC and/or RSA	<input checked="" type="checkbox"/>			
Samples stored properly (e.g., refrigeration)	<input checked="" type="checkbox"/>			
Notify the PC immediately if any problems are noted. Any "No" checked boxes require PC resolution. For WRPS samples, the initials block below is completed by the responsible WRPS PC.				
Samples acceptable for release? <u>yes</u> PC/SC Initials <u>SLM</u> Date <u>6-19-17</u>				
If No, comment on communication and resolution:				
WRPS - <u>SLM</u> - 600				
Run - 240				
WHL - <u>WHL</u> - 80				
17g - 80				
Number of IH Samples Received: <u>Acetonitrile - 80</u>				
Aldehyde Screen: <u>80</u>	Amines: <u>80</u>	Ammonia: <u>80</u>	Aromatic HC: _____	Asbestos: _____
Beryllium: _____	Be-Bulk: _____	Be-Filter: _____	Be-Wipe _____	1,3-Butadiene: <u>160</u>
Formaldehyde: _____	Furans: <u>80</u>	Mercury: <u>80</u>	Methanol: <u>40</u>	Nitrosamines: <u>160 80</u>
Nitrous Oxide: _____	Pyridines: <u>80</u>	SVOA: <u>80</u>	VOA: <u>80</u>	Other-IH: _____

A-6005-302 (REV 4)



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6-17-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03273 - Cartridge Testing Sat-Sun Green Mac 6/17/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
	17-03273-13-TL2-IN-3 / Silica Gel (SKC-226-51)				Methanol Source
	17-03273-13-TL2-IN-4 / Silica Gel (SKC-226-51)				Methanol Source
	17-03273-13-TL2-IN-5 / Silica Gel (SKC-226-51)				Methanol Source
	17-03273-13-TL2-IN-6 / Silica Gel (SKC-226-51)				Methanol Source
	17-03273-13-TL2-IN-7 / Silica Gel (SKC-226-51)				Methanol Source
	17-03273-13-TL2-IN-8 / Silica Gel (SKC-226-51)				Methanol Source
517020648	17-03273-7-TL2-BA-EF / CISA (SKC 226-29) 517020649 517020650				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>[Signature]</i>	Gerrardo Saenz	2704HV/H-104	6-18-17	0605
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6-17-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03273 - Cartridge Testing Sat-Sun Green Mac 6/17/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517T020657	17-03273-7-TL2-BA-IN / CISA (SKC 226-29) 517T020659 517T020660				NH3 Source
517T020663	17-03273-7-TL2-BL-EF / CISA (SKC 226-29) 517T020664 517T020665				NH3 Source
517T020666	17-03273-7-TL2-BL-IN / CISA (SKC 226-29) 517T020667 517T020668				NH3 Source
517T020669	17-03273-7-TL2-EF-1 / CISA (SKC 226-29) 517T020670 517T020671				NH3 Source
517T020672	17-03273-7-TL2-EF-2 / CISA (SKC 226-29) 517T020673 517T020674				NH3 Source
517T020676	17-03273-7-TL2-EF-3 / CISA (SKC 226-29) 517T020679 517T020680				NH3 Source
517T020681	17-03273-7-TL2-EF-4 / CISA (SKC 226-29) 517T020682 517T020683				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:		Gerardo Suenz	2704HV/H-104	6-18-17	0605
Retrieved from Storage:		Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:		Brett Garner	6-19-17	1100	
Received By:		TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6-17-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03273 - Cartridge Testing Sat-Sun Green Mac 6/17/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
5171020685	17-03273-7-TL2-EF-5 / CISA (SKC 226-29) 5171020686 5171020687				NH3 Source
5171020690	17-03273-7-TL2-EF-6 / CISA (SKC 226-29) 5171020691 5171020692				NH3 Source
5171020696	17-03273-7-TL2-EF-7 / CISA (SKC 226-29) 5171020697 5171020698				NH3 Source
5171020700	17-03273-7-TL2-EF-8 / CISA (SKC 226-29) 5171020701 5171020702				NH3 Source
5171020705	17-03273-7-TL2-IN-1 / CISA (SKC 226-29) 5171020706 5171020707				NH3 Source
5171020708	17-03273-7-TL2-IN-2 / CISA (SKC 226-29) 5171020709 5171020710				NH3 Source
5171020711	17-03273-7-TL2-IN-3 / CISA (SKC 226-29) 5171020713 5171020714				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>[Signature]</i>	Gerrardo Scaenz	2704HV/H/04	6-18-17	0605
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6-17-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03273 - Cartridge Testing Sat-Sun Green Mac 6/17/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>			<b>Required Analysis</b>	
517020717	17-03273-7-TL2-IN-4 / CISA (SKC 226-29) 517020718 517020719			NH3 Source	
517020721	17-03273-7-TL2-IN-5 / CISA (SKC 226-29) 517020724 517020725			NH3 Source	
517020726	17-03273-7-TL2-IN-6 / CISA (SKC 226-29) 517020728 517020729			NH3 Source	
517020732	17-03273-7-TL2-IN-7 / CISA (SKC 226-29) 517020733 517020734			NH3 Source	
517020736	17-03273-7-TL2-IN-8 / CISA (SKC 226-29) 517020737 517020738			NH3 Source	
	17-03273-12-TL2-BA-EF / Thermosorb-N (TDX) S/N 06-18-17			Nitrosamines Source	
	17-03273-12-TL2-BA-IN / Thermosorb-N (TDX)			Nitrosamines Source	
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>[Signature]</i>	Gerrado Suenz	2704 HU/H-104	6-18-17	0605
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03009 - Cartridge Testing Fri-Sat 6/16/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
5171020741	17-03009-7-SD1-IN-3 / CISA (SKC 226-29) ✓ 5171020743 5171020744				NH3 Source
5171020750	17-03009-7-SD1-IN-4 / CISA (SKC 226-29) ✓ 5171020751 5171020752				NH3 Source
5171020753	17-03009-7-SD1-IN-5 / CISA (SKC 226-29) ✓ 5171020754 5171020755				NH3 Source
5171020756	17-03009-7-SD1-IN-6 / CISA (SKC 226-29) ✓ 5171020757 5171020758				NH3 Source
5171020759	17-03009-7-SD1-IN-7 / CISA (SKC 226-29) ✓ 5171020760 5171020761				NH3 Source
5171020762	17-03009-7-SD1-IN-8 / CISA (SKC 226-29) ✓ 5171020763 5171020764				NH3 Source
	17-03009-12-SD1-BA-EF / Thermosorb-N (TDX) <i>SPW 06-17-17</i>				Nitrosamines Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Enza Whaler</i>	Enza Whaler	2704 HV / H104	06-17-17	0655
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	6-19-17	1100	
Received By:	<i>Sharon L. Halden</i>	Sharon L. Halden	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03009 - Cartridge Testing Fri-Sat 6/16/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517T020765	17-03009-7-SD1-EF-4 / CISA (SKC 226-29) ✓ 517T020766 517T020767				NH3 Source
517T020768	17-03009-7-SD1-EF-5 / CISA (SKC 226-29) ✓ 517T020769 517T020770				NH3 Source
517T020771	17-03009-7-SD1-EF-6 / CISA (SKC 226-29) ✓ 517T020772 517T020773				NH3 Source
517T020774	17-03009-7-SD1-EF-7 / CISA (SKC 226-29) ✓ 517T020775 517T020776				NH3 Source
517T020777	17-03009-7-SD1-EF-8 / CISA (SKC 226-29) ✓ 517T020778 517T020779				NH3 Source
517T020780	17-03009-7-SD1-IN-1 / CISA (SKC 226-29) ✓ 517T020781 517T020782				NH3 Source
517T020783	17-03009-7-SD1-IN-2 / CISA (SKC 226-29) ✓ 517T020784 517T020785				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Erin Wheeler</i>	Erin Wheeler	2704 HV / H104	06-17-17	0655
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	6-19-17	1600	
Received By:	<i>Sharon L. Halden</i>	Sharon L. Halden	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03009 - Cartridge Testing Fri-Sat 6/16/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517T020787	17-03009-7-SD1-BA-EF / CISA (SKC 226-29) * 517T020788 517T020789				NH3 Source
517T020792	17-03009-7-SD1-BA-IN / CISA (SKC 226-29) * 517T020793 517T020794				NH3 Source
517T020795	17-03009-7-SD1-BL-EF / CISA (SKC 226-29) * 517T020796 517T020797				NH3 Source
517T021429	17-03009-7-SD1-BL-IN / CISA (SKC 226-29) * 517T021430 517T021431				NH3 Source
517T021433	17-03009-7-SD1-EF-1 / CISA (SKC 226-29) * 517T021436 517T021437				NH3 Source
517T021439	17-03009-7-SD1-EF-2 / CISA (SKC 226-29) * 517T021442 517T021443				NH3 Source
517T021444	17-03009-7-SD1-EF-3 / CISA (SKC 226-29) * 517T021445 517T021446				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Erin Wheeler</i>	Erin Wheeler	2704 HV / H104	06-17-17	0655
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	6-19-17	1100	
Received By:	<i>Sharon L. Hilde</i>	Sharon L. Hilde	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 6-17-17	
CACN: 202843		COA: CB20		Survey No.: 17-03010 - Cartridge Testing Sat-Sun 6/17/2017 Yellow Mac	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Maxwell, Sally A				MSIN: R1-06	Phone: (509)373-3324
Laboratory Log No.	Sample ID/Type/Description				Required Analysis
517T021520	17-03010-7-SC1-BA-EF / CISA (SKC 226-29) 517T021521 517T021522				NH3 Source
517T021523	17-03010-7-SC1-BA-IN / CISA (SKC 226-29) 517T021524 517T021525				NH3 Source
517T021526	17-03010-7-SC1-BL-EF / CISA (SKC 226-29) 517T021527 517T021528 6-20-17				NH3 Source
517T021557	17-03010-7-SC1-BL-IN / CISA (SKC 226-29) 517T021560 517T021561				NH3 Source
517T021563	17-03010-7-SC1-EF-1 / CISA (SKC 226-29) 517T021564 517T021565				NH3 Source
517T021568	17-03010-7-SC1-EF-2 / CISA (SKC 226-29) 517T021570 517T021571				NH3 Source
517T021574	17-03010-7-SC1-EF-3 / CISA (SKC 226-29) 517T021576 517T021577				NH3 Source
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>[Signature]</i>	Gerardo Suenz	2704 HV/H/04	6-18-17	0630
Retrieved from Storage:	<i>[Signature]</i>	Brett Garner		6-19-17	0700
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	Brett Garner	6-19-17	1100	
Received By:	<i>[Signature]</i>	TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6.17.17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03010 - Cartridge Testing Sat-Sun 6/17/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517T021580	17-03010-7-SC1-IN-3 / CISA (SKC 226-29) 517T021582 517T021583				NH3 Source
517T021584	17-03010-7-SC1-IN-4 / CISA (SKC 226-29) 517T021587 517T021589				NH3 Source
517T021590	17-03010-7-SC1-IN-5 / CISA (SKC 226-29) 517T021593 517T021594				NH3 Source
517T021596	17-03010-7-SC1-IN-6 / CISA (SKC 226-29) 517T021599 517T021600				NH3 Source
517T021601	17-03010-7-SC1-IN-7 / CISA (SKC 226-29) 517T021602 517T021603				NH3 Source
517T021604	17-03010-7-SC1-IN-8 / CISA (SKC 226-29) 517T021605 517T021606				NH3 Source
	17-03010-12-SC1-BA-EF / Thermosorb-N (TDX) epw 06-18-17				Nitrosamines Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:		Gerardo Suenz	2704 HV/H104	6-18-17	0630
Retrieved from Storage:		Brett Garner		6-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:		Brett Garner	6-19-17	1100	
Received By:		TERESA FORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 6.17.17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03010 - Cartridge Testing Sat-Sun 6/17/2017 Yellow Mac	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
S17T021608	17-03010-7-SC1-EF-4 / CISA (SKC 226-29) S17T021611 S17T021612				NH3 Source
S17T021614	17-03010-7-SC1-EF-5 / CISA (SKC 226-29) S17T021615 S17T021616				NH3 Source
S17T021619	17-03010-7-SC1-EF-6 / CISA (SKC 226-29) S17T021620 S17T021622				NH3 Source
S17T021623	17-03010-7-SC1-EF-7 / CISA (SKC 226-29) S17T021626 S17T021627				NH3 Source
S17T021628	17-03010-7-SC1-EF-8 / CISA (SKC 226-29) S17T021629 S17T021630				NH3 Source
S17T021632	17-03010-7-SC1-IN-1 / CISA (SKC 226-29) S17T021633 S17T021635				NH3 Source
S17T021638	17-03010-7-SC1-IN-2 / CISA (SKC 226-29) S17T021639 S17T021640				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:		Gerrard Suarez	2704HV/H114	6.18.17	0630
Retrieved from Storage:		Brett Garner		6.19.17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:		Brett Garner	6-19-17	1100	
Received By:		TERESA KORRESTER	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03269 - Cartridge Testing Fri-Sat Green Mac 6/16/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
	17-03269-13-TL1-IN-3 / Silica Gel (SKC-226-51)				Methanol Source
	17-03269-13-TL1-IN-4 / Silica Gel (SKC-226-51)				Methanol Source
	17-03269-13-TL1-IN-5 / Silica Gel (SKC-226-51)				Methanol Source
	17-03269-13-TL1-IN-6 / Silica Gel (SKC-226-51)				Methanol Source
	17-03269-13-TL1-IN-7 / Silica Gel (SKC-226-51)				Methanol Source
	17-03269-13-TL1-IN-8 / Silica Gel (SKC-226-51)				Methanol Source
517021643	17-03269-7-TL1-BA-EF / CISA (SKC 226-29) 517021645				NH3 Source
	517021646				
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Eric Wheeler</i>	Eric Wheeler	2704 HU / H104	06-17-17	0605
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-19-17	1100	
Received By:	<i>Sharon L. Holder</i>	Sharon L. Holder	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03269 - Cartridge Testing Fri-Sat Green Mac 6/16/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517021653	17-03269-7-TL1-BA-IN / CISA (SKC 226-29) : 517021656 517021657				NH3 Source
517021661	17-03269-7-TL1-BL-EF / CISA (SKC 226-29) : 517021664 517021669				NH3 Source
517021671	17-03269-7-TL1-BL-IN / CISA (SKC 226-29) : 517021674 517021675				NH3 Source
517021677	17-03269-7-TL1-EF-1 / CISA (SKC 226-29) : 517021679 517021680				NH3 Source
517021681	17-03269-7-TL1-EF-2 / CISA (SKC 226-29) : 517021682 517021683				NH3 Source
517021685	17-03269-7-TL1-EF-3 / CISA (SKC 226-29) : 517021687 517021688				NH3 Source
517021691	17-03269-7-TL1-EF-4 / CISA (SKC 226-29) : 517021692 517021693				NH3 Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Erica Wheeler</i>	Erica Wheeler	2704 Hv / H 104	06-17-17	0605
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-19-17	1100	
Received By:	<i>Sharon Uholder</i>	Sharon Uholder	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03269 - Cartridge Testing Fri-Sat Green Mac 6/16/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
Laboratory Log No.	Sample ID/Type/Description				Required Analysis
S17T021695	17-03269-7-TL1-EF-5 / CISA (SKC 226-29) , S17T021697 S17T021699				NH3 Source
S17T021701	17-03269-7-TL1-EF-6 / CISA (SKC 226-29) , S17T021702 S17T021704				NH3 Source
S17T021706	17-03269-7-TL1-EF-7 / CISA (SKC 226-29) , S17T021708 S17T021709				NH3 Source
S17T021712	17-03269-7-TL1-EF-8 / CISA (SKC 226-29) , S17T021713 S17T021714				NH3 Source
S17T021716	17-03269-7-TL1-IN-1 / CISA (SKC 226-29) , S17T021717 S17T021720				NH3 Source
S17T021721	17-03269-7-TL1-IN-2 / CISA (SKC 226-29) , S17T021722 S17T021723				NH3 Source
S17T021724	17-03269-7-TL1-IN-3 / CISA (SKC 226-29) , S17T021725 S17T021726				NH3 Source
<b>Special Instructions:</b>					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Enca Wheeler</i>	Enca Wheeler	2704 HU / H-104	06-17-17	0605
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-19-17	0700
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-19-17	1100	
Received By:	<i>Sharon Libalder</i>	Sharon Libalder	06-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

<b>Contractor:</b> Washington River Protection Solutions				<b>Date Sampled:</b> 06-16-17	
<b>CACN:</b> 202843		<b>COA:</b> CB20		<b>Survey No.:</b> 17-03269 - Cartridge Testing Fri-Sat Green Mac 6/16/2017	
<b>Contact Name:</b> Jones, Parker L			<b>Phone:</b> (509)373-4966		<b>Turnaround:</b> N/A
<b>Return Report To:</b> Maxwell, Sally A				<b>MSIN:</b> R1-06	<b>Phone:</b> (509)373-3324
<b>Laboratory Log No.</b>	<b>Sample ID/Type/Description</b>				<b>Required Analysis</b>
517T021745	17-03269-7-TL1-IN-4 / CISA (SKC 226-29) ; 517T021747 517T021748				NH3 Source
517T021751	17-03269-7-TL1-IN-5 / CISA (SKC 226-29) ; 517T021753 517T021754				NH3 Source
517T021757	17-03269-7-TL1-IN-6 / CISA (SKC 226-29) ; 517T021758 517T021759				NH3 Source
517T021760	17-03269-7-TL1-IN-7 / CISA (SKC 226-29) ; 517T021762 517T021763				NH3 Source
517T021766	17-03269-7-TL1-IN-8 / CISA (SKC 226-29) ; 517T021767 517T021768				NH3 Source
	17-03269-12-TL1-BA-EF / Thermosorb-N (TDX) EJW 06-17-17				Nitrosamines Source
	17-03269-12-TL1-BA-IN / Thermosorb-N (TDX)				Nitrosamines Source
<b>Special Instructions:</b>					
	<b>Signature</b>	<b>Printed Name</b>	<b>Location</b>	<b>Date</b>	<b>Time</b>
Delivered to Storage:	<i>Enica Wheeler</i>	Enica Wheeler	2704 HU / H-104	06-17-17	0605
Retrieved from Storage:	<i>Brett Garner</i>	Brett Garner		06-19-17	0700
	<b>Signature</b>	<b>Printed Name</b>	<b>Date</b>	<b>Time</b>	
Relinquished By:	<i>Brett Garner</i>	Brett Garner	06-19-17	1100	
Received By:	<i>Sharon Khalil</i>	Sharon Khalil	6-19-17	1100	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
<b>Additional Comments:</b>					



## C.4.8 Aldehydes



### ANALYTICAL REPORT

Report Date: June 29, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172118

Workorder: **34-1717329**

Client Project ID: 2107 CARTRIDGE

EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

#### Analytical Results

Sample ID: <b>S17T021333</b>		Collected: 06/16/2017		
Lab ID: 1717329001		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021334</b>		Collected: 06/16/2017		
Lab ID: 1717329002		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.066	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050

Results Continued on Next Page

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992

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## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021334		Sampling Location: 2107 CARTRIDGE EVALU		Collected: 06/16/2017
Lab ID: 1717329002				Received: 06/22/2017
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 06/23/2017 (193150)
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acetone	0.17	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021335</b>		Sampling Location: 2107 CARTRIDGE EVALU		Collected: 06/16/2017
Lab ID: 1717329003				Received: 06/22/2017
<b>Method: EPA TO-11A</b>		<b>Media:</b> SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		<b>Analyzed:</b> 06/23/2017 (193150)
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021336</b>		Collected: 06/16/2017		
Lab ID: 1717329004		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021337</b>		Collected: 06/16/2017		
Lab ID: 1717329005		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.072	NA	NA	0.050
Acetaldehyde	1.2	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021337</b>		Collected: 06/16/2017		
Lab ID: 1717329005		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021338</b>		Collected: 06/16/2017		
Lab ID: 1717329006		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.071	NA	NA	0.050
Acetaldehyde	0.41	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021339</b>		Collected: 06/16/2017		
Lab ID: 1717329007		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.6	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021339</b>		Collected: 06/16/2017		
Lab ID: 1717329007		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021340</b>		Collected: 06/16/2017		
Lab ID: 1717329008		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.5	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021341</b>		Collected: 06/16/2017		
Lab ID: 1717329009		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.4	NA	NA	0.050
Acetone	0.077	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021342</b>		Collected: 06/16/2017		
Lab ID: 1717329010		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.4	NA	NA	0.050
Acetone	0.30	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021342</b>		Collected: 06/16/2017	
Lab ID: 1717329010		Received: 06/22/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T021343</b>		Collected: 06/16/2017	
Lab ID: 1717329011		Received: 06/22/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	<0.050	NA	0.050
Acetaldehyde	1.3	NA	0.050
Acetone	0.43	NA	0.050
Acrolein	<0.050	NA	0.050
Propionaldehyde	<0.050	NA	0.050
Crotonaldehyde	<0.050	NA	0.050
Butyraldehyde	<0.050	NA	0.050
Benzaldehyde	<0.050	NA	0.050
Isovaleraldehyde	<0.050	NA	0.050
Valeraldehyde	<0.050	NA	0.050
m-Tolualdehyde	<0.050	NA	0.050
p-Tolualdehyde	<0.050	NA	0.050
o-Tolualdehyde	<0.050	NA	0.050
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T021344</b>		Collected: 06/16/2017	
Lab ID: 1717329012		Received: 06/22/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	<0.050	NA	0.050
Acetaldehyde	1.3	NA	0.050
Acetone	0.68	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021344</b>		Collected: 06/16/2017		
Lab ID: 1717329012		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021345</b>		Collected: 06/16/2017		
Lab ID: 1717329013		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.16	NA	NA	0.050
Acetaldehyde	2.5	NA	NA	0.050
Acetone	23	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.1	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.1	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021346</b>		Collected: 06/16/2017		
Lab ID: 1717329014		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.17	NA	NA	0.050
Acetaldehyde	2.7	NA	NA	0.050
Acetone	26	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.2	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.2	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021347</b>		Collected: 06/16/2017		
Lab ID: 1717329015		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.16	NA	NA	0.050
Acetaldehyde	2.5	NA	NA	0.050
Acetone	23	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.1	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.1	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021347</b>		Collected: 06/16/2017		
Lab ID: 1717329015		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021348</b>		Collected: 06/16/2017		
Lab ID: 1717329016		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.15	NA	NA	0.050
Acetaldehyde	2.6	NA	NA	0.050
Acetone	16	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.2	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.1	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021349</b>		Collected: 06/16/2017		
Lab ID: 1717329017		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.10	NA	NA	0.050
Acetaldehyde	2.7	NA	NA	0.050
Acetone	22	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021349</b>		Collected: 06/16/2017		
Lab ID: 1717329017		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.3	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.1	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021350</b>		Collected: 06/16/2017		
Lab ID: 1717329018		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.084	NA	NA	0.050
Acetaldehyde	2.7	NA	NA	0.050
Acetone	25	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.3	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.2	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021351</b>		Collected: 06/16/2017		
Lab ID: 1717329019		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Formaldehyde	0.075	NA	NA	0.050
Acetaldehyde	2.9	NA	NA	0.050
Acetone	30	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.3	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021352</b>		Collected: 06/16/2017		
Lab ID: 1717329020		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/23/2017 (193150)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.067	NA	NA	0.050
Acetaldehyde	2.9	NA	NA	0.050
Acetone	31	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.4	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

Results Continued on Next Page





## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel 15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021352</b>		Collected: 06/16/2017	
Lab ID: 1717329020		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/23/2017 (193150)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm) RL (ug/sample)
Hexanal	<0.050	NA	NA 0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA 0.050

### Comments

#### Quality Control: EPA TO-11A - (HBN: 193150)

Samples were media blank corrected using the LMB for all QC and samples.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-11A	/S/ Lyle Edwards 06/25/2017 10:12	/S/ Thomas Bosch 06/29/2017 15:20

### Laboratory Contact Information

ALS Environmental  
960 W Levo Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alstt.lab@ALSGlobal.com](mailto:alstt.lab@ALSGlobal.com)  
Web: [www.alsslc.com](http://www.alsslc.com)





## ANALYTICAL REPORT

Workorder: **34-1717329**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1717329

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: EPA TO-11A

Batch: ILC/15025 (HBN: 193150)

Analyzed By: Lyle Edwards

### Blank

LMB: 553279			
Analyzed: 06/23/2017 00:00			
Units: ug/sample			
Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.360	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553280					LCSD: 553281				
Analyzed: 06/23/2017 00:00					Analyzed: 06/23/2017 00:00				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Formaldehyde	3.05	3.00	102	87.8 116.8	2.94	98.0	3.67	0.0	20.0
Acetaldehyde	3.08	3.00	103	94.7 110.5	3.04	101	1.31	0.0	20.0
Acetone	3.07	3.00	102	69.2 119.9	3.05	102	0.654	0.0	20.0
Acrolein	2.71	3.00	90.3	83.5 120.2	2.66	88.7	1.86	0.0	20.0
Propionaldehyde	2.99	3.00	99.7	92.2 117.2	2.94	98.0	1.69	0.0	20.0
Crotonaldehyde	3.19	3.00	106	93.1 114.8	3.32	111	3.99	0.0	20.0
Butyraldehyde	2.94	3.00	98.0	86.6 120.8	2.93	97.7	0.341	0.0	20.0
Benzaldehyde	2.96	3.00	98.7	96.0 112.3	2.91	97.0	1.70	0.0	20.0
Isovaleraldehyde	3.31	3.00	110	95.4 121.6	3.30	110	0.303	0.0	20.0
Valeraldehyde	3.37	3.00	112	85.3 120.4	3.27	109	3.01	0.0	20.0
m-Tolualdehyde	3.31	3.00	110	80.9 118.6	3.27	109	1.22	0.0	20.0
p-Tolualdehyde	2.84	3.00	94.7	83.5 122.2	2.72	90.7	4.32	0.0	20.0
o-Tolualdehyde	3.22	3.00	107	91.6 111.4	3.19	106	0.936	0.0	20.0
Hexanal	3.37	3.00	112	85.4 127.6	3.33	111	1.19	0.0	20.0
2,5-Dimethylbenzaldehyde	2.93	3.00	* 97.7	99.6 118.7	2.92	* 97.3	0.342	0.0	20.0





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1717329

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** EPA TO-11A

**Batch:** ILC/15025 (HBN: 193150)

**Analyzed By:** Lyle Edwards

### Comments

Samples were media blank corrected using the LMB for all QC and samples.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Lyle Edwards 06/25/2017 10:12	/S/ Thomas Bosch 06/29/2017 15:20

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1717329

1717329

Assembler		C.O.C. No.		20172118			
N/A		Page		1 of 2			
Collector		Contact/Requestor		Telephone No.			
JONES		CARL HOWARD IV		373-6861			
SAF No.		Sample Origin		MSIN			
N/A		2017 CARTRIDGE EVALUATION		36-05			
Project Title		Logbook/Work Package No.		FAX			
2017 CARTRIDGE EVALUATION		N/A		372-1878			
Shipped To (Lab)		Method of Shipment		Purchase Order/Charge Code			
ALS		Data Turnaround		203006/2820			
Protocol		10 DAYS		Ice Chest No.			
N/A		Bill of Lading/Air Bill No.		Temp.			
		Parts and Return No.		OW ICE			
				7794 6050 4373			
				42606			
Sample No.		Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
1	S17T021333	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-BA-EF •	25C or low
2	S17T021334	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-BA-IN •	25C or low
3	S17T021335	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-SL-EF •	25C or low
4	S17T021336	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-SL-IN •	25C or low
5	S17T021337	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-EF-1 •	25C or low
6	S17T021338	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-EF-2 •	25C or low
7	S17T021339	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-EF-3 •	25C or low
8	S17T021340	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-EF-4 •	25C or low
9	S17T021341	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-EF-5 •	25C or low
10	S17T021342	VA	6/16/17		SILICA GEL	Aldehyde 17-03269-8-TL1-EF-6 •	25C or low
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No							
EPA TO-11A							
SPECIAL INSTRUCTIONS							
Send Results to Carl Howard & Keisha Garcia Carl W Howard@crl.gov and Keisha R Garcia@crl.gov See SOW for email							
Release 15 Ref: 1502 NIOSH 2016 MOD / EPA TO-11A							
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Sharon Harder	Sharon Harder	6/21/17	1030	Scott Harder	Scott Harder	6-21-17	1030
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
WRPS	WRPS	6-21-17	1400	FEDEX	FEDEX		
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Podox	Podox			Resonant	Resonant		
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)			
EPA TO-11A				Consumed			
All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.				Date/Time			
				6/23/17 1000			

A-6003-962 (03/05)



CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										C.O.C. No. 20172118	
										Page 2 of 2	
Assembler N/A	Collector JONES	Contact/Requestor CARL HOWARD IV	Telephone No.	373-6861	MSN	16-05	FAX	372-1878			
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 2030067380									
Project Title 2017 CARTRIDGE EVALUATION	Logbook/Work Package No. N/A	Isa Chest No. WTS-033	Temp. 60 IN								
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7794 6050 4373									
Protocol S/A	Data Turnaround 10 Days	Parts and Return No. 42606									
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative					
1	S17T021343	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-EF-7	25C or low					
2	S17T021344	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-EF-8	25C or low					
3	S17T021345	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-1	25C or low					
4	S17T021346	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-2	25C or low					
5	S17T021347	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-3	25C or low					
6	S17T021348	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-4	25C or low					
7	S17T021349	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-5	25C or low					
8	S17T021350	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-6	25C or low					
9	S17T021351	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-7	25C or low					
10	S17T021352	VA	6/16/17	SILICA GEL	Aldehyde 17-03269-8-TL1-IN-8	25C or low					
<p>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>SPECIAL INSTRUCTIONS Send Results to Carl Howard &amp; Keisha Garcia Carl W Howard@crl.gov and Keisha R Garcia@crl.gov see SOW for email Release 15 Reference Contract # 55502 NIOSH 2016 MOD / EPA TO-11A</p>											
Relinquished By Shaver, Molder, & Swartz	Print	Sign	Date/Time 6/21/17/1030	Received By SCOTT HORDER	Print	Sign	Date/Time 6-21-17/1030	Matrix*			
Relinquished By WRPS	Print	Sign	Date/Time 6-21-17/1030	Received By FEDEX	Print	Sign	Date/Time 6-21-17/1030	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids	DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other		
Relinquished By Follett	Print	Sign	Date/Time 6-21-17/1030	Received By	Print	Sign	Date/Time 6/23/17 1000				
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By Conserved			Date/Time 6/23/17 1000				

A-8003-662 (03/05)

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.





