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Analysis of Respirator Cartridge Performance Testing on Hanford Tank AX-101

February 2017

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Executive Summary

Washington River Protection Solutions (WRPS) conducted tests using two types of chemical cartridges for use in air purifying respirators (APR) to determine the period of time that the cartridges would provide adequate performance for APRs to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPCs) from vapors emanating from the headspace of tank AX-101 on the Hanford Site. The Occupational Safety and Health Administration (OSHA) identifies cartridge testing as a valid approach for establishing a cartridge service life. Testing is commonly applied in situations where mixtures of COPCs exist, and where other approaches, such as manufacturer recommendations and modeling, are less reliable. The tests were designed and conducted to assure measurement and/or control of the key variables OSHA identified as important to estimate cartridge service life, including temperature, humidity, COPC concentration, breathing rate, and cartridge adsorption capacity.

Testing was conducted from September 9–11, 2016, using headspace vapors from Hanford tank AX-101 under static conditions fed to a respirator cartridge test stand developed by WRPS in collaboration with HiLine Engineering (Richland, Washington). Multipurpose respirator cartridges, SCOTT 7422-SD1 and SCOTT 7422-SC1 (SCOTT Safety, Monroe, North Carolina) were assessed on separate days. Sample media (sorbent tubes) were used to collect samples of the vapor stream entering and exiting the respirator cartridge, and were subsequently analyzed for COPC concentrations. Pacific Northwest National Laboratory was tasked with conducting an independent analysis of the analytical results and making recommendations based on the results for respiratory cartridge performance and service life. The key conclusions from the analysis are described below:

- Based on measured cartridge inlet vapor concentrations from tank AX-101, only two COPCs, ammonia and N-Nitrosodimethylamine (NDMA), exceeded their corresponding Occupational Exposure Limits (OEL).¹ Six COPCs—mercury, formaldehyde, furan, 2,3-dihydrofuran, N-Nitrosomethylethylamine (NMEA), and N-Nitrosomorpholine—were found to have one or more inlet concentration measurements greater than 10% of their corresponding OELs, but less than 100% of their OELs. All other COPC's inlet and outlet measurements did not exceed 10% of their OELs, except for acetonitrile which had a single outlet measurement at 21% of its OEL and N-Nitrosodiethylamine which had all inlet and outlet measurements below the detection limit (DL) of approximately 23% of the OEL.
- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 801% of the OEL (200 ppm) during the testing, which was higher than average and maximum historical headspace measurements. For both cartridges tested, ammonia appeared to breakthrough above 10% of its OEL after 2 hours.
- Cartridge inlet concentration measurements for NDMA reached 932% of its OEL (2.8 ppb), which was higher than average and maximum historical headspace concentrations. All outlet concentrations of NDMA were less than the analytical reporting limit of approximately 11% of its OEL, except for the final measurement at 16 hours on SCOTT 7422-SC1, which indicated a concentration equivalent to the 14-hour inlet concentration. Sampling error is suspected in this case, possibly the result of swapping the inlet and outlet samples. The other nitrosamines indicated a similar issue. There is no

¹ Occupational Exposure Limits accepted for Hanford Tank Farm use are based on OELs established by a U.S. governmental agency or national professional organization (e.g., OSHA, National Institute for Occupational Safety and Health, American Conference of Governmental Industrial Hygienists), or if no U.S. OEL exists, standard toxicological practices are applied to develop OELs using non-U.S. exposure limits, other established OELs for chemical surrogates when available, or other standard procedures. The OEL for NDMA was established in 2005 based on the MAK (Maximale Arbeitsplatzkonzentration) Commission standard adopted in Europe.

indication of breakthrough for SCOTT 7422-SD1, and the suspect data point for SCOTT 7422-SC1 also provides no compelling indication of breakthrough.

- Mercury inlet concentrations measured throughout the testing period for both cartridges remained relatively constant, up to 24% of the OEL, which is comparable to historic AX-101 measurements. Respirator outlet concentrations for mercury were all below its DL, except for the last outlet concentration for SCOTT 7422-SC1 at 16% of the OEL, indicating potential breakthrough after 14 hours of testing.
- Formaldehyde inlet concentrations reached a maximum early in the cartridge test period of approximately 10% and 14% for SCOTT 7422-SD1 and SCOTT 7422-SC1, respectively, and then declined to less than its DL. All outlet measurements were less than or slightly above the DL, indicating no breakthrough for the test period.
- The respirator cartridge inlet concentrations for both furan and 2,3-dihydrofuran varied from a maximum of 15% and 44% of their OELs, respectively, to less than their DLs. All historic data for these two furan compounds in AX-101 were less than the reporting limit. All outlet concentrations for both cartridges were less than their DLs, with the exception of the 16-hour measurement on the SCOTT 7422-SC1 cartridge for both furan and 2,3-dihydrofuran, which showed detectable concentrations of 6.2% and 10% of their OELs, respectively. These data indicate the potential that breakthrough initiated after 14 hours for this cartridge; however, this data point was flagged as having a flow issue that could have contributed to data error.
- A single acetonitrile outlet concentration measurement reached approximately 20.8% of its OEL for the SCOTT 7422-SC1 cartridge test at 8 hours. The high value could either be due to an error in the single concentration measurement or an error in handling the sample. All other inlet and outlet measurements for these COPCs never exceeded 10% of the OEL, specifically less than 2.5%, indicating no breakthrough.
- Several respirator inlet concentration measurements for NMEA and N-Nitrosomorpholine were slightly above their DLs, but less than 16% and 15%, respectively. All outlet concentrations were less than the DLs, except for the final measurement at 16 hours on SCOTT 7422-SC1 which showed an elevated outlet concentration more consistent with the preceding inlet concentration at 14 hours. Sampling error is suspected in this case, possibly the result of swapping the inlet and outlet samples. There is no indication of breakthrough for either cartridge at or above the 10% of OEL limit.

Based on the measurements taken for this study, breakthrough occurred early in the test sequence for ammonia. Ammonia breakthrough occurred after 2 hours for both cartridges (SCOTT 7422-SD1 and SCOTT 7422-SC1). This experimental result supports a 2-hour service life for the use of SCOTT 7422-SC1 and 7422-SD1 cartridges in APRs employed to protect workers at Hanford tank AX-101. However, the inlet ammonia concentrations are close to the upper limits recommended by the Centers for Disease Control and Prevention-National Institute for Occupational Safety and Health recommendations for APR use.¹ Additional respirator cartridge and respirator selection evaluations by Industrial Hygiene professionals are recommended to determine proper respiratory protection requirements. Variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact the experiment-derived cartridge service life, especially if OEL thresholds are exceeded. Therefore, a 2-hour service life under the reported test conditions is recommended to inform an Industrial Hygiene determination of an appropriate respirator cartridge change-out schedule that would provide adequate worker protection.

¹ *CDC-NIOSH Pocket Guide to Chemical Hazards – Ammonia*. Available at <https://www.cdc.gov/niosh/npg/npgd0028.html>.

Acronyms and Abbreviations

ALS	ALS Environmental Salt Lake City
APR	Air Purifying Respirator
CAS	Chemical Abstracts Service
CBAL	Columbia Basin Analytical Laboratory, part of the RJ Lee Group
CFR	Code of Federal Regulations
COPC	Chemicals Of Potential Concern
CVAA	Cold Vapor Atomic Absorption
DL	Detection Limit
EPA	U.S. Environmental Protection Agency
GC–FID	Gas Chromatography–Flame Ionization Detector
GC/MS	Gas Chromatography/Mass Spectrometry
GC–TEA	Gas Chromatography–Thermal Energy Analyzer
HPLC	High Performance Liquid Chromatography
HPLC–UV	High Performance Liquid Chromatography–Ultraviolet
IC	Ion Chromatography
IH	Industrial Hygiene
NDEA	N-Nitrosodiethylamine
NDMA	N-Nitrosodimethylamine
NIOSH	National Institute of Occupational Safety and Health
NMEA	N-Nitrosomethylethylamine
OEL	Occupational Exposure Level
OSHA	Occupational Safety and Health Administration
SCBA	Self-Contained Breathing Apparatus
ppm	Parts Per Million
PNNL	Pacific Northwest National Laboratory
RL	Reporting Limit
SAR	Supplied Air Respirator
SCBA	Self Contained Breathing Apparatus
SWIHD	Site-Wide Industrial Hygiene Database
TIC	Tentatively Identified Compound
TWINS	Tank Waste Information Network System
VOC	Volatile Organic Compound
WC	Water Column
WHL	Wastren Hanford Laboratory (222S)
WRPS	Washington River Protection Solutions

Contents

Executive Summary	iii
Acronyms and Abbreviations	v
1.0 Introduction/Project Description	1.1
2.0 Regulatory Requirements	2.1
2.1 Background on Regulatory Requirements	2.1
2.2 OSHA-Approved Methods for Determining Cartridge Change-Out Times	2.1
3.0 Description of Testing Program	3.1
4.0 Data Analysis.....	4.1
5.0 Plots of COPCs with Significant Detected Values	5.1
6.0 Factoring in Historical Concentration Data.....	6.1
7.0 Conclusions	7.1
8.0 Recommendations	8.1
9.0 References	9.1
Appendix A – Description of Respirator Cartridge Testing Setup	A.1
Appendix B – Analytical Testing	B.1
Appendix C – Raw Analytical Data	C.1
Appendix D – Data Reduction Steps	D.1
Appendix E – Plots of Other COPCs with Significant (2–10% of the OEL) Detected Values	E.1
Appendix F – Historical Data Comparison.....	F.1

Figures

1	Plot of Measured Ammonia Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.1
2	Plot of Measured Mercury Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.2
3	Plot of Measured Formaldehyde Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.3
4	Plot of Measured Furan Concentrations before the Inlets and after the Outlets of the two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.4
5	Plot of Measured 2,3-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.5
6	Plot of Measured Acetonitrile Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.6
7	Plot of Measured N-Nitrosodimethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.7
8	Plot of Measured N-Nitrosodiethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.8
9	Plot of Measured N-Nitrosomethylethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1)	5.9
10	Plot of Measured N-Nitrosomorpholine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1).....	5.10

Tables

1.	Summary of Analyzed COPCs	4.2
2.	Historical AX-101 Headspace Data for COPCs with Boiling Points less than 70°C (158°F).....	6.2

1.0 Introduction/Project Description

As the Tank Operations Contractor for U.S. Department of Energy operations at the Hanford site, Washington River Protection Solutions (WRPS) is responsible for managing highly radioactive wastes stored in tanks at Hanford. WRPS recently identified the need to test air purifying respirator (APR) chemical cartridges commonly used at Hanford Tank Farms. The tests were conducted to determine the period of time that the cartridges would provide adequate performance for APRs to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPCs) from any vapors exiting headspaces in the tanks. Occupational Safety and Health Administration (OSHA) Standard 29 Code of 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 APR Cartridge Test Program is to obtain objective data to determine service life for the APR cartridges in use at Hanford Tank Farms. WRPS contracted Pacific Northwest National Laboratory (PNNL) to analyze the test data and offer an independent analysis and any recommendations. This report summarizes data analysis of cartridge testing on vapors from the headspace of Hanford AX-101 single-shell tank

2.0 Regulatory Requirements

2.1 Background on Regulatory Requirements

OSHA Respiratory Protection Standard (29 CFR 1910.134) mandates/requires that employers provide protective equipment, including respirators, to their employees to protect them against potential exposure to contaminants at or above documented Occupational Exposure Limits (OELs) and establish cartridge change-out schedules to ensure cartridges are changed before the end of service life.[1] End of service life is the time when a respirator cartridge can no longer filter/capture harmful contaminants (i.e., the cartridge no longer functions effectively).