## ANALYTICAL REPORT

Report Date: June 28, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov  
20172119

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021353</b>		Collected: 06/17/2017		
Lab ID: 1717328001		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.092	NA	NA	0.050
Acetaldehyde	0.096	NA	NA	0.050
Acetone	0.16	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S17T021354		Collected: 06/17/2017		
Lab ID: 1717328002		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.096	NA	NA	0.050
Acetaldehyde	0.14	NA	NA	0.050

Results Continued on Next Page

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ALS GROUP USA, CORP. An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER





## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021354</b>		Collected: 06/17/2017		
Lab ID: 1717328002		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 06/22/2017 (193121)				
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acetone	0.31	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021355</b>		Sampling Location: 2107 CARTRIDGE EVALU		Collected: 06/17/2017
Lab ID: 1717328003				Received: 06/22/2017
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 06/22/2017 (193121)
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	0.76	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021356</b>		Collected: 06/17/2017		
Lab ID: 1717328004		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	0.055	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021357</b>		Collected: 06/17/2017		
Lab ID: 1717328005		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.055	NA	NA	0.050
Acetaldehyde	0.98	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021357</b>		Collected: 06/17/2017		
Lab ID: 1717328005		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021358</b>		Collected: 06/17/2017		
Lab ID: 1717328006		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.050	NA	NA	0.050
Acetaldehyde	0.45	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021359</b>		Collected: 06/17/2017		
Lab ID: 1717328007		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.2	NA	NA	0.050
Acetone	0.25	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021359</b>		Collected: 06/17/2017		
Lab ID: 1717328007		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021360</b>		Collected: 06/17/2017		
Lab ID: 1717328008		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.6	NA	NA	0.050
Acetone	0.21	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021361</b>		Collected: 06/17/2017		
Lab ID: 1717328009		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.6	NA	NA	0.050
Acetone	0.073	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021362</b>		Collected: 06/17/2017		
Lab ID: 1717328010		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.3	NA	NA	0.050
Acetone	0.37	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021362</b>		Collected: 06/17/2017	
Lab ID: 1717328010		Received: 06/22/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T021363</b>		Collected: 06/17/2017	
Lab ID: 1717328011		Received: 06/22/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	<0.050	NA	0.050
Acetaldehyde	1.2	NA	0.050
Acetone	0.73	NA	0.050
Acrolein	<0.050	NA	0.050
Propionaldehyde	<0.050	NA	0.050
Crotonaldehyde	<0.050	NA	0.050
Butyraldehyde	<0.050	NA	0.050
Benzaldehyde	<0.050	NA	0.050
Isovaleraldehyde	<0.050	NA	0.050
Valeraldehyde	<0.050	NA	0.050
m-Tolualdehyde	<0.050	NA	0.050
p-Tolualdehyde	<0.050	NA	0.050
o-Tolualdehyde	<0.050	NA	0.050
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T021364</b>		Collected: 06/17/2017	
Lab ID: 1717328012		Received: 06/22/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	<0.050	NA	0.050
Acetaldehyde	1.1	NA	0.050
Acetone	2.5	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021364</b>		Collected: 06/17/2017		
Lab ID: 1717328012		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021365</b>		Collected: 06/17/2017		
Lab ID: 1717328013		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.35	NA	NA	0.050
Acetaldehyde	3.0	NA	NA	0.050
Acetone	17	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.3	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021366</b>		Collected: 06/17/2017		
Lab ID: 1717328014		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Formaldehyde	0.30	NA	NA	0.050
Acetaldehyde	3.4	NA	NA	0.050
Acetone	34	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.4	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.3	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021367</b>		Collected: 06/17/2017		
Lab ID: 1717328015		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.24	NA	NA	0.050
Acetaldehyde	3.1	NA	NA	0.050
Acetone	34	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021367</b>		Collected: 06/17/2017		
Lab ID: 1717328015		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021368</b>		Collected: 06/17/2017		
Lab ID: 1717328016		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.20	NA	NA	0.050
Acetaldehyde	3.2	NA	NA	0.050
Acetone	27	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021369</b>		Collected: 06/17/2017		
Lab ID: 1717328017		Received: 06/22/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.18	NA	NA	0.050
Acetaldehyde	3.2	NA	NA	0.050
Acetone	19	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021369</b>		Collected: 06/17/2017		
Lab ID: 1717328017		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021370</b>		Collected: 06/17/2017		
Lab ID: 1717328018		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.17	NA	NA	0.050
Acetaldehyde	3.2	NA	NA	0.050
Acetone	19	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021371</b>		Collected: 06/17/2017		
Lab ID: 1717328019		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.15	NA	NA	0.050
Acetaldehyde	2.9	NA	NA	0.050
Acetone	17	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.4	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.3	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T021372</b>		Collected: 06/17/2017		
Lab ID: 1717328020		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 06/22/2017 (193121)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.11	NA	NA	0.050
Acetaldehyde	3.1	NA	NA	0.050
Acetone	20	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	1.3	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

Results Continued on Next Page





## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel 15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021372</b>		Collected: 06/17/2017	
Lab ID: 1717328020		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 06/22/2017 (193121)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm) RL (ug/sample)
Hexanal	<0.050	NA	NA 0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA 0.050

### Comments

#### Quality Control: EPA TO-11A - (HBN: 193121)

Samples were media blank corrected using the LMB for all QC and samples.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-11A	/S/ Lyle Edwards 06/24/2017 09:18	/S/ Thomas Bosch 06/28/2017 11:00

### Laboratory Contact Information

ALS Environmental  
960 W Levo Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alst.lab@ALSGlobal.com](mailto:alst.lab@ALSGlobal.com)  
Web: [www.alsslc.com](http://www.alsslc.com)





## ANALYTICAL REPORT

Workorder: **34-1717328**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD/ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1717328

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: EPA TO-11A

Batch: ILC/15015 (HBN: 193121)

Analyzed By: Lyle Edwards

### Blank

LMB: 553253			
Analyzed: 06/22/2017 00:00			
Units: ug/sample			
Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.290	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553254					LCSD: 553255				
Analyzed: 06/22/2017 00:00					Analyzed: 06/22/2017 00:00				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Formaldehyde	3.04	3.00	101	87.8 116.8	3.03	101	0.329	0.0 20.0	
Acetaldehyde	3.09	3.00	103	94.7 110.5	3.09	103	0.00	0.0 20.0	
Acetone	3.09	3.00	103	69.2 119.9	3.17	106	2.56	0.0 20.0	
Acrolein	3.07	3.00	102	83.5 120.2	3.10	103	0.972	0.0 20.0	
Propionaldehyde	2.99	3.00	99.7	92.2 117.2	3.00	100	0.334	0.0 20.0	
Crotonaldehyde	2.97	3.00	99.0	93.1 114.8	2.97	99.0	0.00	0.0 20.0	
Butyraldehyde	2.90	3.00	96.7	86.6 120.8	2.98	99.3	2.72	0.0 20.0	
Benzaldehyde	2.91	3.00	97.0	96.0 112.3	3.03	101	4.04	0.0 20.0	
Isovaleraldehyde	3.24	3.00	108	95.4 121.6	3.19	106	1.56	0.0 20.0	
Valeraldehyde	3.38	3.00	113	85.3 120.4	3.36	112	0.593	0.0 20.0	
m-Tolualdehyde	2.99	3.00	99.7	80.9 118.6	3.15	105	5.21	0.0 20.0	
p-Tolualdehyde	3.00	3.00	100	83.5 122.2	3.12	104	3.92	0.0 20.0	
o-Tolualdehyde	3.02	3.00	101	91.6 111.4	3.05	102	0.988	0.0 20.0	
Hexanal	3.17	3.00	106	85.4 127.6	3.15	105	0.633	0.0 20.0	
2,5-Dimethylbenzaldehyde	2.83	3.00	* 94.3	99.6 118.7	2.90	* 96.7	2.44	0.0 20.0	





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1717328

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** EPA TO-11A

**Batch:** ILC/15015 (HBN: 193121)

**Analyzed By:** Lyle Edwards

### Comments

Samples were media blank corrected using the LMB for all QC and samples.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Lyle Edwards 06/24/2017 09:18	/S/ Thomas Bosch 06/28/2017 10:59

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1717328

1717328

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A		C.O.C. No. 20172119 Page 1 of 2							
Collector JONES	Contact/Requestor CARL HOWARD		Telephone No. 373-6861		MSIN 16-05 FAX 372-1878				
SAF No.	Sample Origin 2011 CARTRIDGE EVALUATION		Purchase Order/Charge Code 203008/CS20						
Project Title 2011 CARTRIDGE EVALUATION	Logbook/Work Package No.		Ice Chest No. 645033		Temp. 60.1°C				
Shipped To (Lab)	Method of Shipment		Bill of Lading/Air Bill No. 7794 6050 4373						
Protocol AUS	Data Turnaround 10 DAYS		Parts and Return No. 42606						
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative			
1	S17T021353	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-8A-EF	25C or low			
2	S17T021354	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-8A-IN	25C or low			
3	S17T021355	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-8L-EF	25C or low			
4	S17T021356	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-8L-IN	25C or low			
5	S17T021357	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-EF-1	25C or low			
6	S17T021358	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-EF-2	25C or low			
7	S17T021359	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-EF-3	25C or low			
8	S17T021360	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-EF-4	25C or low			
9	S17T021361	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-EF-5	25C or low			
10	S17T021362	VA	6/17/17	SILICA GEL	Aldehyde 17-03273-8-TL2-EF-6	25C or low			
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No									
SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl W. Howard@rl.gov and Keisha R. Garcia@rl.gov gov See SOW for email Release 15 Reference Contract # 55502 NIOSH 2016 WOD / EPA TO-11A									
Relinquished By Sharon Weller	Print	Sign	Date/Time 6-21-17/1430	Received By Scott Harder	Print	Sign	Date/Time 6-21-17/1430	Matrix*	
Relinquished By SW Harder	Print	Sign	Date/Time 6-21-17/1430	Received By FEDEX	Print	Sign	Date/Time 6-21-17/1430	Matrix*	
Relinquished By FOCLOX	Print	Sign	Date/Time 6-21-17/1430	Received By Dagmar Hill	Print	Sign	Date/Time 6-21-17/1430	Matrix*	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Date/Time 6/22/17 13:00	

A-8003-962 (03/05)



Assembler		C.O.C. No.	
N/A		20172119	
		Page 2 of 2	
Collector		Telephone No. 373-6861	
JONES		MSIN FAX 372-1878	
SAF No.		Purchase Order/Charge Code	
N/A		203005/CB20	
Project Title		Ice Chest No.	
2017 CARTRIDGE EVALUATION		WTS033 ON ICE	
Shipped To (Lab)		Bill of Lading/Air Bill No.	
ALS		7794 1050 4373	
Protocol		Parts and Return No.	
N/A		42600	

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			
Sample No.	Lab ID	Date	Time
11	SL17021363	VA	6/17/17
12	SL17021364	VA	6/17/17
13	SL17021365	VA	6/17/17
14	SL17021366	VA	6/17/17
15	SL17021367	VA	6/17/17
16	SL17021368	VA	6/17/17
17	SL17021369	VA	6/17/17
18	SL17021370	VA	6/17/17
19	SL17021371	VA	6/17/17
20	SL17021372	VA	6/17/17

Sample Analysis		Preservative
Aldehyde 17-03273-8-TL2-BF-7	•	25C or Low
Aldehyde 17-03273-8-TL2-BF-8	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-1	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-2	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-3	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-4	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-5	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-6	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-7	•	25C or Low
Aldehyde 17-03273-8-TL2-IN-8	•	25C or Low

SPECIAL INSTRUCTIONS		Hold Time
Send Results to Carl Howard & Keisha Garcia Carl W. Howard@rl.gov and Keisha.R.Garcia@rl.gov gov See SOW for email		
Release 15 Reference Contract # 55502 NIOSH 2016 MOD / EPA TO-11A		

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*
Sharon Y. Alder			6-21-17 1030	Scott Harder			6-21-17 1030	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids
Relinquished By	SW Harder			Received By	FEDEX			DL = Drum Liquids T = Tissue Wt = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By	WRPS		6-21-17 1400	Received By	FORNEX			
Relinquished By				Received By				

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Date/Time
	CONVINCED	6/22/17 13:00

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)





## ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov  
20172239

Workorder: **34-1718133**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023313</b>		Collected: 06/23/2017		
Lab ID: 1718133001		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<b>0.20</b>	NA	NA	0.050
Acetone	<b>2.3</b>	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023314</b>		Collected: 06/23/2017		
Lab ID: 1718133002		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: EPA TO-11A</b>		<b>Media:</b> SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		<b>Analyzed:</b> 07/02/2017 (193706)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Formaldehyde	0.13	NA	NA	0.050
Acetaldehyde	0.26	NA	NA	0.050

Results Continued on Next Page

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ALS GROUP USA, CORP. An ALS Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023314</b>		Collected: 06/23/2017		
Lab ID: 1718133002		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acetone	2.7	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023315</b>		Collected: 06/23/2017		
Lab ID: 1718133003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	0.17	NA	NA	0.050
Acetone	1.6	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023316</b>		Collected: 06/23/2017		
Lab ID: 1718133004		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<b>0.074</b>	NA	NA	0.050
Acetone	<b>0.63</b>	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023317</b>		Collected: 06/23/2017		
Lab ID: 1718133005		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.54	NA	NA	0.050
Acetaldehyde	2.4	NA	NA	0.050
Acetone	1.6	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023317</b>		Collected: 06/23/2017		
Lab ID: 1718133005		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023318</b>		Collected: 06/23/2017		
Lab ID: 1718133006		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.12	NA	NA	0.050
Acetaldehyde	2.7	NA	NA	0.050
Acetone	0.68	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023319</b>		Collected: 06/23/2017		
Lab ID: 1718133007		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.083	NA	NA	0.050
Acetaldehyde	3.1	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023319</b>		Collected: 06/23/2017		
Lab ID: 1718133007		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023320</b>		Collected: 06/23/2017		
Lab ID: 1718133008		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.052	NA	NA	0.050
Acetaldehyde	3.0	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023321</b>		Collected: 06/23/2017		
Lab ID: 1718133009		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.051	NA	NA	0.050
Acetaldehyde	3.7	NA	NA	0.050
Acetone	0.34	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023322</b>		Collected: 06/23/2017		
Lab ID: 1718133010		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.1	NA	NA	0.050
Acetone	0.32	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023322</b>		Collected: 06/23/2017		
Lab ID: 1718133010		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023323</b>		Collected: 06/23/2017		
Lab ID: 1718133011		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.0	NA	NA	0.050
Acetone	1.6	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023324</b>		Collected: 06/23/2017		
Lab ID: 1718133012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.0	NA	NA	0.050
Acetone	2.1	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023324</b>		Collected: 06/23/2017		
Lab ID: 1718133012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023325</b>		Collected: 06/23/2017		
Lab ID: 1718133013		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.28	NA	NA	0.050
Acetaldehyde	5.2	NA	NA	0.050
Acetone	27	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.0	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023326</b>		Collected: 06/23/2017		
Lab ID: 1718133014		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Formaldehyde	0.30	NA	NA	0.050
Acetaldehyde	6.1	NA	NA	0.050
Acetone	47	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	4.3	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.7	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023327</b>		Collected: 06/23/2017		
Lab ID: 1718133015		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Formaldehyde	0.24	NA	NA	0.050
Acetaldehyde	5.7	NA	NA	0.050
Acetone	44	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	4.1	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.7	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023327</b>		Collected: 06/23/2017	
Lab ID: 1718133015		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T023328</b>		Collected: 06/23/2017	
Lab ID: 1718133016		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	0.17	NA	0.050
Acetaldehyde	5.5	NA	0.050
Acetone	44	NA	0.050
Acrolein	<0.050	NA	0.050
Propionaldehyde	3.9	NA	0.050
Crotonaldehyde	<0.050	NA	0.050
Butyraldehyde	5.3	NA	0.050
Benzaldehyde	<0.050	NA	0.050
Isovaleraldehyde	<0.050	NA	0.050
Valeraldehyde	<0.050	NA	0.050
m-Tolualdehyde	<0.050	NA	0.050
p-Tolualdehyde	<0.050	NA	0.050
o-Tolualdehyde	<0.050	NA	0.050
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T023329</b>		Collected: 06/23/2017	
Lab ID: 1718133017		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	0.11	NA	0.050
Acetaldehyde	5.4	NA	0.050
Acetone	34	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023329</b>		Collected: 06/23/2017		
Lab ID: 1718133017		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.7	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.1	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023330</b>		Collected: 06/23/2017		
Lab ID: 1718133018		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/02/2017 (193706)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.067	NA	NA	0.050
Acetaldehyde	5.3	NA	NA	0.050
Acetone	29	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.6	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.1	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023331</b>		Collected: 06/23/2017		
Lab ID: 1718133019		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.060	NA	NA	0.050
Acetaldehyde	5.1	NA	NA	0.050
Acetone	32	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	4.7	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023332</b>		Collected: 06/23/2017		
Lab ID: 1718133020		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/02/2017 (193706)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.053	NA	NA	0.050
Acetaldehyde	5.2	NA	NA	0.050
Acetone	38	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	4.9	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

Results Continued on Next Page





## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023332</b>		Collected: 06/23/2017		
Lab ID: 1718133020		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: EPA TO-11A</b>		<b>Media:</b> SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		<b>Analyzed:</b> 07/02/2017 (193706)		
<b>Sampling Info: Air Volume Not Provided</b>				
<b>Analyte</b>	<b>Result (ug/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (ug/sample)</b>
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

### Comments

#### Quality Control: EPA TO-11A - (HBN: 193706)

Samples and QC's were media blank corrected for Acetone using the LMB.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

Crotonaldehyde failed high, however due to no hits in the field samples no further action was taken.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-11A	/S/ Lyle Edwards 07/06/2017 10:53	/S/ Dustin Calder 07/07/2017 11:07

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alsslc.com](http://www.alsslc.com)





## ANALYTICAL REPORT

Workorder: **34-1718133**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

**Workorder: 1718133**

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: EPA TO-11A

Batch: ILC/15123 (HBN: 193706)

Analyzed By: Lyle Edwards

### Blank

LMB: 554481			
Analyzed: 07/02/2017 00:00			
Units: ug/sample			
Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.368	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554482					LCSD: 554483				
Analyzed: 07/02/2017 00:00					Analyzed: 07/02/2017 00:00				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Formaldehyde	2.99	3.00	99.7	87.8 116.8	2.99	99.7	0.00	0.0 20.0	
Acetaldehyde	3.03	3.00	101	94.7 110.5	3.05	102	0.658	0.0 20.0	
Acetone	3.03	3.00	101	69.2 119.9	2.93	97.7	3.35	0.0 20.0	
Acrolein	2.69	3.00	89.7	83.5 120.2	2.58	86.0	4.17	0.0 20.0	
Propionaldehyde	2.94	3.00	98.0	92.2 117.2	2.92	97.3	0.683	0.0 20.0	
Crotonaldehyde	3.72	3.00	124	93.1 114.8	3.81	127	2.39	0.0 20.0	
Butyraldehyde	2.89	3.00	96.3	86.6 120.8	2.86	95.3	1.04	0.0 20.0	
Benzaldehyde	2.95	3.00	98.3	96.0 112.3	2.95	98.3	0.00	0.0 20.0	
Isovaleraldehyde	3.33	3.00	111	95.4 121.6	3.23	108	3.05	0.0 20.0	
Valeraldehyde	3.01	3.00	100	85.3 120.4	3.08	103	2.30	0.0 20.0	
m-Tolualdehyde	3.20	3.00	107	80.9 118.6	2.93	97.7	8.81	0.0 20.0	
p-Tolualdehyde	2.56	3.00	85.3	83.5 122.2	2.81	93.7	9.31	0.0 20.0	
o-Tolualdehyde	3.21	3.00	107	91.6 111.4	3.28	109	2.16	0.0 20.0	
Hexanal	3.25	3.00	108	85.4 127.6	3.23	108	0.617	0.0 20.0	
2,5-Dimethylbenzaldehyde	2.73	3.00	91.0	99.6 118.7	2.79	93.0	2.17	0.0 20.0	





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1718133

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** EPA TO-11A

**Batch:** ILC/15123 (HBN: 193706)

**Analyzed By:** Lyle Edwards

### Comments

Samples and QC's were media blank corrected for Acetone using the LMB.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

Crotonaldehyde failed high, however due to no hits in the field samples no further action was taken.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Lyle Edwards 07/06/2017 10:53	/S/ Dustin Calder 07/07/2017 11:07

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1718133

1718133

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A	C.O.C. No. 20172239 Page 1 of 2								
Collector JONES	Contact/Requestor CARL HOWARD IV	Telephone No. 373-6861 MSIN 16-05 FAX 372-1878							
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code							
Project Title 2017 CARTRIDGE EVALUATION	Logbook/Work Package No. N/A	Ice Chest No. <u>WIS-037</u> Temp. <u>ON ICE</u>							
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. <u>7795 145 8499</u>							
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. <u>42646</u>							
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis				Preservative
1	S17T023313	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-BA-EF				25C or low
2	S17T023314	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-BA-IN				25C or low
3	S17T023315	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-BL-EF				25C or low
4	S17T023316	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-BL-IN				25C or low
5	S17T023317	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-EF-1				25C or low
6	S17T023318	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-EF-2				25C or low
7	S17T023319	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-EF-3				25C or low
8	S17T023320	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-EF-4				25C or low
9	S17T023321	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-EF-5				25C or low
10	S17T023322	VA	6/23/17	SILICA GEL	Aldehyde 17-04568-8-TLI-EF-6				25C or low
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No									
EPA TO-11A SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl W Howard@dr1.gov and Keisha R_Garcia@dr1.gov gov 2es SOW for email Release 15 Reference Contract # 55502 NIOGH 2016 MOD / EPA TO-11A									
Relinquished By Sharon Wolden	Print SW Harder	Sign S. Harder	Date/Time 6-28-17/1030	Received By Scott Harder	Sign S. Harder	Date/Time 6-28-17/1030	Matrix* S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WJ = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids		
Relinquished By WRPS	Print WRPS	Sign WRPS	Date/Time 6-28-17/1400	Received By WRPS	Sign WRPS	Date/Time 6-28-17/1400	FEDEX		
Relinquished By	Print	Sign	Date/Time	Received By	Sign	Date/Time	Date/Time		
Disposal Method (e.g., Return to customer, per lab procedure used in process)							Date/Time		
FINAL SAMPLE DISPOSITION	Consumed						Date/Time 6/30/17 1250		

A-6003-082 (03/05)









## ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172240

Workorder: **34-1718134**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023333</b>		Collected: 06/24/2017		
Lab ID: 1718134001		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<b>0.085</b>	NA	NA	0.050
Acetone	<b>1.1</b>	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023334</b>		Collected: 06/24/2017		
Lab ID: 1718134002		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.12	NA	NA	0.050
Acetaldehyde	0.31	NA	NA	0.050

Results Continued on Next Page

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023334</b>		Collected: 06/24/2017		
Lab ID: 1718134002		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acetone	1.5	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023335</b>		Collected: 06/24/2017		
Lab ID: 1718134003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	0.16	NA	NA	0.050
Acetone	0.15	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023336</b>		Collected: 06/24/2017		
Lab ID: 1718134004		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<b>0.18</b>	NA	NA	0.050
Acetone	<b>0.21</b>	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023337</b>		Collected: 06/24/2017		
Lab ID: 1718134005		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	1.9	NA	NA	0.050
Acetone	0.38	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

Results Continued on Next Page





## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023337</b>		Collected: 06/24/2017	
Lab ID: 1718134005		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T023338</b>		Collected: 06/24/2017	
Lab ID: 1718134006		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	0.077	NA	0.050
Acetaldehyde	1.2	NA	0.050
Acetone	<0.050	NA	0.050
Acrolein	<0.050	NA	0.050
Propionaldehyde	<0.050	NA	0.050
Crotonaldehyde	<0.050	NA	0.050
Butyraldehyde	<0.050	NA	0.050
Benzaldehyde	<0.050	NA	0.050
Isovaleraldehyde	<0.050	NA	0.050
Valeraldehyde	<0.050	NA	0.050
m-Tolualdehyde	<0.050	NA	0.050
p-Tolualdehyde	<0.050	NA	0.050
o-Tolualdehyde	<0.050	NA	0.050
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T023339</b>		Collected: 06/24/2017	
Lab ID: 1718134007		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	<0.050	NA	0.050
Acetaldehyde	3.0	NA	0.050
Acetone	<0.050	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023339</b>		Collected: 06/24/2017		
Lab ID: 1718134007		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023340</b>		Collected: 06/24/2017		
Lab ID: 1718134008		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.7	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023341</b>		Collected: 06/24/2017		
Lab ID: 1718134009		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	4.0	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023342</b>		Collected: 06/24/2017		
Lab ID: 1718134010		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	2.0	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023342</b>		Collected: 06/24/2017		
Lab ID: 1718134010		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023343</b>		Collected: 06/24/2017		
Lab ID: 1718134011		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	4.0	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023344</b>		Collected: 06/24/2017		
Lab ID: 1718134012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.2	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023344</b>		Collected: 06/24/2017		
Lab ID: 1718134012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023345</b>		Collected: 06/24/2017		
Lab ID: 1718134013		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 07/05/2017 (193724)				
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.44	NA	NA	0.050
Acetaldehyde	4.1	NA	NA	0.050
Acetone	6.2	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	2.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	3.8	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023346</b>		Collected: 06/24/2017		
Lab ID: 1718134014		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Formaldehyde	0.49	NA	NA	0.050
Acetaldehyde	6.0	NA	NA	0.050
Acetone	49	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	4.0	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.5	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023347</b>		Collected: 06/24/2017		
Lab ID: 1718134015		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.40	NA	NA	0.050
Acetaldehyde	5.8	NA	NA	0.050
Acetone	50	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.9	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.2	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023347</b>		Collected: 06/24/2017	
Lab ID: 1718134015		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T023348</b>		Collected: 06/24/2017	
Lab ID: 1718134016		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	0.23	NA	0.050
Acetaldehyde	5.3	NA	0.050
Acetone	46	NA	0.050
Acrolein	<0.050	NA	0.050
Propionaldehyde	3.5	NA	0.050
Crotonaldehyde	<0.050	NA	0.050
Butyraldehyde	4.7	NA	0.050
Benzaldehyde	<0.050	NA	0.050
Isovaleraldehyde	<0.050	NA	0.050
Valeraldehyde	<0.050	NA	0.050
m-Tolualdehyde	<0.050	NA	0.050
p-Tolualdehyde	<0.050	NA	0.050
o-Tolualdehyde	<0.050	NA	0.050
Hexanal	<0.050	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	0.050

Sample ID: <b>S17T023349</b>		Collected: 06/24/2017	
Lab ID: 1718134017		Received: 06/29/2017	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 07/05/2017 (193724)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	RL (ug/sample)
Formaldehyde	0.13	NA	0.050
Acetaldehyde	5.7	NA	0.050
Acetone	45	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023349</b>		Collected: 06/24/2017		
Lab ID: 1718134017		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	4.0	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.4	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023350</b>		Collected: 06/24/2017		
Lab ID: 1718134018		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.071	NA	NA	0.050
Acetaldehyde	4.8	NA	NA	0.050
Acetone	20	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.2	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	4.7	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050





## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023351</b>		Collected: 06/24/2017		
Lab ID: 1718134019		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.054	NA	NA	0.050
Acetaldehyde	5.4	NA	NA	0.050
Acetone	34	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	3.5	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.0	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: <b>S17T023352</b>		Collected: 06/24/2017		
Lab ID: 1718134020		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.068	NA	NA	0.050
Acetaldehyde	5.9	NA	NA	0.050
Acetone	28	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	4.0	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	5.7	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel 15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023352</b>		Collected: 06/24/2017		
Lab ID: 1718134020		Received: 06/29/2017		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 07/05/2017 (193724)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

### Comments

#### Quality Control: EPA TO-11A - (HBN: 193724)

Samples and QC's were blank corrected for Acetone using the LMB.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

### Report Authorization (IS/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-11A	/S/ Lyle Edwards 07/07/2017 08:29	/S/ Stephen Brose 07/07/2017 10:58

### Laboratory Contact Information

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## ANALYTICAL REPORT

Workorder: **34-1718134**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

**Workorder: 1718134**

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: EPA TO-11A

Batch: ILC/15127 (HBN: 193724)

Analyzed By: Lyle Edwards

### Blank

LMB: 554507			
Analyzed: 07/05/2017 00:00			
Units: ug/sample			
Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	1.05	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554508					LCSD: 554509				
Analyzed: 07/05/2017 00:00					Analyzed: 07/05/2017 00:00				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Formaldehyde	2.94	3.00	98.0	87.8 116.8	2.96	98.7	0.678	0.0 20.0	
Acetaldehyde	2.98	3.00	99.3	94.7 110.5	3.01	100	1.00	0.0 20.0	
Acetone	2.90	3.00	96.7	69.2 119.9	2.91	97.0	0.344	0.0 20.0	
Acrolein	2.94	3.00	98.0	83.5 120.2	2.95	98.3	0.340	0.0 20.0	
Propionaldehyde	2.88	3.00	96.0	92.2 117.2	2.89	96.3	0.347	0.0 20.0	
Crotonaldehyde	2.96	3.00	98.7	93.1 114.8	2.93	97.7	1.02	0.0 20.0	
Butyraldehyde	2.93	3.00	97.7	86.6 120.8	2.89	96.3	1.37	0.0 20.0	
Benzaldehyde	2.95	3.00	98.3	96.0 112.3	2.93	97.7	0.680	0.0 20.0	
Isovaleraldehyde	3.25	3.00	108	95.4 121.6	3.29	110	1.22	0.0 20.0	
Valeraldehyde	3.06	3.00	102	85.3 120.4	3.10	103	1.30	0.0 20.0	
m-Tolualdehyde	2.84	3.00	94.7	80.9 118.6	3.42	114	18.5	0.0 20.0	
p-Tolualdehyde	2.86	3.00	95.3	83.5 122.2	2.62	87.3	8.76	0.0 20.0	
o-Tolualdehyde	3.01	3.00	100	91.6 111.4	3.24	108	7.36	0.0 20.0	
Hexanal	3.15	3.00	105	85.4 127.6	3.16	105	0.317	0.0 20.0	
2,5-Dimethylbenzaldehyde	2.68	3.00	* 89.3	99.6 118.7	2.73	* 91.0	1.85	0.0 20.0	





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1718134

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** EPA TO-11A

**Batch:** ILC/15127 (HBN: 193724)

**Analyzed By:** Lyle Edwards

### Comments

Samples and QC's were blank corrected for Acetone using the LMB.

2,5-Dimethaldahyde was outside of established limits but within general laboratory limits. The analyte was not found in any of the field samples so no further action was taken.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Lyle Edwards 07/07/2017 08:29	/S/ Stephen Brose 07/07/2017 10:58

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1718134

1718134

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A	C.O.C. No. 20172240 Page 1 of 2								
Collector JONES	Contact/Requestor CARL HOWARD IV	Telephone No. 373-6861 MSN TG-05 FAX 372-1878							
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 203066/CB20							
Project Title 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ice Chest No. WIS-037							
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7795 1445 8499							
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 424 TL							
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis				Preservative
	S17T023333	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-BA-EF				25C or low
	S17T023334	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-BA-IN				25C or low
	S17T023335	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-BL-EF				25C or low
	S17T023336	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-BL-IN				25C or low
	S17T023337	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EF-1				25C or low
	S17T023338	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EF-2				25C or low
	S17T023339	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EF-3				25C or low
	S17T023340	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EF-4				25C or low
	S17T023341	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EF-5				25C or low
	S17T023342	VA	6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EF-6				25C or low
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input checked="" type="radio"/> Yes <input type="radio"/> No Hold Time									
SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl.W.Howard@rl.gov and Keisha_R.Garcia@rl.gov gov see SCOW for email Release 15 Contract # 55502 NIEHS 2016 MOD / EPA TO-11A									
Relinquished By Sara-Webster	Print	Sign	Date/Time 6/28/17	Received By Scott Harder	Print	Sign	Date/Time 6-28-17/1030	Main*	
Relinquished By SW Harder	Print	Sign	Date/Time 1030	Received By FEDEX	Print	Sign	Date/Time	S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids	
Relinquished By WRPS	Print	Sign	Date/Time 6-28-17/1400	Received By WRPS	Print	Sign	Date/Time		
Relinquished By TAK	Print	Sign	Date/Time	Received By TAK	Print	Sign	Date/Time		
Relinquished By TAK	Print	Sign	Date/Time	Received By TAK	Print	Sign	Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method in g., Return to customer, per lab procedure, used in process)							Date/Time	
	Sara-Webster							6/30/17 1445	

A-6003-982 (03/05)



Assembler		C.O.C. No. 20172240					
N/A		Page 2 of 2					
Collector		Telephone No. 373-6861 MSN 16-05 FAX 372-1878					
JONES		Purchase Order/Charge Code					
SAF No.		203006/0220					
N/A		Ice Chest No. 371 Temp. ON ICE					
Project Title		Bill of Lading/Air Bill No. 1795 1745 8499					
2017 CARTRIDGE EVALUATION		Parts and Return No. 4264C					
Shipped To (Lab)							
ALS							
Protocol							
N/A							
Contact/Requestor		Sample Analysis					
CARL HOWARD IV							
Sample Origin							
2017 CARTRIDGE EVALUATION							
Logbook/Work Package No.							
N/A							
Method of Shipment							
Data Turnaround							
10 DAYS							
Sample No.	Lab ID	Date	No./Type Container	Preservative			
	S17T023343	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EE-7	25C or low		
	S17T023344	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-EE-8	25C or low		
	S17T023345	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-1	25C or low		
	S17T023346	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-2	25C or low		
	S17T023347	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-3	25C or low		
	S17T023348	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-4	25C or low		
	S17T023349	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-5	25C or low		
	S17T023350	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-6	25C or low		
	S17T023351	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-7	25C or low		
	S17T023352	VA 6/24/17	SILICA GEL	Aldehyde 17-04569-8-TL2-IN-8	25C or low		
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl W Howard@rl.gov and Keisha R Garcia@rl.gov gov See SOW for email Release 15 Reference Contract # 55502 NIOSH 2016 MOD / EPA TO-11A							
Relinquished By	Print	Sign	Received By	Date/Time	Sign	Date/Time	Matrix*
Sharon Allen	6/28/17	6/28/17	Scott Harder	6/28/17	6/28/17	6/28/17	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids
Relinquished By	Print	Sign	Received By	Date/Time	Sign	Date/Time	Matrix*
SW Harder	6/28/17	6/28/17	FEDEX	6/28/17	6/28/17	6/28/17	DL = Drum Liquids T = Tissue WL = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By	Print	Sign	Received By	Date/Time	Sign	Date/Time	Matrix*
WRPS	6/28/17	6/28/17	WRPS	6/28/17	6/28/17	6/28/17	
Relinquished By	Print	Sign	Received By	Date/Time	Sign	Date/Time	Matrix*
WRPS	6/28/17	6/28/17	WRPS	6/28/17	6/28/17	6/28/17	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process) Consumed					Date/Time 6/30/17 1415		

A-6003-962 (03/05)



## C.4.9 1,3-Butadiene



### ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172225

Workorder: **34-1718117**

Client Project ID: 2017 CARTRIDGE

EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

#### Analytical Results

Sample ID: <b>S17T023030</b>		Collected: 06/23/2017		
Lab ID: 1718117001		Received: 06/29/2017		
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube		
		Sampling Info: Air Volume Not Provided		
		Analyzed: 07/07/2017 (193773)		
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: <b>S17T023031</b>		Collected: 06/23/2017		
Lab ID: 1718117002		Received: 06/29/2017		
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: <b>S17T023032</b>		Collected: 06/23/2017		
Lab ID: 1718117003		Received: 06/29/2017		
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube		
Sampling Info: Air Volume Not Provided		Analyzed: 07/07/2017 (193773)		
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

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ALS GROUP USA, CORP. An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023033</b>		Collected: 06/23/2017		
Lab ID: 1718117004		Received: 06/29/2017		
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: <b>S17T023034</b>		Collected: 06/23/2017		
Lab ID: 1718117005		Received: 06/29/2017		
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: <b>S17T023035</b>		Collected: 06/23/2017		
Lab ID: 1718117006		Received: 06/29/2017		
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: <b>S17T023036</b>		Collected: 06/23/2017		
Lab ID: 1718117007		Received: 06/29/2017		
Method: <b>NIOSH 1024</b>		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: <b>S17T023037</b>		Collected: 06/23/2017		
Lab ID: 1718117008		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023038</b>		Collected: 06/23/2017	
Lab ID: 1718117009		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023039</b>		Collected: 06/23/2017	
Lab ID: 1718117010		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023040</b>		Collected: 06/23/2017	
Lab ID: 1718117011		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023041</b>		Collected: 06/23/2017	
Lab ID: 1718117012		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023042</b>		Collected: 06/23/2017	
Lab ID: 1718117013		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023043</b>		Collected: 06/23/2017	
Lab ID: 1718117014		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023044</b>		Collected: 06/23/2017	
Lab ID: 1718117015		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023045</b>		Collected: 06/23/2017	
Lab ID: 1718117016		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023046</b>		Collected: 06/23/2017	
Lab ID: 1718117017		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023047</b>		Collected: 06/23/2017	
Lab ID: 1718117018		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023048</b>		Collected: 06/23/2017	
Lab ID: 1718117019		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023049</b>		Collected: 06/23/2017	
Lab ID: 1718117020		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023050</b>		Collected: 06/23/2017	
Lab ID: 1718117021		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023051</b>		Collected: 06/23/2017	
Lab ID: 1718117022		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023052</b>		Collected: 06/23/2017	
Lab ID: 1718117023		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023053</b>		Collected: 06/23/2017	
Lab ID: 1718117024		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023054</b>		Collected: 06/23/2017	
Lab ID: 1718117025		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023055</b>		Collected: 06/23/2017	
Lab ID: 1718117026		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023056</b>		Collected: 06/23/2017	
Lab ID: 1718117027		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023057</b>		Collected: 06/23/2017	
Lab ID: 1718117028		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023058</b>		Collected: 06/23/2017	
Lab ID: 1718117029		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023059</b>		Collected: 06/23/2017	
Lab ID: 1718117030		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023060</b>		Collected: 06/23/2017	
Lab ID: 1718117031		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023061</b>		Collected: 06/23/2017	
Lab ID: 1718117032		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023062</b>		Collected: 06/23/2017	
Lab ID: 1718117033		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023063</b>		Collected: 06/23/2017	
Lab ID: 1718117034		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023064</b>		Collected: 06/23/2017	
Lab ID: 1718117035		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023065</b>		Collected: 06/23/2017	
Lab ID: 1718117036		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023066</b>		Collected: 06/23/2017	
Lab ID: 1718117037		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023067</b>		Collected: 06/23/2017	
Lab ID: 1718117038		Received: 06/29/2017	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023068</b>		Collected: 06/23/2017	
Lab ID: 1718117039		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023069</b>		Collected: 06/23/2017		
Lab ID: 1718117040		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
<b>Method: NIOSH 1024</b>		<b>Media: SKC 226-37 Sorbent Tube</b>		
<b>Sampling Info: Air Volume Not Provided</b>		<b>Analyzed: 07/07/2017 (193773)</b>		
<b>Analyte</b>	<b>Result (mg/sample)</b>	<b>Result (mg/m³)</b>	<b>Result (ppm)</b>	<b>RL (mg/sample)</b>
1,3-Butadiene	<0.0010	NA	NA	0.0010

### Comments

Workorder: 1718117
QC/QD pair 555319/555320 relate to samples 1718117001-020
QC/QD pair 555322/555323 relate to samples 1718117021-040

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1024	/S/ Fred Rejali 07/07/2017 14:39	/S/ Thomas J. Masoian 07/07/2017 15:34

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: als@alstlab.com  
Web: www.alstlab.com





## ANALYTICAL REPORT

Workorder: **34-1718117**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1718117

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** NIOSH 1024

**Batch:** IFID/8583 (HBN: 193773)

**Analyzed By:** Fred Rejali

### Blank

MB: 554563 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555309 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555312 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555315 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555318 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555321 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555324 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1718117

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: NIOSH 1024

Batch: IFID/8583 (HBN: 193773)

Analyzed By: Fred Rejali

### Blank

<b>MB:</b> 555327 <b>Analyzed:</b> 07/07/2017 00:00 <b>Units:</b> mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

<b>LCS:</b> 554564 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample					<b>LCSD:</b> 554565 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0281	0.0308	91.3	78.0 117.6	0.0298	96.8	5.87	0.0 20.0	
<b>LCS:</b> 555310 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample					<b>LCSD:</b> 555311 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0304	0.0308	98.8	78.0 117.6	0.0304	98.8	0.00	0.0 20.0	
<b>LCS:</b> 555313 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample					<b>LCSD:</b> 555314 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0310	0.0308	101	78.0 117.6	0.0309	100	0.323	0.0 20.0	
<b>LCS:</b> 555316 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample					<b>LCSD:</b> 555317 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0295	0.0308	95.8	78.0 117.6	0.0297	96.5	0.676	0.0 20.0	
<b>LCS:</b> 555319 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample					<b>LCSD:</b> 555320 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0298	0.0308	96.8	78.0 117.6	0.0303	98.4	1.66	0.0 20.0	
<b>LCS:</b> 555322 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample					<b>LCSD:</b> 555323 <b>Analyzed:</b> 07/07/2017 00:00 <b>Dilution:</b> 1 <b>Units:</b> mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0307	0.0308	99.7	78.0 117.6	0.0303	98.4	1.31	0.0 20.0	





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718117

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: NIOSH 1024

Batch: IFID/8583 (HBN: 193773)

Analyzed By: Fred Rejali

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 555325 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 555326 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0300	0.0308	97.5	78.0 117.6	0.0285	92.6	5.13	0.0 20.0	
LCS: 555328 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 555329 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0294	0.0308	95.5	78.0 117.6	0.0291	94.5	1.03	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Fred Rejali 07/07/2017 14:39	/S/ Thomas J. Masoian 07/07/2017 15:34

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1718117

1718117

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A		C.O.C. No. 20172225 Page 1 of 4							
Collector JONES	Contact/Requestor CARL HOWARD IV	Telephone No. 373-6861		MSIN T6-05		FAX 372-1878			
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 203067/CB20							
Project Title 2017 CARTRIDGE EVALUATION	Logbook/Work Package No. N/A	Tag Chest No. WIS-037		Temp. ON TCE					
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7795 1445 8499							
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 42646							
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative			
	S17T023030	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-BA-EFA	CHILL -4C			
	S17T023031	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-BA-EFB	CHILL -4C			
	S17T023032	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-BA-INA	CHILL -4C			
	S17T023033	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-BA-INB	CHILL -4C			
	S17T023034	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-BL-EFA	CHILL -4C			
	S17T023035	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-BL-EFB	CHILL -4C			
	S17T023036	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-BL-INA	CHILL -4C			
	S17T023037	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-BL-INB	CHILL -4C			
	S17T023038	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-1-A	CHILL -4C			
	S17T023039	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-1-B	CHILL -4C			
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No Hold Time									
SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl.W.Howald@rl.gov and Keisha.R.Garcia@rl.gov Reference Contract # 55502 RELEASE 15 NIOASH 1024 CHILL BELOW -4 C									
Relinquished By Dianne Turner	Print SW Harder	Signature SW Harder	Date/Time 6/28-17/1030	Received By SW Harder	Signature SW Harder	Date/Time 6-28-17/1030	Material* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids	Date/Time 6-28-17/1030	
Relinquished By WRPS	Print WRPS	Signature WRPS	Date/Time 6-28-17/1400	Received By WRPS	Signature WRPS	Date/Time 6-28-17/1400	Material* DL = Drum Liquids T = Tissue WM = Wipe L = Liquid V = Vegetation VA = Vapor X = Other	Date/Time 6-28-17/1400	
Relinquished By 6/28	Print 6/28	Signature 6/28	Date/Time 6-28-17/1400	Received By 6/28	Signature 6/28	Date/Time 6-28-17/1400	Material* DL = Drum Liquids T = Tissue WM = Wipe L = Liquid V = Vegetation VA = Vapor X = Other	Date/Time 6-28-17/1400	
Disposal Method (e.g., Return to customer, per lab procedure, used in process)									
Disposed By Fred Reja									
Date/Time 0710717 0700									

A-6003-962 (03/05)



Assembler		C.O.C. No. 20172225	
N/A		Page 2 of 4	
<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			
Collector	Requestor	Telephone No.	MSIN
JONES	CARL HOWARD IV	373-6861	16-05
SAF No.	Sample Origin	Purchase Order/Charge Code	FAX 372-1878
N/A	2017 CARTRIDGE EVALUATION	203006/CR20	
Project Title	Logbook/Work Package No.	Ips Chest No.	Temp.
2017 CARTRIDGE EVALUATION	N/A	WIS-037	ON ICE
Shipped To (Lab)	Method of Shipment	Bill of Lading/Air Bill No.	7795 1445 8499
ALS		Parts and Return No.	42646
Protocol	Data Turnaround		
N/A	10 DAYS		

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T023040	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-2-A	CHILL -4C
	S17T023041	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-2-B	CHILL -4C
	S17T023042	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-3-A	CHILL -4C
	S17T023043	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-3-B	CHILL -4C
	S17T023044	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-4-A	CHILL -4C
	S17T023045	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-4-B	CHILL -4C
	S17T023046	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-5-A	CHILL -4C
	S17T023047	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-5-B	CHILL -4C
	S17T023048	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-6-A	CHILL -4C
	S17T023049	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-6-B	CHILL -4C

**POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)** MSDS ☐ Yes ☒ No

**SPECIAL INSTRUCTIONS**  
 Send Results to Carl Howard & Keisha Garcia  
 Carl W. Howard@rl.gov and Keisha R. Garcia@rl.gov  
 gov see SOW for email  
 Reference Contract # 55502  
 RELEASE 15  
 NIOSH 1024 CHILL BELOW -4 C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	SW Harder	6/28/17	10:30	Scott Harder	Scott Harder	6-28-17/1030	
Relinquished By	SW Harder	6-28-17/1400		Received By	FEDEX		
Relinquished By	WPS	6/28/17/1558		Received By	WPS	6/28/17/1558	
Relinquished By				Received By			

Final Sample Disposition	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Date/Time
	Fred Rejali	07/07/17 0700

A-6003-562 (03/05)



Assembler		C.O.C. No. 20172225				
N/A		Page 3 of 4				
<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>						
Collector	Requestor	Telephone No.	MSIN			
JONES	CARL HOWARD IV	373-6861	16-05			
SAF No.	Sample Origin	Purchase Order/Charge Code	FAX			
N/A	2017 CARTRIDGE EVALUATION	203006/2520	372-1878			
Project Title	Logbook/Work Package No.	Ice Chest No.	Temp.			
2017 CARTRIDGE EVALUATION	N/A	WIS-037	ON ICE			
Shipped To (Lab)	Method of Shipment	Bill of Lading/Air Bill No.				
ALS		7795 1445 8499				
Protocol	Data Turnaround	Parts and Return No.				
N/A	10 DAYS	42646				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T023050	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-7-A	CHILL -4C
	S17T023051	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-7-B	CHILL -4C
	S17T023052	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-EF-8-A	CHILL -4C
	S17T023053	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-EF-8-B	CHILL -4C
	S17T023054	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-IN-1-A	CHILL -4C
	S17T023055	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-IN-1-B	CHILL -4C
	S17T023056	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-IN-2-A	CHILL -4C
	S17T023057	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-IN-2-B	CHILL -4C
	S17T023058	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-9-TL1-IN-3-A	CHILL -4C
	S17T023059	VA	6/23/17	CHARCOAL TUBE	1,3-Butadiene 17-04568-10-TL1-IN-3-B	CHILL -4C
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No						
<b>SPECIAL INSTRUCTIONS</b> Seed Results to Carl Howard & Keisha Garcia Carl W. Howard@rl.gov and Keisha R. Garcia@rl.gov gov see SOW for email Reference Contract # 55502 RELEASE 15 NIOSH 1024 CHILL BELOW -4 C						
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time
Dianne Turner	SW Harder	SW Harder	SW Harder	SW Harder	SW Harder	6-28-17/1030
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time
SW Harder	SW Harder	SW Harder	SW Harder	SW Harder	SW Harder	6-28-17/1400
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time
SW Harder	SW Harder	SW Harder	SW Harder	SW Harder	SW Harder	6-28-17/1400
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time
SW Harder	SW Harder	SW Harder	SW Harder	SW Harder	SW Harder	6-28-17/1400
<b>Disposal Method (e.g., Return to customer, per lab procedure, used in process)</b> Fred R. Jah						
<b>Date/Time</b> 07/07/17						
<b>Matrix*</b> S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vapor O = Oil VA = Vapor A = Air X = Other DS = Drum Solids						









## ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172226

Workorder: **34-1718118**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023070</b>		Collected: 06/24/2017		
Lab ID: 1718118001		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube		
Analyzed: 07/07/2017 (193773)		Sampling Info: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: <b>S17T023071</b>		Collected: 06/24/2017	
Lab ID: 1718118002		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023072</b>		Collected: 06/24/2017		
Lab ID: 1718118003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube		
Analyzed: 07/07/2017 (193773)		Sampling Info: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

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ALS GROUP USA, CORP. An ALS Limited Company

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[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023073</b>		Collected: 06/24/2017	
Lab ID: 1718118004		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023074</b>		Collected: 06/24/2017	
Lab ID: 1718118005		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023075</b>		Collected: 06/24/2017	
Lab ID: 1718118006		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023076</b>		Collected: 06/24/2017	
Lab ID: 1718118007		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023077</b>		Collected: 06/24/2017	
Lab ID: 1718118008		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023078</b>		Collected: 06/24/2017	
Lab ID: 1718118009		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023079</b>		Collected: 06/24/2017	
Lab ID: 1718118010		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023080</b>		Collected: 06/24/2017	
Lab ID: 1718118011		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023081</b>		Collected: 06/24/2017	
Lab ID: 1718118012		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023082</b>		Collected: 06/24/2017	
Lab ID: 1718118013		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023083</b>		Collected: 06/24/2017	
Lab ID: 1718118014		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023084</b>		Collected: 06/24/2017	
Lab ID: 1718118015		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023085</b>		Collected: 06/24/2017	
Lab ID: 1718118016		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023086</b>		Collected: 06/24/2017	
Lab ID: 1718118017		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023087</b>		Collected: 06/24/2017	
Lab ID: 1718118018		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023088</b>		Collected: 06/24/2017	
Lab ID: 1718118019		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023089</b>		Collected: 06/24/2017	
Lab ID: 1718118020		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023090</b>		Collected: 06/24/2017	
Lab ID: 1718118021		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023091</b>		Collected: 06/24/2017	
Lab ID: 1718118022		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023092</b>		Collected: 06/24/2017	
Lab ID: 1718118023		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023093</b>		Collected: 06/24/2017	
Lab ID: 1718118024		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023094</b>		Collected: 06/24/2017	
Lab ID: 1718118025		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023095</b>		Collected: 06/24/2017	
Lab ID: 1718118026		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023096</b>		Collected: 06/24/2017	
Lab ID: 1718118027		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023097</b>		Collected: 06/24/2017	
Lab ID: 1718118028		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023098</b>		Collected: 06/24/2017	
Lab ID: 1718118029		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023099</b>		Collected: 06/24/2017	
Lab ID: 1718118030		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023100</b>		Collected: 06/24/2017	
Lab ID: 1718118031		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023101</b>		Collected: 06/24/2017	
Lab ID: 1718118032		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023102</b>		Collected: 06/24/2017	
Lab ID: 1718118033		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023103</b>		Collected: 06/24/2017	
Lab ID: 1718118034		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023104</b>		Collected: 06/24/2017	
Lab ID: 1718118035		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023105</b>		Collected: 06/24/2017	
Lab ID: 1718118036		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023106</b>		Collected: 06/24/2017	
Lab ID: 1718118037		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023107</b>		Collected: 06/24/2017	
Lab ID: 1718118038		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023108</b>		Collected: 06/24/2017	
Lab ID: 1718118039		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: <b>S17T023109</b>		Collected: 06/24/2017	
Lab ID: 1718118040		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	Analyzed: 07/07/2017 (193773)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

### Comments

Workorder: 1718118
QC/QD pair 555325/555326 relate to samples 1718118001-20
QC/QD pair 555328/555329 relate to samples 1718118021-40

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1024	/S/ Fred Rejali 07/07/2017 14:39	/S/ Thomas J. Masoian 07/07/2017 15:35

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: als@alstlab.com  
Web: www.alstlab.com





## ANALYTICAL REPORT

Workorder: **34-1718118**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1718118

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** NIOSH 1024

**Batch:** IFID/8583 (HBN: 193773)

**Analyzed By:** Fred Rejali

### Blank

MB: 554563 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555309 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555312 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555315 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555318 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555321 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100
MB: 555324 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100





## Quality Control Sample Batch Report

### Analysis Information

**Workorder: 1718118**

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: NIOSH 1024  
Batch: IFID/8583 (HBN: 193773)  
Analyzed By: Fred Rejali

### Blank

<b>MB: 555327</b> <b>Analyzed: 07/07/2017 00:00</b>  Units: mg/sample			
Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

<b>LCS: 554564</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample					<b>LCSD: 554565</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0281	0.0308	91.3	78.0 117.6	0.0298	96.8	5.87	0.0 20.0	
<b>LCS: 555310</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample					<b>LCSD: 555311</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0304	0.0308	98.8	78.0 117.6	0.0304	98.8	0.00	0.0 20.0	
<b>LCS: 555313</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample					<b>LCSD: 555314</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0310	0.0308	101	78.0 117.6	0.0309	100	0.323	0.0 20.0	
<b>LCS: 555316</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample					<b>LCSD: 555317</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0295	0.0308	95.8	78.0 117.6	0.0297	96.5	0.676	0.0 20.0	
<b>LCS: 555319</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample					<b>LCSD: 555320</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0298	0.0308	96.8	78.0 117.6	0.0303	98.4	1.66	0.0 20.0	
<b>LCS: 555322</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample					<b>LCSD: 555323</b> <b>Analyzed: 07/07/2017 00:00</b> Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0307	0.0308	99.7	78.0 117.6	0.0303	98.4	1.31	0.0 20.0	





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718118

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: NIOSH 1024

Batch: IFID/8583 (HBN: 193773)

Analyzed By: Fred Rejali

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 555325 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 555326 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0300	0.0308	97.5	78.0 117.6	0.0285	92.6	5.13	0.0 20.0	
LCS: 555328 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 555329 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0294	0.0308	95.5	78.0 117.6	0.0291	94.5	1.03	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Fred Rejali 07/07/2017 14:39	/S/ Thomas J. Masoian 07/07/2017 15:34

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1718118

1718118

Assembler				C.O.C. No.			
N/A				20172226			
Collector				Page 1 of 4			
JONES				MSIN			
SAF No.				Telephone No. 373-6861			
N/A				203006/CB20			
Project Title				Purchase Order/Charge Code			
2017 CARTRIDGE EVALUATION				203006/CB20			
Shipped To (Lab)				Ice Chest No.			
ALS				WTS-037			
Protocol				Temp.			
N/A				7795 1445 8499			
Data Turnaround				Parts and Return No.			
10 DAYS				42646			

Sample No.	Lab ID	Date	Time	No. Type Container	Sample Analysis	Preservative
	S17T023070	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-4-A	CHILL -4C
	S17T023071	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-4-B	CHILL -4C
	S17T023072	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-5-A	CHILL -4C
	S17T023073	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-5-B	CHILL -4C
	S17T023074	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-6-A	CHILL -4C
	S17T023075	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-6-B	CHILL -4C
	S17T023076	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-7-A	CHILL -4C
	S17T023077	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-BL-TNB	CHILL -4C
	S17T023078	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-1-A	CHILL -4C
	S17T023079	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-1-B	CHILL -4C

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)				MSDS	Yes	No	Hold Time
SPECIAL INSTRUCTIONS							
Send Results to Carl Howard & Keisha Garcia							
Carl.W.Howard@rl.gov and Keisha.R.Garcia@rl.gov see SOW for email							
Reference Contract # 55502							
RELEASE 15							
NIOSH 1024 CHILL BELOW -4 C							

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*
Dianne Turner	SW Harder	6/28/17 10:36	6/28-17/1030	SW Harder	6/28-17/1030			S = Soil DL = Drum Liquids
Relinquished By	SW Harder	6/28/17 10:36	6/28-17/1030	Received By	FEDEX			SE = Sediment T = Tissue
Relinquished By	WRPS	6/28-17/1400	6/28-17/1400	Received By				SO = Solid WI = Wipe
Relinquished By				Received By				SL = Sludge L = Liquid
				Received By				W = Water V = Vegetation
				Received By				O = Oil VA = Vapor
				Received By				A = Air X = Other
				Received By				DS = Drum Solids

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Date/Time
	Fred Rejali	07/07/17 0700

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



Assembler N/A		C.O.C. No. 20172226 Page 2 of 4				
Collector JONES		Telephone No. 373-5861 MSIN 16-05 FAX 372-1878				
SAF No. N/A		Purchase Order/Charge Code 203006/C520				
Project Title 2017 CARTRIDGE EVALUATION		Ice Chest No. WYS-037 Temp. <u>Ice</u>				
Shipped To (Lab) AUS		Bill of Lading/Air Bill No. 779 5144 5 8499				
Protocol N/A		Parts and Return No. 42646				
Data Turnaround 10 DAYS						
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T023080	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-2-A	CHILL -4C
	S17T023081	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-2-B	CHILL -4C
	S17T023082	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-3-A	CHILL -4C
	S17T023083	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-3-B	CHILL -4C
	S17T023084	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-BA-EFA	CHILL -4C
	S17T023085	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-BA-EFB	CHILL -4C
	S17T023086	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-BA-INA	CHILL -4C
	S17T023087	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-BA-INB	CHILL -4C
	S17T023088	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-BL-EFA	CHILL -4C
	S17T023089	VA	6/24/17	CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-BL-EFB	CHILL -4C
<p>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>SPECIAL INSTRUCTIONS            Send Results to Carl Howald &amp; Keisha Garcia            Carl W. Howald@rl.gov and Keisha R. Garcia@rl.gov            gov see SOW for email            Reference Contract # 55502            RELEASE 15            NIOSH 1024 CHILL BELOW -4 C</p>						
Relinquished By Dianne Turner	Print SW Harder	Sign Dianne Turner	Date/Time 6/24/17 10:30	Received By Scott Harder	Sign Scott Harder	Date/Time 6-28-17/1030
Relinquished By WRPS	Print WRPS	Sign WRPS	Date/Time 6-28-17/1400	Received By WRPS	Sign WRPS	Date/Time 6-28-17/1400
Relinquished By WRPS	Print WRPS	Sign WRPS	Date/Time 6-28-17/1400	Received By WRPS	Sign WRPS	Date/Time 6-28-17/1400
Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Date/Time 07/07/17 0700		







Assembler N/A		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				G.O.C. No. 20172226 Page 4 of 4	
Collector JONES	Contact/Requestor CARL HOWARD EV	Telephone No. 373-6861		MSNH 16-05 FAX 372-1878			
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 233006/CH20		Ice Chest No. <u>WIS-037</u> Temp. <u>ON ICE</u>			
Project Title 2017 CARTRIDGE EVALUATION	Logbook/Work Package No. N/A	Bill of Lading/Air Bill No. <u>7795 1445 8499</u>		Parts and Return No. <u>42646</u>			
Shipped To (Lab) ALS	Method of Shipment	Data Turnaround 10 DAYS		Preservative			
Protocol N/A							
Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T023100	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-IN-5-A	CHILL -4C
	S17T023101	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-IN-5-B	CHILL -4C
	S17T023102	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-IN-6-A	CHILL -4C
	S17T023103	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-7-B	CHILL -4C
	S17T023104	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-EF-8-A	CHILL -4C
	S17T023105	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-EF-8-B	CHILL -4C
	S17T023106	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-IN-1-A	CHILL -4C
	S17T023107	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-IN-1-B	CHILL -4C
	S17T023108	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-9-TL2-IN-2-A	CHILL -4C
	S17T023109	VA	6/24/17		CHARCOAL TUBE	1,3-Butadiene 17-04569-10-TL2-IN-2-B	CHILL -4C
<p>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>SPECIAL INSTRUCTIONS Send Results to Carl Howard &amp; Keisha Garcia Carl W. Howard@rl.gov and Keisha R. Garcia@rl.gov see SON for email Reference Contract # 55502 RELEASE 15 NIOSH 1024 CHILL BELOW -4 C</p>							
Relinquished By <u>Dianne Jones</u>	Print <u>SW Harder</u>	Sign <u>Dianne Jones</u>	Date/Time <u>6/28/17</u>	Received By <u>SW Harder</u>	Sign <u>SW Harder</u>	Date/Time <u>6-28-17/1030</u>	Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids
Relinquished By <u>WRPS</u>	Print <u>SW Harder</u>	Sign <u>SW Harder</u>	Date/Time <u>6/28/17</u>	Received By <u>SW Harder</u>	Sign <u>SW Harder</u>	Date/Time <u>6-28-17/1030</u>	Matrix* DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By <u>SW Harder</u>	Print <u>SW Harder</u>	Sign <u>SW Harder</u>	Date/Time <u>6-28-17/1400</u>	Received By <u>SW Harder</u>	Sign <u>SW Harder</u>	Date/Time <u>6-28-17/1400</u>	Matrix* DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By <u>SW Harder</u>	Print <u>SW Harder</u>	Sign <u>SW Harder</u>	Date/Time <u>6-28-17/1400</u>	Received By <u>SW Harder</u>	Sign <u>SW Harder</u>	Date/Time <u>6-28-17/1400</u>	Matrix* DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)						Date/Time
	Fred Rejah						07/07/17 0700

A-6003-962 (03/05)



## C.4.10 Pyridines



### ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov  
20172235

Workorder: **34-1718129**

Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

#### Analytical Results

Sample ID: <b>S17T023233</b>		Collected: 06/23/2017		
Lab ID: 1718129001		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023234</b>		Collected: 06/23/2017		
Lab ID: 1718129002		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023235</b>		Collected: 06/23/2017		
Lab ID: 1718129003		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992  
ALS GROUP USA, CORP. An ALS Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER





## ANALYTICAL REPORT

Workorder: **34-1718129**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023236</b>		Collected: 06/23/2017	
Lab ID: 1718129004		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023237</b>		Collected: 06/23/2017	
Lab ID: 1718129005		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023238</b>		Collected: 06/23/2017	
Lab ID: 1718129006		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023239</b>		Collected: 06/23/2017	
Lab ID: 1718129007		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1718129**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023240</b>		Collected: 06/23/2017	
Lab ID: 1718129008		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023241</b>		Collected: 06/23/2017	
Lab ID: 1718129009		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023242</b>		Collected: 06/23/2017	
Lab ID: 1718129010		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023243</b>		Collected: 06/23/2017	
Lab ID: 1718129011		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1718129**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023244</b>		Collected: 06/23/2017		
Lab ID: 1718129012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023245</b>		Collected: 06/23/2017		
Lab ID: 1718129013		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023246</b>		Collected: 06/23/2017		
Lab ID: 1718129014		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023247</b>		Collected: 06/23/2017		
Lab ID: 1718129015		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50





## ANALYTICAL REPORT

Workorder: **34-1718129**  
Client Project ID: 2017 CARTRIDGE EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023248</b>		Collected: 06/23/2017	
Lab ID: 1718129016		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023249</b>		Collected: 06/23/2017	
Lab ID: 1718129017		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023250</b>		Collected: 06/23/2017	
Lab ID: 1718129018		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023251</b>		Collected: 06/23/2017	
Lab ID: 1718129019		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193828)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1718129**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023252</b>		Collected: 06/23/2017		
Lab ID: 1718129020		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193828)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

### Comments

#### Quality Control: NIOSH 1613 Mod. - (HBN: 193828)

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

### Report Authorization (IS/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1613 Mod.	/S/ Benson Boy 07/06/2017 09:35	/S/ Thomas J. Masoian 07/07/2017 09:04

### Laboratory Contact Information

ALS Environmental  
960 W Levoe Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alstt.lab@ALSGlobal.com](mailto:alstt.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)





## ANALYTICAL REPORT

Workorder: **34-1718129**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718129

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: NIOSH 1613 Mod.  
Batch: ISVO/3544 (HBN: 193828)  
Analyzed By: Benson Boy

### Blank

LMB: 554701 Analyzed: 07/05/2017 14:33 Units: ug/sample			
Analyte	Result	MDL	RL
Pyridine	ND	NA	0.500
2,4-Dimethylpyridine	ND	NA	0.500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554702 Analyzed: 07/05/2017 14:53 Dilution: 1 Units: ug/sample					LCSD: 554703 Analyzed: 07/05/2017 15:13 Dilution: 1 Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Pyridine	1.86	2.00	93.1	28.7 141.2	1.88	93.8	0.723	0.0	22.1
2,4-Dimethylpyridine	2.14	2.00	107	18.3 119.1	2.13	107	0.566	0.0	22.2

### Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Benson Boy 07/06/2017 09:35	/S/ Thomas J. Masoian 07/07/2017 09:04

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1718129

1718129

Assembler		C.O.C. No.		Page	
N/A		20172235		1 of 2	
Collector		Telephone No.		MSIN	
JONES		373-8861		372-1878	
SAF No.		Purchase Order/Charge Code		FAX	
N/A		20306/CH20		36-05	
Project Title		Ice Chest No.		Temp.	
2017 CARTRIDGE EVALUATION		WIS-037		ON JOE	
Shipped To (Lab)		Bill of Lading/Air Bill No.		779514458499	
N/A		Parts and Return No.		42646	
Protocol		Data Turnaround		Preservative	
N/A		10 DAYS		N/A	
Sample No.		Lab ID	Date	No./Type Container	Sample Analysis
	S17T023233	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-BA-EP-1
	S17T023234	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-BA-IN-1
	S17T023235	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-BL-EP-1
	S17T023236	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-BL-IN-1
	S17T023237	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-EP-1
	S17T023238	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-EP-2
	S17T023239	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-EP-3
	S17T023240	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-EP-4
	S17T023241	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-EP-5
	S17T023242	VA	6/23/17	CHARCOAL TUBE	Pyridines 17-04568-11-TL1-EP-6
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No					
SPECIAL INSTRUCTIONS Send Results to Carl Howard IV and Keisha Garcia Carl.W.Howard@l.gov and Keisha.R.Garcia@l.gov gov see SOW for email					
Relinquished By	Print	Sign	Date/Time	Received By	Date/Time
Sharon Webb	Print	Signature	6-28-17 1030	Scott Harder	6-28-17 1030
Relinquished By	Print	Sign	Date/Time	Received By	Date/Time
SW Harder	Print	Signature	6-28-17 1423	FEDEX	
Relinquished By	Print	Sign	Date/Time	Received By	Date/Time
WRPS	Print	Signature	6-28-17 1423	FEDEX	
Relinquished By	Print	Sign	Date/Time	Received By	Date/Time
	Print	Signature			
Disposal Method (e.g., Return to customer, per lab procedure, used in process)					
Per lab procedure					
Date/Time					
7/5/17 140 PM					

A-6003-962 (03/05)









## ANALYTICAL REPORT

Report Date: June 29, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

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20172105

Workorder: **34-1717342**

Client Project ID: 2107 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021005</b>		Collected: 06/16/2017	
Lab ID: 1717342001		Received: 06/22/2017	
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)    RL (ug/sample)
Pyridine	<0.50	NA	NA    0.50
2,4-Dimethylpyridine	<0.50	NA	NA    0.50

Sample ID: <b>S17T021006</b>		Collected: 06/16/2017	
Lab ID: 1717342002		Received: 06/22/2017	
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)    RL (ug/sample)
Pyridine	<0.50	NA	NA    0.50
2,4-Dimethylpyridine	<0.50	NA	NA    0.50

Sample ID: <b>S17T021007</b>		Collected: 06/16/2017	
Lab ID: 1717342003		Received: 06/22/2017	
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)      RL (ug/sample)
Pyridine	<0.50	NA	NA      0.50
2,4-Dimethylpyridine	<0.50	NA	NA      0.50

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ALS GROUP USA, CORP. An ALS Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1717342**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021008</b>		Collected: 06/16/2017	
Lab ID: 1717342004		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021009</b>		Collected: 06/16/2017	
Lab ID: 1717342005		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021010</b>		Collected: 06/16/2017	
Lab ID: 1717342006		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021011</b>		Collected: 06/16/2017	
Lab ID: 1717342007		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1717342**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021012</b>		Collected: 06/16/2017	
Lab ID: 1717342008		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021013</b>		Collected: 06/16/2017	
Lab ID: 1717342009		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021014</b>		Collected: 06/16/2017	
Lab ID: 1717342010		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021015</b>		Collected: 06/16/2017	
Lab ID: 1717342011		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1717342**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021016</b>		Collected: 06/16/2017		
Lab ID: 1717342012		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021017</b>		Collected: 06/16/2017		
Lab ID: 1717342013		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/27/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021018</b>		Collected: 06/16/2017		
Lab ID: 1717342014		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021019</b>		Collected: 06/16/2017		
Lab ID: 1717342015		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50





## ANALYTICAL REPORT

Workorder: **34-1717342**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021020</b>		Collected: 06/16/2017		
Lab ID: 1717342016		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021021</b>		Collected: 06/16/2017		
Lab ID: 1717342017		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021022</b>		Collected: 06/16/2017		
Lab ID: 1717342018		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021023</b>		Collected: 06/16/2017		
Lab ID: 1717342019		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50





## ANALYTICAL REPORT

Workorder: **34-1717342**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021024</b>		Collected: 06/16/2017		
Lab ID: 1717342020		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193315)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

### Comments

#### Quality Control: NIOSH 1613 Mod. - (HBN: 193315)

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

2,4-Dimethylpyridine is outside of passing percent recovery criteria high in the LCS and LCSD.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1613 Mod.	/S/ Benson Boy 06/29/2017 11:24	/S/ Thomas J. Masoian 06/29/2017 12:29

### Laboratory Contact Information

ALS Environmental  
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Salt Lake City, Utah 84123

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## ANALYTICAL REPORT

Workorder: **34-1717342**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1717342

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: NIOSH 1613 Mod.

Batch: ISVO/3535 (HBN: 193315)

Analyzed By: Benson Boy

### Blank

LMB: 553636

Analyzed: 06/27/2017 14:53

Units: ug/sample

Analyte	Result	MDL	RL
Pyridine	ND	NA	0.500
2,4-Dimethylpyridine	ND	NA	0.500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553637

Analyzed: 06/27/2017 15:14

Dilution: 1

Units: ug/sample

LCSD: 553638

Analyzed: 06/27/2017 15:33

Dilution: 1

Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Pyridine	2.50	2.00	125	28.7 141.2	2.22	111	11.8	0.0 22.1
2,4-Dimethylpyridine	2.85	2.00	* 142	18.3 119.1	2.56	* 128	10.7	0.0 22.2

### Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

2,4-Dimethylpyridine is outside of passing percent recovery criteria high in the LCS and LCSD.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

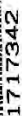
Analyst	Peer Review
/S/ Benson Boy 06/29/2017 11:24	/S/ Thomas J. Masoian 06/29/2017 12:29

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





3

1717342

24.7.17



Assembler		C.O.C. No. 20172105																																		
N/A		Page 2 of 2																																		
<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>																																				
Collector	Carl Howell IV	Telephone No.	373-6861																																	
SAF No.	N/A	MSIN	16-05 FAX 372-1878																																	
Project Title	2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code	203006/C820																																	
Shipped To (Lab)	ALS	Ice Chest No.	WTS-033 ON ICE																																	
Protocol	N/A	Bill of Lading/Air Bill No.	7794 6050 4373																																	
		Parts and Return No.	42606																																	
Sample No.	Lab ID	Date	Time																																	
11	S17T021015	VA	6/16/17																																	
12	S17T021016	VA	6/16/17																																	
13	S17T021017	VA	6/16/17																																	
14	S17T021018	VA	6/16/17																																	
15	S17T021019	VA	6/16/17																																	
16	S17T021020	VA	6/16/17																																	
17	S17T021021	VA	6/16/17																																	
18	S17T021022	VA	6/16/17																																	
19	S17T021023	VA	6/16/17																																	
20	S17T021024	VA	6/16/17																																	
<table border="1"> <thead> <tr> <th>No./Type Container</th> <th>Sample Analysis</th> <th>Preservative</th> </tr> </thead> <tbody> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-SF-7 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-SF-8 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-1 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-2 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-3 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-4 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-5 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-6 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-7 *</td> <td>N/A</td> </tr> <tr> <td>CHARCOAL TUBE</td> <td>Pyridines 17-03269-11-TLL-IN-8 *</td> <td>N/A</td> </tr> </tbody> </table>				No./Type Container	Sample Analysis	Preservative	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-SF-7 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-SF-8 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-1 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-2 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-3 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-4 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-5 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-6 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-7 *	N/A	CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-8 *	N/A
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CHARCOAL TUBE	Pyridines 17-03269-11-TLL-IN-8 *	N/A																																		
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No																																				
<b>SPECIAL INSTRUCTIONS</b> Send Results to Carl Howell IV and Keisha Garcia Carl.W.Howald@rl.gov and Keisha.R.Garcia@rl.gov gov See SOW for email																																				
Relinquished By	Print	Sign	Date/Time																																	
Sharon Udder	6/21/17	RE ROGERS	1030																																	
Relinquished By	Print	Sign	Date/Time																																	
RE ROGERS	6/21/17	FEDEX	1400																																	
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Relinquished By	Print	Sign	Date/Time																																	
RE ROGERS	6/21/17	FEDEX	1400																																	
<b>Matrix*</b> S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid W = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids																																				
<b>Disposal Method (e.g., Return to customer, per lab procedure, used in process)</b> Per lab procedure			Date/Time 6/29/17 1650																																	
All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.																																				





## ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172236

Workorder: **34-1718130**

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023253</b>		Collected: 06/24/2017		
Lab ID: 1718130001		Received: 06/29/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023254</b>		Collected: 06/24/2017		
Lab ID: 1718130002		Received: 06/29/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg		
		Analyzed: 07/05/2017 (193939)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023255</b>		Collected: 06/24/2017		
Lab ID: 1718130003		Received: 06/29/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg		
		Analyzed: 07/05/2017 (193939)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

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ALS GROUP USA, CORP. An ALS Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER





## ANALYTICAL REPORT

Workorder: **34-1718130**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023256</b>		Collected: 06/24/2017		
Lab ID: 1718130004		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023257</b>		Collected: 06/24/2017		
Lab ID: 1718130005		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023258</b>		Collected: 06/24/2017		
Lab ID: 1718130006		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023259</b>		Collected: 06/24/2017		
Lab ID: 1718130007		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50





## ANALYTICAL REPORT

Workorder: **34-1718130**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023260</b>		Collected: 06/24/2017	
Lab ID: 1718130008		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023261</b>		Collected: 06/24/2017	
Lab ID: 1718130009		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/05/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023262</b>		Collected: 06/24/2017	
Lab ID: 1718130010		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023263</b>		Collected: 06/24/2017	
Lab ID: 1718130011		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1718130**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023264</b>		Collected: 06/24/2017		
Lab ID: 1718130012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023265</b>		Collected: 06/24/2017		
Lab ID: 1718130013		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023266</b>		Collected: 06/24/2017		
Lab ID: 1718130014		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T023267</b>		Collected: 06/24/2017		
Lab ID: 1718130015		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50