Protective respirator cartridges are frequently used in workplaces with low contaminant concentrations and where respirators provide essential protection for longer periods of time (>2 hours). If the contaminant concentration in a workplace is high, supplied air respirators (SAR) or self-contained breathing apparatuses (SCBA) must be used to provide additional protection. While the use of SARs or SCBAs offers more protection, a tradeoff exists, particularly for SCBAs that employ a large, heavy (~30 pounds), back-mounted compressed air cylinder.[1]

2.2 OSHA-Approved Methods for Determining Cartridge Change-Out Times

The National Institute of Occupational Safety and Health (NIOSH) certifies organic vapor cartridges using the criteria in 42 CFR 84, Approval of Respiratory Protective Devices. Still, there is no widely accepted, standard protocol for performing service life testing.[4] However, OSHA has identified three valid approaches for establishing cartridge change-out schedules.[3] These approaches are described below.

- *Conduct experimental tests* – First, gather all available information about the nature of all contaminants present in the workplace. Obtain breathing rates of workers and estimate worst-case exposures. For most employers, this approach is the most time consuming, and resources needed to perform these tests may not be available. If an employer has the resources needed to pursue this approach, it is the most reliable method of estimating cartridge service life. Concentrations at different points in time are obtained using actual respirator cartridges exposed to actual or simulated gases to gather service life information. A safety factor that includes the assumptions made, variable factors, or conditions needs to be applied to the service life and used in the respiratory protection program. This approach is commonly used in situations where mixtures of contaminants are present and can also be used to validate an existing cartridge change-out schedule.
- *Use the manufacturer's recommendation* – Once information about airborne contaminants (including concentrations, temperature, and humidity) has been obtained, contact the manufacturer of the respirator to be used and provide all the information. Manufacturers should be able to provide the estimated service life of different cartridges for particular compounds. Manufacturers should also be able to provide the exact objective information they used to project the service life. Using the information obtained, change-out schedules are proposed. This approach is not as reliable as conducting application-specific experiments, and manufacturers may not have all the information for workplace hazards and user factors. If any safety factor is applied considering all the variable factors, it must be clearly identified in the respiratory protection program. For complex mixtures such as those present in the storage tanks at Hanford, manufacturer recommendations may be of limited value, and experimental testing is recommended.

- *Use mathematical models* – Mathematical models are usually applicable for single contaminant exposure situations. OSHA and NIOSH have worked over the years with researchers and industrial partners to develop mathematical models for predicting respirator cartridge service life.[3, 5-11] OSHA offers guidance on using mathematical models to estimate respirator cartridge service life based on single components, but the models have not been adopted for mixtures. NIOSH has developed a computer tool for estimating breakthrough times and service lives of respirator cartridges. Manufacturers can use those results to make service life recommendations for their particular product (canister/cartridge) in multi-gas environments. Two types of mathematical models are used: 1) predictive models[3, 5-7] and 2) descriptive models.[9] Each model has its own mathematical basis for its estimations. To estimate the service lives of cartridges, the following information is needed:

- the number of cartridges used by the respirator
- the mass of the sorbent used in each cartridge
- the carbon micro-pore volume
- the density of the packed bed
- the maximum temperature
- the maximum relative humidity
- the maximum concentration of the contaminants and the work (volumetric flow) rate.

The primary advantages of using mathematical models are that they are relatively inexpensive and take little time. However, the estimates are not as accurate as testing; sometimes modeling might result in a service life estimate that is shorter than it needs to be because of conservative assumptions used during calculations.

In addition to the methods described above, “rules of thumb” can be allowed as part of the overall workplace organic vapor assessment for determining a cartridge change-out schedule. Chapter 36 of the American Industrial Hygiene Association publication, *The Occupational Environment: Its Evaluation and Control and Management*, outlines the approach.[12] The “rules of thumb” may not work for every chemical or situation, but provide an estimation of cartridge life. The following are rules of thumb outlined in the publication:

- If the compound’s boiling point is $>70^{\circ}\text{C}$ and the concentration is less than 200 ppm, a service life of 8 hours at a normal work rate can be expected.
- Service life is inversely proportional to worker breathing rate.
- Reducing the concentration of a contaminant by a factor of 10 will increase service life by a factor of 5.
- Relative humidity above 85% will reduce the service life by 50%.

These rules of thumb do not apply in certain situations, including for mixtures of hazardous contaminants (e.g., Hanford Tank Farm vapors) and inorganic gases such as ammonia, sulfur dioxide, and hydrogen sulfide; compositions that vary with time and location; and contaminants that undergo continuous reactions. However, some of the general drivers can help in interpreting the results obtained from experimental testing of respirator cartridges.

3.0 Description of Testing Program

Based on the OSHA guidance described in the previous section, a sample testing approach was pursued for quantifying respirator cartridge effectiveness for Hanford tank vapors. WRPS developed a sampling approach outlined in TFC-PLN-168, “Industrial Hygiene Sampling and Analysis Plan for Respirator Cartridge Testing,” and “Air Purifying Respirator Cartridge Test Apparatus, RPP-STE-59226.”[13,14]

Appendix A provides a description of the respirator cartridge testing setup developed by WRPS and used for measurements of vapors from the AX-101 tank.[13-15] The test system and methodology were developed in consultation with recognized subject matter experts to follow the example of tank farm headspace field sampling for the purposes of cartridge testing.

The Sampling and Analysis Plan was developed under the direction and oversight of the Industrial Hygienist in conjunction with the Tank Farms Operations Contractor Retrieval and Closure, and Tank Farms Project and/or Production Operations Project Management Team, as applicable. Trained Industrial Hygiene Technicians under the direction of a qualified Industrial Hygienist collected chemical vapor samples from the influent and effluent sides of the cartridge test apparatus. Training was performed at HiLine Engineering (Richland, Washington) on the test stands for WRPS Sampling Equipment Operators, Industrial Hygiene Technicians, and the Field Work Supervisors, prior to transport of the stands to tank farms.

The APR cartridge test assembly was designed and constructed to operate under the following environmental conditions without negatively impacting system performance:

- Temperature: 32 to 115°F
- Relative Humidity: 5% to 100%
- Precipitation: Up to 4 inches in 6 hours
- Wind: Up to 20 mph with blowing dust.

To ensure the cartridges effectively protect workers, WRPS developed a testing program with the following conservative conditions:

- The flow rate through each cartridge was set at 30 L/min (equivalent to 60 L/min for a pair of cartridges), which corresponds to more than twice the normal breathing rate and is slightly higher than OSHA recommended testing flow rate of 53.3 L/ min.[3,5]
- Tank farm vapors source sampling was performed on headspace vapors rather than from Hanford Tank Farm atmospheric concentrations (i.e., source sampling vs. the breathing zone).
- 10% OEL for each COPC was considered as a threshold concentration.

Using the cartridge testing setup shown in Appendix A, separate test surveys were performed on two NIOSH-approved respiratory protection twin cartridges: SCOTT 7422-SD1 for Survey 1, and SCOTT 7422-SC1 for Survey 2.[16] These cartridges were chosen because they are suitable for capturing organic vapors, acid gases, ammonia, formaldehyde, and particulates.[16]

Vapor concentrations upstream and downstream of the APR cartridge were monitored with an array of sorbent tubes (see Appendix B). Influent (upstream) concentration measurements were recorded every 2 hours during the 16-hour verification survey. Downstream sorbent tubes were changed out every 2 hours until the experiment was finished. A measured quantity of sample air was drawn in through the sorbent tube (see Appendix A).[13,14] Compounds from the sorbent tubes were extracted and analyzed using analytical methods referenced in Appendix B.

The characteristics of 59 COPCs were the primary focus of the testing. The 59 COPCs represent a set of tank vapor chemicals found in a tank farm source greater than 10% of their OELs, or are considered “known” or “probable” carcinogens by the International Agency for Research Cancer or other regulatory agencies.[17,18] A full listing of these COPCs is shown in Section 4.0.

4.0 Data Analysis

Respirator cartridge testing on the AX-101 tank was conducted from September 9–11, 2016. Each cartridge was tested for approximately 16 hours of continuous run time. Testing and analysis focused on the 59 COPCs identified in Table 1 and other hazardous airborne contaminants. Sorbent tubes were changed every 2 hours, and more than 200 sorbent tubes were sent to the 222S Laboratory at Hanford and dispositioned for analysis. Appendix C lists the raw data for all of contaminants analyzed during the tests, and Appendix D lists the corresponding calculated concentrations. Appendix C also gives the average temperatures of the sample slipstream during testing, which ranged from 54 to 93°F, and the average relative humidity that ranged from 42 to 85%. Table 1 provides an overview of the results for each of the 59 COPCs. Note that nitrous oxide was not analyzed as it is not susceptible to respirator filtration, and there are no known NIOSH-approved respirator filtration cartridges approved for nitrous oxide. Additionally, methanol was not quantified as part of the COPC data set because it is used as a standard solvent and calibration standard in the analytical procedure for volatile organic compounds (VOC).