## ANALYTICAL REPORT

Workorder: **34-1718130**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023268</b>		Collected: 06/24/2017	
Lab ID: 1718130016		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023269</b>		Collected: 06/24/2017	
Lab ID: 1718130017		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023270</b>		Collected: 06/24/2017	
Lab ID: 1718130018		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T023271</b>		Collected: 06/24/2017	
Lab ID: 1718130019		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1718130**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023272</b>		Collected: 06/24/2017		
Lab ID: 1718130020		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 07/06/2017 (193939)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

### Comments

#### Quality Control: NIOSH 1613 Mod. - (HBN: 193939)

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

LCS and LCD failed high for 2,4-dimethylpyridine at 2.84 µg/ml and 3.11 µg/ml

Sample container ID 1718130-005B (back portion of sampler) was desorbed with 1.7ml of 37475.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1613 Mod.	/S/ Benson Boy 07/07/2017 08:07	/S/ Thomas J. Masoian 07/07/2017 09:05

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

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## ANALYTICAL REPORT

Workorder: **34-1718130**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718130

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: NIOSH 1613 Mod.  
Batch: ISVO/3545 (HBN: 193939)  
Analyzed By: Benson Boy

### Blank

LMB: 554936 Analyzed: 07/05/2017 17:08 Units: ug/sample			
Analyte	Result	MDL	RL
Pyridine	ND	NA	0.500
2,4-Dimethylpyridine	ND	NA	0.500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554937 Analyzed: 07/05/2017 17:28 Dilution: 1 Units: ug/sample					LCSD: 554938 Analyzed: 07/05/2017 17:48 Dilution: 1 Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Pyridine	2.35	2.00	118	28.7 141.2	2.51	126	6.61	0.0	22.1
2,4-Dimethylpyridine	2.84	2.00	* 142	18.3 119.1	3.11	* 156	9.10	0.0	22.2

### Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

LCS and LCD failed high for 2,4-dimethylpyridine at 2.84 µg/ml and 3.11 µg/ml

Sample container ID 1718130-005B (back portion of sampler) was desorbed with 1.7ml of 37475.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Benson Boy 07/07/2017 08:07	/S/ Thomas J. Masoian 07/07/2017 09:05

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1718130

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembled N/A		C.O.C. No. 20172236 Page 1 of 2							
Collector JONES		Telephone No. 373-6861 MSIN T6-05 FAX 372-1878							
SAF No. N/A		Purchase Order/Charge Code 203006/7323							
Project Title 2017 CARTRIDGE EVALUATION		Ice Chest No. <u>WIS-037</u> Temp. <u>ON ICE</u>							
Shipped To (Lab) AUS		Bill of Lading/AF Bill No. <u>7795</u> <u>14TS 8499</u>							
Protocol N/A		Parts and Return No. <u>42646</u>							
Data Turnaround 10 DAYS									
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis			Preservative	
	S17T023253	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BA-2F			N/A	
	S17T023254	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BA-IN			N/A	
	S17T023255	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BL-BF			N/A	
	S17T023256	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BJ-IN			N/A	
	S17T023257	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BF-1			N/A	
	S17T023258	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BF-2			N/A	
	S17T023259	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BF-3			N/A	
	S17T023260	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BF-4			N/A	
	S17T023261	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BF-5			N/A	
	S17T023262	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-BF-6			N/A	
SPECIAL INSTRUCTIONS Send Results to Carl Howald IV and Keisha Garcia Carl.W.Howald@rl.gov and Keisha.R.Garcia@rl.gov see SOW for email.									
RELEASE 15 Reference Contract # 55502									
Relinquished By Sharon Light	Print h. U. d. W.	Sign 6-28-17/1030	Received By Sant Harder	Print Sant Harder	Sign 6-28-17/1030	Date/Time 6-28-17/1030	Received By FEDEx	Print FEDEx	Sign 6-28-17/1030
Relinquished By WRPS	Print G. A. L.	Sign 6-28-17/1400	Received By	Print	Sign	Date/Time	Received By	Print	Sign
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Received By	Print	Sign
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Received By	Print	Sign
Disposal Method (e.g., Return to customer, per lab procedure, used in process)						Date/Time 4/6/17 230			
Per Lab Procedure									

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-0003-962 (03/05)



Assembler		C.O.C. No.	
N/A		20172236	
<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			
Collector	Contact/Requestor	Telephone No.	MSIN
JONES	CARL HOWARD IV	373-5861	16-05
SAF No.	Sample Origin	Purchase Order/Charge Code	FAX
N/A	2017 CARTRIDGE EVALUATION	203006/CH20	372-1878
Project Title	Logbook/Work Package No.	Ice Chest No.	LEAD
2017 CARTRIDGE EVALUATION	N/A	WIS-037	JCE
Shipped To (Lab)	Method of Shipment	Bill of Lading/Air Bill No.	17951458499
ALS		Parts and Return No.	42646
Protocol	Data Turnaround		
N/A	10 DAYS		

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S177023263	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-SF-7	N/A
	S177023264	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-SF-8	N/A
	S177023265	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-1	N/A
	S177023266	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-2	N/A
	S177023267	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-3	N/A
	S177023268	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-4	N/A
	S177023269	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-5	N/A
	S177023270	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-6	N/A
	S177023271	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-7	N/A
	S177023272	VA	6/24/17	CHARCOAL TUBE	Pyridines 17-04569-11-TL2-IN-8	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)		MSDS	Yes	No
SPECIAL INSTRUCTIONS				
Send Results to Carl Howard IV and Keisha Garcia Carl W. Howard@rl.gov and Keisha R. Garcia@rl.gov gov See SOW for email				
RELEASE 15				
Reference Contract # 55502				

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Shirley Felder	6-28-17	1030	SW Harder	6-28-17	1030		
Relinquished By	SW Harder			Received By	FEDEX		
Relinquished By	WRPS			Received By			
Relinquished By				Received By			

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By				Received By			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	per lab procedure		6/16/17 230 pm

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)





## ANALYTICAL REPORT

Report Date: June 29, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172106

Workorder: **34-1717343**

Client Project ID: 2107 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021025</b>		Collected: 06/17/2017	
Lab ID: 1717343001		Received: 06/22/2017	
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)    RL (ug/sample)
Pyridine	<0.50	NA	NA    0.50
2,4-Dimethylpyridine	<0.50	NA	NA    0.50

Sample ID: <b>S17T021026</b>		Collected: 06/17/2017	
Lab ID: 1717343002		Received: 06/22/2017	
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)    RL (ug/sample)
Pyridine	<0.50	NA	NA    0.50
2,4-Dimethylpyridine	<0.50	NA	NA    0.50

Sample ID: <b>S17T021027</b>		Collected: 06/17/2017	
Lab ID: 1717343003		Received: 06/22/2017	
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)    RL (ug/sample)
Pyridine	<0.50	NA	NA    0.50
2,4-Dimethylpyridine	<0.50	NA	NA    0.50

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992  
ALS GROUP USA, CORP. An ALS Limited Company

Environmental

[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1717343**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021028</b>		Collected: 06/17/2017	
Lab ID: 1717343004		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021029</b>		Collected: 06/17/2017	
Lab ID: 1717343005		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021030</b>		Collected: 06/17/2017	
Lab ID: 1717343006		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021031</b>		Collected: 06/17/2017	
Lab ID: 1717343007		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1717343**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021032</b>		Collected: 06/17/2017		
Lab ID: 1717343008		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021033</b>		Collected: 06/17/2017		
Lab ID: 1717343009		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021034</b>		Collected: 06/17/2017		
Lab ID: 1717343010		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021035</b>		Collected: 06/17/2017		
Lab ID: 1717343011		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50





## ANALYTICAL REPORT

Workorder: **34-1717343**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021036</b>		Collected: 06/17/2017	
Lab ID: 1717343012		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021037</b>		Collected: 06/17/2017	
Lab ID: 1717343013		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021038</b>		Collected: 06/17/2017	
Lab ID: 1717343014		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50

Sample ID: <b>S17T021039</b>		Collected: 06/17/2017	
Lab ID: 1717343015		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)
Sampling Info: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (ug/sample)
Pyridine	<0.50	NA	NA 0.50
2,4-Dimethylpyridine	<0.50	NA	NA 0.50





## ANALYTICAL REPORT

Workorder: **34-1717343**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021040</b>		Collected: 06/17/2017		
Lab ID: 1717343016		Received: 06/22/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021041</b>		Collected: 06/17/2017		
Lab ID: 1717343017		Received: 06/22/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021042</b>		Collected: 06/17/2017		
Lab ID: 1717343018		Received: 06/22/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: <b>S17T021043</b>		Collected: 06/17/2017		
Lab ID: 1717343019		Received: 06/22/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 06/28/2017 (193322)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50





## ANALYTICAL REPORT

Workorder: **34-1717343**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021044		Collected: 06/17/2017		
Lab ID: 1717343020		Sampling Location: 2107 CARTRIDGE EVALU		
		Received: 06/22/2017		
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube		
		100/50mg		
		Analyzed: 06/28/2017 (193322)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

### Comments

#### Quality Control: NIOSH 1613 Mod. - (HBN: 193322)

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

Sampler 1717343018 (S17T021042) was missing the back transport cap when received for analysis.

2,4-Dimethylpyridine is outside of passing percent recovery criteria high in the LCS and LCSD.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1613 Mod.	/S/ Benson Boy 06/29/2017 14:26	/S/ Thomas J. Masoian 06/29/2017 15:20

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alsslc.com](http://www.alsslc.com)





## ANALYTICAL REPORT

Workorder: **34-1717343**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD/ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html">http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC Soil, Dust, Paint, Air	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eap/labs/index.html">http://www.ecy.wa.gov/programs/eap/labs/index.html</a>
	ANAB (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Dietary Supplements	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1717343

Limits: Historical/Performance

Basis: ALS Laboratory Group

Preparation: NA

Batch: NA

Prepared By: NA

Analysis: NIOSH 1613 Mod.

Batch: ISVO/3536 (HBN: 193322)

Analyzed By: Benson Boy

### Blank

LMB: 553645

Analyzed: 06/28/2017 05:12

Units: ug/sample

Analyte	Result	MDL	RL
Pyridine	ND	NA	0.500
2,4-Dimethylpyridine	ND	NA	0.500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 553646

Analyzed: 06/28/2017 05:32

Dilution: 1

Units: ug/sample

LCSD: 553647

Analyzed: 06/28/2017 05:52

Dilution: 1

Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Pyridine	2.25	2.00	113	28.7 141.2	2.29	115	1.62	0.0 22.1
2,4-Dimethylpyridine	2.52	2.00	* 126	18.3 119.1	2.54	* 127	0.762	0.0 22.2

### Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

Sampler 1717343018 (S17T021042) was missing the back transport cap when received for analysis.

2,4-Dimethylpyridine is outside of passing percent recovery criteria high in the LCS and LCSD.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Benson Boy	/S/ Thomas J. Masoian
06/29/2017 14:48	06/29/2017 15:20

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





4

1717343

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A		1717343 C.O.C. No. 20172106 Page 1 of 2							
Collector JONES	Contact/Requestor CARL HOWARD IV		Telephone No. 373-6861		MSIN TG-05 FAX 372-1878				
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION		Purchase Order/Charge Code 203006/C820						
Project Title 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A		Ice Chest No. N/A		Temp. 0.15-0.33 ON ICE				
Shipped To (Lab) AUS	Method of Shipment		Bill of Lading/Air Bill No. 77946050 4373						
Protocol N/A	Data Turnaround 10 DAYS		Parts and Return No. 42606						
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis			Preservative	
1	S17T021025	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-BA-EF •			N/A	
2	S17T021026	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-BA-IN •			N/A	
3	S17T021027	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-BL-EF •			N/A	
4	S17T021028	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-BL-IN •			N/A	
5	S17T021029	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-EF-1 •			N/A	
6	S17T021030	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-EF-2 •			N/A	
7	S17T021031	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-EF-3 •			N/A	
8	S17T021032	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-EF-4 •			N/A	
9	S17T021033	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-EF-5 •			N/A	
10	S17T021034	VA	6/17/17	CHARCOAL TUBE	Pyridines 17-03273-11-TL2-EF-6 •			N/A	
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Hold Time									
SPECIAL INSTRUCTIONS Send Results to Carl Howard IV and Keisha Garcia Carl.W.Howard@rl.gov and Keisha.R.Garcia@rl.gov See SOW for email									
Relinquished By Sharon V. Kelly	Print SW Harder	Sign Sharon V. Kelly	Date/Time 6-21-17 1030	Received By SW Harder	Sign SW Harder	Date/Time 6-21-17 1030	Matrix* S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids		
Relinquished By WRPS	Print SW Harder	Sign SW Harder	Date/Time 6-21-17 1400	Received By FEDEX	Sign FEDEX	Date/Time 6-21-17 1030			
Relinquished By Fodex	Print Fodex	Sign Fodex	Date/Time 6-21-17 1400	Received By K. Howard	Sign K. Howard	Date/Time 6-21-17 1030			
Relinquished By	Print	Sign	Date/Time	Received By	Sign	Date/Time			
Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Date/Time 6/27/16 0950		
Per lab procedure									

A-6003-962 (03/05)



Assembler		C.O.C. No.	
N/A		20172106	
Collector		Page 2 of 2	
JONES		372-1878	
SAF No.		MSIN	
N/A		373-6861	
Project Title		Purchase Order/Charge Code	
2017 CHARGE EVALUATION		203009/0320	
Shipped To (Lab)		Ice Chest No.	
ALS		N/A	
Protocol		Temp.	
N/A		016 116	
Data Turnaround		Bill of Lading/Air Bill No.	
10 DAYS		7794 6050 4373	
Sample No.		Parts and Return No.	
11		42606	

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			
Sample No.	Lab ID	Date	Time
11	S17T021035	VA	6/17/17
12	S17T021036	VA	6/17/17
13	S17T021037	VA	6/17/17
14	S17T021038	VA	6/17/17
15	S17T021039	VA	6/17/17
16	S17T021040	VA	6/17/17
17	S17T021041	VA	6/17/17
18	S17T021042	VA	6/17/17
19	S17T021043	VA	6/17/17
20	S17T021044	VA	6/17/17

Sample Analysis		Preservative
Pyridines 17-03273-11-TL2-EF-7		N/A
Pyridines 17-03273-11-TL2-EF-8		N/A
Pyridines 17-03273-11-TL2-IN-1		N/A
Pyridines 17-03273-11-TL2-IN-2		N/A
Pyridines 17-03273-11-TL2-IN-3		N/A
Pyridines 17-03273-11-TL2-IN-4		N/A
Pyridines 17-03273-11-TL2-IN-5		N/A
Pyridines 17-03273-11-TL2-IN-6		N/A
Pyridines 17-03273-11-TL2-IN-7		N/A
Pyridines 17-03273-11-TL2-IN-8		N/A

SPECIAL INSTRUCTIONS		Hold Time
Send Results to Carl Howard IV and Keisha Garcia Carl.Howard@rl.gov and Keisha.R.Garcia@rl.gov Get See SW for email		
RELEASE 15 Reference Contract # 55502		

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*
Sharon Holder	SW Holder	6-21-17	1030	Scott Harder	FEDEX	6-21-17	1030	S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids
Relinquished By	WRPS	6-21-17	1400	Received By	Produx	6-21-17	1010	
Relinquished By	Produx	6-21-17	1400	Received By	Produx	6-21-17	1010	

FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
Per Lab Procedure		Return to customer, per lab procedure, used in process	Bentson Bay	6/24/16 0950

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



## C.4.11 Nitrosamines

W706138, 1 of 20



RJ LeeGroup, Inc. | Columbia Basin Analytical Laboratories

2710 North 20th Avenue, Pasco WA 99301

Tel: (509) 545-4989 | Fax: (509) 544-6010

Carl Howald IV

08/22/17

Washington River Protection Solutions, LLC

Contract No.:

55503 R9

P.O. Box 850 MSIN 116-16

Richland, WA 99352

Project: 2017 Cartridge Evaluation

### Subject: Nitrosamines Analysis Report, Group Number 20172249

Enclosed is the final report for group 20172249 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20172249 has been assigned a Columbia Basin Analytical Laboratories login order number of W706138. This report consists of a summary report of the samples, a single quality control report for the analysis batch, and a copy of the chain of custody.

### General Set Comments

Columbia Basin Analytical Laboratories received 20 samples on 06/28/17 to be tested for Nitrosamines. The samples were analyzed in accordance with NIOSH 2522-Modified for N-Nitrosodimethylamine, N-Nitrosomethylethylamine, N-Nitrosodiethylamine, N-Nitrosodi-n-propylamine, N-Nitrosodi-n-butylamine, N-Nitrosopiperidine, N-Nitrosopyrrolidine, and N-Nitrosomorpholine. All results have been corrected for desorption efficiency and measurable levels in the blanks.

\*- Analyte not detected at or above MRL on initial analysis. Analyte detected at or above MRL on confirmation analysis. Analyte not confirmed.

X- Analyte detected at or above MRL on initial analysis. Analyte not detected at or above MRL on confirmation analysis. Analyte not confirmed.

C- Analyte detected at or above MRL on initial analysis and confirmation analysis. Poor mass agreement between initial and confirmation analysis indicates interference such that this result should be considered qualitative only.

### Results

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

SampleName	Analyzed	Analyte	CAS Number	Results	RL	Units	Flags
17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube	
17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube	
17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube	
17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube	
17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube	

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QA-17-024

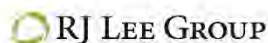
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17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-EF	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-BA-IN	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-EF	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-BL-IN	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-1	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-1	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-1	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-EF-1	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube

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17-04568-12-TL1-EF-1	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-1	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-1	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-1	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-2	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-3	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-4	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-5	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-5	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-5	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube

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17-04568-12-TL1-EF-5	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-5	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-5	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-5	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-5	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-6	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-7	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	µg/tube
17-04568-12-TL1-EF-8	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04568-12-TL1-IN-1	07/14/17	N-Nitrosodiethylamine	55-18-5	0.046	0.012	µg/tube C
17-04568-12-TL1-IN-1	07/26/17	N-Nitrosodimethylamine	62-75-9	9.572	1.077	µg/tube D

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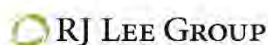
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17-04568-12-TL1-IN-1	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.119	0.011	µg/tube	
17-04568-12-TL1-IN-1	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.022	0.012	µg/tube	
17-04568-12-TL1-IN-1	07/14/17	N-Nitrosomethylethylamine	10595-95-6	0.156	0.012	µg/tube	
17-04568-12-TL1-IN-1	07/14/17	N-Nitrosomorpholine	59-89-2	0.057	0.012	µg/tube	C
17-04568-12-TL1-IN-1	07/14/17	N-Nitrosopiperidine	100-75-4	0.087	0.012	µg/tube	C
17-04568-12-TL1-IN-1	07/14/17	N-Nitrosopyrrolidine	930-55-2	0.058	0.012	µg/tube	C
17-04568-12-TL1-IN-2	07/14/17	N-Nitrosodiethylamine	55-18-5	0.060	0.012	µg/tube	C
17-04568-12-TL1-IN-2	07/26/17	N-Nitrosodimethylamine	62-75-9	15.092	1.077	µg/tube	D
17-04568-12-TL1-IN-2	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.066	0.011	µg/tube	
17-04568-12-TL1-IN-2	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	µg/tube	
17-04568-12-TL1-IN-2	07/14/17	N-Nitrosomethylethylamine	10595-95-6	0.265	0.012	µg/tube	C
17-04568-12-TL1-IN-2	07/14/17	N-Nitrosomorpholine	59-89-2	0.068	0.012	µg/tube	
17-04568-12-TL1-IN-2	07/14/17	N-Nitrosopiperidine	100-75-4	0.098	0.012	µg/tube	X
17-04568-12-TL1-IN-2	07/14/17	N-Nitrosopyrrolidine	930-55-2	0.076	0.012	µg/tube	X
17-04568-12-TL1-IN-3	07/14/17	N-Nitrosodiethylamine	55-18-5	0.076	0.012	µg/tube	C
17-04568-12-TL1-IN-3	07/27/17	N-Nitrosodimethylamine	62-75-9	14.337	1.077	µg/tube	DCD
17-04568-12-TL1-IN-3	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.156	0.011	µg/tube	C
17-04568-12-TL1-IN-3	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.046	0.012	µg/tube	X
17-04568-12-TL1-IN-3	07/14/17	N-Nitrosomethylethylamine	10595-95-6	0.248	0.012	µg/tube	C
17-04568-12-TL1-IN-3	07/14/17	N-Nitrosomorpholine	59-89-2	0.075	0.012	µg/tube	C
17-04568-12-TL1-IN-3	07/14/17	N-Nitrosopiperidine	100-75-4	0.111	0.012	µg/tube	X
17-04568-12-TL1-IN-3	07/14/17	N-Nitrosopyrrolidine	930-55-2	0.079	0.012	µg/tube	
17-04568-12-TL1-IN-4	07/14/17	N-Nitrosodiethylamine	55-18-5	0.081	0.012	µg/tube	C
17-04568-12-TL1-IN-4	07/27/17	N-Nitrosodimethylamine	62-75-9	15.355	1.077	µg/tube	DD
17-04568-12-TL1-IN-4	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.132	0.011	µg/tube	
17-04568-12-TL1-IN-4	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.047	0.012	µg/tube	C
17-04568-12-TL1-IN-4	07/14/17	N-Nitrosomethylethylamine	10595-95-6	0.252	0.012	µg/tube	C
17-04568-12-TL1-IN-4	07/14/17	N-Nitrosomorpholine	59-89-2	0.077	0.012	µg/tube	C
17-04568-12-TL1-IN-4	07/14/17	N-Nitrosopiperidine	100-75-4	0.120	0.012	µg/tube	C
17-04568-12-TL1-IN-4	07/14/17	N-Nitrosopyrrolidine	930-55-2	0.089	0.012	µg/tube	C
17-04568-12-TL1-IN-5	07/14/17	N-Nitrosodiethylamine	55-18-5	0.052	0.012	µg/tube	C

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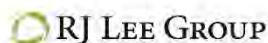
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17-04568-12-TL1-IN-5	07/27/17	N-Nitrosodimethylamine	62-75-9	14.857	1.077	µg/tube	DD
17-04568-12-TL1-IN-5	07/22/17	N-Nitrosodi-n-butylamine	924-16-3	0.148	0.011	µg/tube	CC
17-04568-12-TL1-IN-5	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.033	0.012	µg/tube	C
17-04568-12-TL1-IN-5	07/14/17	N-Nitrosomethylethylamine	10595-95-6	0.222	0.012	µg/tube	C
17-04568-12-TL1-IN-5	07/14/17	N-Nitrosomorpholine	59-89-2	0.064	0.012	µg/tube	
17-04568-12-TL1-IN-5	07/14/17	N-Nitrosopiperidine	100-75-4	0.091	0.012	µg/tube	C
17-04568-12-TL1-IN-5	07/14/17	N-Nitrosopyrrolidine	930-55-2	0.067	0.012	µg/tube	C
17-04568-12-TL1-IN-6	07/14/17	N-Nitrosodiethylamine	55-18-5	0.064	0.012	µg/tube	C
17-04568-12-TL1-IN-6	07/27/17	N-Nitrosodimethylamine	62-75-9	11.155	1.077	µg/tube	DD
17-04568-12-TL1-IN-6	07/22/17	N-Nitrosodi-n-butylamine	924-16-3	0.129	0.011	µg/tube	C
17-04568-12-TL1-IN-6	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.027	0.012	µg/tube	C
17-04568-12-TL1-IN-6	07/22/17	N-Nitrosomethylethylamine	10595-95-6	0.205	0.012	µg/tube	C
17-04568-12-TL1-IN-6	07/14/17	N-Nitrosomorpholine	59-89-2	0.034	0.012	µg/tube	
17-04568-12-TL1-IN-6	07/14/17	N-Nitrosopiperidine	100-75-4	0.059	0.012	µg/tube	C
17-04568-12-TL1-IN-6	07/22/17	N-Nitrosopyrrolidine	930-55-2	0.072	0.012	µg/tube	CX
17-04568-12-TL1-IN-7	07/14/17	N-Nitrosodiethylamine	55-18-5	0.044	0.012	µg/tube	C
17-04568-12-TL1-IN-7	07/27/17	N-Nitrosodimethylamine	62-75-9	12.882	1.077	µg/tube	D
17-04568-12-TL1-IN-7	07/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.119	0.012	µg/tube	
17-04568-12-TL1-IN-7	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.025	0.012	µg/tube	
17-04568-12-TL1-IN-7	07/14/17	N-Nitrosomethylethylamine	10595-95-6	0.203	0.012	µg/tube	C
17-04568-12-TL1-IN-7	07/14/17	N-Nitrosomorpholine	59-89-2	0.025	0.012	µg/tube	C
17-04568-12-TL1-IN-7	07/14/17	N-Nitrosopiperidine	100-75-4	0.082	0.012	µg/tube	C
17-04568-12-TL1-IN-7	07/14/17	N-Nitrosopyrrolidine	930-55-2	0.062	0.012	µg/tube	C
17-04568-12-TL1-IN-8	07/14/17	N-Nitrosodiethylamine	55-18-5	0.055	0.012	µg/tube	C
17-04568-12-TL1-IN-8	07/27/17	N-Nitrosodimethylamine	62-75-9	11.631	1.077	µg/tube	D
17-04568-12-TL1-IN-8	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube	*
17-04568-12-TL1-IN-8	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.033	0.012	µg/tube	C
17-04568-12-TL1-IN-8	07/14/17	N-Nitrosomethylethylamine	10595-95-6	0.189	0.012	µg/tube	C
17-04568-12-TL1-IN-8	07/14/17	N-Nitrosomorpholine	59-89-2	0.030	0.012	µg/tube	
17-04568-12-TL1-IN-8	07/14/17	N-Nitrosopiperidine	100-75-4	0.090	0.012	µg/tube	C
17-04568-12-TL1-IN-8	07/14/17	N-Nitrosopyrrolidine	930-55-2	0.052	0.012	µg/tube	C

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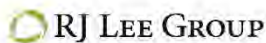
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**Recovery Failures in the ICV, CCV, LCS, and MRL**

There were no recovery failures in the CCV, ICV, LCS, MRL.

**RSD Failures in the LCS**

There were no RSD failures between the laboratory control samples.

**Measurable Blank Values**

There were no measurable analytes in the blank samples.

**Calibration Curves**

The calibration curves for the Nitrosamines had an R-value that was 0.997 or better, over a range of 5.0 ng/mL to 200 ng/mL.

**General Lab Comments**

The results provided in this report relate only to the items tested. Samples were received in acceptable conditions unless otherwise noted in the comments above. Samples have not been field blank corrected unless otherwise noted in the general set comments above. This test report shall not be reproduced, except in full, without written approval of Columbia Basin Analytical Laboratories.

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

08/17/17  
Scientist II DeNomy Dage

If you have any questions, please feel free to contact DeNomy Dage at ddage@rjlg.com or at 509-545-4989.

This report has been reviewed and approved by the following individual:

08/22/17  
Office Manager JJ Furlong

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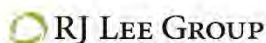
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Carl Howald IV  
Washington River Protection  
Solutions, LLC  
P.O. Box 850 MSIN II6-16  
Richland, WA 99352

Client Project: 2017 Cartridge Evaluation

## Laboratory Report

NIOSH 2522-Modified  
Air/Emissions No Vol on GC\_TEA09  
Summary Table

RJ Lee Group No.: W706138  
Samples Received: 6/28/17  
Report Date: 8/22/17  
COC No.: 20172249  
Extraction Date: 6/29/17

Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04568-12-TL1-BA-EF   S17T023515	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-BA-IN   S17T023516	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-BL-EF   S17T023517	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-BL-IN   S17T023518	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-EF-1   S17T023519	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	

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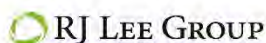
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04568-12-TL1-EF-2   S17T023520	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-EF-3   S17T023521	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-EF-4   S17T023522	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-EF-5   S17T023523	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-EF-6   S17T023524	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-EF-7   S17T023525	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	

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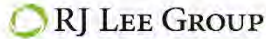
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04568-12-TL1-EF-7   S17T023525	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-EF-8   S17T023526	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04568-12-TL1-IN-1   S17T023527	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.046	0.012	C
	6/23/17	7/22/17	N-Nitrosodimethylamine	62-75-9	0.332	0.012	
	6/23/17	7/26/17	N-Nitrosodimethylamine	62-75-9	9.240	1.077	D
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.119	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.022	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.156	0.012	
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.057	0.012	C
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.087	0.012	C
17-04568-12-TL1-IN-2   S17T023528	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.060	0.012	C
	6/23/17	7/22/17	N-Nitrosodimethylamine	62-75-9	0.472	0.012	
	6/23/17	7/26/17	N-Nitrosodimethylamine	62-75-9	14.605	1.077	D
	6/23/17	7/22/17	N-Nitrosodimethylamine	62-75-9	0.014	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.066	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.012	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.265	0.012	C
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.068	0.012	
17-04568-12-TL1-IN-3   S17T023529	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.098	0.012	X
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.076	0.012	X
	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.076	0.012	C
	6/23/17	7/26/17	N-Nitrosodimethylamine	62-75-9	13.757	1.077	D
	6/23/17	7/22/17	N-Nitrosodimethylamine	62-75-9	0.014	0.012	C
	6/23/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.565	0.125	D
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.156	0.011	C
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.046	0.012	X
17-04568-12-TL1-IN-4   S17T023530	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.248	0.012	C
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.075	0.012	C
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.111	0.012	X
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.079	0.012	
	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.081	0.012	C
	6/23/17	7/26/17	N-Nitrosodimethylamine	62-75-9	14.781	1.077	D
	6/23/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.574	0.125	D
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.132	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.047	0.012	C
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.252	0.012	C
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.077	0.012	C

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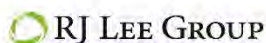
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04568-12-TL1-IN-4   S17T023530	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.120	0.012	C
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.089	0.012	C
17-04568-12-TL1-IN-5   S17T023531	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.052	0.012	C
	6/23/17	7/26/17	N-Nitrosodimethylamine	62-75-9	14.307	1.077	D
	6/23/17	7/22/17	N-Nitrosodimethylamine	62-75-9	0.018	0.012	
	6/23/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.532	0.125	D
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.112	0.011	C
	6/23/17	7/22/17	N-Nitrosodi-n-butylamine	924-16-3	0.035	0.011	C
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.033	0.012	C
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.222	0.012	C
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.064	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.091	0.012	C
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.067	0.012	C
17-04568-12-TL1-IN-6   S17T023532	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.064	0.012	C
	6/23/17	7/26/17	N-Nitrosodimethylamine	62-75-9	10.403	1.077	D
	6/23/17	7/22/17	N-Nitrosodimethylamine	62-75-9	0.031	0.012	
	6/23/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.721	0.125	D
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.063	0.011	
	6/23/17	7/22/17	N-Nitrosodi-n-butylamine	924-16-3	0.067	0.011	C
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.027	0.012	C
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.188	0.012	
	6/23/17	7/22/17	N-Nitrosomethylethylamine	10595-95-6	0.017	0.011	C
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.034	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.059	0.012	C
17-04568-12-TL1-IN-7   S17T023533	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.038	0.012	X
	6/23/17	7/22/17	N-Nitrosopyrrolidine	930-55-2	0.034	0.011	C
	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.044	0.012	C
	6/23/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.446	0.013	
	6/23/17	7/26/17	N-Nitrosodimethylamine	62-75-9	12.436	1.077	D
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.106	0.011	
	6/23/17	7/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.012	0.012	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.025	0.012	
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.203	0.012	C
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.025	0.012	C
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.082	0.012	C
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.062	0.012	C
	6/23/17	7/14/17	N-Nitrosodiethylamine	55-18-5	0.055	0.012	C
17-04568-12-TL1-IN-8   S17T023534	6/23/17	7/22/17	N-Nitrosodimethylamine	62-75-9	0.340	0.012	
	6/23/17	7/27/17	N-Nitrosodimethylamine	62-75-9	11.291	1.077	D
	6/23/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/23/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	0.033	0.012	C
	6/23/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	0.189	0.012	C
	6/23/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.030	0.012	
	6/23/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.090	0.012	C
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.052	0.012	C
	6/23/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	0.052	0.012	C

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## Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report  
 D = Analyte analyzed in a dilution

E = Report concentration was above the instrument calibration range

I = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match,  $\geq 90\%$  @ RI match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

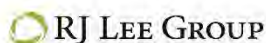
Z = Not LLAP accredited analyte

ND = Not Detected

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Client Project: 2017 Cartridge Evaluation

### Quality Control

NIOSH 2522-Modified

RJ Lee Group No.: W706138  
Samples Received: 6/28/17  
Report Date: 8/22/17  
COC No.: 20172249  
Extraction Date: 7/25/17

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS1	7/27/17	0.200	0.173	0.90		4.75	86.5	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS1	7/27/17	0.200	0.167	0.83		0.63	83.6	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS1	7/27/17	0.200	0.157	0.80		3.18	78.3	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS1	7/27/17	0.200	0.154	0.76		1.63	76.9	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS1	7/27/17	0.200	0.163	0.83		4.02	81.3	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS1	7/27/17	0.200	0.176	0.91		4.19	87.7	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS1	7/27/17	0.200	0.175	0.91		3.05	87.6	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS1	7/27/17	0.200	0.164	0.83		2.51	81.7	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS1	7/27/17	0.200	0.161	0.83		4.53	80.3	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS1	7/27/17	0.200	0.171	0.88		2.89	85.2	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS1	7/27/17	0.200	0.164	0.83		1.53	82.0	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS1	7/27/17	0.200	0.176	0.91		3.68	87.7	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS1	7/27/17	0.200	0.169	0.89		5.05	84.5	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS1	7/27/17	0.200	0.166	0.83		0.66	82.9	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS1	7/27/17	0.200	0.167	0.89		5.63	83.3	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS1	7/27/17	0.200	0.164	0.83		1.03	82.0	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	7/14/17	0.200	0.160	0.82		2.10	80.1	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	7/26/17	0.200	0.185	0.97		6.61	92.6	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	7/21/17	0.200	0.177	0.91		2.50	88.6	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/26/17	0.200	0.187	0.93		7.33	93.3	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/14/17	0.200	0.168	0.83		1.79	84.1	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/21/17	0.200	0.156	0.81		4.47	77.8	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/14/17	0.200	0.169	0.88		3.35	84.4	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/21/17	0.200	0.178	0.90		1.51	89.1	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/26/17	0.200	0.194	1.03		6.99	97.0	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/14/17	0.200	0.169	0.86		1.98	84.6	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/21/17	0.200	0.185	0.93		0.78	92.3	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/26/17	0.200	0.193	1.01		6.54	96.4	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/14/17	0.200	0.165	0.83		0.60	82.5	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/21/17	0.200	0.178	0.89		1.25	88.9	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/26/17	0.200	0.192	0.99		7.28	95.7	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-1	7/21/17	0.200	0.176	0.90		2.04	88.0	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-1	7/26/17	0.200	0.190	0.99		6.75	94.9	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-1	7/14/17	0.200	0.164	0.83		1.63	81.8	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-1	7/26/17	0.200	0.194	1.00		7.12	96.8	71.9 - 121	

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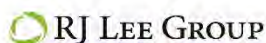
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopiperidine	100-75-4	LCS-1	7/21/17	0.200	0.178	0.88		1.47	89.0	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	7/14/17	0.200	0.169	0.85		0.21	84.4	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/26/17	0.200	0.195	0.99		7.39	97.3	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/14/17	0.200	0.164	0.82		0.80	81.8	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/21/17	0.200	0.169	0.89		4.21	84.4	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS2	7/27/17	0.200	0.189	0.90		4.75	94.6	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS2	7/27/17	0.200	0.166	0.83		0.63	82.6	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS2	7/27/17	0.200	0.155	0.76		1.63	77.4	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS2	7/27/17	0.200	0.167	0.80		3.18	83.2	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS2	7/27/17	0.200	0.174	0.83		4.02	86.9	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS2	7/27/17	0.200	0.190	0.91		4.19	95.0	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS2	7/27/17	0.200	0.172	0.83		2.51	85.7	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS2	7/27/17	0.200	0.185	0.91		3.05	92.6	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS2	7/27/17	0.200	0.175	0.83		4.53	87.4	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS2	7/27/17	0.200	0.180	0.88		2.89	90.1	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS2	7/27/17	0.200	0.189	0.91		3.68	94.2	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS2	7/27/17	0.200	0.169	0.83		1.53	84.3	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS2	7/27/17	0.200	0.187	0.89		5.05	93.5	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS2	7/27/17	0.200	0.166	0.83		0.66	83.1	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS2	7/27/17	0.200	0.167	0.83		1.03	83.6	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS2	7/27/17	0.200	0.186	0.89		5.63	93.0	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-2	7/21/17	0.200	0.186	0.91		2.50	92.6	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	7/26/17	0.200	0.190	0.97		6.61	94.8	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	7/14/17	0.200	0.163	0.82		2.10	81.4	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/26/17	0.200	0.172	0.93		7.33	85.8	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/14/17	0.200	0.164	0.83		1.79	81.7	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/21/17	0.200	0.170	0.81		4.47	85.0	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/14/17	0.200	0.180	0.88		3.35	89.7	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/21/17	0.200	0.184	0.90		1.51	91.7	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/26/17	0.200	0.201	1.03		6.99	100	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/21/17	0.200	0.188	0.93		0.78	93.8	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/14/17	0.200	0.176	0.86		1.98	87.8	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/26/17	0.200	0.198	1.01		6.54	98.9	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/14/17	0.200	0.166	0.83		0.60	82.9	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/26/17	0.200	0.187	0.99		7.28	93.5	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/21/17	0.200	0.181	0.89		1.25	90.5	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-2	7/14/17	0.200	0.169	0.83		1.63	84.4	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	7/26/17	0.200	0.191	0.99		6.75	95.5	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	7/21/17	0.200	0.183	0.90		2.04	91.6	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-2	7/26/17	0.200	0.191	1.00		7.12	95.2	71.9 - 121	

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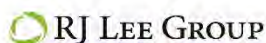
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopiperidine	100-75-4	LCS-2	7/14/17	0.200	0.169	0.85		0.21	84.6	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-2	7/21/17	0.200	0.178	0.88		1.47	88.9	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/21/17	0.200	0.181	0.89		4.21	90.2	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/14/17	0.200	0.163	0.82		0.80	81.6	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/26/17	0.200	0.184	0.99		7.39	92.2	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS3	7/27/17	0.200	0.166	0.83		0.63	82.8	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS3	7/27/17	0.200	0.176	0.90		4.75	88.1	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS3	7/27/17	0.200	0.150	0.76		1.63	75.0	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS3	7/27/17	0.200	0.159	0.80		3.18	79.5	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS3	7/27/17	0.200	0.179	0.91		4.19	89.6	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS3	7/27/17	0.200	0.162	0.83		4.02	81.0	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS3	7/27/17	0.200	0.184	0.91		3.05	92.1	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS3	7/27/17	0.200	0.165	0.83		2.51	82.6	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS3	7/27/17	0.200	0.164	0.83		4.53	81.7	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS3	7/27/17	0.200	0.178	0.88		2.89	88.7	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS3	7/27/17	0.200	0.168	0.83		1.53	84.0	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS3	7/27/17	0.200	0.180	0.91		3.68	89.9	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS3	7/27/17	0.200	0.178	0.89		5.05	88.9	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS3	7/27/17	0.200	0.164	0.83		0.66	82.1	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS3	7/27/17	0.200	0.165	0.83		1.03	82.3	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS3	7/27/17	0.200	0.181	0.89		5.63	90.2	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-3	7/14/17	0.200	0.167	0.82		2.10	83.5	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-3	7/26/17	0.200	0.210	0.97		6.61	105	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-3	7/21/17	0.200	0.185	0.91		2.50	92.3	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/21/17	0.200	0.162	0.81		4.47	80.9	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/14/17	0.200	0.169	0.83		1.79	84.4	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/26/17	0.200	0.199	0.93		7.33	99.4	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/14/17	0.200	0.179	0.88		3.35	89.4	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/26/17	0.200	0.222	1.03		6.99	111	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/21/17	0.200	0.180	0.90		1.51	89.8	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/26/17	0.200	0.218	1.01		6.54	109	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/21/17	0.200	0.186	0.93		0.78	92.8	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/14/17	0.200	0.171	0.86		1.98	85.3	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/14/17	0.200	0.167	0.83		0.60	83.5	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/21/17	0.200	0.177	0.89		1.25	88.3	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/26/17	0.200	0.214	0.99		7.28	107	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-3	7/14/17	0.200	0.168	0.83		1.63	83.8	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	7/21/17	0.200	0.179	0.90		2.04	89.3	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	7/26/17	0.200	0.214	0.99		6.75	107	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-3	7/26/17	0.200	0.217	1.00		7.12	108	71.9 - 121	

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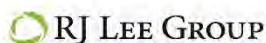
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopiperidine	100-75-4	LCS-3	7/21/17	0.200	0.174	0.88		1.47	86.7	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	7/14/17	0.200	0.170	0.85		0.21	84.7	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/26/17	0.200	0.213	0.99		7.39	107	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/21/17	0.200	0.183	0.89		4.21	91.4	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/14/17	0.200	0.166	0.82		0.80	82.8	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	7/27/17		<0.010	0.83	<0.012				
N-Nitrosodiethylamine	55-18-5	MB	7/27/17		<0.010	0.90	<0.011				
N-Nitrosodiethylamine	55-18-5	MB	7/14/17		<0.010	0.82	<0.012				
N-Nitrosodiethylamine	55-18-5	MB	7/21/17		<0.010	0.91	<0.011				
N-Nitrosodiethylamine	55-18-5	MB	7/26/17		<0.010	0.97	<0.010				
N-Nitrosodimethylamine	62-75-9	MB	7/14/17		<0.010	0.83	<0.012				
N-Nitrosodimethylamine	62-75-9	MB	7/27/17		<0.010	0.76	<0.013				
N-Nitrosodimethylamine	62-75-9	MB	7/27/17		<0.010	0.80	<0.012				
N-Nitrosodimethylamine	62-75-9	MB	7/21/17		<0.010	0.81	<0.012				
N-Nitrosodimethylamine	62-75-9	MB	7/26/17		<0.010	0.93	<0.011				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/14/17		<0.010	0.88	<0.011				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/27/17		<0.010	0.83	<0.012				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/27/17		<0.010	0.91	<0.011				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/26/17		<0.010	1.03	<0.010				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/21/17		<0.010	0.90	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/21/17		<0.010	0.93	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/27/17		<0.010	0.91	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/27/17		<0.010	0.83	<0.012				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/14/17		<0.010	0.86	<0.012				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/26/17		<0.010	1.01	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	7/14/17		<0.010	0.83	<0.012				
N-Nitrosomethylethylamine	10595-95-6	MB	7/21/17		<0.010	0.89	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	7/27/17		<0.010	0.88	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	7/27/17		<0.010	0.83	<0.012				
N-Nitrosomethylethylamine	10595-95-6	MB	7/26/17		<0.010	0.99	<0.010				
N-Nitrosomorpholine	59-89-2	MB	7/14/17		<0.010	0.83	<0.012				
N-Nitrosomorpholine	59-89-2	MB	7/27/17		<0.010	0.83	<0.012				
N-Nitrosomorpholine	59-89-2	MB	7/27/17		<0.010	0.91	<0.011				
N-Nitrosomorpholine	59-89-2	MB	7/21/17		<0.010	0.90	<0.011				
N-Nitrosomorpholine	59-89-2	MB	7/26/17		<0.010	0.99	<0.010				
N-Nitrosopiperidine	100-75-4	MB	7/27/17		<0.010	0.89	<0.011				
N-Nitrosopiperidine	100-75-4	MB	7/14/17		<0.010	0.85	<0.012				
N-Nitrosopiperidine	100-75-4	MB	7/26/17		<0.010	1.00	<0.010				
N-Nitrosopiperidine	100-75-4	MB	7/27/17		<0.010	0.83	<0.012				
N-Nitrosopiperidine	100-75-4	MB	7/21/17		<0.010	0.88	<0.011				
N-Nitrosopyrrolidine	930-55-2	MB	7/27/17		<0.010	0.83	<0.012				
N-Nitrosopyrrolidine	930-55-2	MB	7/21/17		<0.010	0.89	<0.011				
N-Nitrosopyrrolidine	930-55-2	MB	7/27/17		<0.010	0.89	<0.011				

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopyrrolidine	930-55-2	MB	7/26/17		<0.010	0.99	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	7/14/17		<0.010	0.82	<0.012				
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MRL	7/26/17	0.010	0.010	0.97	0.011		106	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/21/17	0.010	0.011	0.91	0.012		124	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/14/17	0.010	0.010	0.82	0.012		121	39.6 - 158	
N-Nitrosodimethylamine	62-75-9	MRL	7/21/17	0.010	0.011	0.81	0.014		140	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL	7/14/17	0.010	0.007	0.83	0.008		80.8	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL	7/26/17	0.010	0.013	0.93	0.014		144	71.6 - 181	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/26/17	0.010	0.012	1.03	0.011		113	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/14/17	0.010	0.008	0.88	0.009		90.2	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/21/17	0.010	0.014	0.90	0.016		157	27.4 - 210	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/14/17	0.010	0.008	0.86	0.010		97.9	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/21/17	0.010	0.011	0.93	0.012		121	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/26/17	0.010	0.009	1.01	0.009		91.3	47.8 - 163	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/21/17	0.010	0.013	0.89	0.014		142	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/26/17	0.010	0.010	0.99	0.010		98.6	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/14/17	0.010	0.009	0.83	0.011		106	50.8 - 164	
N-Nitrosomorpholine	59-89-2	MRL	7/21/17	0.010	0.013	0.90	0.015		150	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL	7/14/17	0.010	0.011	0.83	0.013		127	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL	7/26/17	0.010	0.006	0.99	0.006		62.3	36 - 169	
N-Nitrosopiperidine	100-75-4	MRL	7/21/17	0.010	0.011	0.88	0.013		129	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	7/14/17	0.010	0.009	0.85	0.011		112	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	7/26/17	0.010	0.008	1.00	0.008		82.9	26.8 - 171	
N-Nitrosopyrrolidine	930-55-2	MRL	7/26/17	0.010	0.010	0.99	0.010		104	43.3 - 163	
N-Nitrosopyrrolidine	930-55-2	MRL	7/21/17	0.010	0.013	0.89	0.015		149	43.3 - 163	
N-Nitrosopyrrolidine	930-55-2	MRL	7/14/17	0.010	0.012	0.82	0.015		147	43.3 - 163	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MRL1	7/27/17	0.010	0.008	0.83	0.010		99.5	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL1	7/27/17	0.010	0.008	0.90	0.009		87.7	39.6 - 158	
N-Nitrosodimethylamine	62-75-9	MRL1	7/27/17	0.010	0.011	0.80	0.014		142	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL1	7/27/17	0.010	0.010	0.76	0.013		129	71.6 - 181	
N-Nitrosodi-n-butylamine	924-16-3	MRL1	7/27/17	0.010	0.009	0.83	0.011		112	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL1	7/27/17	0.010	0.010	0.91	0.011		111	27.4 - 210	
N-Nitrosodi-n-propylamine	621-64-7	MRL1	7/27/17	0.010	0.008	0.91	0.009		87.5	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL1	7/27/17	0.010	0.008	0.83	0.010		101	47.8 - 163	
N-Nitrosomethylethylamine	10595-95-6	MRL1	7/27/17	0.010	0.008	0.83	0.010		95.6	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL1	7/27/17	0.010	0.009	0.88	0.011		106	50.8 - 164	
N-Nitrosomorpholine	59-89-2	MRL1	7/27/17	0.010	0.009	0.83	0.011		109	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL1	7/27/17	0.010	0.009	0.91	0.010		103	36 - 169	
N-Nitrosopiperidine	100-75-4	MRL1	7/27/17	0.010	0.008	0.83	0.009		93.1	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL1	7/27/17	0.010	0.007	0.89	0.008		82.1	26.8 - 171	

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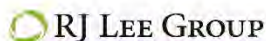
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopyrrolidine	930-55-2	MRL1	7/27/17	0.010	0.010	0.89	0.011		112	43.3 - 163	
N-Nitrosopyrrolidine	930-55-2	MRL1	7/27/17	0.010	0.009	0.83	0.011		108	43.3 - 163	

## Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report

D = Analyte analyzed by a dilution

F = Report concentration was above the instrument calibration range

I = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match, rsd &gt;90% to RT match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

Z = Not ELAP accredited analyte

ND = Not Detected

Scientist II DeNomy Dage

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group will store the samples for a period of ninety (90) days before discarding. A shipping and handling fee will be assessed for the return of any samples. Unless otherwise noted, samples were received in an acceptable condition. This laboratory operates in accordance with ISO 17025 guidelines, and holds limited scopes of accreditation under ORLLAP Lab Code 4061. ALHA-LAP, LLC Lab ID 178656 LPA ID WA01195 and WA DOE Lab ID C859. This report may not be used to claim product endorsement by any laboratory accrediting agency. The results contained in this report relate only to the items tested or to the sample(s) as received by the laboratory. Any reproduction of this document must be in full for the report to be

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W706138

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						C.O.C. No. 20172249	
						Page 1 of 2	
Assembler							
Collector	JONES	Contact/Requestor	CARL HOWARD IV	Telephone No.	373-6861	MSIN	16-05 FAX 372-1878
SAF No.	N/A	Sample Origin	2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code	203006/0926		
Project Title	2017 CARTRIDGE EVALUATION	Logbook/Work Package No.	N/A	Ice Chest No.		Temp.	25.7
Shipped To (Lab)	CSAL	Method of Shipment		Bill of Lading/Air Bill No.			
Protocol	N/A	Data Turnaround	10 DAYS	Parts and Return No.			
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative	
	S17T023515	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-BA-EF		N/A
	S17T023516	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-BA-IN		N/A
	S17T023517	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-BL-EF		N/A
	S17T023518	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-BL-IN		N/A
	S17T023519	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-1		N/A
	S17T023520	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-2		N/A
	S17T023521	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-3		N/A
	S17T023522	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-4		N/A
	S17T023523	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-5		N/A
	S17T023524	VA	6/23/17	Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-6		N/A
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)				MSDS	<input type="radio"/> Yes <input checked="" type="radio"/> No	SPECIAL INSTRUCTIONS	
				Send Results to Carl Howard & Keisha Garcia Carl.W.Howard@rl.gov and Keisha_R.Garcia@rl.gov see SOW for email			
				CONTRACT 55503 RELEASE 9			
				Hold Time			
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Diane Turner	Diane Turner	6/17/17 10:30	Received By	Ke Rogers	Ke Rogers	6/28/17 10:30
Relinquished By	Ke Rogers	Ke Rogers	6/19/17 1300	Received By	Phyllis O'Connell	Phyllis O'Connell	6/26/17 1300
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time	
	CONSUMED			Dunne-Smith		06/16/17 11:48	

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



W706138

Assembled				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. No. 20172249	
Collector				Contact/Requestor				Telephone No. 373-6861	
SAF No.				Sample Origin				MSIN 15-05 FAX 372-1878	
2017 CARTRIDGE EVALUATION				2017 CARTRIDGE EVALUATION				Purchase Order/Charge Code 20308/020	
Project Title				Logbook/Work Package No.				Temp. 25.7	
2017 CARTRIDGE EVALUATION				N/A				Ice Chest No.	
Shipped To (Lab)				Method of Shipment				Bill of Lading/Air Bill No.	
CBAL				Data Turnaround				Parts and Return No.	
N/A				10 DAYS					
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative			
	S17023525	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-7	N/A			
	S17023526	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-EF-8	N/A			
	S17023527	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-1	N/A			
	S17023528	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-2	N/A			
	S17023529	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-3	N/A			
	S17023530	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-4	N/A			
	S17023531	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-5	N/A			
	S17023532	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-6	N/A			
	S17023533	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-7	N/A			
	S17023534	6/23/17		Thermosorb-N	Nitrosamines 17-04568-12-TL1-IN-8	N/A			

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ☐ Yes ☒ No

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Keisha Garcia  
Carl W Howald@rl.gov and Keisha\_R\_Garcia@rl.gov  
see SOW for email

CONTRACT 55503  
RELEASE 5

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*
Diane Turner			6/28/17 10:30	Re Kopas			6/28/17 10:30	S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids
Re Kopas			6/28/17 1300	Final Release			6/28/17 1300	
Relinquished By			Date/Time	Received By			Date/Time	
Relinquished By			Date/Time	Received By			Date/Time	
Relinquished By			Date/Time	Received By			Date/Time	

FINAL SAMPLE DISPOSITION **CONSUMED**

Disposed By **Bernard Smith**

Date/Time **6/28/17 11:48**

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.





RJ LeeGroup, Inc. | Columbia Basin Analytical Laboratories

2710 North 20th Avenue, Pasco WA 99301

Tel: (509) 545-4989 | Fax: (509) 544-6010

Carl Howald IV

08/23/17

Washington River Protection Solutions, LLC

Contract No.:

55503 R9

P.O. Box 850 MSIN 116-16

Richland, WA 99352

Project: 2017 Cartridge Evaluation

**Subject: Nitrosamines Analysis Report, Group Number 20172250**

Enclosed is the final report for group 20172250 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20172250 has been assigned a Columbia Basin Analytical Laboratories login order number of W706139. This report consists of a summary report of the samples, a single quality control report for the analysis batch, and a copy of the chain of custody.

**General Set Comments**

Columbia Basin Analytical Laboratories received 20 samples on 06/28/17 to be tested for Nitrosamines. The samples were analyzed in accordance with NIOSH 2522-Modified for N-Nitrosodimethylamine, N-Nitrosomethylethylamine, N-Nitrosodiethylamine, N-Nitrosodi-n-propylamine, N-Nitrosodi-n-butylamine, N-Nitrosopiperidine, N-Nitrosopyrrolidine, and N-Nitrosomorpholine. All results have been corrected for desorption efficiency and measurable levels in the blanks.

*\*- Analyte not detected at or above MRL on initial analysis. Analyte detected at or above MRL on confirmation analysis. Analyte not confirmed.*

*X- Analyte detected at or above MRL on initial analysis. Analyte not detected at or above MRL on confirmation analysis. Analyte not confirmed.*

*C- Analyte detected at or above MRL on initial analysis and confirmation analysis. Poor mass agreement between initial and confirmation analysis indicates interference such that this result should be considered qualitative only.*

**Results**

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

<u>SampleName</u>	<u>Analyzed</u>	<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>	<u>RL</u>	<u>Units</u>	<u>Flags</u>
17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube	
17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosodimethylamine	62-75-9	0.012	0.011	µg/tube	C
17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube	
17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	
17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube	

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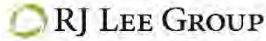
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17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-EF	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-BA-IN	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-EF	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-BL-IN	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-1	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-1	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-1	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-1	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube

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17-04569-12-TL2-EF-1	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-1	07/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-1	07/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-1	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-2	07/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-3	07/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-4	07/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-5	07/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-5	07/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-5	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube

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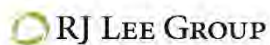
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17-04569-12-TL2-EF-5	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-5	07/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-5	07/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-5	07/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-5	07/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-6	07/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-7	07/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-04569-12-TL2-EF-8	07/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	µg/tube
17-04569-12-TL2-IN-1	07/15/17	N-Nitrosodiethylamine	55-18-5	0.035	0.012	µg/tube C
17-04569-12-TL2-IN-1	07/27/17	N-Nitrosodimethylamine	62-75-9	6.098	1.054	µg/tube DC

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17-04569-12-TL2-IN-1	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.147	0.011	µg/tube	C
17-04569-12-TL2-IN-1	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.023	0.011	µg/tube	
17-04569-12-TL2-IN-1	07/15/17	N-Nitrosomethylethylamine	10595-95-6	0.110	0.011	µg/tube	C
17-04569-12-TL2-IN-1	07/15/17	N-Nitrosomorpholine	59-89-2	0.039	0.011	µg/tube	C
17-04569-12-TL2-IN-1	07/15/17	N-Nitrosopiperidine	100-75-4	0.082	0.011	µg/tube	C
17-04569-12-TL2-IN-1	07/15/17	N-Nitrosopyrrolidine	930-55-2	0.048	0.012	µg/tube	C
17-04569-12-TL2-IN-2	07/15/17	N-Nitrosodiethylamine	55-18-5	0.064	0.012	µg/tube	C
17-04569-12-TL2-IN-2	08/07/17	N-Nitrosodimethylamine	62-75-9	14.238	1.054	µg/tube	DD
17-04569-12-TL2-IN-2	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.192	0.011	µg/tube	C
17-04569-12-TL2-IN-2	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.044	0.011	µg/tube	C
17-04569-12-TL2-IN-2	07/15/17	N-Nitrosomethylethylamine	10595-95-6	0.247	0.011	µg/tube	C
17-04569-12-TL2-IN-2	07/15/17	N-Nitrosomorpholine	59-89-2	0.078	0.011	µg/tube	
17-04569-12-TL2-IN-2	07/15/17	N-Nitrosopiperidine	100-75-4	0.121	0.011	µg/tube	C
17-04569-12-TL2-IN-2	07/15/17	N-Nitrosopyrrolidine	930-55-2	0.086	0.012	µg/tube	C
17-04569-12-TL2-IN-3	07/15/17	N-Nitrosodiethylamine	55-18-5	0.055	0.012	µg/tube	C
17-04569-12-TL2-IN-3	08/07/17	N-Nitrosodimethylamine	62-75-9	13.710	1.054	µg/tube	DD
17-04569-12-TL2-IN-3	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.149	0.011	µg/tube	C
17-04569-12-TL2-IN-3	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.039	0.011	µg/tube	C
17-04569-12-TL2-IN-3	08/07/17	N-Nitrosomethylethylamine	10595-95-6	0.267	0.011	µg/tube	C
17-04569-12-TL2-IN-3	07/15/17	N-Nitrosomorpholine	59-89-2	0.069	0.011	µg/tube	
17-04569-12-TL2-IN-3	07/15/17	N-Nitrosopiperidine	100-75-4	0.100	0.011	µg/tube	C
17-04569-12-TL2-IN-3	07/15/17	N-Nitrosopyrrolidine	930-55-2	0.069	0.012	µg/tube	C
17-04569-12-TL2-IN-4	07/15/17	N-Nitrosodiethylamine	55-18-5	0.058	0.012	µg/tube	C
17-04569-12-TL2-IN-4	08/16/17	N-Nitrosodimethylamine	62-75-9	7.455	1.054	µg/tube	C, DD
17-04569-12-TL2-IN-4	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.096	0.011	µg/tube	
17-04569-12-TL2-IN-4	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.028	0.011	µg/tube	X
17-04569-12-TL2-IN-4	07/15/17	N-Nitrosomethylethylamine	10595-95-6	0.260	0.011	µg/tube	C
17-04569-12-TL2-IN-4	07/15/17	N-Nitrosomorpholine	59-89-2	0.057	0.011	µg/tube	C
17-04569-12-TL2-IN-4	07/15/17	N-Nitrosopiperidine	100-75-4	0.079	0.011	µg/tube	X
17-04569-12-TL2-IN-4	07/15/17	N-Nitrosopyrrolidine	930-55-2	0.056	0.012	µg/tube	C
17-04569-12-TL2-IN-5	07/15/17	N-Nitrosodiethylamine	55-18-5	0.043	0.012	µg/tube	C

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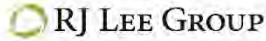
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17-04569-12-TL2-IN-5	08/16/17	N-Nitrosodimethylamine	62-75-9	13.401	1.054	µg/tube	DD
17-04569-12-TL2-IN-5	07/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.152	0.011	µg/tube	C
17-04569-12-TL2-IN-5	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.042	0.011	µg/tube	C
17-04569-12-TL2-IN-5	07/15/17	N-Nitrosomethylethylamine	10595-95-6	0.242	0.011	µg/tube	C
17-04569-12-TL2-IN-5	07/15/17	N-Nitrosomorpholine	59-89-2	0.071	0.011	µg/tube	
17-04569-12-TL2-IN-5	07/15/17	N-Nitrosopiperidine	100-75-4	0.107	0.011	µg/tube	C
17-04569-12-TL2-IN-5	07/15/17	N-Nitrosopyrrolidine	930-55-2	0.073	0.012	µg/tube	C
17-04569-12-TL2-IN-6	07/15/17	N-Nitrosodiethylamine	55-18-5	0.061	0.012	µg/tube	C
17-04569-12-TL2-IN-6	08/07/17	N-Nitrosodimethylamine	62-75-9	3.405	1.054	µg/tube	CC, DD
17-04569-12-TL2-IN-6	08/07/17	N-Nitrosodi-n-butylamine	924-16-3	0.133	0.011	µg/tube	C
17-04569-12-TL2-IN-6	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.023	0.011	µg/tube	X
17-04569-12-TL2-IN-6	07/15/17	N-Nitrosomethylethylamine	10595-95-6	0.170	0.011	µg/tube	
17-04569-12-TL2-IN-6	07/15/17	N-Nitrosomorpholine	59-89-2	0.049	0.011	µg/tube	
17-04569-12-TL2-IN-6	07/15/17	N-Nitrosopiperidine	100-75-4	0.058	0.011	µg/tube	C
17-04569-12-TL2-IN-6	08/07/17	N-Nitrosopyrrolidine	930-55-2	0.079	0.012	µg/tube	CC
17-04569-12-TL2-IN-7	07/15/17	N-Nitrosodiethylamine	55-18-5	0.057	0.012	µg/tube	C
17-04569-12-TL2-IN-7	07/27/17	N-Nitrosodimethylamine	62-75-9	10.635	1.054	µg/tube	CD
17-04569-12-TL2-IN-7	07/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.157	0.011	µg/tube	C
17-04569-12-TL2-IN-7	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.040	0.011	µg/tube	C
17-04569-12-TL2-IN-7	07/15/17	N-Nitrosomethylethylamine	10595-95-6	0.182	0.011	µg/tube	C
17-04569-12-TL2-IN-7	07/15/17	N-Nitrosomorpholine	59-89-2	0.044	0.011	µg/tube	
17-04569-12-TL2-IN-7	07/15/17	N-Nitrosopiperidine	100-75-4	0.089	0.011	µg/tube	X
17-04569-12-TL2-IN-7	07/15/17	N-Nitrosopyrrolidine	930-55-2	0.059	0.012	µg/tube	C
17-04569-12-TL2-IN-8	07/15/17	N-Nitrosodiethylamine	55-18-5	0.051	0.012	µg/tube	C
17-04569-12-TL2-IN-8	07/27/17	N-Nitrosodimethylamine	62-75-9	4.468	1.054	µg/tube	CC, DC
17-04569-12-TL2-IN-8	07/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.118	0.011	µg/tube	*
17-04569-12-TL2-IN-8	07/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.012	0.011	µg/tube	
17-04569-12-TL2-IN-8	07/15/17	N-Nitrosomethylethylamine	10595-95-6	0.145	0.011	µg/tube	
17-04569-12-TL2-IN-8	07/15/17	N-Nitrosomorpholine	59-89-2	0.020	0.011	µg/tube	
17-04569-12-TL2-IN-8	07/15/17	N-Nitrosopiperidine	100-75-4	0.048	0.011	µg/tube	C
17-04569-12-TL2-IN-8	07/15/17	N-Nitrosopyrrolidine	930-55-2	0.025	0.012	µg/tube	C

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**Recovery Failures in the ICV, CCV, LCS, and MRL**

There were no recovery failures in the CCV, ICV, MRL. There were recovery failures in the LCS.

**RSD Failures in the LCS**

There were no RSD failures between the laboratory control samples.

**Measurable Blank Values**

There were no measurable analytes in the blank samples.

**Calibration Curves**

The calibration curves for the Nitrosamines had an R-value that was 0.997 or better, over a range of 5.0 ng/mL to 200 ng/mL.

**General Lab Comments**

The results provided in this report relate only to the items tested. Samples were received in acceptable conditions unless otherwise noted in the comments above. Samples have not been field blank corrected unless otherwise noted in the general set comments above. This test report shall not be reproduced, except in full, without written approval of Columbia Basin Analytical Laboratories.

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

A handwritten signature in black ink, appearing to read 'DeNomy Dage'.

08/23/17

Scientist II DeNomy Dage

If you have any questions, please feel free to contact DeNomy Dage at ddage@rjlg.com or at 509-545-4989.

This report has been reviewed and approved by the following individual:

A handwritten signature in black ink, appearing to read 'Fernanda Pincheira'.

08/23/17

Scientist I Fernanda Pincheira

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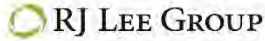
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Carl Howald IV  
Washington River Protection  
Solutions, LLC  
P.O. Box 850 MSIN II6-16  
Richland, WA 99352

Client Project: 2017 Cartridge Evaluation

## Laboratory Report

NIOSH 2522-Modified  
Air/Emissions No Vol on GC\_TEA09  
Summary Table

RJ Lee Group No.: W706139  
Samples Received: 6/28/17  
Report Date: 8/23/17  
COC No.: 20172250  
Extraction Date: 6/29/17

Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04569-12-TL2-BA-EF   S17T023535	6/24/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	C
	6/24/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.012	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-BA-IN   S17T023536	6/24/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-BL-EF   S17T023537	6/24/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-BL-IN   S17T023538	6/24/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-EF-1   S17T023539	6/24/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	

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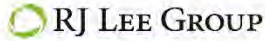
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04569-12-TL2-EF-2   S17T023540	6/24/17	7/14/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/14/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/14/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-EF-3   S17T023541	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-EF-4   S17T023542	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-EF-5   S17T023543	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-EF-6   S17T023544	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-EF-7   S17T023545	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	

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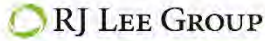
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04569-12-TL2-EF-7   S17T023545	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-EF-8   S17T023546	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	<0.012	0.012	
	6/24/17	7/15/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	<0.012	0.012	
17-04569-12-TL2-IN-1   S17T023547	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.035	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.037	0.011	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	6.060	1.054	D
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.147	0.011	C
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.023	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.110	0.011	C
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.039	0.011	C
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.082	0.011	C
17-04569-12-TL2-IN-2   S17T023548	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.064	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	13.599	1.054	D
	6/24/17	8/7/17	N-Nitrosodimethylamine	62-75-9	0.026	0.008	
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.613	0.114	D
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.192	0.011	C
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.044	0.011	C
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.247	0.011	C
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.078	0.011	
17-04569-12-TL2-IN-3   S17T023549	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.121	0.011	C
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	0.086	0.012	C
	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.055	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	13.096	1.054	D
	6/24/17	8/7/17	N-Nitrosodimethylamine	62-75-9	0.019	0.008	
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.595	0.114	D
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.149	0.011	C
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.039	0.011	C
17-04569-12-TL2-IN-4   S17T023550	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.254	0.011	C
	6/24/17	8/7/17	N-Nitrosomethylethylamine	10595-95-6	0.013	0.008	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.069	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.100	0.011	C
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	0.069	0.012	C
	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.058	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	6.999	1.054	C, D
	6/24/17	8/7/17	N-Nitrosodimethylamine	62-75-9	0.013	0.008	
17-04569-12-TL2-IN-4   S17T023550	6/24/17	8/16/17	N-Nitrosodimethylamine	62-75-9	0.443	0.083	D
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.096	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.028	0.011	X

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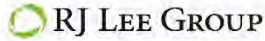
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04569-12-TL2-IN-4   S17T023550	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.260	0.011	C
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.057	0.011	C
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.079	0.011	X
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	0.056	0.012	C
17-04569-12-TL2-IN-5   S17T023551	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.043	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	13.034	1.054	D
	6/24/17	8/7/17	N-Nitrosodimethylamine	62-75-9	0.018	0.008	
	6/24/17	8/16/17	N-Nitrosodimethylamine	62-75-9	0.349	0.083	D
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.152	0.011	C
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.042	0.011	C
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.242	0.011	C
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.071	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.107	0.011	C
17-04569-12-TL2-IN-6   S17T023552	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	0.073	0.012	C
	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.061	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	2.725	1.054	C, D
	6/24/17	8/7/17	N-Nitrosodimethylamine	62-75-9	0.015	0.008	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.665	0.114	D
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.084	0.011	
	6/24/17	8/7/17	N-Nitrosodi-n-butylamine	924-16-3	0.049	0.008	C
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.023	0.011	X
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.170	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.049	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.058	0.011	C
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	0.044	0.012	C
17-04569-12-TL2-IN-7   S17T023553	6/24/17	8/7/17	N-Nitrosopyrrolidine	930-55-2	0.034	0.008	C
	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.057	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.270	0.011	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	10.365	1.054	D
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.138	0.011	C
	6/24/17	7/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.019	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.040	0.011	C
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.182	0.011	C
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.044	0.011	
17-04569-12-TL2-IN-8   S17T023554	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.089	0.011	X
	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	0.059	0.012	C
	6/24/17	7/15/17	N-Nitrosodiethylamine	55-18-5	0.051	0.012	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.116	0.011	C
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	4.340	1.054	C, D
	6/24/17	7/27/17	N-Nitrosodimethylamine	62-75-9	0.012	0.011	C
	6/24/17	7/15/17	N-Nitrosodi-n-butylamine	924-16-3	0.091	0.011	
	6/24/17	7/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.027	0.011	
	6/24/17	7/15/17	N-Nitrosodi-n-propylamine	621-64-7	0.012	0.011	
	6/24/17	7/15/17	N-Nitrosomethylethylamine	10595-95-6	0.145	0.011	
	6/24/17	7/15/17	N-Nitrosomorpholine	59-89-2	0.020	0.011	
	6/24/17	7/15/17	N-Nitrosopiperidine	100-75-4	0.048	0.011	C

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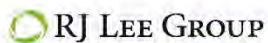
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-04569-12-TL2-IN-8   S17T023554	6/24/17	7/15/17	N-Nitrosopyrrolidine	930-55-2	0.025	0.012	C

## Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report

D = Analyte analyzed in a dilution

E = Report concentration was above the instrument calibration range

I = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match, rsd &gt;90% w/ RT match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

I = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

Z = Not ELAP accredited analyte

ND = Not Detected

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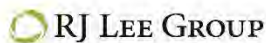
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Carl Howald IV  
Washington River Protection  
Solutions, LLC  
P.O. Box 850 MSIN II6-16  
Richland, WA 99352  
Client Project: 2017 Cartridge Evaluation

### Quality Control

NIOSH 2522-Modified

RJ Lee Group No.: W706139  
Samples Received: 6/28/17  
Report Date: 8/23/17  
COC No.: 20172250  
Extraction Date: 7/18/17