Table 1 shows the measured concentrations in the current study for all of the COPCs tested. The inlet concentrations of two COPCs, ammonia and N-Nitrosodimethylamine (NDMA), exceeded their corresponding OELs. The inlet (or outlet) concentrations of seven additional COPCs were lower than their corresponding OELs but still exceeded 10%. These COPCs were mercury, formaldehyde, furan, 2,3-dihydrofuran, acetonitrile, N-Nitrosomethylethylamine (NMEA) and N-Nitrosomorpholine. In addition, inlet and outlet concentrations for N-Nitrosodiethylamine (NDEA) were identified as being greater than 10% of the OEL. However, these values were below the analytical detection limits (DL) for that compound in all cases, which corresponds to approximately 23% of the OEL. As such, the concern threshold for NDEA was increased from 10% of the OEL to the analytical DL. These 10 COPCs are highlighted in yellow in Table 1, and are discussed in more detail in Section 5.0.

Appendix E shows similar detailed assessments for an additional seven COPCs with respirator cartridge inlet (or outlet) concentrations or DLs less than 10% of the OEL but greater than 2%. These COPCs were 1,3-butadiene, 2,5-dihydrofuran, 2-methylfuran, 2,5-dimethylfuran, 2-pentylfuran, 2-heptylfuran and 2-propylfuran. All of the other COPCs had inlet (or outlet) concentrations less than 2% or their OELs or their DLs.¹

¹ The term “detection limit” is used here to refer either to analytical reporting limit (RL) or DL. The use of either an RL or DL varied among analytical laboratories. The RL (equivalent to a limit of quantification) was used instead of an analytical method DL by several laboratories for specific COPC analyses. See Appendix C and Appendix F for additional information on the specific use of RLs or DLs for each COPC.

Table 1. Summary of Analyzed COPCs

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL ¹ (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Inorganic						
1 Ammonia	7664-41-7	200 ppm	25 ppm	2.56%		Up to 801% of OEL for inlet values. All outlets <767%.
2 Nitrous Oxide	10024-97-2	Not Measured	50 ppm			
3 Mercury	7439-97-6	6.07 ug/m3	25 ug/m3	7.33%		Up to 24.3% of OEL for inlet values. All outlets <16.3%.
Hydrocarbons						
4 1,3-Butadiene	106-99-0	0.0202 ppm	1 ppm	2.05%	X	
5 Benzene	71-43-2	0.0009 ppm	0.5 ppm	0.021%		Up to 0.2% of OEL for inlet values. All outlets <0.09%.
6 Biphenyl	92-52-4	0.0002 ppm	0.2 ppm	0.096%	X	
Alcohols						
7 1-Butanol	71-36-3	0.0633 ppm	20 ppm	0.004%		Up to 0.3% of OEL for inlet values. All outlets <0.15%.
8 Methanol	67-56-1	Not Measured	200 ppm			
Ketones						
9 2-Hexanone	591-78-6	0.0031 ppm	5 ppm	0.002%		Up to 0.06% of OEL for inlet values. All outlets <0.03%.
10 3-Methyl-3-butene-2-one	814-78-8	Not Detected	0.02 ppm	TIC ²	X	
11 4-Methyl-2-hexanone	105-42-0	0.0001 ppm	0.5 ppm	0.017%		Up to 0.02% of OEL for inlet values. All outlets <DL.
12 6-Methyl-2-heptanone	928-68-7	Not Detected	8 ppm	TIC	X	
13 3-Buten-2-one	78-94-4	0.0034 ppm	0.2 ppm	0.083%		Up to 1.7% of OEL for inlet values. All outlets <0.5%.
Aldehydes						
14 Formaldehyde	50-00-0	0.0431 ppm	0.3 ppm	0.63%		Up to 14.4% of OEL for inlet values. All outlets <0.7%.
15 Acetaldehyde	75-07-0	0.105 ppm	25 ppm	0.005%		Up to 0.4% of OEL for inlet values. All outlets <0.3%.
16 Butanal	123-72-8	0.0042 ppm	25 ppm	0.001%		Up to 0.02% of OEL for inlet values. All outlets <0.01%.
17 2-Methyl-2-butenal	1115-11-3	Not Detected	0.03 ppm	TIC	X	
18 2-Ethyl-hex-2-enal	645-62-5	Not Detected	0.1 ppm	TIC	X	

¹ Approximate DL is calculated using the reported DLs (or RL) from the analytical laboratory and the average volume (from flowrate × time) of vapor exposed to the sorbent tube.

² Tentatively Identified Compound (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 ≥5 nanograms of TIC mass, and other analytical criteria are met. For the 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.

Table 1. (continued)

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL ¹ (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Furans						
19 Furan	110-00-9	0.15 ppb	1 ppb	3.61%		Up to 14.7% of OEL for inlet values. All outlets <6.2%.
20 2,3-Dihydrofuran	1191-99-7	0.44 ppb	1 ppb	2.14%		Up to 43.6% OEL for inlet values. All outlets <10.4%.
21 2,5-Dihydrofuran	1708-29-8	0.03 ppb	1 ppb	3.13%		All inlet values <DL. All outlets <4.0%
22 2-Methylfuran	534-22-5	0.04 ppb	1 ppb	3.72%	X	
23 2,5-Dimethylfuran	625-86-5	0.05 ppb	1 ppb	5.19%	X	
24 2-Ethyl-5-methylfuran	1703-52-2	Not Detected	1 ppb	TIC	X	
25 4-(1-Methylpropyl)-2,3-dihydrofuran	34379-54-9	Not Detected	1 ppb	TIC	X	
26 3-(1,1-Dimethylethyl)-2,3-dihydrofuran	34314-82-4	Not Detected	1 ppb	TIC	X	
27 2-Pentylfuran	3777-69-3	0.06 ppb	1 ppb	4.33%		Up to 6.3% of OEL for inlet values. All outlets <4.5%.
28 2-Heptylfuran	3777-71-7	0.03 ppb	1 ppb	3.44%		All inlet values <DL. All outlets <2.7%.
29 2-Propylfuran	4229-91-8	0.04 ppb	1 ppb	3.74%	X	
30 2-Octylfuran	4179-38-8	Not Detected	1 ppb	TIC	X	
31 2-(3-Oxo-3-phenylprop-1-enyl)furan	717-21-5	Not Detected	1 ppb	TIC	X	
32 2-(2-Methyl-6-oxoheptyl)furan	51595-87-0	Not Detected	1 ppb	TIC	X	
Phthalates						
33 Diethylphthalate	84-66-2	0.0021 mg/m3	5 mg/m3	0.042%	X	
Nitriles						
34 Acetonitrile	75-05-8	4.15 ppm	20 ppm	0.002%		Up to 2.6% of OEL for inlet values. All outlets <20.8%.
35 Propanenitrile	107-12-0	0.0096 ppm	6 ppm	0.003%		Up to 0.16% of OEL for inlet values. All outlets <0.08%.
36 Butanenitrile	109-74-0	0.0051 ppm	8 ppm	0.002%		Up to 0.06% of OEL for inlet values. All outlets <0.03%.
37 Pentanenitrile	110-59-8	0.0014 ppm	6 ppm	0.002%		Up to 0.02% of OEL for inlet values. All outlets <0.01%.
38 Hexanenitrile	628-73-9	0.0102 ppm	6 ppm	0.002%		Up to 0.2% of OEL for inlet values. All outlets <0.002%.
39 Heptanenitrile	629-08-3	Not Detected	6 ppm	TIC	X	
40 2-Methylene butanenitrile	1647-11-6	Not Detected	0.3 ppm	TIC	X	
41 2,4-Pentadienenitrile	1615-70-9	Not Detected	0.3 ppm	TIC	X	

Table 1. (continued)

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL ¹ (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Amines						
42 Ethylamine	75-04-7	0.0049 ppm	5 ppm	0.098%	X	
Nitrosamines						
43 N-Nitrosodimethylamine	62-75-9	2.80 ppb	0.3 ppb	11.2%		Up to 932% of OEL for inlet values. All outlets <644%.
44 N-Nitrosodiethylamine	55-18-5	0.02 ppb	0.1 ppb	23.2%	X	All inlet and outlet values <DL (23.2% of OEL)
45 N-Nitrosomethylethylamine	10595-95-6	0.05 ppb	0.3 ppb	8.95%		Up to 15.5% of OEL for inlet values. All outlets <9.0%.
46 N-Nitrosomorpholine	59-89-2	0.09 ppb	0.6 ppb	3.40%		Up to 14.4% of OEL for inlet values. All outlets <7.9%.
Organophosphates						
47 Tributyl phosphate	126-73-8	0.16 ppb	200 ppb	0.078%	X	
48 Dibutyl butylphosphonate	78-46-6	0.11 ppb	7 ppb	1.51%	X	
Halogenated						
49 Chlorinated Biphenyls	Varies	Not Detected	1 mg/m ³	TIC	X	
50 2-Fluoropropene	1184-60-7	Not Detected	0.1 ppm	TIC	X	
Pyridines						
51 Pyridine	110-86-1	2.40 ppb	1000 ppb	0.036%		Up to 0.2% of OEL for inlet values. All outlets <0.09%.
52 2,4-Dimethylpyridine	108-47-4	0.22 ppb	500 ppb	0.046%	X	
Organonitrites						
53 Methyl nitrite	624-91-9	Not Detected	0.1 ppm	TIC	X	
54 Butyl nitrite	544-16-1	Not Detected	0.1 ppm	TIC	X	
Organonitrates						
55 Butyl nitrate	928-45-0	Not Detected	2.5 ppm	TIC	X	
56 1,4-Butanediol, dinitrate	3457-91-8	Not Detected	0.05 ppm	TIC	X	
57 2-Nitro-2-methylpropane	594-70-7	Not Detected	0.3 ppm	TIC	X	
58 1,2,3-Propanetriol, 1,3-dinitrate	623-87-0	Not Detected	0.05 ppm	TIC	X	
Isocyanates						
59 Methyl Isocyanate	624-83-9	Not Detected	20 ppb	TIC	X	

5.0 Plots of COPCs with Significant Detected Values

Of the 59 COPCs in Table 1, only two COPCs, ammonia and NDMA, had measurements that exceeded their OELs. Eight additional COPCs—mercury, formaldehyde, furan, 2,3-dihydrofuran, acetonitrile, NDEA, NMEA, and N-Nitrosomorpholine—had measured concentrations or DLs less than their corresponding OELs but greater than 10% (see COPCs highlighted in yellow in Table 1). This section provides more detail on these 10 COPCs, along with plots of the corresponding data. Note that Appendix E shows plots and descriptions for other COPCs with measured concentrations or DLs between 2% and 10% of their corresponding OELs.

Ammonia (see Figure 1) – The DL for ammonia corresponds to approximately 2.6% of the OEL. Inlet concentrations were measured every two hours throughout the testing period. The highest measured value recorded for the SCOTT 7422-SD1 cartridge test was 801% of the OEL. Outlet concentrations for this cartridge exceeded 10% of the OEL after 2 hours of testing, specifically reaching 168% within 4 hours and remained above 340% of the OEL for all subsequent sample times. The outlet concentrations measured for the SCOTT 7422-SC1 cartridge also exceeded 10% of the OEL after 4 hours of testing, specifically exceeding 152% of the OEL. These measurements clearly indicate breakthrough after 2 hours for both the cartridges tested.

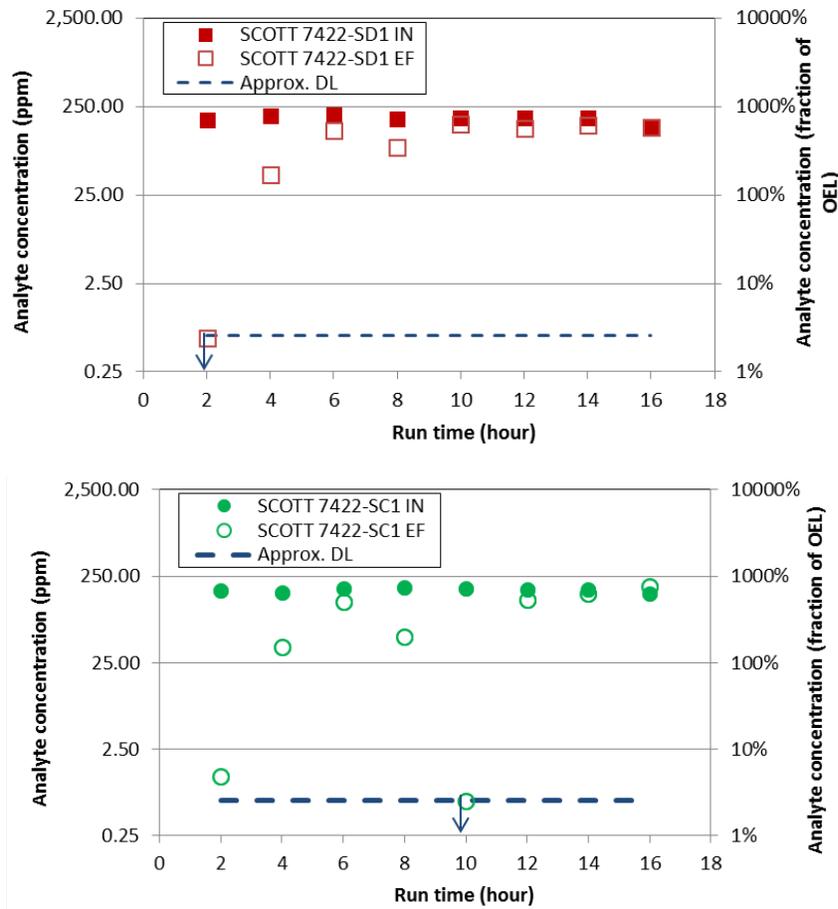


Figure 1. Plot of Measured Ammonia Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

Mercury (see Figure 2) – The DL for mercury corresponds to approximately 7.3% of the OEL. Inlet concentrations for mercury measured throughout the testing period for both cartridges remained relatively similar, with the highest value recorded at 24% of the OEL for SCOTT 7422-SD1. All measured outlet concentrations for cartridge SCOTT 7422-SD1 were below the DL. All measured outlet concentrations for cartridge SCOTT 7422-SC1 were also below the DL, except for the last outlet concentration at 16% of the OEL, indicating potential breakthrough of mercury on that cartridge at the end of the testing period. Note that for this higher outlet concentration, the corresponding inlet was the lowest of any inlet measurement for mercury. This could indicate a sampling or analysis error due to swapped inlet and outlet sorbent tube samples for the 16-hour data set, although this could not be confirmed.

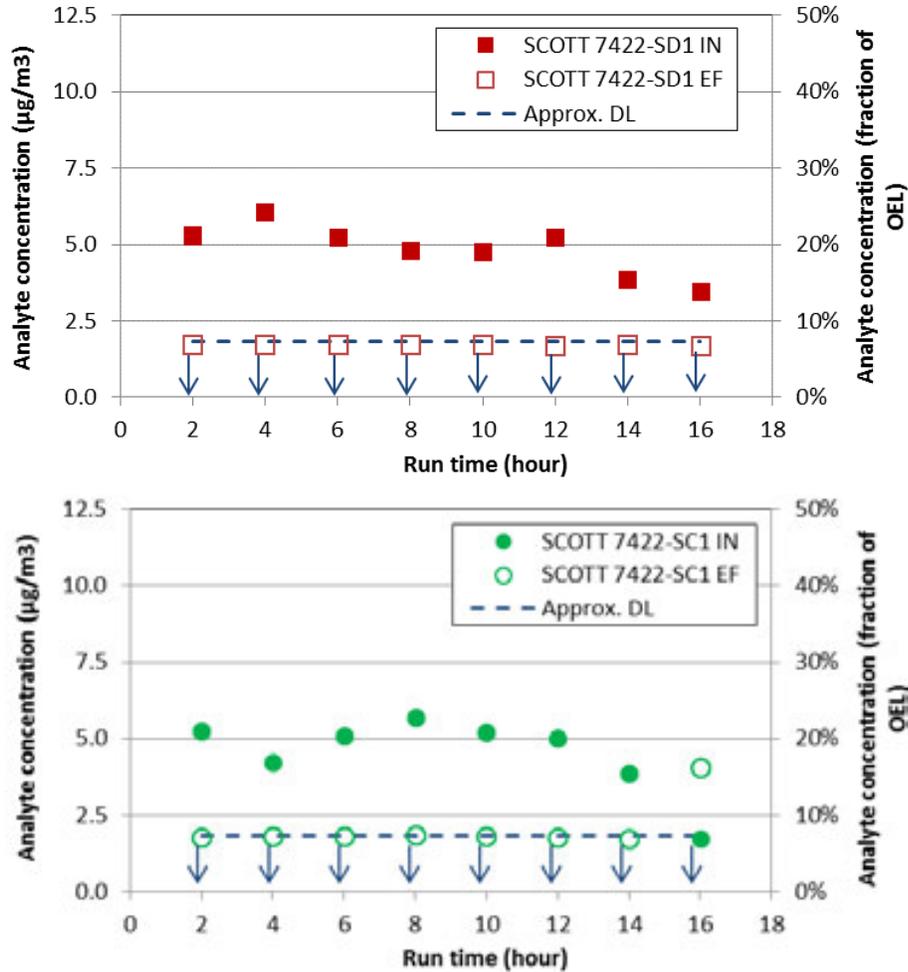


Figure 2. Plot of Measured Mercury Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

Formaldehyde (see Figure 3) – The DL for formaldehyde corresponds to approximately 0.6% of its OEL. The inlet concentrations measured throughout the testing period for both cartridges were higher than DLs for several early measurements, but were at the DL for the last three. The outlet measurements for both cartridges were all less than the DLs, with the exception of a single measurement (the 4-hour data point for the SCOTT 7422-SD1 cartridge) that was slightly above the DL. Based on this data there is no evidence of breakthrough over the measured time period for either cartridge tested.

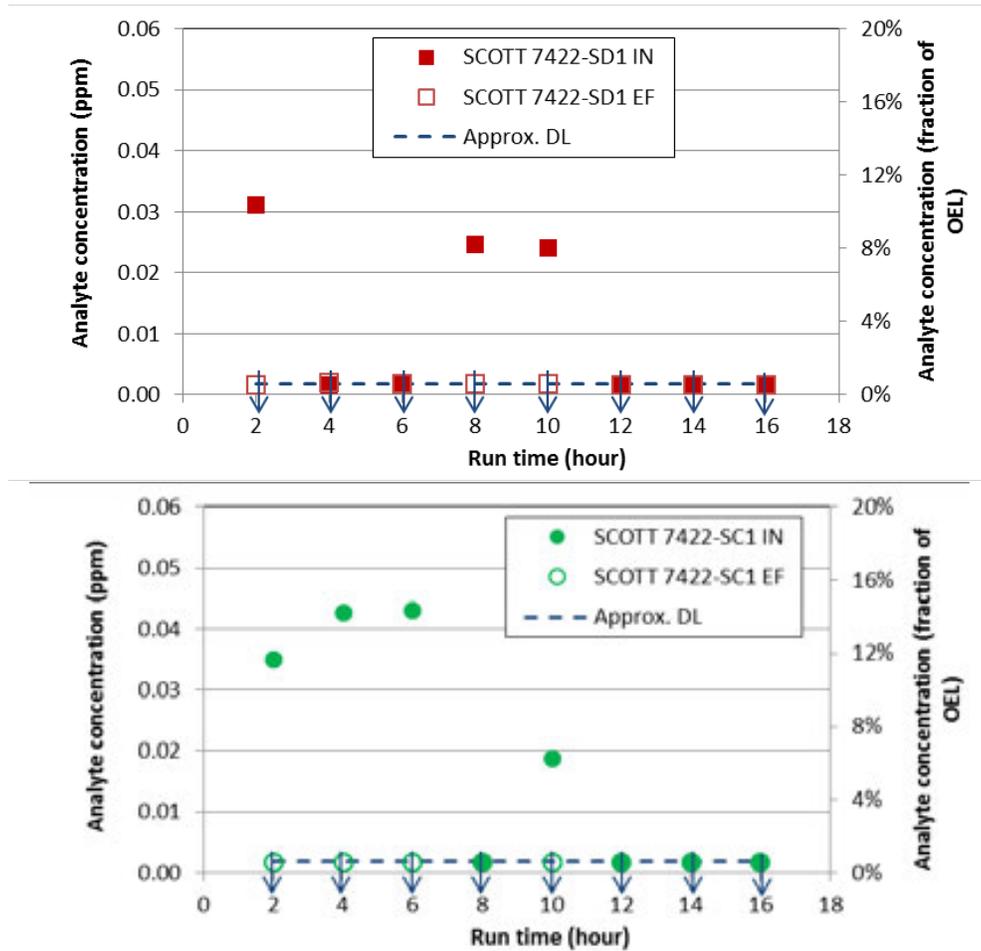


Figure 3. Plot of Measured Formaldehyde Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

Furan (see Figure 4) – The DL for furan corresponds to approximately 3.6% of its OEL. All inlet and outlet values measured for SCOTT 7422-SD1 cartridge were less than 10% of the OEL, specifically less than the DL.¹ The inlet concentrations measured for SCOTT 7422-SC1 cartridge were higher than 10% of the OEL earlier in the testing but decreased to the DL by the end of testing. The second inlet measurement for SCOTT 7422-SC1 cartridge represented the highest concentration at 15% of the OEL. All of the measured outlet concentrations were below the DL, except for the last outlet concentration for SCOTT 7422-SC1 at 6.2 % of the OEL. This single measurement may indicate the beginning of breakthrough for furan on the SCOTT 7422-SC1 cartridge. However, this may also be a result of sampling error given that the flowrate through the sample tube for this data point was flagged as suspect. There was no evidence of breakthrough for the SCOTT 7422-SD1 cartridge.