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS1	8/7/17	0.200	0.251	1.26		2.14	125	74.6 - 118	S
N-Nitrosodimethylamine	62-75-9	LCS1	8/7/17	0.200	0.252	1.27		1.86	126	66 - 119	S
N-Nitrosodi-n-butylamine	924-16-3	LCS1	8/7/17	0.200	0.243	1.23		1.37	121	75.1 - 120	S
N-Nitrosodi-n-propylamine	621-64-7	LCS1	8/7/17	0.200	0.254	1.26		2.26	127	74.9 - 119	S
N-Nitrosomethylethylamine	10595-95-6	LCS1	8/7/17	0.200	0.267	1.33		1.51	133	73.7 - 119	S
N-Nitrosomorpholine	59-89-2	LCS1	8/7/17	0.200	0.255	1.30		2.82	127	72.5 - 124	S
N-Nitrosopiperidine	100-75-4	LCS1	8/7/17	0.200	0.250	1.26		1.76	125	71.9 - 121	S
N-Nitrosopyrrolidine	930-55-2	LCS1	8/7/17	0.200	0.251	1.28		2.90	126	69.2 - 124	S
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	7/27/17	0.200	0.203	1.03		5.62	101	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	7/14/17	0.200	0.173	0.85		2.93	86.3	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	7/27/17	0.200	0.186	0.92		0.61	92.7	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	7/27/17	0.200	0.186	0.92		0.61	92.7	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	8/16/17	0.200	0.256	1.27		1.67	128	74.6 - 119	S
N-Nitrosodimethylamine	62-75-9	LCS-1	7/27/17	0.200	0.186	0.95		3.89	92.6	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/27/17	0.200	0.178	0.88		1.37	88.8	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/14/17	0.200	0.185	0.91		1.20	92.2	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/27/17	0.200	0.178	0.88		1.37	88.8	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	8/16/17	0.200	0.240	1.20		1.48	120	66 - 119	S
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/14/17	0.200	0.180	0.90		2.85	89.9	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/27/17	0.200	0.184	0.94		3.44	91.9	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	8/16/17	0.200	0.266	1.32		1.06	133	75.1 - 120	S
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/27/17	0.200	0.202	1.05		6.95	101	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/27/17	0.200	0.184	0.94		3.44	91.9	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/27/17	0.200	0.204	1.05		4.56	102	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/14/17	0.200	0.180	0.89		3.44	89.8	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/27/17	0.200	0.185	0.94		3.25	92.2	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	8/16/17	0.200	0.266	1.34		1.17	133	74.9 - 119	S
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/27/17	0.200	0.185	0.94		3.25	92.2	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/27/17	0.200	0.183	0.93		1.82	91.3	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/14/17	0.200	0.173	0.87		1.97	86.2	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	8/16/17	0.200	0.262	1.31		0.77	131	73.7 - 119	S
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/27/17	0.200	0.183	0.93		1.82	91.3	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/27/17	0.200	0.202	1.05		4.55	101	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-1	7/14/17	0.200	0.174	0.88		2.03	87.0	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-1	7/27/17	0.200	0.184	0.92		0.59	91.9	72.5 - 124	

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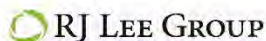
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosomorpholine	59-89-2	LCS-1	7/27/17	0.200	0.184	0.92		0.59	91.9	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-1	8/16/17	0.200	0.267	1.33		0.83	134	72.5 - 124	S
N-Nitrosomorpholine	59-89-2	LCS-1	7/27/17	0.200	0.203	1.06		7.65	101	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-1	7/14/17	0.200	0.174	0.88		2.94	87.0	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	7/27/17	0.200	0.182	0.93		2.58	90.9	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	8/16/17	0.200	0.264	1.30		1.16	132	71.9 - 121	S
N-Nitrosopiperidine	100-75-4	LCS-1	7/27/17	0.200	0.199	1.04		6.72	99.4	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	7/27/17	0.200	0.182	0.93		2.58	90.9	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/27/17	0.200	0.181	0.91		1.40	90.5	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/14/17	0.200	0.172	0.86		2.08	86.1	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/27/17	0.200	0.181	0.91		1.40	90.5	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/27/17	0.200	0.204	1.05		6.20	102	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	8/16/17	0.200	0.259	1.30		1.18	129	69.2 - 124	S
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS2	8/7/17	0.200	0.248	1.26		2.14	124	74.6 - 118	S
N-Nitrosodimethylamine	62-75-9	LCS2	8/7/17	0.200	0.251	1.27		1.86	125	66 - 119	S
N-Nitrosodi-n-butylamine	924-16-3	LCS2	8/7/17	0.200	0.244	1.23		1.37	122	75.1 - 120	S
N-Nitrosodi-n-propylamine	621-64-7	LCS2	8/7/17	0.200	0.246	1.26		2.26	123	74.9 - 119	S
N-Nitrosomethylamine	10595-95-6	LCS2	8/7/17	0.200	0.261	1.33		1.51	130	73.7 - 119	S
N-Nitrosomorpholine	59-89-2	LCS2	8/7/17	0.200	0.258	1.30		2.82	129	72.5 - 124	S
N-Nitrosopiperidine	100-75-4	LCS2	8/7/17	0.200	0.249	1.26		1.76	124	71.9 - 121	S
N-Nitrosopyrrolidine	930-55-2	LCS2	8/7/17	0.200	0.253	1.28		2.90	126	69.2 - 124	S
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-2	7/27/17	0.200	0.183	0.92		0.61	91.6	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	7/14/17	0.200	0.165	0.85		2.93	82.5	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	8/16/17	0.200	0.250	1.27		1.67	125	74.6 - 118	S
N-Nitrosodiethylamine	55-18-5	LCS-2	7/27/17	0.200	0.183	0.92		0.61	91.6	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	7/27/17	0.200	0.199	1.03		5.62	99.1	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/27/17	0.200	0.186	0.95		3.89	92.8	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/14/17	0.200	0.181	0.91		1.20	90.5	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/27/17	0.200	0.175	0.88		1.37	87.2	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	8/16/17	0.200	0.238	1.20		1.48	119	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/27/17	0.200	0.175	0.88		1.37	87.2	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/27/17	0.200	0.184	0.94		3.44	92.1	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/14/17	0.200	0.175	0.90		2.85	87.4	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/27/17	0.200	0.184	0.94		3.44	92.1	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	8/16/17	0.200	0.262	1.32		1.06	131	75.1 - 120	S
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/27/17	0.200	0.203	1.05		6.95	102	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	8/16/17	0.200	0.268	1.34		1.17	134	74.9 - 119	S
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/14/17	0.200	0.171	0.89		3.44	85.6	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/27/17	0.200	0.205	1.05		4.56	102	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/27/17	0.200	0.185	0.94		3.25	92.2	74.9 - 119	

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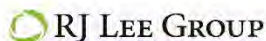
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/27/17	0.200	0.185	0.94		3.25	92.2	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/27/17	0.200	0.187	0.93		1.82	93.3	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/27/17	0.200	0.208	1.05		4.55	104	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/14/17	0.200	0.174	0.87		1.97	86.8	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/27/17	0.200	0.187	0.93		1.82	93.3	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	8/16/17	0.200	0.259	1.31		0.77	129	73.7 - 119	S
N-Nitrosomorpholine	59-89-2	LCS-2	8/16/17	0.200	0.264	1.33		0.83	132	72.5 - 124	S
N-Nitrosomorpholine	59-89-2	LCS-2	7/27/17	0.200	0.183	0.92		0.59	91.3	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	7/27/17	0.200	0.183	0.92		0.59	91.3	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	7/14/17	0.200	0.173	0.88		2.03	86.4	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	7/27/17	0.200	0.202	1.06		7.65	101	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-2	7/14/17	0.200	0.172	0.88		2.94	86.0	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-2	8/16/17	0.200	0.258	1.30		1.16	129	71.9 - 121	S
N-Nitrosopiperidine	100-75-4	LCS-2	7/27/17	0.200	0.183	0.93		2.58	91.6	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-2	7/27/17	0.200	0.183	0.93		2.58	91.6	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-2	7/27/17	0.200	0.201	1.04		6.72	101	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-2	8/16/17	0.200	0.264	1.30		1.18	132	69.2 - 124	S
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/27/17	0.200	0.181	0.91		1.40	90.6	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/14/17	0.200	0.169	0.88		2.08	84.2	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/27/17	0.200	0.181	0.91		1.40	90.6	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/27/17	0.200	0.202	1.05		6.20	101	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS3	8/7/17	0.200	0.259	1.26		2.14	129	74.6 - 118	S
N-Nitrosodimethylamine	62-75-9	LCS3	8/7/17	0.200	0.260	1.27		1.86	130	66 - 119	S
N-Nitrosodi-n-butylamine	924-16-3	LCS3	8/7/17	0.200	0.249	1.23		1.37	124	75.1 - 120	S
N-Nitrosodi-n-propylamine	621-64-7	LCS3	8/7/17	0.200	0.257	1.26		2.26	128	74.9 - 119	S
N-Nitrosomethylethylamine	10595-95-6	LCS3	8/7/17	0.200	0.269	1.33		1.51	134	73.7 - 119	S
N-Nitrosomorpholine	59-89-2	LCS3	8/7/17	0.200	0.269	1.30		2.82	134	72.5 - 124	S
N-Nitrosopiperidine	100-75-4	LCS3	8/7/17	0.200	0.257	1.26		1.76	129	71.9 - 121	S
N-Nitrosopyrrolidine	930-55-2	LCS3	8/7/17	0.200	0.265	1.28		2.90	132	69.2 - 124	S
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-3	7/27/17	0.200	0.185	0.92		0.61	92.4	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-3	7/27/17	0.200	0.220	1.03		5.62	110	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-3	8/16/17	0.200	0.258	1.27		1.67	129	74.6 - 118	S
N-Nitrosodiethylamine	55-18-5	LCS-3	7/27/17	0.200	0.185	0.92		0.61	92.4	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-3	7/14/17	0.200	0.175	0.85		2.93	87.2	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS-3	8/16/17	0.200	0.245	1.20		1.48	122	66 - 119	S
N-Nitrosodimethylamine	62-75-9	LCS-3	7/27/17	0.200	0.199	0.95		3.89	99.1	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/27/17	0.200	0.173	0.88		1.37	86.5	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/27/17	0.200	0.173	0.88		1.37	86.5	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/14/17	0.200	0.180	0.91		1.20	90.1	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/14/17	0.200	0.185	0.90		2.85	92.6	75.1 - 120	

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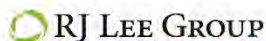
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/27/17	0.200	0.195	0.94		3.44	97.6	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/27/17	0.200	0.228	1.05		6.95	114	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	8/16/17	0.200	0.267	1.32		1.06	133	75.1 - 120	S
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/27/17	0.200	0.195	0.94		3.44	97.6	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/14/17	0.200	0.183	0.89		3.44	91.5	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	8/16/17	0.200	0.272	1.34		1.17	136	74.9 - 119	S
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/27/17	0.200	0.221	1.05		4.56	110	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/27/17	0.200	0.195	0.94		3.25	97.5	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/27/17	0.200	0.195	0.94		3.25	97.5	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	8/16/17	0.200	0.263	1.31		0.77	131	73.7 - 119	S
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/27/17	0.200	0.190	0.93		1.82	94.7	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/14/17	0.200	0.179	0.87		1.97	89.4	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/27/17	0.200	0.190	0.93		1.82	94.7	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/27/17	0.200	0.221	1.05		4.55	110	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-3	7/27/17	0.200	0.185	0.92		0.59	92.4	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	7/14/17	0.200	0.180	0.88		2.03	89.8	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	7/27/17	0.200	0.230	1.06		7.65	115	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	8/16/17	0.200	0.268	1.33		0.83	134	72.5 - 124	S
N-Nitrosomorpholine	59-89-2	LCS-3	7/27/17	0.200	0.185	0.92		0.59	92.4	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-3	7/14/17	0.200	0.182	0.88		2.94	90.9	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	7/27/17	0.200	0.191	0.93		2.58	95.3	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	8/16/17	0.200	0.262	1.30		1.16	131	71.9 - 121	S
N-Nitrosopiperidine	100-75-4	LCS-3	7/27/17	0.200	0.191	0.93		2.58	95.3	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	7/27/17	0.200	0.224	1.04		6.72	112	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/14/17	0.200	0.176	0.86		2.08	87.8	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/27/17	0.200	0.186	0.91		1.40	92.8	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-3	8/16/17	0.200	0.258	1.30		1.18	129	69.2 - 124	S
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/27/17	0.200	0.186	0.91		1.40	92.8	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/27/17	0.200	0.225	1.05		6.20	113	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	7/27/17		<0.010	1.03	<0.010				
N-Nitrosodiethylamine	55-18-5	MB	8/16/17		<0.010	1.27	<0.008				
N-Nitrosodiethylamine	55-18-5	MB	7/27/17		<0.010	0.92	<0.011				
N-Nitrosodiethylamine	55-18-5	MB	8/7/17		<0.010	1.26	<0.008				
N-Nitrosodiethylamine	55-18-5	MB	7/14/17		<0.010	0.85	<0.012				
N-Nitrosodiethylamine	55-18-5	MB	7/27/17		<0.010	0.92	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	7/27/17		<0.010	0.95	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	7/27/17		<0.010	0.88	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	8/7/17		<0.010	1.27	<0.008				
N-Nitrosodimethylamine	62-75-9	MB	8/16/17		<0.010	1.20	<0.008				
N-Nitrosodimethylamine	62-75-9	MB	7/14/17		<0.010	0.91	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	7/27/17		<0.010	0.88	<0.011				
N-Nitrosodi-n-butylamine	924-16-3	MB	8/16/17		<0.010	1.32	<0.008				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/27/17		<0.010	0.94	<0.011				

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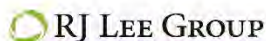
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodi-n-butylamine	924-16-3	MB	7/27/17		<0.010	1.05	<0.009				
N-Nitrosodi-n-butylamine	924-16-3	MB	8/7/17		<0.010	1.23	<0.008				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/27/17		<0.010	0.94	<0.011				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/14/17		<0.010	0.90	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	8/16/17		<0.010	1.34	<0.007				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/27/17		<0.010	0.94	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/14/17		<0.010	0.89	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/27/17		<0.010	0.94	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	8/7/17		<0.010	1.26	<0.008				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/27/17		<0.010	1.05	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	8/7/17		<0.010	1.33	<0.008				
N-Nitrosomethylethylamine	10595-95-6	MB	7/27/17		<0.010	0.93	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	7/27/17		<0.010	1.05	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	7/27/17		<0.010	0.93	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	8/16/17		<0.010	1.31	<0.008				
N-Nitrosomethylethylamine	10595-95-6	MB	7/14/17		<0.010	0.87	<0.011				
N-Nitrosomorpholine	59-89-2	MB	7/14/17		<0.010	0.88	<0.011				
N-Nitrosomorpholine	59-89-2	MB	7/27/17		<0.010	1.06	<0.009				
N-Nitrosomorpholine	59-89-2	MB	7/27/17		<0.010	0.92	<0.011				
N-Nitrosomorpholine	59-89-2	MB	8/7/17		<0.010	1.30	<0.008				
N-Nitrosomorpholine	59-89-2	MB	8/16/17		<0.010	1.33	<0.008				
N-Nitrosomorpholine	59-89-2	MB	7/27/17		<0.010	0.92	<0.011				
N-Nitrosopiperidine	100-75-4	MB	8/7/17		<0.010	1.26	<0.008				
N-Nitrosopiperidine	100-75-4	MB	7/27/17		<0.010	0.93	<0.011				
N-Nitrosopiperidine	100-75-4	MB	8/16/17		<0.010	1.30	<0.008				
N-Nitrosopiperidine	100-75-4	MB	7/14/17		<0.010	0.88	<0.011				
N-Nitrosopiperidine	100-75-4	MB	7/27/17		<0.010	1.04	<0.010				
N-Nitrosopiperidine	100-75-4	MB	7/27/17		<0.010	0.93	<0.011				
N-Nitrosopyrrolidine	930-55-2	MB	8/16/17		<0.010	1.30	<0.008				
N-Nitrosopyrrolidine	930-55-2	MB	8/7/17		<0.010	1.28	<0.008				
N-Nitrosopyrrolidine	930-55-2	MB	7/14/17		<0.010	0.86	<0.012				
N-Nitrosopyrrolidine	930-55-2	MB	7/27/17		<0.010	0.91	<0.011				
N-Nitrosopyrrolidine	930-55-2	MB	7/27/17		<0.010	1.05	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	7/27/17		<0.010	0.91	<0.011				
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MRL	8/16/17	0.010	0.013	1.27	0.010		104	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/27/17	0.010	0.009	1.03	0.009		89.8	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/14/17	0.010	0.011	0.85	0.013		126	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/27/17	0.010	0.008	0.92	0.009		90.7	39.6 - 158	
N-Nitrosodimethylamine	62-75-9	MRL	7/14/17	0.010	0.008	0.91	0.008		83.6	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL	7/27/17	0.010	0.012	0.88	0.014		137	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL	7/27/17	0.010	0.013	0.95	0.013		133	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL	8/16/17	0.010	0.012	1.20	0.010		102	71.6 - 181	
N-Nitrosodi-n-butylamine	924-16-3	MRL	8/16/17	0.010	0.014	1.32	0.011		106	27.4 - 210	

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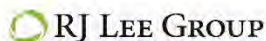
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/27/17	0.010	0.011	1.05	0.011		105	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/14/17	0.010	0.011	0.90	0.012		124	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/27/17	0.010	0.012	0.94	0.013		130	27.4 - 210	
N-Nitrosodi-n-propylamine	621-64-7	MRL	8/16/17	0.010	0.015	1.34	0.011		113	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/27/17	0.010	0.010	0.94	0.011		106	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/27/17	0.010	0.010	1.05	0.009		90.6	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/14/17	0.010	0.009	0.89	0.010		95.9	47.8 - 163	
N-Nitrosomethylethylamine	10595-95-6	MRL	8/16/17	0.010	0.012	1.31	0.009		91.0	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/27/17	0.010	0.011	1.05	0.011		107	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/14/17	0.010	0.008	0.87	0.009		88.4	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/27/17	0.010	0.010	0.93	0.011		109	50.8 - 164	
N-Nitrosomorpholine	59-89-2	MRL	7/27/17	0.010	0.008	1.06	0.007		74.2	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL	7/27/17	0.010	0.009	0.92	0.010		95.8	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL	8/16/17	0.010	0.012	1.33	0.009		87.4	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL	7/14/17	0.010	0.009	0.88	0.011		107	36 - 169	
N-Nitrosopiperidine	100-75-4	MRL	7/14/17	0.010	0.010	0.88	0.012		118	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	7/27/17	0.010	0.008	0.93	0.008		81.3	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	7/27/17	0.010	0.005	1.04	0.005		50.5	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	8/16/17	0.010	0.014	1.30	0.010		104	26.8 - 171	
N-Nitrosopyrrolidine	930-55-2	MRL	7/14/17	0.010	0.010	0.86	0.011		112	43.3 - 163	
N-Nitrosopyrrolidine	930-55-2	MRL	7/27/17	0.010	0.008	0.91	0.009		86.2	43.3 - 163	
N-Nitrosopyrrolidine	930-55-2	MRL	8/16/17	0.010	0.013	1.30	0.010		99.4	43.3 - 163	
N-Nitrosopyrrolidine	930-55-2	MRL	7/27/17	0.010	0.008	1.05	0.008		78.2	43.3 - 163	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MRL1	8/7/17	0.010	0.012	1.26	0.009		91.7	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL1	7/27/17	0.010	0.008	0.92	0.009		90.7	39.6 - 158	
N-Nitrosodimethylamine	62-75-9	MRL1	8/7/17	0.010	0.014	1.27	0.011		108	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL1	7/27/17	0.010	0.012	0.88	0.014		137	71.6 - 181	
N-Nitrosodi-n-butylamine	924-16-3	MRL1	8/7/17	0.010	0.013	1.23	0.011		108	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL1	7/27/17	0.010	0.012	0.94	0.013		130	27.4 - 210	
N-Nitrosodi-n-propylamine	621-64-7	MRL1	8/7/17	0.010	0.011	1.26	0.009		90.4	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL1	7/27/17	0.010	0.010	0.94	0.011		106	47.8 - 163	
N-Nitrosomethylethylamine	10595-95-6	MRL1	8/7/17	0.010	0.014	1.33	0.011		108	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL1	7/27/17	0.010	0.010	0.93	0.011		109	50.8 - 164	
N-Nitrosomorpholine	59-89-2	MRL1	8/7/17	0.010	0.011	1.30	0.009		87.9	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL1	7/27/17	0.010	0.009	0.92	0.010		95.8	36 - 169	
N-Nitrosopiperidine	100-75-4	MRL1	8/7/17	0.010	0.014	1.26	0.011		112	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL1	7/27/17	0.010	0.008	0.93	0.008		81.3	26.8 - 171	
N-Nitrosopyrrolidine	930-55-2	MRL1	8/7/17	0.010	0.013	1.28	0.010		103	43.3 - 163	
N-Nitrosopyrrolidine	930-55-2	MRL1	7/27/17	0.010	0.008	0.91	0.009		86.2	43.3 - 163	

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**Report Qualifiers:**

A = Target Analyte media breakthrough suspect, see analytical report

D = Analyte analyzed in a dilution

E = Report concentration was above the instrument calibration range

J = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match,  $\text{rsd} > 90\%$  vs RT match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

Z = Not FIAP accredited analyte

ND = Not Detected

Scientist II DeNomy Dage

*These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group will store the samples for a period of ninety (90) days before discarding. A shipping and handling fee will be assessed for the return of any samples. Unless otherwise noted, samples were received in an acceptable condition. This laboratory operates in accordance with ISO 17025 guidelines, and holds limited scopes of accreditation under UKLAP Lab Code 4061. AIHA-LAP, LLC Lab ID 178656 EPA ID WA01195 and WA DOE Lab ID C859. This report may not be used to claim product endorsement by any laboratory accrediting agency. The results contained in this report relate only to the items tested or to the sample(s) as received by the laboratory. Any reproduction of this document must be in full for the report to be valid.*



C.O.C. No.  
20172250

A-6003-962 (03/05)



W706139

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										C.O.C. No. 20172250			
										Page 2 of 2			
Assembler			Contact/Requestor CARL HOWARD IV							Telephone No. 313-6861		MSIN 16-05 FAX 372-1878	
Collector JONES			Sample Origin 2017 CARTRIDGE EVALUATION							Purchase Order/Charge Code 203009/6820			
SAF No. N/A			Logbook Work Package No. N/A							Ice Chest No.		Temp. <b>25.1</b>	
Project Title 2017 CARTRIDGE EVALUATION			Method of Shipment							Bill of Lading/Air Bill No.			
Shipped To (Lab) CBAL			Data Turnaround 10 DAYS							Parts and Return No.			
Protocol N/A													
Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis				Preservative			
	S17T023545	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-EF-7				N/A			
	S17T023546	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-EF-8				N/A			
	S17T023547	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-1				N/A			
	S17T023548	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-2				N/A			
	S17T023549	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-3				N/A			
	S17T023550	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-4				N/A			
	S17T023551	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-5				N/A			
	S17T023552	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-6				N/A			
	S17T023553	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-7				N/A			
	S17T023554	VA	6/24/17		Thermosorb-N	Nitrosamines 17-04569-12-TL2-IN-8				N/A			
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)											MSDS	<input type="radio"/> Yes <input checked="" type="radio"/> No	
SPECIAL INSTRUCTIONS											Hold Time		
Send Results to Carl Howard & Keisha Garcia Carl W Howard@rl.gov and Keisha_R_Garcia@rl.gov see SOW for email													
CONTRACT 55503 RELEASE 9													
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*					
Diane Turner			6/28/17 10:30	RE Rogers			6/28/17 10:30	S = Soil DL = Drum Liquids					
Relinquished By			Date/Time	Received By			Date/Time	SE = Sediment T = Tissue					
RE Rogers			6/28/17 13:00	Anna Melville			6/28/17 13:00	SO = Solid WM = Wipe					
Relinquished By			Date/Time	Received By			Date/Time	SL = Sludge L = Liquid					
								W = Water V = Vegetation					
Relinquished By			Date/Time	Received By			Date/Time	O = Oil VA = Vapor					
								A = Air X = Other					
Relinquished By			Date/Time	Received By			Date/Time	DS = Drum Solids					
FINAL SAMPLE DISPOSITION	Disposal Method (e.g. Return to customer, per lab procedure, used in process)							Date/Time					
	CONSUMED							DB/10/17 11:49					
	Diverse Smith												

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)





RJ LeeGroup, Inc. | Columbia Basin Analytical Laboratories

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Tel: (509) 545-4989 | Fax: (509) 544-6010

Carl Howald IV

07/19/17

Washington River Protection Solutions, LLC

Contract No.:

55503 R9

P.O. Box 850 MSIN 116-16

Richland, WA 99352

Project: 2017 Cartridge Evaluation

**Subject: Nitrosamines Analysis Report, Group Number 20172097**

Enclosed is the final report for group 20172097 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20172097 has been assigned a Columbia Basin Analytical Laboratories login order number of W706098. This report consists of a summary report of the samples, a single quality control report for the analysis batch, and a copy of the chain of custody.

**General Set Comments**

Columbia Basin Analytical Laboratories received 20 samples on 06/21/17 to be tested for Nitrosamines. The samples were analyzed in accordance with NIOSH 2522-Modified for N-Nitrosodimethylamine, N-Nitrosomethylethylamine, N-Nitrosodiethylamine, N-Nitrosodi-n-propylamine, N-Nitrosodi-n-butylamine, N-Nitrosopiperidine, N-Nitrosopyrrolidine, and N-Nitrosomorpholine. All results have been corrected for desorption efficiency and measurable levels in the blanks.

*\*- Analyte not detected at or above MRL on initial analysis. Analyte detected at or above MRL on confirmation analysis. Analyte not confirmed.*

*X- Analyte detected at or above MRL on initial analysis. Analyte not detected at or above MRL on confirmation analysis. Analyte not confirmed.*

*C- Analyte detected at or above MRL on initial analysis and confirmation analysis. Poor mass agreement between initial and confirmation analysis indicates interference such that this result should be considered qualitative only.*

**Results**

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

<u>SampleName</u>	<u>Analyzed</u>	<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>	<u>RL</u>	<u>Units</u>	<u>Flags</u>
17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	
17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube	

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QA-17-024

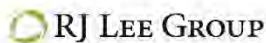
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17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-EF	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-BA-IN	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-EF	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-BL-IN	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-1	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-1	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-1	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-1	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube

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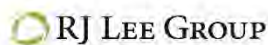
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17-03269-12-TL1-EF-1	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-1	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-1	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-1	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-2	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-3	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-4	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-5	06/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-5	06/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-5	06/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube

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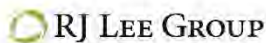
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17-03269-12-TL1-EF-5	06/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-5	06/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-5	06/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-5	06/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-5	06/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-6	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-7	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03269-12-TL1-EF-8	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03269-12-TL1-IN-1	06/27/17	N-Nitrosodiethylamine	55-18-5	0.031	0.010	µg/tube C
17-03269-12-TL1-IN-1	07/06/17	N-Nitrosodimethylamine	62-75-9	7.421	1.471	µg/tube B, D

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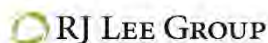
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17-03269-12-TL1-IN-1	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-1	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-1	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.051	0.010	µg/tube	
17-03269-12-TL1-IN-1	06/27/17	N-Nitrosomorpholine	59-89-2	0.036	0.010	µg/tube	
17-03269-12-TL1-IN-1	06/27/17	N-Nitrosopiperidine	100-75-4	0.068	0.010	µg/tube	X
17-03269-12-TL1-IN-1	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.022	0.010	µg/tube	X
17-03269-12-TL1-IN-2	06/27/17	N-Nitrosodiethylamine	55-18-5	0.031	0.010	µg/tube	C
17-03269-12-TL1-IN-2	07/06/17	N-Nitrosodimethylamine	62-75-9	6.716	1.471	µg/tube	B, D
17-03269-12-TL1-IN-2	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.021	0.010	µg/tube	
17-03269-12-TL1-IN-2	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-2	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.057	0.010	µg/tube	
17-03269-12-TL1-IN-2	06/27/17	N-Nitrosomorpholine	59-89-2	0.040	0.010	µg/tube	C
17-03269-12-TL1-IN-2	06/27/17	N-Nitrosopiperidine	100-75-4	0.119	0.010	µg/tube	C
17-03269-12-TL1-IN-2	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.040	0.010	µg/tube	X
17-03269-12-TL1-IN-3	06/27/17	N-Nitrosodiethylamine	55-18-5	0.036	0.010	µg/tube	C
17-03269-12-TL1-IN-3	07/13/17	N-Nitrosodimethylamine	62-75-9	6.733	1.471	µg/tube	B, D
17-03269-12-TL1-IN-3	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-3	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-3	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.058	0.010	µg/tube	
17-03269-12-TL1-IN-3	06/27/17	N-Nitrosomorpholine	59-89-2	0.040	0.010	µg/tube	
17-03269-12-TL1-IN-3	06/27/17	N-Nitrosopiperidine	100-75-4	0.104	0.010	µg/tube	C
17-03269-12-TL1-IN-3	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.040	0.010	µg/tube	X
17-03269-12-TL1-IN-4	06/27/17	N-Nitrosodiethylamine	55-18-5	0.018	0.010	µg/tube	C
17-03269-12-TL1-IN-4	07/06/17	N-Nitrosodimethylamine	62-75-9	5.919	1.471	µg/tube	CB, D
17-03269-12-TL1-IN-4	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.018	0.010	µg/tube	
17-03269-12-TL1-IN-4	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-4	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.039	0.010	µg/tube	
17-03269-12-TL1-IN-4	06/27/17	N-Nitrosomorpholine	59-89-2	0.029	0.010	µg/tube	
17-03269-12-TL1-IN-4	06/27/17	N-Nitrosopiperidine	100-75-4	0.094	0.010	µg/tube	C
17-03269-12-TL1-IN-4	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.030	0.010	µg/tube	C
17-03269-12-TL1-IN-5	06/27/17	N-Nitrosodiethylamine	55-18-5	0.036	0.010	µg/tube	C

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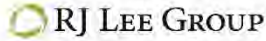
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17-03269-12-TL1-IN-5	07/13/17	N-Nitrosodimethylamine	62-75-9	6.387	1.471	µg/tube	B, DC
17-03269-12-TL1-IN-5	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-5	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-5	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.057	0.010	µg/tube	
17-03269-12-TL1-IN-5	06/27/17	N-Nitrosomorpholine	59-89-2	0.013	0.010	µg/tube	C
17-03269-12-TL1-IN-5	06/27/17	N-Nitrosopiperidine	100-75-4	0.079	0.010	µg/tube	X
17-03269-12-TL1-IN-5	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.028	0.010	µg/tube	X
17-03269-12-TL1-IN-6	06/27/17	N-Nitrosodiethylamine	55-18-5	0.028	0.010	µg/tube	C
17-03269-12-TL1-IN-6	07/06/17	N-Nitrosodimethylamine	62-75-9	4.924	0.147	µg/tube	CB, D
17-03269-12-TL1-IN-6	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-6	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-6	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.044	0.010	µg/tube	
17-03269-12-TL1-IN-6	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-03269-12-TL1-IN-6	06/27/17	N-Nitrosopiperidine	100-75-4	0.064	0.010	µg/tube	X
17-03269-12-TL1-IN-6	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.020	0.010	µg/tube	X
17-03269-12-TL1-IN-7	06/27/17	N-Nitrosodiethylamine	55-18-5	0.022	0.010	µg/tube	C
17-03269-12-TL1-IN-7	07/06/17	N-Nitrosodimethylamine	62-75-9	4.875	0.147	µg/tube	CD, B
17-03269-12-TL1-IN-7	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-7	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-7	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	µg/tube	
17-03269-12-TL1-IN-7	06/27/17	N-Nitrosomorpholine	59-89-2	0.010	0.010	µg/tube	X
17-03269-12-TL1-IN-7	06/27/17	N-Nitrosopiperidine	100-75-4	0.107	0.010	µg/tube	X
17-03269-12-TL1-IN-7	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.039	0.010	µg/tube	X
17-03269-12-TL1-IN-8	06/27/17	N-Nitrosodiethylamine	55-18-5	0.030	0.010	µg/tube	C
17-03269-12-TL1-IN-8	07/06/17	N-Nitrosodimethylamine	62-75-9	4.322	0.147	µg/tube	CB, D
17-03269-12-TL1-IN-8	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-8	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-03269-12-TL1-IN-8	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	µg/tube	
17-03269-12-TL1-IN-8	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-03269-12-TL1-IN-8	06/27/17	N-Nitrosopiperidine	100-75-4	0.119	0.010	µg/tube	X
17-03269-12-TL1-IN-8	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.041	0.010	µg/tube	X

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**Recovery Failures in the ICV, CCV, LCS, and MRL**

There were no recovery failures in the CCV, ICV. There were recovery failures in the LCS, MRL.

**RSD Failures in the LCS**

There were no RSD failures between the laboratory control samples.

**Measurable Blank Values**

There were measurable analytes in the blank samples.

**Calibration Curves**

The calibration curves for the Nitrosamines had an R-value that was 0.997 or better, over a range of 5.0 ng/mL to 200 ng/mL.

**General Lab Comments**

The results provided in this report relate only to the items tested. Samples were received in acceptable conditions unless otherwise noted in the comments above. Samples have not been field blank corrected unless otherwise noted in the general set comments above. This test report shall not be reproduced, except in full, without written approval of Columbia Basin Analytical Laboratories.

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

07/19/17

Scientist II DeNomy Dage

If you have any questions, please feel free to contact DeNomy Dage at ddage@rjlg.com or at 509-545-4989.

This report has been reviewed and approved by the following individual:

07/19/17

Scientist I Fernanda Pincheira

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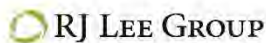
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Carl Howald IV  
Washington River Protection  
Solutions, LLC  
P.O. Box 850 MSIN II6-16  
Richland, WA 99352  
Client Project: 2017 Cartridge Evaluation

## Laboratory Report

NIOSH 2522-Modified  
Air/Emissions No Vol on GC\_TEA09  
Summary Table

RJ Lee Group No.: W706098  
Samples Received: 6/21/17  
Report Date: 7/19/17  
COC No.: 20172097  
Extraction Date: 6/23/17

Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03269-12-TL1-BA-EF   S17T020845	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-BA-IN   S17T020846	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-BL-EF   S17T020847	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-BL-IN   S17T020848	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-EF-1   S17T020849	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	

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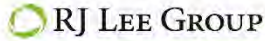
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03269-12-TL1-EF-2   S17T020850	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-EF-3   S17T020851	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-EF-4   S17T020852	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-EF-5   S17T020853	6/16/17	6/26/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/26/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-EF-6   S17T020854	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-EF-7   S17T020855	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	

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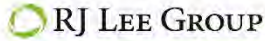
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03269-12-TL1-EF-7   S17T020855	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-EF-8   S17T020856	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03269-12-TL1-IN-1   S17T020857	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.031	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.234	0.012	
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	7.174	1.471	B, D
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.013	0.012	
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.051	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.036	0.010	
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.068	0.010	X
17-03269-12-TL1-IN-2   S17T020858	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.022	0.010	X
	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.031	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.235	0.012	
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	8.480	1.471	B, D
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.021	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.057	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.040	0.010	C
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.119	0.010	C
17-03269-12-TL1-IN-3   S17T020859	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.040	0.010	X
	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.036	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.210	0.012	
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	6.523	1.471	B, D
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.058	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.040	0.010	
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.104	0.010	C
17-03269-12-TL1-IN-4   S17T020860	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.040	0.010	X
	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.018	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.056	0.012	C
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	5.863	1.471	B, D
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.018	0.010	
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.039	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.029	0.010	
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.094	0.010	C

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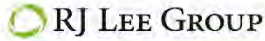
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03269-12-TL1-IN-4   S17T020860	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.030	0.010	C
17-03269-12-TL1-IN-5   S17T020861	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.036	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.063	0.012	C
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	6.324	1.471	B, D
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.057	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.013	0.010	C
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.079	0.010	X
	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.028	0.010	X
17-03269-12-TL1-IN-6   S17T020862	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.028	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.095	0.012	C
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	4.829	0.147	B, D
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.044	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.064	0.010	X
	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.020	0.010	X
17-03269-12-TL1-IN-7   S17T020863	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.022	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.057	0.012	C
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	4.818	0.147	D, B
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.010	0.010	X
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.107	0.010	X
	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.039	0.010	X
17-03269-12-TL1-IN-8   S17T020864	6/16/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.030	0.010	C
	6/16/17	7/13/17	N-Nitrosodimethylamine	62-75-9	0.049	0.012	C
	6/16/17	7/6/17	N-Nitrosodimethylamine	62-75-9	4.273	0.147	B, D
	6/16/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	6/16/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	
	6/16/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/16/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.119	0.010	X
	6/16/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.041	0.010	X

## Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report

D = Analyte analyzed in a dilution

E = Report concentration was above the instrument calibration range

J = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match, rsl &gt;90% w RT match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

I = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

Z = Not ELAP accredited analyte

ND = Not Detected

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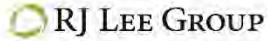
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A handwritten signature in black ink, appearing to read "DeNomy Dage", written over a horizontal line.