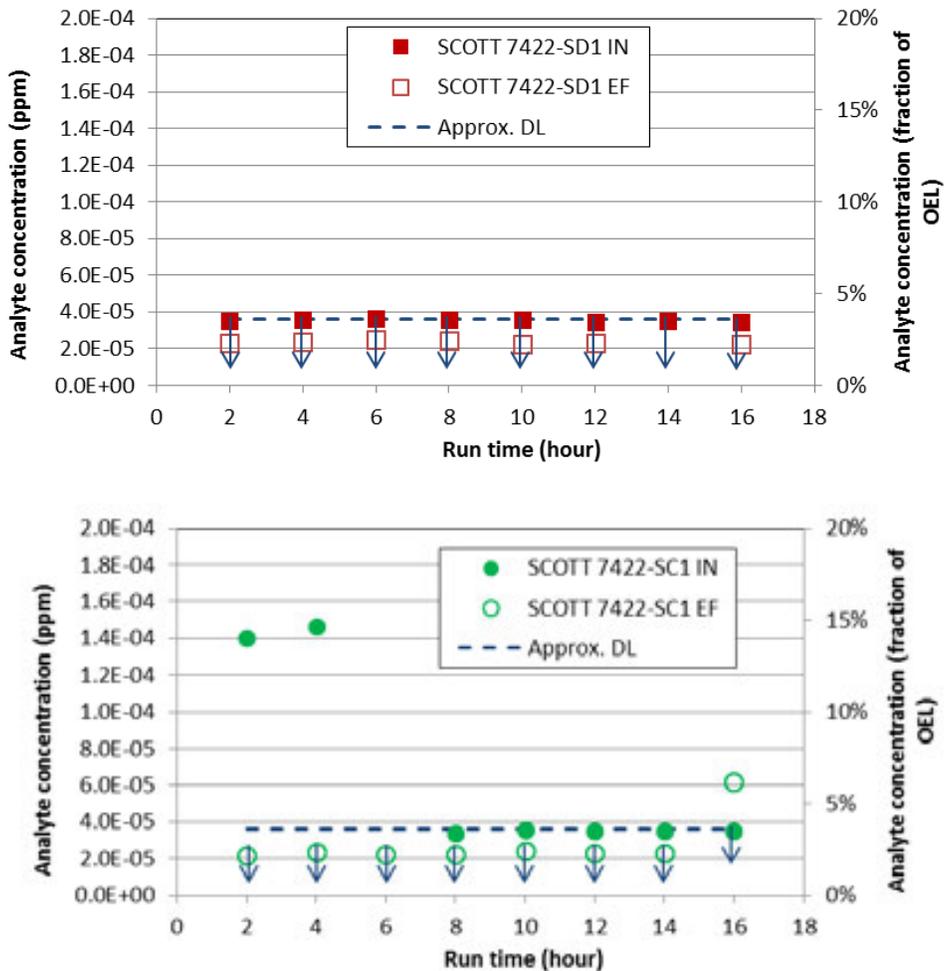


Figure 4. Plot of Measured Furan Concentrations before the Inlets and after the Outlets of the two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

¹ Inlet concentration results for furan and all substituted furans for the 14-hour period (SCOTT 7422-SD1) and 6-hour period (SCOTT 7422-SC1) were not recorded because of either a broken sorbent tube or analytical laboratory malfunction.

2,3-Dihydrofuran (see Figure 5) – The DL for 2,3-dihydrofuran corresponds to approximately 2.1% of its OEL. The inlet concentrations measured for the SCOTT 7422-SD1 cartridge were at or above 20% of the OEL earlier in the testing but decreased to near the DL by the end of testing. All of the measured outlet concentrations for the SCOTT 7422-SD1 cartridge were below the DL, thus there is no evidence of breakthrough over the measured time period for that cartridge. In the case of SCOTT 7422-SC1 cartridge, the inlet concentrations were higher than 20% for two measurements but all outlet concentrations were less than the DL, except for the last outlet concentration at 10.4% of the OEL. This single measurement may indicate the beginning of breakthrough for 2,3-dihydrofuran on the SCOTT 7422-SC1 cartridge. However, this may also be a result of sampling error given that the flowrate through the sample tube for this data point was flagged as suspect.

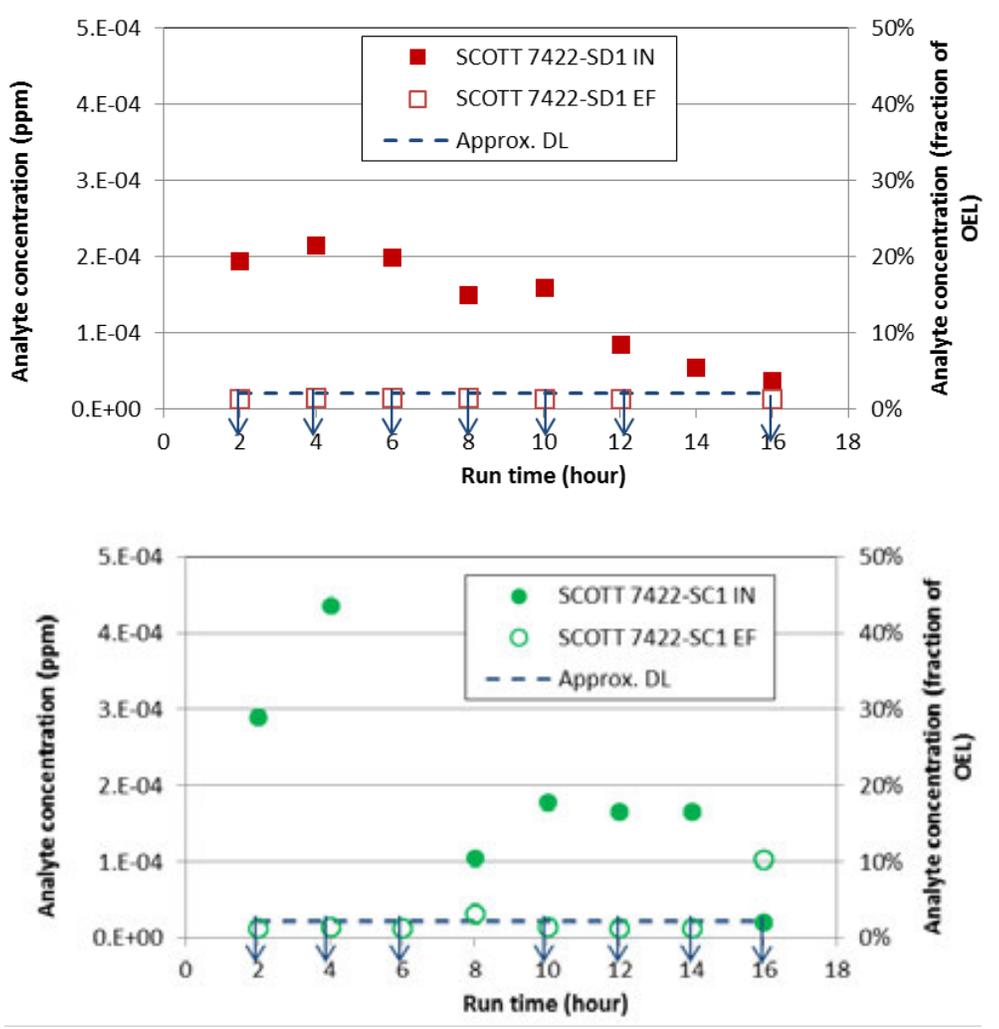


Figure 5. Plot of Measured 2,3-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

Acetonitrile (see Figure 6) – The DL for acetonitrile corresponds to approximately 0.002% of the OEL. The inlet concentrations for SCOTT 7422-SD1 were higher than DL, but less than 0.5% of the OEL. The inlet concentrations for SCOTT 7422-SC1 were higher than the concentrations measured for SCOTT-7422-SD1, but less than 2.6% of the OEL. All outlet measurements for the two cartridges were less than 1% of the OEL, except for one measurement (at 8 hours) on the SCOTT 7422-SC1 cartridge which was 21% of the OEL. Analytical error or flow rate measurement error is suspected in this data point since it is greatly different from the surrounding values. Despite the other outlet measurements being greater than the DL, the data does not support evidence of breakthrough over the measured time period for either cartridge tested.