Scientist II DeNomy Dage

*These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group will store the samples for a period of ninety (90) days before discarding. A shipping and handling fee will be assessed for the return of any samples. Unless otherwise noted, samples were received in an acceptable condition. This laboratory operates in accordance with ISO 17025 guidelines, and holds limited scopes of accreditation under ORLLAP Lab Code 4061 AIIIA-LAP, LLC Lab ID 178656 LPA ID WA01195 and WA DOL Lab ID C859. This report may not be used to claim product endorsement by any laboratory accrediting agency. The results contained in this report relate only to the items listed or to the sample(s) as received by the laboratory. Any reproduction of this document must be in full for the report to be valid. Quality control data is available upon request.*

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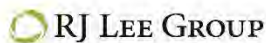
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Carl Howald IV  
Washington River Protection  
Solutions, LLC  
P.O. Box 850 MSIN II6-16  
Richland, WA 99352  
Client Project: 2017 Cartridge Evaluation

### Quality Control

NIOSH 2522-Modified

RJ Lee Group No.: W706098  
Samples Received: 6/21/17  
Report Date: 7/19/17  
COC No.: 20172097  
Extraction Date: 6/28/17

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	7/13/17	0.200	0.168	0.84		3.48	83.8	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	7/5/17	0.200	0.199	0.99		0.83	99.5	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	6/26/17	0.200	0.188	1.00		5.44	93.8	74.1 - 116	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/5/17	0.200	0.134	0.68		7.03	66.8	66 - 119	B
N-Nitrosodimethylamine	62-75-9	LCS-1	7/13/17	0.200	0.171	0.85		2.00	85.5	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	6/26/17	0.200	0.187	0.97		3.85	93.2	66.1 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	6/26/17	0.200	0.184	0.98		5.53	92.0	73.4 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/13/17	0.200	0.170	0.86		3.72	84.8	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/5/17	0.200	0.195	0.96		2.01	97.6	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/13/17	0.200	0.173	0.86		2.31	86.4	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/5/17	0.200	0.203	0.97		3.94	101	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	6/26/17	0.200	0.191	1.02		5.56	95.3	74.6 - 117	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/5/17	0.200	0.201	0.98		3.09	100	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	6/26/17	0.200	0.195	1.03		4.53	97.3	70.9 - 118	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/13/17	0.200	0.170	0.85		2.82	84.7	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-1	7/13/17	0.200	0.173	0.87		2.97	86.4	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-1	6/26/17	0.200	0.192	1.03		5.95	96.1	70.7 - 118	
N-Nitrosomorpholine	59-89-2	LCS-1	7/5/17	0.200	0.199	1.00		0.60	99.5	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-1	7/5/17	0.200	0.201	0.97		3.40	100	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	7/13/17	0.200	0.168	0.84		1.06	83.9	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	6/26/17	0.200	0.191	1.03		6.73	95.1	71.5 - 115	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/5/17	0.200	0.200	0.99		0.92	100	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	6/26/17	0.200	0.189	1.03		7.02	94.6	67.8 - 118	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/13/17	0.200	0.165	0.85		3.55	82.5	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-2	7/5/17	0.200	0.198	0.99		0.83	99.0	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	7/13/17	0.200	0.162	0.84		3.48	80.9	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	6/26/17	0.200	0.204	1.00		5.44	102	74.1 - 116	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/13/17	0.200	0.167	0.85		2.00	83.8	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	6/26/17	0.200	0.196	0.97		3.85	97.6	66.1 - 115	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/5/17	0.200	0.128	0.68		7.03	63.9	66 - 119	B, S
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/5/17	0.200	0.191	0.96		2.01	95.6	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/13/17	0.200	0.169	0.86		3.72	84.2	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	6/26/17	0.200	0.201	0.98		5.53	100	73.4 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/5/17	0.200	0.193	0.97		3.94	96.5	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/13/17	0.200	0.168	0.86		2.31	83.9	74.9 - 119	

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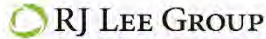
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	6/26/17	0.200	0.208	1.02		5.56	104	74.6 - 117	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/13/17	0.200	0.164	0.85		2.82	82.0	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/5/17	0.200	0.196	0.98		3.09	98.1	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	6/26/17	0.200	0.212	1.03		4.53	106	70.9 - 118	
N-Nitrosomorpholine	59-89-2	LCS-2	7/13/17	0.200	0.170	0.87		2.97	84.8	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	7/5/17	0.200	0.201	1.00		0.60	100	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	6/26/17	0.200	0.208	1.03		5.95	104	70.7 - 118	
N-Nitrosopiperidine	100-75-4	LCS-2	7/5/17	0.200	0.194	0.97		3.40	97.0	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-2	6/26/17	0.200	0.212	1.03		6.73	106	71.5 - 115	
N-Nitrosopiperidine	100-75-4	LCS-2	7/13/17	0.200	0.167	0.84		1.06	83.3	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-2	6/26/17	0.200	0.213	1.03		7.02	107	67.8 - 118	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/5/17	0.200	0.199	0.99		0.92	99.3	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/13/17	0.200	0.167	0.85		3.55	83.5	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-3	7/5/17	0.200	0.196	0.99		0.83	97.9	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-3	6/26/17	0.200	0.208	1.00		5.44	104	74.1 - 116	
N-Nitrosodiethylamine	55-18-5	LCS-3	7/13/17	0.200	0.174	0.84		3.48	86.7	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS-3	6/26/17	0.200	0.202	0.97		3.85	101	66.1 - 115	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/13/17	0.200	0.174	0.85		2.00	87.0	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/5/17	0.200	0.147	0.68		7.03	73.2	66 - 119	B
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	6/26/17	0.200	0.205	0.98		5.53	102	73.4 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/5/17	0.200	0.188	0.96		2.01	93.7	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/13/17	0.200	0.180	0.86		3.72	90.0	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	6/26/17	0.200	0.212	1.02		5.56	106	74.6 - 117	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/13/17	0.200	0.176	0.86		2.31	87.9	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/5/17	0.200	0.188	0.97		3.94	93.8	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/13/17	0.200	0.174	0.85		2.82	86.8	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	6/26/17	0.200	0.210	1.03		4.53	105	70.9 - 118	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/5/17	0.200	0.189	0.98		3.09	94.5	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-3	7/5/17	0.200	0.199	1.00		0.60	99.2	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	7/13/17	0.200	0.180	0.87		2.97	89.9	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	6/26/17	0.200	0.217	1.03		5.95	108	70.7 - 118	
N-Nitrosopiperidine	100-75-4	LCS-3	7/13/17	0.200	0.170	0.84		1.06	85.1	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	7/5/17	0.200	0.188	0.97		3.40	93.8	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	6/26/17	0.200	0.216	1.03		6.73	108	71.5 - 115	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/13/17	0.200	0.176	0.85		3.55	88.1	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-3	6/26/17	0.200	0.215	1.03		7.02	108	67.8 - 118	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/5/17	0.200	0.197	0.99		0.92	98.3	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	7/13/17		<0.010	0.84	<0.012				
N-Nitrosodiethylamine	55-18-5	MB	6/26/17		<0.010	1.00	<0.010				
N-Nitrosodiethylamine	55-18-5	MB	7/6/17		<0.010	0.99	<0.010				

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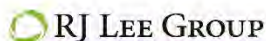
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodimethylamine	62-75-9	MB	7/13/17		<0.010	0.85	<0.012				
N-Nitrosodimethylamine	62-75-9	MB	6/26/17		<0.010	0.97	<0.010				
N-Nitrosodimethylamine	62-75-9	MB	7/6/17		0.007	0.68	0.010				B
N-Nitrosodi-n-butylamine	924-16-3	MB	7/6/17		<0.010	0.96	<0.010				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/13/17		<0.010	0.86	<0.012				
N-Nitrosodi-n-butylamine	924-16-3	MB	6/26/17		<0.010	0.98	<0.010				
N-Nitrosodi-n-propylamine	621-64-7	MB	6/26/17		<0.010	1.02	<0.010				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/13/17		<0.010	0.86	<0.012				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/6/17		<0.010	0.97	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	7/6/17		<0.010	0.98	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	7/13/17		<0.010	0.85	<0.012				
N-Nitrosomethylethylamine	10595-95-6	MB	6/26/17		<0.010	1.03	<0.010				
N-Nitrosomorpholine	59-89-2	MB	6/26/17		<0.010	1.03	<0.010				
N-Nitrosomorpholine	59-89-2	MB	7/13/17		<0.010	0.87	<0.011				
N-Nitrosomorpholine	59-89-2	MB	7/6/17		<0.010	1.00	<0.010				
N-Nitrosopiperidine	100-75-4	MB	7/13/17		<0.010	0.84	<0.012				
N-Nitrosopiperidine	100-75-4	MB	6/26/17		<0.010	1.03	<0.010				
N-Nitrosopiperidine	100-75-4	MB	7/6/17		<0.010	0.97	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	7/13/17		<0.010	0.85	<0.012				
N-Nitrosopyrrolidine	930-55-2	MB	6/26/17		<0.010	1.03	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	7/6/17		<0.010	0.99	<0.010				
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MRL	6/26/17	0.010	0.008	1.00	0.008		78.7	59 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/13/17	0.010	0.011	0.84	0.014		136	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/6/17	0.010	0.012	0.99	0.012		122	39.6 - 158	
N-Nitrosodimethylamine	62-75-9	MRL	6/26/17	0.010	0.008	0.97	0.008		80.7	71.2 - 188	
N-Nitrosodimethylamine	62-75-9	MRL	7/6/17	0.010	0.011	0.68	0.017		167	71.6 - 181	B
N-Nitrosodimethylamine	62-75-9	MRL	7/13/17	0.010	0.010	0.85	0.012		116	71.6 - 181	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/6/17	0.010	0.011	0.96	0.012		118	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL	6/26/17	0.010	0.011	0.98	0.012		115	63.4 - 168	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/13/17	0.010	0.010	0.86	0.012		120	27.4 - 210	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/13/17	0.010	0.011	0.86	0.013		132	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL	6/26/17	0.010	0.009	1.02	0.009		86.4	59.8 - 154	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/6/17	0.010	0.010	0.97	0.010		101	47.8 - 163	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/6/17	0.010	0.011	0.98	0.012		117	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/13/17	0.010	0.010	0.85	0.012		124	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	6/26/17	0.010	0.007	1.03	0.007		72.2	52 - 162	
N-Nitrosomorpholine	59-89-2	MRL	7/6/17	0.010	0.012	1.00	0.012		116	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL	6/26/17	0.010	0.007	1.03	0.007		67.1	68.5 - 159	S
N-Nitrosomorpholine	59-89-2	MRL	7/13/17	0.010	0.012	0.87	0.014		137	36 - 169	
N-Nitrosopiperidine	100-75-4	MRL	7/6/17	0.010	0.012	0.97	0.012		124	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	7/13/17	0.010	0.012	0.84	0.014		142	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	6/26/17	0.010	0.006	1.03	0.006		60.9	63.5 - 156	S
N-Nitrosopyrrolidine	930-55-2	MRL	7/6/17	0.010	0.012	0.99	0.012		123	43.3 - 163	

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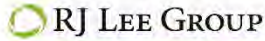
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopyrrolidine	930-55-2	MRL	6/26/17	0.010	0.009	1.03	0.009		90.4	60.8 - 160	
N-Nitrosopyrrolidine	930-55-2	MRL	7/13/17	0.010	0.013	0.85	0.015		149	43.3 - 163	

## Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report  
D = Analyte analyzed by a dilution

F<sub>1</sub> = Report concentration was above the instrument calibration range  
I = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match, rsd >90% to RT match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

Z = Not ELAP accredited analyte

ND = Not Detected

Scientist II DeNomy Dage

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group will store the samples for a period of ninety (90) days before discarding. A shipping and handling fee will be assessed for the return of any samples. Unless otherwise noted, samples were received in an acceptable condition. This laboratory operates in accordance with ISO 17025 guidelines, and holds limited scopes of accreditation under ORLLAP Lab Code 4061. ALHA-LAP, LLC Lab ID 178656 LPA ID WA01195 and WA DOE Lab ID C859. This report may not be used to claim product endorsement by any laboratory accrediting agency. The results contained in this report relate only to the items tested or to the sample(s) as received by the laboratory. Any reproduction of this document must be in full for the report to be valid.

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A-6003-962 (03/05)



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Assembled				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. No. 20172097	
								Page 2 of 2	
Collector JONES	Contact/Requestor CARL HOWALD IV	Telephone No. 313-6861	MSIN 16-05	FAX 372-1878					
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 20306/C230	Temp.						
Project Title 2017 CARTRIDGE EVALUATION	Logbook/Work Package No. N/A	Ice Chest No.							
Shipped To (Lab) CAL	Method of Shipment	Bill of Lading/Air Bill No.							
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No.							
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis			Preservative	
	S17F020835	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-EF-7			N/A	
	S17F020836	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-EF-8			N/A	
	S17F020837	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-1			N/A	
	S17F020838	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-2			N/A	
	S17F020839	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-3			N/A	
	S17F020860	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-4			N/A	
	S17F020861	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-5			N/A	
	S17F020862	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-6			N/A	
	S17F020863	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-7			N/A	
	S17F020864	6/16/17		Thermosorb-N	Nitrosamines 17-03269-12-TL1-IN-8			N/A	
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No SPECIAL INSTRUCTIONS Send Results to Carl Howald & Keisha Garcia Carl W Howald@rl.gov and Keisha_R_Garcia@rl.gov See SOM for email. CONTRACT 55503 RELEASE 9									
Hold Time									
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*	
Relinquished By	Shawn W. L. L. L. L.		6-21-17 1030	Received By	Re Rogers		6/21/17 1030	S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids	
Relinquished By	Re Rogers		6/21/17 1400	Received By	Adrielle Olson		6/21/17 14:00		
Relinquished By				Received By					
Relinquished By				Received By					
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)					
CONSUMED				Disposed By Re Rogers					
				Date/Time 6/21/17 11:00					

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.





RJ LeeGroup, Inc. | Columbia Basin Analytical Laboratories

2710 North 20th Avenue, Pasco WA 99301

Tel: (509) 545-4989 | Fax: (509) 544-6010

Carl Howald IV

07/21/17

Washington River Protection Solutions, LLC

Contract No.:

55503 R9

P.O. Box 850 MSIN 116-16

Richland, WA 99352

Project: 2017 Cartridge Evaluation

**Subject: Nitrosamines Analysis Report, Group Number 20172098**

Enclosed is the final report for group 20172098 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20172098 has been assigned a Columbia Basin Analytical Laboratories login order number of W706099. This report consists of a summary report of the samples, a single quality control report for the analysis batch, and a copy of the chain of custody.

**General Set Comments**

Columbia Basin Analytical Laboratories received 20 samples on 06/21/17 to be tested for Nitrosamines. The samples were analyzed in accordance with NIOSH 2522-Modified for N-Nitrosodimethylamine, N-Nitrosomethylethylamine, N-Nitrosodiethylamine, N-Nitrosodi-n-propylamine, N-Nitrosodi-n-butylamine, N-Nitrosopiperidine, N-Nitrosopyrrolidine, and N-Nitrosomorpholine. All results have been corrected for desorption efficiency and measurable levels in the blanks.

\*- Analyte not detected at or above MRL on initial analysis. Analyte detected at or above MRL on confirmation analysis. Analyte not confirmed.

X- Analyte detected at or above MRL on initial analysis. Analyte not detected at or above MRL on confirmation analysis. Analyte not confirmed.

C- Analyte detected at or above MRL on initial analysis and confirmation analysis. Poor mass agreement between initial and confirmation analysis indicates interference such that this result should be considered qualitative only.

**Results**

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

<u>SampleName</u>	<u>Analyzed</u>	<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>	<u>RL</u>	<u>Units</u>	<u>Flags</u>
17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube	
17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube	
17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube	
17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	
17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube	

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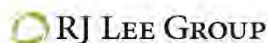
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17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-BA-EF	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube *
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosodimethylamine	62-75-9	0.013	0.011	µg/tube
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube *
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosopiperidine	100-75-4	0.018	0.010	µg/tube X
17-03273-12-TL2-BA-IN	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-BL-EF	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-BL-IN	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-1	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-1	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-1	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-1	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube

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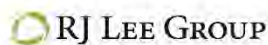
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17-03273-12-TL2-EF-1	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-1	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-1	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-1	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-2	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-3	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-4	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-5	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-5	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-5	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube

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17-03273-12-TL2-EF-5	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-5	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-5	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-5	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-5	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-6	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-7	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-03273-12-TL2-EF-8	06/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-03273-12-TL2-IN-1	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube *
17-03273-12-TL2-IN-1	07/14/17	N-Nitrosodimethylamine	62-75-9	3.355	0.135	µg/tube DC

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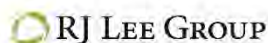
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17-03273-12-TL2-IN-1	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-1	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-1	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.029	0.011	µg/tube	C
17-03273-12-TL2-IN-1	06/27/17	N-Nitrosomorpholine	59-89-2	0.053	0.011	µg/tube	C
17-03273-12-TL2-IN-1	06/27/17	N-Nitrosopiperidine	100-75-4	0.106	0.010	µg/tube	C
17-03273-12-TL2-IN-1	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.033	0.010	µg/tube	C
17-03273-12-TL2-IN-2	06/27/17	N-Nitrosodiethylamine	55-18-5	0.035	0.011	µg/tube	C
17-03273-12-TL2-IN-2	07/14/17	N-Nitrosodimethylamine	62-75-9	6.332	1.355	µg/tube	DC
17-03273-12-TL2-IN-2	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.038	0.011	µg/tube	
17-03273-12-TL2-IN-2	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	0.014	0.011	µg/tube	C
17-03273-12-TL2-IN-2	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.076	0.011	µg/tube	C
17-03273-12-TL2-IN-2	06/27/17	N-Nitrosomorpholine	59-89-2	0.059	0.010	µg/tube	
17-03273-12-TL2-IN-2	06/27/17	N-Nitrosopiperidine	100-75-4	0.172	0.010	µg/tube	C
17-03273-12-TL2-IN-2	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.061	0.010	µg/tube	C
17-03273-12-TL2-IN-3	06/27/17	N-Nitrosodiethylamine	55-18-5	0.047	0.011	µg/tube	C
17-03273-12-TL2-IN-3	07/06/17	N-Nitrosodimethylamine	62-75-9	7.617	1.355	µg/tube	D
17-03273-12-TL2-IN-3	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.037	0.011	µg/tube	
17-03273-12-TL2-IN-3	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	0.012	0.011	µg/tube	C
17-03273-12-TL2-IN-3	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.086	0.011	µg/tube	C
17-03273-12-TL2-IN-3	06/27/17	N-Nitrosomorpholine	59-89-2	0.069	0.010	µg/tube	
17-03273-12-TL2-IN-3	06/27/17	N-Nitrosopiperidine	100-75-4	0.191	0.010	µg/tube	C
17-03273-12-TL2-IN-3	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.068	0.010	µg/tube	X
17-03273-12-TL2-IN-4	06/27/17	N-Nitrosodiethylamine	55-18-5	0.037	0.011	µg/tube	C
17-03273-12-TL2-IN-4	07/06/17	N-Nitrosodimethylamine	62-75-9	7.300	1.355	µg/tube	D
17-03273-12-TL2-IN-4	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.076	0.011	µg/tube	C
17-03273-12-TL2-IN-4	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-4	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.065	0.011	µg/tube	C
17-03273-12-TL2-IN-4	07/14/17	N-Nitrosomorpholine	59-89-2	0.078	0.011	µg/tube	C
17-03273-12-TL2-IN-4	07/14/17	N-Nitrosopiperidine	100-75-4	0.312	0.011	µg/tube	CC
17-03273-12-TL2-IN-4	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.032	0.010	µg/tube	C
17-03273-12-TL2-IN-5	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube	*

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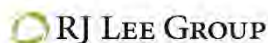
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17-03273-12-TL2-IN-5	07/06/17	N-Nitrosodimethylamine	62-75-9	6.334	1.355	µg/tube	CD
17-03273-12-TL2-IN-5	07/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.026	0.011	µg/tube	*
17-03273-12-TL2-IN-5	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-5	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.053	0.011	µg/tube	
17-03273-12-TL2-IN-5	06/27/17	N-Nitrosomorpholine	59-89-2	0.073	0.011	µg/tube	
17-03273-12-TL2-IN-5	06/27/17	N-Nitrosopiperidine	100-75-4	0.276	0.011	µg/tube	C
17-03273-12-TL2-IN-5	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.020	0.010	µg/tube	C
17-03273-12-TL2-IN-6	06/27/17	N-Nitrosodiethylamine	55-18-5	0.013	0.011	µg/tube	C
17-03273-12-TL2-IN-6	07/14/17	N-Nitrosodimethylamine	62-75-9	6.473	1.355	µg/tube	D
17-03273-12-TL2-IN-6	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-6	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	
17-03273-12-TL2-IN-6	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.053	0.011	µg/tube	C
17-03273-12-TL2-IN-6	06/27/17	N-Nitrosomorpholine	59-89-2	0.030	0.010	µg/tube	
17-03273-12-TL2-IN-6	06/27/17	N-Nitrosopiperidine	100-75-4	0.059	0.010	µg/tube	C
17-03273-12-TL2-IN-6	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.019	0.010	µg/tube	X
17-03273-12-TL2-IN-7	07/03/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-7	07/14/17	N-Nitrosodimethylamine	62-75-9	6.547	1.355	µg/tube	D
17-03273-12-TL2-IN-7	07/03/17	N-Nitrosodi-n-butylamine	924-16-3	0.011	0.011	µg/tube	
17-03273-12-TL2-IN-7	07/03/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-7	07/03/17	N-Nitrosomethylethylamine	10595-95-6	0.050	0.011	µg/tube	C
17-03273-12-TL2-IN-7	07/03/17	N-Nitrosomorpholine	59-89-2	0.026	0.010	µg/tube	
17-03273-12-TL2-IN-7	07/03/17	N-Nitrosopiperidine	100-75-4	0.066	0.010	µg/tube	C
17-03273-12-TL2-IN-7	07/03/17	N-Nitrosopyrrolidine	930-55-2	0.018	0.010	µg/tube	
17-03273-12-TL2-IN-8	06/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-8	07/06/17	N-Nitrosodimethylamine	62-75-9	6.043	1.355	µg/tube	CD
17-03273-12-TL2-IN-8	06/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.030	0.011	µg/tube	C
17-03273-12-TL2-IN-8	06/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	µg/tube	*
17-03273-12-TL2-IN-8	06/27/17	N-Nitrosomethylethylamine	10595-95-6	0.039	0.011	µg/tube	C
17-03273-12-TL2-IN-8	06/27/17	N-Nitrosomorpholine	59-89-2	0.014	0.010	µg/tube	C
17-03273-12-TL2-IN-8	06/27/17	N-Nitrosopiperidine	100-75-4	0.061	0.010	µg/tube	C
17-03273-12-TL2-IN-8	06/27/17	N-Nitrosopyrrolidine	930-55-2	0.021	0.010	µg/tube	C

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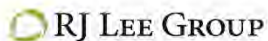
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#### Recovery Failures in the ICV, CCV, LCS, and MRL

There were no recovery failures in the CCV, ICV, LCS. There were recovery failures in the MRL.

#### RSD Failures in the LCS

There were no RSD failures between the laboratory control samples.

#### Measurable Blank Values

There were no measurable analytes in the blank samples.

#### Calibration Curves

The calibration curves for the Nitrosamines had an R-value that was 0.997 or better, over a range of 5.0 ng/mL to 200 ng/mL.

#### General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable conditions unless otherwise noted in the comments above. Samples have not been field blank corrected unless otherwise noted in the general set comments above. This test report shall not be reproduced, except in full, without written approval of Columbia Basin Analytical Laboratories.

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

07/20/17

Scientist II DeNomy Dage

If you have any questions, please feel free to contact DeNomy Dage at ddage@rjlg.com or at 509-545-4989.

This report has been reviewed and approved by the following individual:

07/21/17

Scientist I Fernanda Pincheira

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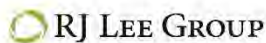
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Carl Howald IV  
Washington River Protection  
Solutions, LLC  
P.O. Box 850 MSIN II6-16  
Richland, WA 99352

Client Project: 2017 Cartridge Evaluation

## Laboratory Report

NIOSH 2522-Modified  
Air/Emissions No Vol on GC\_TEA09  
Summary Table

RJ Lee Group No.: W706099  
Samples Received: 6/21/17  
Report Date: 7/21/17  
COC No.: 20172098  
Extraction Date: 6/23/17

Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03273-12-TL2-BA-EF   S17T020865	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-BA-IN   S17T020866	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	0.013	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.018	0.010	X
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-BL-EF   S17T020867	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-BL-IN   S17T020868	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-EF-1   S17T020869	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	

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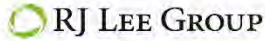
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03273-12-TL2-EF-2   S17T020870	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-EF-3   S17T020871	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-EF-4   S17T020872	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-EF-5   S17T020873	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-EF-6   S17T020874	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-EF-7   S17T020875	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	

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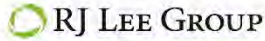
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03273-12-TL2-EF-7   S17T020875	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-EF-8   S17T020876	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodimethylamine	62-75-9	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-03273-12-TL2-IN-1   S17T020877	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	*
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.081	0.011	C
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	3.275	0.135	D
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.029	0.011	C
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.041	0.010	
	6/17/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.012	0.011	C
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.106	0.010	C
17-03273-12-TL2-IN-2   S17T020878	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.033	0.010	C
	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.035	0.011	C
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.101	0.011	C
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	8.231	1.355	D
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.038	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	0.014	0.011	C
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.076	0.011	C
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.059	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.172	0.010	C
17-03273-12-TL2-IN-3   S17T020879	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.061	0.010	C
	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.047	0.011	C
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.282	0.011	
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	7.335	1.355	D
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.037	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	0.012	0.011	C
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.086	0.011	C
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.069	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.191	0.010	C
17-03273-12-TL2-IN-4   S17T020880	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.068	0.010	X
	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.037	0.011	C
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.280	0.011	
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	7.019	1.355	D
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.013	0.011	C
	6/17/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.063	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.065	0.011	C
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.058	0.010	

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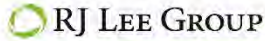
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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-03273-12-TL2-IN-4   S17T020880	6/17/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.020	0.011	C
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.078	0.010	C
	6/17/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.234	0.011	C
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.032	0.010	C
17-03273-12-TL2-IN-5   S17T020881	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	*
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.179	0.011	C
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	6.155	1.355	D
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	*
	6/17/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.026	0.011	
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.053	0.011	
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.056	0.010	
	6/17/17	7/14/17	N-Nitrosomorpholine	59-89-2	0.016	0.011	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.054	0.010	
	6/17/17	7/14/17	N-Nitrosopiperidine	100-75-4	0.221	0.011	C
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.020	0.010	C
17-03273-12-TL2-IN-6   S17T020882	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	0.013	0.011	C
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.244	0.011	
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	6.230	1.355	D
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.053	0.011	C
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.030	0.010	
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.059	0.010	C
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.019	0.010	X
17-03273-12-TL2-IN-7   S17T020883	6/17/17	7/3/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	*
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.267	0.011	
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	6.280	1.355	D
	6/17/17	7/3/17	N-Nitrosodi-n-butylamine	924-16-3	0.011	0.011	*
	6/17/17	7/3/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	
	6/17/17	7/3/17	N-Nitrosomethylethylamine	10595-95-6	0.050	0.011	C
	6/17/17	7/3/17	N-Nitrosomorpholine	59-89-2	0.026	0.010	
	6/17/17	7/3/17	N-Nitrosopiperidine	100-75-4	0.066	0.010	C
17-03273-12-TL2-IN-8   S17T020884	6/17/17	7/3/17	N-Nitrosopyrrolidine	930-55-2	0.018	0.010	
	6/17/17	6/27/17	N-Nitrosodiethylamine	55-18-5	<0.011	0.011	*
	6/17/17	7/14/17	N-Nitrosodimethylamine	62-75-9	0.062	0.011	C
	6/17/17	7/6/17	N-Nitrosodimethylamine	62-75-9	5.981	1.355	D
	6/17/17	6/27/17	N-Nitrosodi-n-butylamine	924-16-3	0.019	0.011	
	6/17/17	7/14/17	N-Nitrosodi-n-butylamine	924-16-3	0.011	0.011	C
	6/17/17	6/27/17	N-Nitrosodi-n-propylamine	621-64-7	<0.011	0.011	*
	6/17/17	6/27/17	N-Nitrosomethylethylamine	10595-95-6	0.039	0.011	C
	6/17/17	6/27/17	N-Nitrosomorpholine	59-89-2	0.014	0.010	C
	6/17/17	6/27/17	N-Nitrosopiperidine	100-75-4	0.061	0.010	C
	6/17/17	6/27/17	N-Nitrosopyrrolidine	930-55-2	0.021	0.010	C

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## Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report  
 D = Analyte analyzed in a dilution

E = Report concentration was above the instrument calibration range

I = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match,  $\leq 90\%$  @ RI match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

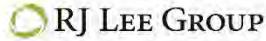
Z = Not LLAP accredited analyte

ND = Not Detected

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Client Project: 2017 Cartridge Evaluation

### Quality Control

NIOSH 2522-Modified

RJ Lee Group No.: W706099  
Samples Received: 6/21/17  
Report Date: 7/21/17  
COC No.: 20172098  
Extraction Date: 6/28/17

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	7/13/17	0.200	0.178	0.88		1.53	88.9	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	7/6/17	0.200	0.181	0.92		2.14	90.5	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-1	6/27/17	0.200	0.182	0.95		4.06	91.1	74.1 - 116	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/6/17	0.200	0.148	0.74		3.25	73.7	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	7/13/17	0.200	0.179	0.88		4.05	89.5	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-1	6/27/17	0.200	0.180	0.91		1.77	90.0	66.1 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	6/27/17	0.200	0.184	0.94		3.41	91.6	73.4 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/13/17	0.200	0.185	0.92		0.30	92.2	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	7/6/17	0.200	0.182	0.91		1.81	91.0	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/13/17	0.200	0.183	0.91		0.18	91.6	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	7/6/17	0.200	0.187	0.93		1.67	93.5	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	6/27/17	0.200	0.191	0.95		2.90	95.4	74.6 - 117	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/6/17	0.200	0.180	0.89		2.47	89.7	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	6/27/17	0.200	0.182	0.93		2.50	90.9	70.9 - 118	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	7/13/17	0.200	0.181	0.89		2.11	90.5	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-1	7/13/17	0.200	0.188	0.93		1.10	94.1	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-1	6/27/17	0.200	0.191	0.98		2.94	95.4	70.7 - 118	
N-Nitrosomorpholine	59-89-2	LCS-1	7/6/17	0.200	0.184	0.92		2.58	91.8	72.5 - 124	
N-Nitrosopiperidine	100-75-4	LCS-1	7/6/17	0.200	0.183	0.92		1.76	91.3	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	7/13/17	0.200	0.183	0.90		1.37	91.3	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-1	6/27/17	0.200	0.184	0.96		4.01	92.0	71.5 - 115	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/6/17	0.200	0.181	0.93		2.64	90.5	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-1	6/27/17	0.200	0.188	0.98		3.31	94.1	67.8 - 118	
N-Nitrosopyrrolidine	930-55-2	LCS-1	7/13/17	0.200	0.181	0.90		1.89	90.6	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-2	7/6/17	0.200	0.184	0.92		2.14	91.9	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	7/13/17	0.200	0.173	0.88		1.53	86.3	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-2	6/27/17	0.200	0.190	0.95		4.06	94.9	74.1 - 116	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/13/17	0.200	0.167	0.88		4.05	83.6	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-2	6/27/17	0.200	0.181	0.91		1.77	90.4	66.1 - 115	
N-Nitrosodimethylamine	62-75-9	LCS-2	7/6/17	0.200	0.143	0.74		3.25	71.5	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/6/17	0.200	0.178	0.91		1.81	88.7	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	7/13/17	0.200	0.183	0.92		0.30	91.6	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	6/27/17	0.200	0.187	0.94		3.41	93.5	73.4 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/6/17	0.200	0.182	0.93		1.67	90.7	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	7/13/17	0.200	0.183	0.91		0.18	91.5	74.9 - 119	