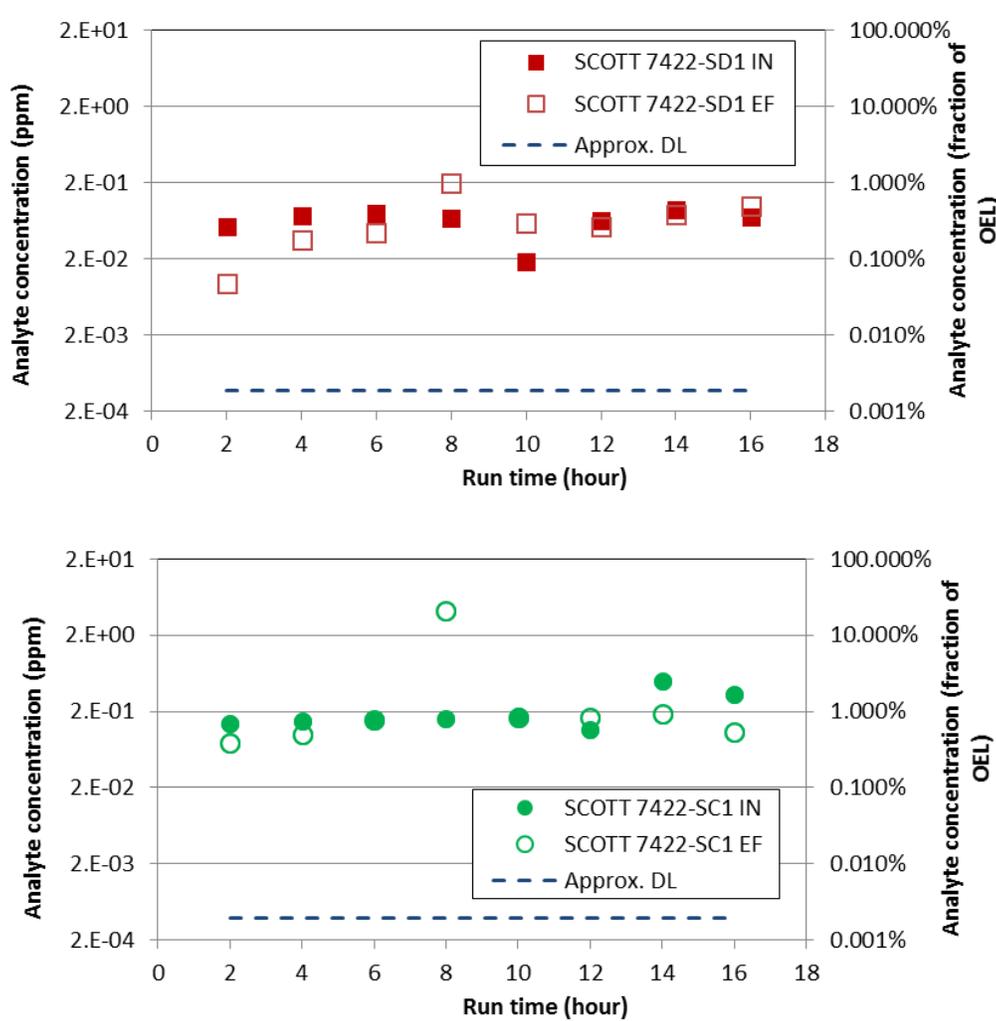


Figure 6. Plot of Measured Acetonitrile Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

N-Nitrosodimethylamine (see Figure 7) – The DL for NDMA corresponds to approximately 11% of the OEL. Inlet measurements for both cartridge tests were significantly greater than the DL, ranging between 420% and 932% of the OEL. All of the outlet measurements for both respirator cartridges were below the analytical DL, except for the last outlet concentration for cartridge SCOTT 7422-SC1 at 644% of the OEL, indicating potential breakthrough of NDMA at the end of the testing period. Note that for this higher outlet concentration, the corresponding inlet was the lowest of any inlet measurement for NDMA. This could indicate a sampling or analysis error due to swapped inlet and outlet sorbent tube samples for the 16-hour data set, although this could not be confirmed. Thus, there was no evidence of breakthrough for the SCOTT 7422-SD1 cartridge and possible breakthrough for the SCOTT 7422-SC1 cartridge, but based on a highly-suspect data point.

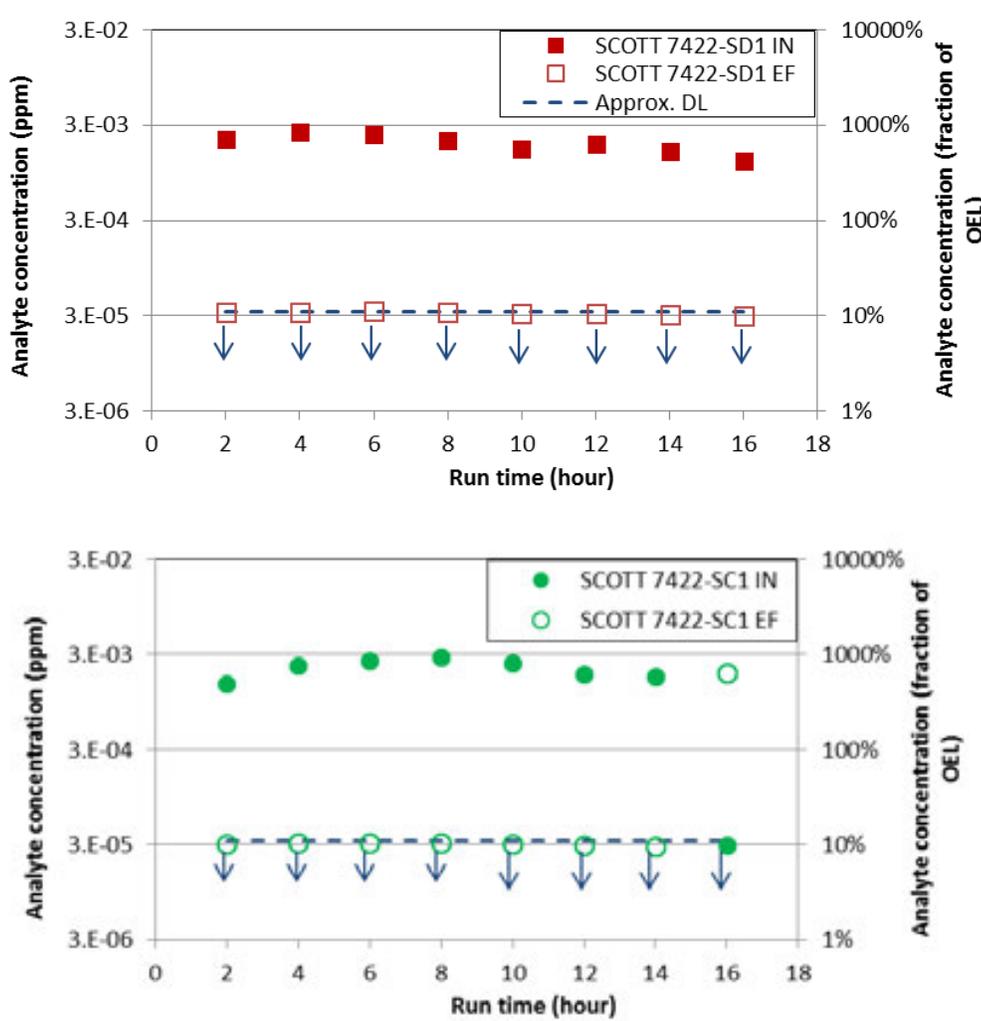


Figure 7. Plot of Measured N-Nitrosodimethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

N-Nitrosodiethylamine (see Figure 8) – The DL for NDEA corresponds to approximately 23% of the OEL. All inlet and outlet measurements for both respirator cartridges were less than the analytical DL. Despite the DL being greater than 10% of the OEL, the outlet measurements do not indicate breakthrough over the measured time period for either cartridge tested.

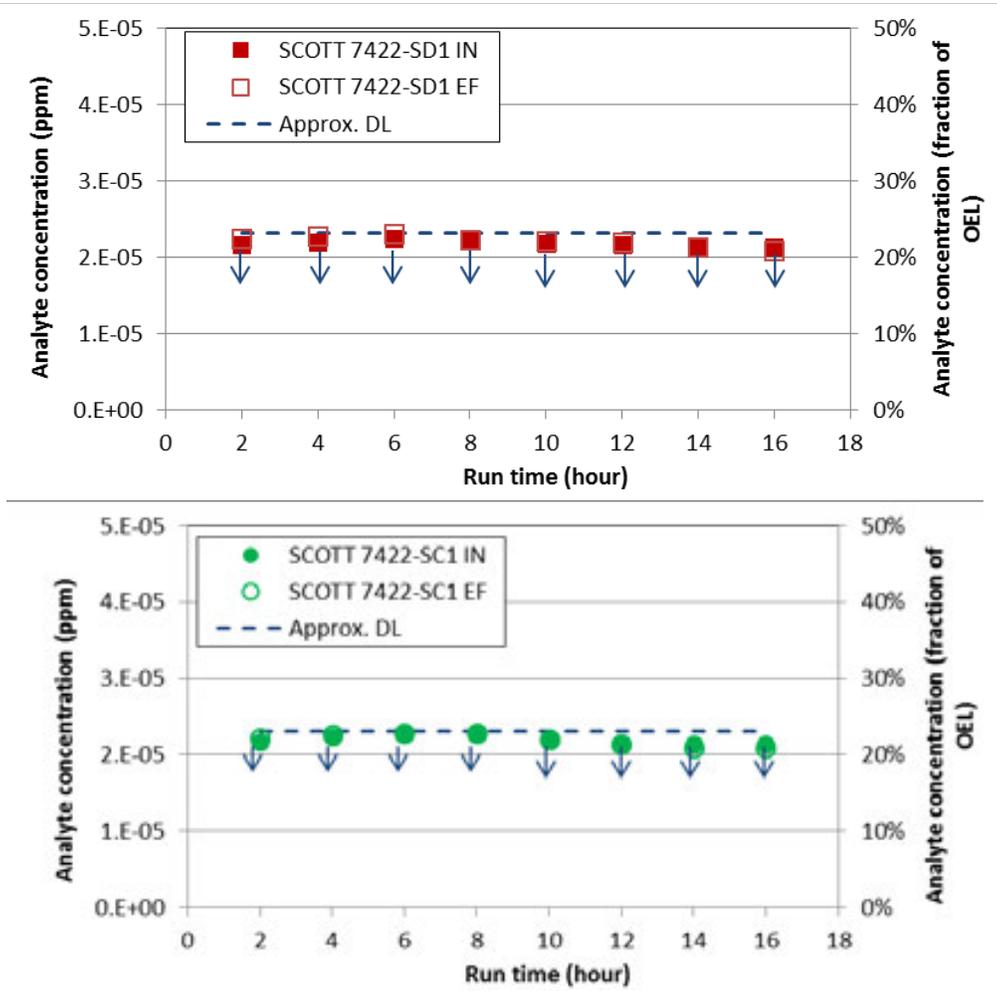


Figure 8. Plot of Measured N-Nitrosodiethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

N-Nitrosomethylethylamine (see Figure 9) – The DL for NMEA corresponds to approximately 9% of the OEL. The inlet concentrations measured throughout the testing period for both cartridges were higher than the DL (as high as 15.5% of the OEL) earlier in the testing for both cartridges but decreased to the DL by the end of testing. All outlet measurements for both respirator cartridges were less than the analytical DL, except for the last outlet concentration for cartridge SCOTT 7422-SC1 at 8% of the OEL. This measurement is from the same suspect sample noted for NDMA above, and could indicate a sampling or analysis error due to swapped inlet and outlet sorbent tube samples for the 16-hour data set. Regardless, all outlet concentrations were below 10% of the OEL, thus there is no indication of breakthrough over the measured time period for either cartridge tested.

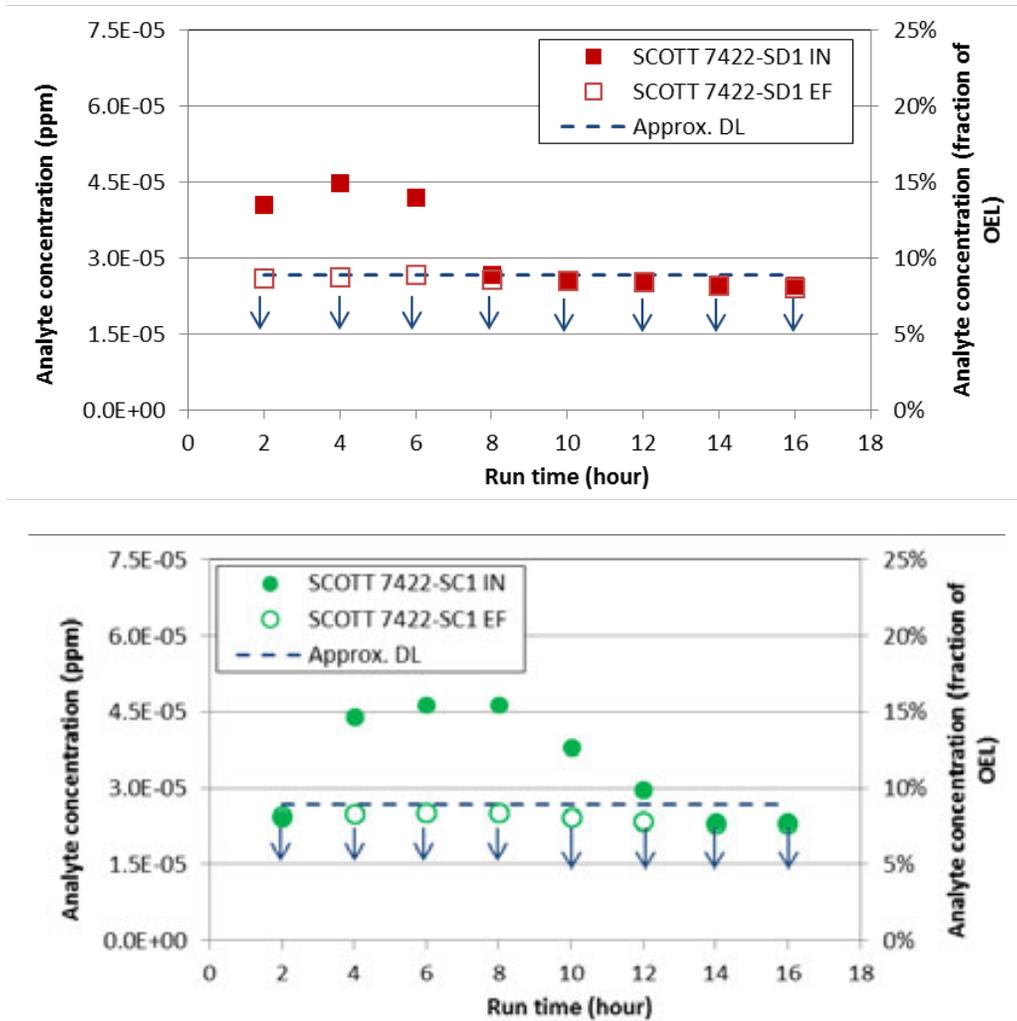


Figure 9. Plot of Measured N-Nitrosomethylethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

N-Nitrosomorpholine (see Figure 10) – The DL for N-Nitrosomorpholine corresponds to approximately 3.4% of the OEL. The inlet concentrations measured throughout the testing period for both cartridges were higher than the DL (as high as 14.4% of the OEL) early in the testing but decreased to the DL by the end of testing. All outlet measurements for both respirator cartridges were less than the DL, except for the last outlet concentration for the SCOTT 7422-SC1 cartridge, which was 7.9% of the OEL. This could indicate the beginning of cartridge breakthrough at the end of the testing period; however, this measurement is consistent with the NDMA result for the same sample period, where the inlet and outlet values were suspected to have been swapped. Based on the information above, there is no indication of breakthrough for the SCOTT 7422-SD1 cartridge over the measured time period, and no indication of breakthrough for the SCOTT 7422-SC1 cartridge over 10% of the OEL. Further, the early indication of breakthrough for the SCOTT 7422-SC1 cartridge could have been due to a sample error.

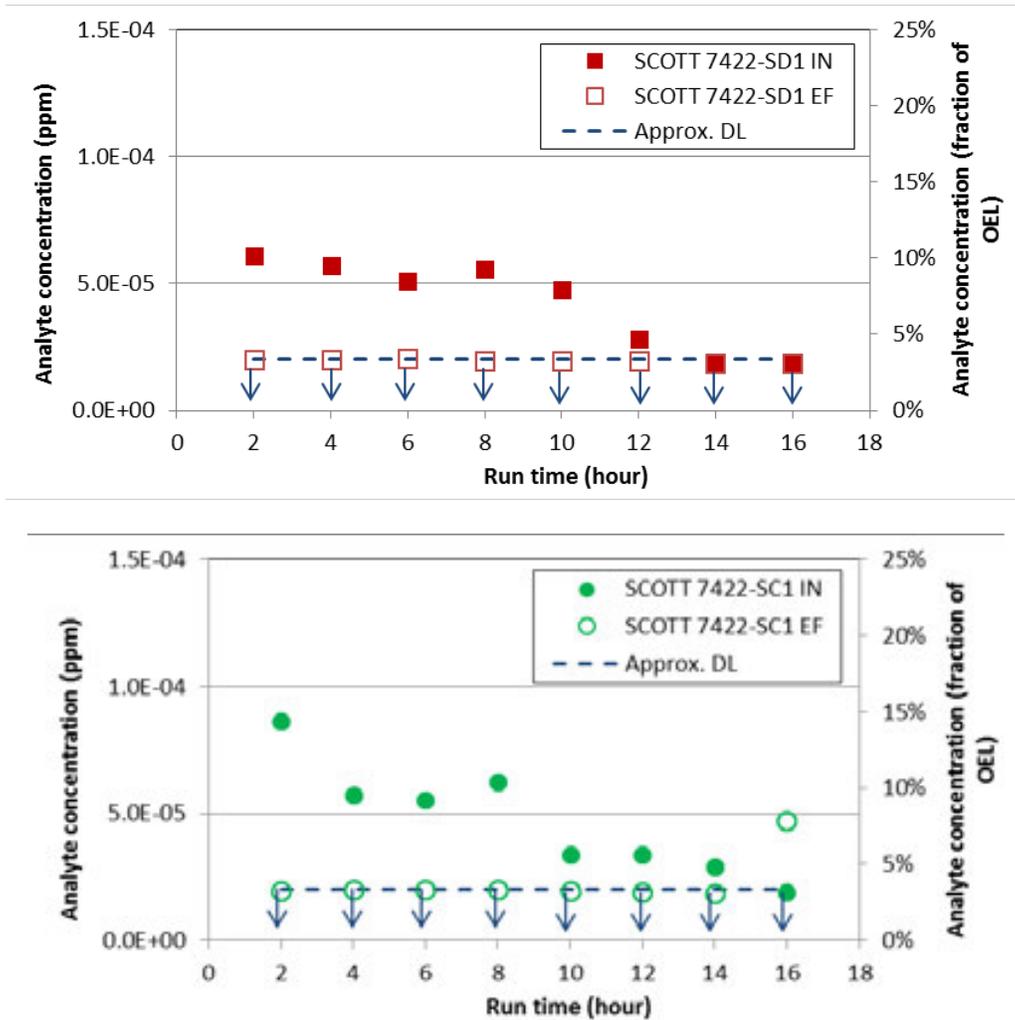


Figure 10. Plot of Measured N-Nitrosomorpholine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet points not visible are obscured by the inlet data points.

6.0 Factoring in Historical Concentration Data

To fully assess respirator performance for COPC removal, historical data were reviewed to determine if the recent inlet measurements were representative of typical values. Historical AX-101 headspace data from TWINS and the Site-Wide Industrial Hygiene Database were used for this assessment.

A complete table with historical and measured results for all 59 COPCs and their boiling point data is shown in Appendix F, along with a description of the historic source data that were used. Table 2 shows a subset of data for COPCs with boiling points below 70°C because a low boiling point can be a general indicator of poor adsorption on solid media.

In total, five COPCs—ammonia, mercury, formaldehyde, 2-pentylfuran, and NDMA—have been previously measured in the AX-101 headspace at concentrations above 10% of their respective OELs and above analytical RLs. Of these five COPCs:

- Mercury maximum and average inlet concentrations measured in this cartridge study were generally consistent¹ with historic headspace measurements.
- Ammonia and NDMA maximum inlet concentrations measured in this cartridge study were approximately 110% and 75% higher, respectively than the historic maximum headspace measurements. Average cartridge inlet concentrations were even higher (i.e., 466% higher for ammonia and 240% higher for NDMA) than historic headspace average measurements.
- Most of the historic headspace data for furan and substituted furans reported measured concentrations less than RLs. Only 2-pentylfuran reported higher concentrations from pre-2006 TWINS headspace data, with average and maximum results of 160% and 274% of the OEL, respectively. In contrast, the average and maximum inlet concentrations from cartridge testing measured approximately 4.4 and 6.3% of the OEL, respectively, which are substantially lower than older historic data, but generally consistent with the more recent results that are less than the RL.
- Formaldehyde concentrations have been measured in previous headspace samples at an average of 12% of the OEL. The average inlet concentration observed in this cartridge study was approximately 60% lower, at 4.9% of the OEL. The maximum inlet concentration of 14.4% of the OEL was comparable to the historic headspace average.

In addition to the five COPCs listed above with historic concentrations exceeding 10% of their OELs, four additional COPCs were detected in this study at inlet concentrations exceeding 10% of their OELs. Furan, 2,3-dihydrofuran, NMEA, and N-Nitrosomorpholine maximum inlet concentrations in the current study exceeded the historic headspace measurements, which were all less than their RLs.

¹ Inlet concentrations were considered generally consistent if they were within a factor of 2 (–50% to +100%) of historic maximum or average headspace measurements.