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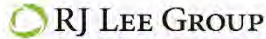
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	6/27/17	0.200	0.184	0.95		2.90	91.9	74.6 - 117	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/13/17	0.200	0.174	0.89		2.11	87.0	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	7/6/17	0.200	0.173	0.89		2.47	86.3	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	6/27/17	0.200	0.191	0.93		2.50	95.5	70.9 - 118	
N-Nitrosomorpholine	59-89-2	LCS-2	7/13/17	0.200	0.184	0.93		1.10	92.1	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	7/6/17	0.200	0.181	0.92		2.58	90.4	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-2	6/27/17	0.200	0.202	0.98		2.94	101	70.7 - 118	
N-Nitrosopiperidine	100-75-4	LCS-2	7/6/17	0.200	0.181	0.92		1.76	90.4	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-2	6/27/17	0.200	0.192	0.96		4.01	96.1	71.5 - 115	
N-Nitrosopiperidine	100-75-4	LCS-2	7/13/17	0.200	0.179	0.90		1.37	89.3	71.9 - 121	
N-Nitrosopyrrolidine	930-55-2	LCS-2	6/27/17	0.200	0.200	0.98		3.31	100	67.8 - 118	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/6/17	0.200	0.186	0.93		2.84	93.1	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-2	7/13/17	0.200	0.175	0.90		1.89	87.6	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-3	7/6/17	0.200	0.189	0.92		2.14	94.4	74.6 - 118	
N-Nitrosodiethylamine	55-18-5	LCS-3	6/27/17	0.200	0.198	0.95		4.06	98.8	74.1 - 116	
N-Nitrosodiethylamine	55-18-5	LCS-3	7/14/17	0.200	0.176	0.88		1.53	88.0	74.6 - 118	
N-Nitrosodimethylamine	62-75-9	LCS-3	6/27/17	0.200	0.186	0.91		1.77	93.0	66.1 - 115	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/14/17	0.200	0.180	0.88		4.05	89.9	66 - 119	
N-Nitrosodimethylamine	62-75-9	LCS-3	7/6/17	0.200	0.153	0.74		3.25	76.3	66 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	6/27/17	0.200	0.196	0.94		3.41	97.9	73.4 - 119	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/6/17	0.200	0.184	0.91		1.81	91.9	75.1 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	7/14/17	0.200	0.184	0.92		0.30	91.9	75.1 - 120	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	6/27/17	0.200	0.195	0.95		2.90	97.3	74.6 - 117	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/14/17	0.200	0.183	0.91		0.18	91.3	74.9 - 119	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	7/6/17	0.200	0.187	0.93		1.67	93.3	74.9 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/14/17	0.200	0.180	0.89		2.11	90.0	73.7 - 119	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	6/27/17	0.200	0.188	0.93		2.50	93.9	70.9 - 118	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	7/6/17	0.200	0.181	0.89		2.47	90.4	73.7 - 119	
N-Nitrosomorpholine	59-89-2	LCS-3	7/6/17	0.200	0.190	0.92		2.58	95.0	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	7/14/17	0.200	0.187	0.93		1.10	93.6	72.5 - 124	
N-Nitrosomorpholine	59-89-2	LCS-3	6/27/17	0.200	0.195	0.98		2.94	97.3	70.7 - 118	
N-Nitrosopiperidine	100-75-4	LCS-3	7/14/17	0.200	0.178	0.90		1.37	89.1	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	7/6/17	0.200	0.187	0.92		1.76	93.5	71.9 - 121	
N-Nitrosopiperidine	100-75-4	LCS-3	6/27/17	0.200	0.200	0.96		4.01	99.7	71.5 - 115	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/14/17	0.200	0.181	0.90		1.89	90.5	69.2 - 124	
N-Nitrosopyrrolidine	930-55-2	LCS-3	6/27/17	0.200	0.198	0.98		3.31	99.2	67.8 - 118	
N-Nitrosopyrrolidine	930-55-2	LCS-3	7/6/17	0.200	0.192	0.93		2.84	95.8	69.2 - 124	
Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	7/14/17		<0.010	0.88	<0.011				
N-Nitrosodiethylamine	55-18-5	MB	6/27/17		<0.010	0.95	<0.011				
N-Nitrosodiethylamine	55-18-5	MB	7/6/17		<0.010	0.92	<0.011				

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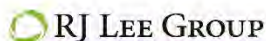
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Report Template: WRPS\_SpecialNitrosamines.rpt

Approved: 07/20/17 19:32  
Report Time Stamp: 07/21/17 11:56





Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodimethylamine	62-75-9	MB	7/14/17		<0.010	0.88	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	6/27/17		<0.010	0.91	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	7/6/17		<0.010	0.74	<0.014				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/6/17		<0.010	0.91	<0.011				
N-Nitrosodi-n-butylamine	924-16-3	MB	7/14/17		<0.010	0.92	<0.011				
N-Nitrosodi-n-butylamine	924-16-3	MB	6/27/17		<0.010	0.94	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	6/27/17		<0.010	0.95	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/14/17		<0.010	0.91	<0.011				
N-Nitrosodi-n-propylamine	621-64-7	MB	7/6/17		<0.010	0.93	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	7/6/17		<0.010	0.89	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	7/14/17		<0.010	0.89	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	6/27/17		<0.010	0.93	<0.011				
N-Nitrosomorpholine	59-89-2	MB	6/27/17		<0.010	0.98	<0.010				
N-Nitrosomorpholine	59-89-2	MB	7/14/17		<0.010	0.93	<0.011				
N-Nitrosomorpholine	59-89-2	MB	7/6/17		<0.010	0.92	<0.011				
N-Nitrosopiperidine	100-75-4	MB	7/14/17		<0.010	0.90	<0.011				
N-Nitrosopiperidine	100-75-4	MB	6/27/17		<0.010	0.96	<0.010				
N-Nitrosopiperidine	100-75-4	MB	7/6/17		<0.010	0.92	<0.011				
N-Nitrosopyrrolidine	930-55-2	MB	7/14/17		<0.010	0.90	<0.011				
N-Nitrosopyrrolidine	930-55-2	MB	6/27/17		<0.010	0.98	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	7/6/17		<0.010	0.93	<0.011				

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MRL	6/27/17	0.010	0.006	0.95	0.006		61.1	59 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/14/17	0.010	0.010	0.88	0.012		116	39.6 - 158	
N-Nitrosodiethylamine	55-18-5	MRL	7/6/17	0.010	0.011	0.92	0.012		122	39.6 - 158	
N-Nitrosodimethylamine	62-75-9	MRL	6/27/17	0.010	0.010	0.91	0.011		109	71.2 - 188	
N-Nitrosodimethylamine	62-75-9	MRL	7/6/17	0.010	0.013	0.74	0.018		176	71.6 - 181	
N-Nitrosodimethylamine	62-75-9	MRL	7/14/17	0.010	0.008	0.88	0.009		92.3	71.6 - 181	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/6/17	0.010	0.009	0.91	0.010		105	27.4 - 210	
N-Nitrosodi-n-butylamine	924-16-3	MRL	6/27/17	0.010	0.011	0.94	0.011		113	63.4 - 168	
N-Nitrosodi-n-butylamine	924-16-3	MRL	7/14/17	0.010	0.012	0.92	0.013		127	27.4 - 210	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/14/17	0.010	0.011	0.91	0.012		118	47.8 - 163	
N-Nitrosodi-n-propylamine	621-64-7	MRL	6/27/17	0.010	0.008	0.95	0.008		80.2	59.8 - 154	
N-Nitrosodi-n-propylamine	621-64-7	MRL	7/6/17	0.010	0.011	0.93	0.012		121	47.8 - 163	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/6/17	0.010	0.009	0.89	0.011		107	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	7/14/17	0.010	0.011	0.89	0.013		126	50.8 - 164	
N-Nitrosomethylethylamine	10595-95-6	MRL	6/27/17	0.010	0.008	0.93	0.008		81.2	52 - 162	
N-Nitrosomorpholine	59-89-2	MRL	7/6/17	0.010	0.012	0.92	0.012		125	36 - 169	
N-Nitrosomorpholine	59-89-2	MRL	6/27/17	0.010	0.009	0.98	0.009		92.6	68.5 - 159	
N-Nitrosomorpholine	59-89-2	MRL	7/14/17	0.010	0.011	0.93	0.012		119	36 - 169	
N-Nitrosopiperidine	100-75-4	MRL	7/6/17	0.010	0.010	0.92	0.011		112	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	7/14/17	0.010	0.011	0.90	0.012		118	26.8 - 171	
N-Nitrosopiperidine	100-75-4	MRL	6/27/17	0.010	0.006	0.96	0.006		57.9	63.5 - 156 S	
N-Nitrosopyrrolidine	930-55-2	MRL	7/6/17	0.010	0.012	0.93	0.013		127	43.3 - 163	

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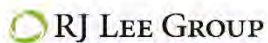
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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopyrrolidine	930-55-2	MRL	6/27/17	0.010	0.010	0.98	0.010		105	60.8 - 160	
N-Nitrosopyrrolidine	930-55-2	MRL	7/14/17	0.010	0.010	0.90	0.011		111	43.3 - 163	

## Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report

D = Analyte analyzed by a dilution

F = Report concentration was above the instrument calibration range

I = Analyte detected below quantitation limits, concentration is estimated

P = Library spectrum match, rsd &gt;90% to RT match

R = RPD (relative percent difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

d = Data that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions

Q = Result out of method specific acceptance QC criteria

S = Spike Recovery outside accepted recovery limits

Z = Not ELAP accredited analyte

ND = Not Detected

Scientist II DeNomy Dage

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QA-17-024

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All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



W706099

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										C.O.C. No. 20172098				
										Page 2 of 2				
Collector	JONES			Contact/Requestor	CARL HOWARD IV			Telephone No	373-6861	MSIN	16-05	FAX	372-1878	
SAF No.	W/A			Sample Origin	2017 CARTRIDGE EVALUATION			Purchase Order/Charge Code	203067/C520					
Project Title	2017 CARTRIDGE EVALUATION			Logbook/Work Package No.	N/A			Ice Chest No.	Temp. 27.0°C					
Shipped To (Lab)	C9AL			Method of Shipment	N/A			Bill of Lading/Air Bill No.						
Protocol	N/A			Data Turnaround	1-10 DAYS			Parts and Return No.						
Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis			Preservative					
	SI7T020875	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-EF-7			N/A					
	SI7T020876	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-EF-8			N/A					
	SI7T020877	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-1			N/A					
	SI7T020878	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-2			N/A					
	SI7T020879	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-3			N/A					
	SI7T020880	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-4			N/A					
	SI7T020881	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-5			N/A					
	SI7T020882	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-6			N/A					
	SI7T020883	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-7			N/A					
	SI7T020884	VA	6/17/17		Thermosorb-N	Nitrosamines 17-03273-12-TL2-IN-8			N/A					
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)										MSDS	<input type="radio"/> Yes	<input checked="" type="radio"/> No	SPECIAL INSTRUCTIONS Send Results to Carl Howard & Reisha Garcia C9AL, 10000 Highway 480, Fort Belvoir, IL 61701 gov see SOW for email. CONTRACT 55503 RELEASE 9	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*						
Relinquished By	Steven Holder	[Signature]	6/21/17 10:30	Received By	Rebecca [Signature]	[Signature]	6/21/17 10:30	S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids						
Relinquished By	Rebecca [Signature]	[Signature]	6/21/17 11:00	Received By	Anna [Signature]	[Signature]	6/21/17 11:00							
Relinquished By				Received By										
FINAL SAMPLE DISPOSITION	Consumed							Date/Time		07/14/17 11:00				

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



## C.4.12 Methanol



### ANALYTICAL REPORT

Report Date: June 29, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172111

Workorder: **34-1717333**

Client Project ID: 2107 CARTRIDGE

EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

#### Analytical Results

Sample ID: S17T021205		Collected: 06/16/2017		
Lab ID: 1717333001		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021206		Collected: 06/16/2017		
Lab ID: 1717333002		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021207		Collected: 06/16/2017	
Lab ID: 1717333003		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube	
		50/100mg	
		Analyzed: 06/28/2017 (193538)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)
Methanol	<0.010	NA	NA
			RL (mg/sample)
			0.010

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## ANALYTICAL REPORT

Workorder: **34-1717333**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021208		Collected: 06/16/2017		
Lab ID: 1717333004		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021209		Collected: 06/16/2017	
Lab ID: 1717333005		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T021210		Collected: 06/16/2017	
Lab ID: 1717333006		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Methanol	<0.010	NA	NA      0.010

Sample ID: S17T021211		Collected: 06/16/2017		
Lab ID: 1717333007		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1717333**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021212</b>		Collected: 06/16/2017	
Lab ID: 1717333008		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T021213</b>		Collected: 06/16/2017	
Lab ID: 1717333009		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T021214</b>		Collected: 06/16/2017	
Lab ID: 1717333010		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T021215</b>		Collected: 06/16/2017	
Lab ID: 1717333011		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1717333**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021216		Collected: 06/16/2017		
Lab ID: 1717333012		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021217		Collected: 06/16/2017	
Lab ID: 1717333013		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T021218		Collected: 06/16/2017		
Lab ID: 1717333014		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021219		Collected: 06/16/2017	
Lab ID: 1717333015		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010





## ANALYTICAL REPORT

Workorder: **34-1717333**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021220		Collected: 06/16/2017		
Lab ID: 1717333016		Received: 06/22/2017		
Sampling Location: 2107 CARTRIDGE EVALU				
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
Analyzed: 06/28/2017 (193538)				
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021221		Collected: 06/16/2017	
Lab ID: 1717333017		Received: 06/22/2017	
		Sampling Location: 2107 CARTRIDGE EVALU	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube	
		50/100mg	
		Analyzed: 06/28/2017 (193538)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)
			RL (mg/sample)
Methanol	<0.010	NA	NA
			0.010

Sample ID: S17T021222		Collected: 06/16/2017	
Lab ID: 1717333018		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Methanol	<0.010	NA	NA      0.010

Sample ID: S17T021223		Collected: 06/16/2017	
Lab ID: 1717333019		Received: 06/22/2017	
		Sampling Location: 2107 CARTRIDGE EVALU	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA                    0.010





## ANALYTICAL REPORT

Workorder: **34-1717333**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021224		Collected: 06/16/2017	
Lab ID: 1717333020		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube	Analyzed: 06/28/2017 (193538)
		50/100mg	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

### Comments

Workorder: 1717333
QC/QD pair 554119/554120 relate to samples 1717333001-20

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 2000	/S/ Fred Rejali 06/29/2017 14:33	/S/ Thomas J. Masoian 06/29/2017 15:40

### Laboratory Contact Information

ALS Environmental  
960 W Levoe Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alsslc.com](http://www.alsslc.com)





## ANALYTICAL REPORT

Workorder: **34-1717333**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdw/labservice.htm">http://ndep.nv.gov/bsdw/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CS/CSnew/">http://www.deq.state.ok.us/CS/CSnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/Regulatory/Water.aspx">http://www.iowadnr.gov/InsideDNR/Regulatory/Water.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/field/qalab_accred_certif.html">http://www.tceq.texas.gov/field/qalab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eep/labs/index.html">http://www.ecy.wa.gov/programs/eep/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eep/labs/index.html">http://www.ecy.wa.gov/programs/eep/labs/index.html</a>
	AIHA LAP LLC (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.  
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.  
ND = Not Detected, Testing result not detected above the LOD or LOQ.  
NA = Not Applicable.  
\*\* No result could be reported, see sample comments for details.  
< This testing result is less than the numerical value.  
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1717333

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: IH GC-FID QC  
Batch: IFID/8567 (HBN: 193538)  
Analyzed By: Fred Rejali

### Blank

MB: 554118 Analyzed: 06/28/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Methanol	ND	NA	0.0100

MB: 554121 Analyzed: 06/28/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Methanol	ND	NA	0.0100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554119 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 554120 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Methanol	0.126	0.119	106	84.1 109.1	0.122	103	3.23	0.0	20.0

LCS: 554122 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 554123 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Methanol	0.115	0.119	97.0	84.1 109.1	0.117	98.7	1.72	0.0	20.0

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Fred Rejali 06/29/2017 14:33	/S/ Thomas J. Masoian 06/29/2017 15:40

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

- RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC - results are not adjusted for moisture correction, where applicable





1717333

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1717333

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A		C.O.C. No. 20172111 Page 1 of 2							
Collector JONES		Telephone No. 373-6851 MSIN 16-02 FAX 372-1878							
SAF No. N/A		Purchase Order/Charge Code 203269/0262							
Project Title 2017 CHARGE EVALUATION		Ice Chest No. 045-033 Temp. 02 ICE							
Shipped To (Lab) ALS		Bill of Lading/Air Bill No. 7794 6050 4373							
Protocol K/A		Parts and Return No. 42606							
Data Turnaround 10 DAYS									
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative			
1	S17T021205	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-SF *	N/A			
2	S17T021206	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-IN *	N/A			
3	S17T021207	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-SF *	N/A			
4	S17T021208	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-INF *	N/A			
5	S17T021209	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-1 *	N/A			
6	S17T021210	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-2 *	N/A			
7	S17T021211	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-3 *	N/A			
8	S17T021212	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-4 *	N/A			
9	S17T021213	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-5 *	N/A			
10	S17T021214	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-BR-6 *	N/A			
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No SPECIAL INSTRUCTIONS Send Results to Carl Howard & Keisha Garcia Carl W. Howard@rl.gov and Keisha.R.Garcia@rl.gov See SW for email RELEASE 15 Reference Contract # 58502									
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*	
Sharon Udden			6-21-17 1030	Scott Harder	Scott		6-21-17 1030	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vapor X = Other	
SW Harder			6-21-17 1400	WRPS					
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
Fedex				Disinfectant			06/22/17 10:10		
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure)		Used in process		Disposed By		Date/Time	
						Fred R. J. J.		06/28/17 2300	

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)



Assembler		C.O.C. No.				
N/A		20172111				
<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>						
Collector	Requestor	Telephone No.	FAX			
JONES	CARL EDWARD IV	373-6861	372-1878			
SAF No.	Sample Origin	Purchase Order/Charge Code				
N/A	2017 EXISTENCE EVALUATION	20306/6320				
Project Title	Logbook/Work Package No.	Ice Chest No.	Temp.			
2017 EXISTENCE EVALUATION	N/A	WTS-033	ON ICE			
Shipped To (Lab)	Method of Shipment	Bill of Lading/Air Bill No.				
ALS		7794 6050 4373				
Protocol	Data Turnaround	Parts and Return No.				
N/A	10 DAYS	42606				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
11	S17T021215	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-EP-7	N/A
12	S17T021216	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-EP-8	N/A
13	S17T021217	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-1	N/A
14	S17T021218	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-2	N/A
15	S17T021219	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-3	N/A
16	S17T021220	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-4	N/A
17	S17T021221	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-5	N/A
18	S17T021222	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-6	N/A
19	S17T021223	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-7	N/A
20	S17T021224	VA	6/16/17	CHARCOAL TUBE	METHANOL 17-03269-13-TL1-IN-8	N/A
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No <b>Hold Time</b>						
<b>SPECIAL INSTRUCTIONS</b> Send Results to Carl Edward & Kelisha Garcia Carl Edward: 373-6861 kelisha_garcia@als.com gov SW SW for email RELEASE 15 Reference Contract # 55502						
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
Sharon Williams	6-21-17/1400	6-21-17/1400	6-21-17/1400	Scott Harder	6-21-17/1400	6-21-17/1400
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
WRPS	6-21-17/1400	6-21-17/1400	6-21-17/1400	WRPS	6-21-17/1400	6-21-17/1400
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
Foley	6-21-17/1400	6-21-17/1400	6-21-17/1400	WRPS	6-21-17/1400	6-21-17/1400
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
<b>Matrix</b> S = Soil DL = Drum Liquids SE = Sediment T = Tissue SO = Solid WI = Wipe SL = Sludge L = Liquid W = Water V = Vegetation O = Oil VA = Vapor A = Air X = Other DS = Drum Solids						
<b>Disposal Method (e.g., Return to customer, per lab procedure, used in process)</b> Disposed By: Fred Rojas Date/Time: 6/28/17 2300						
<b>FINAL SAMPLE DISPOSITION</b>						

A-5003-962 (03/05)





## ANALYTICAL REPORT

Report Date: July 07, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov

20172246

Workorder: 34-1718145

Client Project ID: 2017 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15

Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T023455		Collected: 06/24/2017		
Lab ID: 1718145001		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T023456		Collected: 06/24/2017	
Lab ID: 1718145002		Received: 06/29/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube	
		50/100mg	
		Analyzed: 07/07/2017 (193774)	
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: S17T023457		Collected: 06/24/2017		
Lab ID: 1718145003		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

ADDRESS: 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA PHONE: +1 801 266 7700 FAX: +1 801 268 9992

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www.alsglobal.com

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## ANALYTICAL REPORT

Workorder: **34-1718145**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T023458		Collected: 06/24/2017		
Lab ID: 1718145004		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
Analyzed: 07/07/2017 (193774)		Sampling Info: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T023459		Collected: 06/24/2017	
Lab ID: 1718145005		Received: 06/29/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T023460		Collected: 06/24/2017		
Lab ID: 1718145006		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
Analyzed: 07/07/2017 (193774)		Sampling Info: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T023461		Collected: 06/24/2017		
Lab ID: 1718145007		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1718145**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T023462</b>		Collected: 06/24/2017	
Lab ID: 1718145008		Received: 06/29/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T023463</b>		Collected: 06/24/2017	
Lab ID: 1718145009		Received: 06/29/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T023464</b>		Collected: 06/24/2017	
Lab ID: 1718145010		Received: 06/29/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T023465</b>		Collected: 06/24/2017	
Lab ID: 1718145011		Received: 06/29/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1718145**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T023466		Collected: 06/24/2017		
Lab ID: 1718145012		Received: 06/29/2017		
Sampling Location: 2017 CARTRIDGE EVALU				
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T023467		Collected: 06/24/2017	
Lab ID: 1718145013		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T023468		Collected: 06/24/2017	
Lab ID: 1718145014		Received: 06/29/2017	
Sampling Location: 2017 CARTRIDGE EVALU			
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Methanol	<0.010	NA	NA      0.010

Sample ID: S17T023469		Collected: 06/24/2017		
Lab ID: 1718145015		Received: 06/29/2017		
		Sampling Location: 2017 CARTRIDGE EVALU		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		Analyzed: 07/07/2017 (193774)
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1718145**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T023470		Collected: 06/24/2017		
Lab ID: 1718145016		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T023471		Collected: 06/24/2017	
Lab ID: 1718145017		Received: 06/29/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 07/07/2017 (193774)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T023472		Collected: 06/24/2017		
Lab ID: 1718145018		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T023473		Collected: 06/24/2017		
Lab ID: 1718145019		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1718145**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T023474		Collected: 06/24/2017		
Lab ID: 1718145020		Received: 06/29/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 07/07/2017 (193774)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

### Comments

Workorder: 1718145
QC/QD pair 554567/554568 relate to samples 1718143001-020
QC/QD pair 555201/555202 relate to samples 1718145001-020

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 2000	/S/ Fred Rejali 07/07/2017 03:54	/S/ Thomas J. Masoian 07/07/2017 08:40

### Laboratory Contact Information

ALS Environmental  
960 W Levoe Drive  
Salt Lake City, Utah 84123

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Web: www.alsslc.com





## ANALYTICAL REPORT

Workorder: **34-1718145**  
Client Project ID: 2017 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/abservice.htm">http://ndep.nv.gov/bsdwl/abservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/field/qalab_accred_certif.html">http://www.tceq.texas.gov/field/qalab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eep/labs/index.html">http://www.ecy.wa.gov/programs/eep/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eep/labs/index.html">http://www.ecy.wa.gov/programs/eep/labs/index.html</a>
	AIHA LAP LLC (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.  
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.  
ND = Not Detected, Testing result not detected above the LOD or LOQ.  
NA = Not Applicable.  
\*\* No result could be reported, see sample comments for details.  
< This testing result is less than the numerical value.  
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1718145

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: IH GC-FID QC  
Batch: IFID/3584 (HBN: 193774)  
Analyzed By: Fred Rejali

### Blank

MB: 554566 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Methanol	ND	NA	0.0100

MB: 555200 Analyzed: 07/07/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Methanol	ND	NA	0.0100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554567 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 554568 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Methanol	0.119	0.119	100	84.1 109.1	0.129	109	8.06	0.0 20.0	

LCS: 555201 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 555202 Analyzed: 07/07/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Methanol	0.117	0.119	98.7	84.1 109.1	0.112	94.5	4.37	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Fred Rejali 07/07/2017 03:54	/S/ Thomas J. Masoian 07/07/2017 08:39

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

- RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC - results are not adjusted for moisture correction, where applicable





1718145

1718145

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A	C.O.C. No. 20172246 Page 1 of 2								
Collector JONES	Contact/Requestor CARL HOWARD IV	Telephone No. 372-6861	MSIN TE-02	FAX 372-1879					
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 203066/CB20							
Project Title 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ins Chest No. WTS-831	Temp. ON JCC						
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7795 1445 8499							
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 42446							
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative			
	S17T023455	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BA-EF 1	N/A			
	S17T023456	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BA-IN 1	N/A			
	S17T023457	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-EF 1	N/A			
	S17T023458	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-IN 1	N/A			
	S17T023459	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-EF-1	N/A			
	S17T023460	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-EF-2	N/A			
	S17T023461	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-EF-3	N/A			
	S17T023462	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-EF-4	N/A			
	S17T023463	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-EF-5	N/A			
	S17T023464	VA	6/24/17	CHARCOAL TUBE	METHANOL 17-04569-13-TL2-BL-EF-6	N/A			
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No									
SPECIAL INSTRUCTIONS Send Results to: Carl Howard & Keisha Garcia Carl W. Howard@sl.gov and Keisha_R_Garcia@sl.gov gov 366 SON for email REFERENCE 15 Reference Contract # 55502									
Relinquished By Sharon L. Lyle	Print SW Harder	Sign SW Harder	Date/Time 6-28-17 1030	Received By Scott Harder	Print Balt	Sign Balt	Date/Time 6-28-17 1030	Mainst S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids	
Relinquished By WRPS	Print WRPS	Sign WRPS	Date/Time 6-28-17 1400	Received By WRPS	Print WRPS	Sign WRPS	Date/Time 6-28-17 1400	DL = Drum Liquids T = Tissue WM = Waste L = Liquid V = Vegetation VA = Vapor X = Other	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Date/Time	
Disposal Method (e.g., Return to customer, per lab procedure, used in process)								Date/Time	
Fred Rejib								07/07/17 0500	

A-6005-982 (03/05)









## ANALYTICAL REPORT

Report Date: June 29, 2017

Robert (Buddy) Sosa  
Washington River Protection So  
PO Box 850, MSIN T6-02  
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert\_w\_sosa@rl.gov  
20172112

Workorder: 34-1717334

Client Project ID: 2107 CARTRIDGE  
EVALUATION

Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021225		Collected: 06/17/2017		
Lab ID: 1717334001		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021226		Collected: 06/17/2017		
Lab ID: 1717334002		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021227		Collected: 06/17/2017		
Lab ID: 1717334003		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

ADDRESS: 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA PHONE: +1 801 266 7700 FAX: +1 801 268 9992

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ESSENTIAL INFORMATION

[www.alsglobal.com](http://www.alsglobal.com)

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## ANALYTICAL REPORT

Workorder: **34-1717334**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: <b>S17T021228</b>		Collected: 06/17/2017	
Lab ID: 1717334004		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T021229</b>		Collected: 06/17/2017	
Lab ID: 1717334005		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T021230</b>		Collected: 06/17/2017	
Lab ID: 1717334006		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010

Sample ID: <b>S17T021231</b>		Collected: 06/17/2017	
Lab ID: 1717334007		Received: 06/22/2017	
Method: <b>NIOSH 2000</b>		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: <b>Air Volume Not Provided</b>			
Analyte	Result (mg/sample)	Result (mg/m <sup>3</sup> )	Result (ppm) RL (mg/sample)
Methanol	<0.010	NA	NA 0.010





## ANALYTICAL REPORT

Workorder: **34-1717334**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021232		Collected: 06/17/2017		
Lab ID: 1717334008		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021233		Collected: 06/17/2017	
Lab ID: 1717334009		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T021234		Collected: 06/17/2017	
Lab ID: 1717334010		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T021235		Collected: 06/17/2017		
Lab ID: 1717334011		Sampling Location: 2107 CARTRIDGE EVALU		Received: 06/22/2017
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1717334**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021236		Collected: 06/17/2017		
Lab ID: 1717334012		Received: 06/22/2017		
		Sampling Location: 2107 CARTRIDGE EVALU		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021237		Collected: 06/17/2017	
Lab ID: 1717334013		Received: 06/22/2017	
		Sampling Location: 2107 CARTRIDGE EVALU	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA            0.010

Sample ID: S17T021238		Collected: 06/17/2017	
Lab ID: 1717334014		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T021239		Collected: 06/17/2017	
Lab ID: 1717334015		Received: 06/22/2017	
Sampling Location: 2107 CARTRIDGE EVALU			
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)      RL (mg/sample)
Methanol	<0.010	NA	NA      0.010





## ANALYTICAL REPORT

Workorder: **34-1717334**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021240		Collected: 06/17/2017		
Lab ID: 1717334016		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube		
		50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

Sample ID: S17T021241		Collected: 06/17/2017	
Lab ID: 1717334017		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T021242		Collected: 06/17/2017	
Lab ID: 1717334018		Received: 06/22/2017	
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)
Sampling Info: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)    RL (mg/sample)
Methanol	<0.010	NA	NA    0.010

Sample ID: S17T021243		Collected: 06/17/2017		
Lab ID: 1717334019		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg		
		Analyzed: 06/28/2017 (193538)		
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010





## ANALYTICAL REPORT

Workorder: **34-1717334**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### Analytical Results

Sample ID: S17T021244		Collected: 06/17/2017		
Lab ID: 1717334020		Received: 06/22/2017		
Method: NIOSH 2000		Media: SKC 226-51, Silica Gel Tube 50/100mg	Analyzed: 06/28/2017 (193538)	
Sampling Info: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Methanol	<0.010	NA	NA	0.010

### Comments

Workorder: 1717334
QC/QD pair 554122/554123 relate to samples 1717334001-020

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 2000	/S/ Fred Rejali 06/29/2017 14:33	/S/ Thomas J. Masoian 06/29/2017 15:40

### Laboratory Contact Information

ALS Environmental  
960 W Levoe Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alsslc.com](http://www.alsslc.com)





## ANALYTICAL REPORT

Workorder: **34-1717334**  
Client Project ID: 2107 CARTRIDGE  
EVALUATION  
Purchase Order: 55502 Rel15  
Project Manager: Rand Potter

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimpl/">http://health.utah.gov/lab/labimpl/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bdwl/labservice.htm">http://ndep.nv.gov/bdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CS/new/">http://www.deq.state.ok.us/CS/new/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/field/qalab_accred_certif.html">http://www.tceq.texas.gov/field/qalab_accred_certif.html</a>
	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eep/labs/index.html">http://www.ecy.wa.gov/programs/eep/labs/index.html</a>
Industrial Hygiene	Kansas	E-10416	<a href="http://www.kdheks.gov/lipo/index.html">http://www.kdheks.gov/lipo/index.html</a>
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing: CPSC	Washington	C596-16	<a href="http://www.ecy.wa.gov/programs/eep/labs/index.html">http://www.ecy.wa.gov/programs/eep/labs/index.html</a>
	AIHA LAP LLC (ISO 17025, CPSC)	ADE-1420	<a href="http://www.anab.org/accredited-organizations/">http://www.anab.org/accredited-organizations/</a>
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.  
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.  
ND = Not Detected, Testing result not detected above the LOD or LOQ.  
NA = Not Applicable.  
\*\* No result could be reported, see sample comments for details.  
< This testing result is less than the numerical value.  
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental





## Quality Control Sample Batch Report

### Analysis Information

Workorder: 1717334

Limits: Historical/Performance  
Basis: ALS Laboratory Group

Preparation: NA  
Batch: NA  
Prepared By: NA

Analysis: IH GC-FID QC  
Batch: IFID/8567 (HBN: 193538)  
Analyzed By: Fred Rejali

### Blank

MB: 554118 Analyzed: 06/28/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Methanol	ND	NA	0.0100

MB: 554121 Analyzed: 06/28/2017 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Methanol	ND	NA	0.0100

### Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 554119 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 554120 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Methanol	0.126	0.119	106	84.1 109.1	0.122	103	3.23	0.0 20.0	

LCS: 554122 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample					LCSD: 554123 Analyzed: 06/28/2017 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Methanol	0.115	0.119	97.0	84.1 109.1	0.117	98.7	1.72	0.0 20.0	

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Fred Rejali 06/29/2017 14:33	/S/ Thomas J. Masoian 06/29/2017 15:40

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- \* - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

- RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable





1717334

1717334

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST									
Assembler N/A		C.O.C. No. 20172112 Page 1 of 2							
Collector JONES	Contact/Requestor Carl, Ronald 17		Telephone No. 313-6861		MSIN T6-02		FAX 372-1878		
SAP No.	Sample Origin 2017 COUTRIDE EVALUATION		Purchase Order/Charge Code 209067623						
Project Title 2017 COUTRIDE EVALUATION	Logbook Work Package No.		Ice Chest No.		Temp. ON ICE				
Shipped To (Lab)	Method of Shipment		Bill of Lading/Air Bill No.		7794 6050 4373				
Protocol ALS	Data Turnaround 10 DAYS		Parts and Return No.		42606				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis			Preservative	
1	S17T021225	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-B3-EF *			N/A	
2	S17T021226	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-B3-IN *			N/A	
3	S17T021227	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-B1-EF *			N/A	
4	S17T021228	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-B1-IN *			N/A	
5	S17T021229	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-BF-1 *			N/A	
6	S17T021230	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-BF-2 *			N/A	
7	S17T021231	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-BF-3 *			N/A	
8	S17T021232	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-BF-4 *			N/A	
9	S17T021233	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-BF-5 *			N/A	
10	S17T021234	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-T12-BF-6 *			N/A	
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No									
SPECIAL INSTRUCTIONS Send Results to Carl Ronald & Keisha Garcia Carl W. Howard@ri.gov and Keisha R. Garcia@ri.gov See SW for email RELEASE 15 Reference Contract # 55502									
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix*	
Sharon Weldon	SW Harder	SW Harder	6-21-17 1030	SW Harder	SW Harder	SW Harder	6-21-17 1030	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids	DL = Drum Liquids T = Tissue W = Waste L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
SW Harder	SW Harder	SW Harder	6-21-17 1450	SW Harder	SW Harder	SW Harder	6-21-17 1450		
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
SW Harder	SW Harder	SW Harder	6-21-17 1450	SW Harder	SW Harder	SW Harder	6-21-17 1450		
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time		
SW Harder	SW Harder	SW Harder	6-21-17 1450	SW Harder	SW Harder	SW Harder	6-21-17 1450		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time		
	Fred Rijab			Fred Rijab			06/28/17 2300		

A-6003-962 (03/05)

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.



Assembler N/A		C.O.C. No. 20172112				
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		Page 2 of 2				
Collector JONES	Contact/Requestor CARD HOWARD IV	Telephone No. 373-6861	MSIN T6-02 FAX 372-1878			
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 20302/0220				
Project Title 2017 CARTRIDGE EVALUATION	Logbook/Work Package No. N/A	Ice Chest No. W-15-033	Temp. 60 ICE			
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7794 0050 4373				
Protocol N/A	Date Turnaround 10 DAYS	Parts and Return No. 42606				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
11	S17T021235	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-SF-7 *	N/A
12	S17T021236	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-SF-8 *	N/A
13	S17T021237	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-1 *	N/A
14	S17T021238	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-2 *	N/A
15	S17T021239	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-3 *	N/A
16	S17T021240	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-4 *	N/A
17	S17T021241	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-5 *	N/A
18	S17T021242	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-6 *	N/A
19	S17T021243	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-7 *	N/A
20	S17T021244	VA	6/17/17	CHARCOAL TUBE	METHANOL 17-03273-13-TL2-IN-8 *	N/A
<b>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)</b> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No <b>Hold Time</b> <b>SPECIAL INSTRUCTIONS</b> Send Results to Carl Howald & Keisha Garcia Carl W. Howald: c1.gov and Keisha R. Garcia: k1.gov gov seg SW for email RELEASE 15 Reference Contract # 55502						
Relinquished By Sharon Williams	Print SW Harder	Sign SW Harder	Date/Time 6-21-17 1030	Received By Scott Harder	Print Scott Harder	Sign Scott Harder
Relinquished By WRPS	Print WRPS	Sign WRPS	Date/Time 6-21-17 1400	Received By DANIEL HILL	Print DANIEL HILL	Sign DANIEL HILL
Relinquished By FOD/104	Print FOD/104	Sign FOD/104	Date/Time 6-21-17 1400	Received By DANIEL HILL	Print DANIEL HILL	Sign DANIEL HILL
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By Fred R. J. J.	Date/Time 06/28/17	2300

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin. A-6003-662 (03/05)









**Pacific  
Northwest**  
NATIONAL LABORATORY

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**ENERGY**