Table 2. Historical AX-101 Headspace Data for COPCs with Boiling Points less than 70°C (158°F)

COPC Number and Name	CAS Number	Boiling Point (°F)	Occupational Exposure Limit (OEL)	Historical Measurements ¹						Measurements in this Study	
				# of Values	Max. Value	Average Value	Max. Value (% OEL)	Average Value (% OEL)	Max Inlet Value (% OEL)	Highest Value from Respirator Outlet (% OEL)	
2 Nitrous Oxide	10024-97-2	-127	50 ppm	1	<RL	<RL	<RL	<RL	Not Measured		
1 Ammonia	7664-41-7	-28	25 ppm	3	93.9	31.6*	376%	126%*	801%	767%	
50 2-Fluoropropene	1184-60-7	-11	0.1 ppm	1	<RL	<RL	<RL	<RL	Not Detected - TIC		
14 Formaldehyde	50-00-0	-6	0.3 ppm	5	<RL	0.0353*	<RL	12%*	14.4%	0.67%	
53 Methyl nitrite	624-91-9	10	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC		
4 1,3-Butadiene	106-99-0	24	1 ppm	5	<RL	<RL	<RL	<RL	2.0% (RL) ²	2.1% (RL)	
42 Ethylamine	75-04-7	62	5 ppm	2	<RL	<RL	<RL	<RL	0.097% (RL)	0.098% (RL)	
15 Acetaldehyde	75-07-0	69	25 ppm	2	<RL	<RL	<RL	<RL	0.42%	0.32%	
19 Furan	110-00-9	88	1 ppb	5	<RL	<RL	<RL	<RL	14.7%	6.2%	
59 Methyl Isocyanate	624-83-9	103	0.02 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC		
20 2,3-Dihydrofuran	1191-99-7	130	1 ppb	2	<RL	<RL	<RL	<RL	43.6%	10.4%	
22 2-Methylfuran	534-22-5	147	1 ppb	4	<RL	<RL	<RL	<RL	3.7% (DL)	2.6% (DL)	
8 Methanol	67-56-1	148	200 ppm	0	n/a	n/a	n/a	n/a	Not Measured		
21 2,5-Dihydrofuran	1708-29-8	152	1 ppb	5	<RL	<RL	<RL	<RL	3.1% (DL)	4.0%	

¹ Historical data from TWINS industrial hygiene vapor database and SWIH database; see text for links and dates of queries. Values in italics include those data plus data from the TWINS headspace database, all samples earlier than May 2005.

* indicates that the value of the average would differ by a factor of 2 or more (in either direction) if non-reports were excluded.

"< RL" indicates that all pertinent measurements of the analyte were less than the reporting level

Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene) were included.

Italics mean that the pre-2006 TWINS headspace data were also included.

"n/a" indicates no historical data was found in the databases

² "(DL)" indicates value represents approximate detection limit (DL), which is calculated using the reported detection limit (or reporting limit - RL, where noted) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube.

7.0 Conclusions

Testing was conducted from September 9–11, 2016, using headspace vapors from Hanford tank AX-101 under static conditions fed to a respirator cartridge test stand developed by WRPS in collaboration with HiLine Engineering (Richland, Washington). Multipurpose respirator cartridges, SCOTT 7422-SD1 and SCOTT 7422-SC1 (SCOTT Safety, Monroe, North Carolina) were assessed on separate days. Sample media (sorbent tubes) were used to collect samples of the vapor stream entering and exiting the respirator cartridge, and were subsequently analyzed for COPC concentrations. PNNL was tasked with conducting an independent analysis of the analytical results and making recommendations based on the results for respiratory cartridge performance and service life.

The AX-101 data are expected to provide conservatively high COPC concentrations compared to the ambient concentrations inside and outside the tank farm. Further, the flow rate through each respirator cartridge was maintained conservatively high compared to normal human breathing rates. The average temperatures of headspace vapor stream ranged from 54 to 93°F, and the average relative humidity ranged from 42 to 85%. The inlet concentrations measured are shown in Table 1. Thus, any conclusions on respirator cartridge performance pertain to the above-stated conditions.

The key conclusions from the analysis are described below:

- Based on measured cartridge inlet vapor concentrations from tank AX-101, only two COPCs, ammonia and NDMA, exceeded their corresponding OELs.¹ Six COPCs—mercury, formaldehyde, furan, 2,3-dihydrofuran, NMEA, and N-Nitrosomorpholine—reported one or more inlet concentration measurements greater than 10% of their corresponding OELs, but less than 100% of their OELs. Inlet and outlet measurements for all other COPCs did not exceed 10% of their OELs, except for acetonitrile which had a single outlet measurement at 21% of its OEL and NDEA which had inlet and outlet measurements below the DL of approximately 23% of the OEL.
- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 801% of the OEL (200 ppm) during the testing, which was higher than average and maximum historical headspace measurements. For both cartridges tested, ammonia appeared to breakthrough, above 10% of its OEL, after 2 hours.
- Cartridge inlet concentration measurements for NDMA reached 932% of its OEL (2.8 ppb), which was higher than average and maximum historical headspace concentrations. All outlet concentrations were less than the analytical RL of approximately 11% of the OEL, except for the final measurement at 16 hours on SCOTT 7422-SC1, which indicated a concentration equivalent to the 14-hour inlet concentration. Sampling error likely is the reason for this suspect data point, possibly the result of swapping the inlet and outlet samples. The other nitrosamines indicated a similar sample issue. There is no indication of breakthrough for SCOTT 7422-SD1, and the suspect data point for SCOTT 7422-SC1 provides no compelling indication of breakthrough.

¹ Occupational Exposure Limits accepted for Hanford Tank Farm use are based on OELs established by a U.S. governmental agency or national professional organization (e.g., OSHA, National Institute for Occupational Safety and Health, American Conference of Governmental Industrial Hygienists), or if no U.S. OEL exists, standard toxicological practices are applied to develop OELs using non-U.S. exposure limits, other established OELs for chemical surrogates when available, or other standard procedures. The OEL for NDMA was established in 2005 based on the MAK (Maximale Arbeitsplatzkonzentration) Commission standard adopted in Europe.

- Mercury inlet concentrations measured throughout the testing period for both cartridges remained relatively constant, up to 24% of the OEL, which is comparable to historic AX-101 measurements. Respirator outlet concentrations for mercury were all below the DL, except for the last outlet concentration for SCOTT 7422-SC1 at 16% of the OEL, indicating potential breakthrough after 14 hours of testing.
- Formaldehyde inlet concentrations reached a maximum early in the test period of approximately 10% and 14% for SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges, respectively, and then declined to less than the DL. All outlet measurements were less than or slightly above the DL, indicating no breakthrough during the test period.
- The respirator cartridge inlet concentrations for both furan and 2,3-dihydrofuran varied from a maximum of 15% and 44% of their OELs, respectively, to less than DLs. All historic data for these two furan compounds in AX-101 were less than their RLs. All outlet concentrations for both cartridges were less than DLs, with the exception of the 16 hour measurement on the SCOTT 7422-SC1 cartridge for both furan and 2,3-dihydrofuran, which showed detectable concentrations of 6.2% and 10% of the OELs, respectively. These data indicate the potential that breakthrough initiated after 14 hours for the SCOTT 7422-SC1 cartridge; however, this data point was flagged as having a flow issue that could have contributed to data error.
- A single acetonitrile outlet concentration measurement reached approximately 20.8% of its OEL for the SCOTT 7422-SC1 cartridge test at 8 hours. The high value could either be due to an error in the single concentration measurement or an error in handling the sample. All other inlet and outlet measurements for these COPCs never exceeded 10% of the OEL, specifically less than 2.6%, indicating no breakthrough.
- Several respirator inlet concentration measurements for NMEA and N-Nitrosomorpholine were slightly above their DLs, but less than 18% and 14%, respectively. All outlet concentrations were less than the DLs, except for the final measurement at 16 hours on SCOTT 7422-SC1 that showed an elevated outlet concentration more consistent with preceding inlet concentrations at 14 hours. Sampling error is suspected in this case, possibly caused by swapping of the inlet and outlet samples. There is no indication of breakthrough for either cartridge at or above the 10% of OEL limit.

8.0 Recommendations

- Based on the measurements taken for this study, breakthrough occurred early in the test sequence for ammonia. Ammonia breakthrough occurred after 2 hours for both cartridges (SCOTT 7422-SD1 and SCOTT 7422-SC1). This experimental result supports a 2-hour service life for the use of SCOTT 7422-SC1 and 7422-SD1 cartridges in APRs employed to protect workers at Hanford tank AX-101. However, the inlet ammonia concentrations are close to the upper limits recommended by the Centers for Disease Control and Prevention-National Institute for Occupational Safety and Health recommendations for APR use.¹ Additional respirator cartridge and respirator selection evaluations by Industrial Hygiene professionals are recommended to determine proper respiratory protection requirements. Variations in humidity, temperature, or cartridge inlet concentrations for any COPCs, compared to those measured in the current study, could impact the experiment-derived cartridge service life, especially if OEL thresholds are exceeded. Therefore, a 2-hour service life under the reported test conditions is recommended to inform an Industrial Hygiene determination of an appropriate respirator cartridge change-out schedule that would provide adequate worker protection.
- Additional recommendations related to NDMA and NDEA DLs, TICs, further data assessment, and future testing documented in PNNL-25860 for respirator cartridge testing on a slipstream from the Hanford AP tank exhaustor also are relevant to the AX-101 headspace. Future testing and multi-tank analysis of cartridge performance with a wider range of COPC concentrations and test conditions should help improve understanding of overall cartridge performance.

¹ *CDC-NIOSH Pocket Guide to Chemical Hazards – Ammonia*. Available at <https://www.cdc.gov/niosh/npg/npgd0028.html>.

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Appendix A

Description of Respirator Cartridge Testing Setup

Appendix A

Description of Respirator Cartridge Testing Setup

The respirator cartridge testing system was developed by Washington River Protection Solutions and HiLine Engineering as a means to comprehensively test respirator cartridge performance with actual Hanford tank headspace gases. The system was designed to draw vapors from a tank or exhauster and flow the vapors through the respirator cartridge being tested.[13,14] The test equipment allows for sampling the vapor stream both before and after the cartridge, so that performance for a given COPC can be quantified. Sorbent media tubes were used to capture the COPCs and other hazardous contaminants. After a given test segment, the sorbent tubes were removed and analyzed. Sampling of the exhaust gas was performed every 2 hours, but this timing can be modified as necessary.

Figure A.1 provides a general schematic diagram for the respirator cartridge test apparatus, and Figure A.2 shows photographs of the actual equipment. The test system operates using vacuum to draw tank gases/vapors into the unit so that the potential for leakage to atmosphere is minimized until the gases/vapors are under positive pressure downstream of the vacuum pumps. By the time gases reach the vacuum pump, the COPCs are essentially captured/removed by either the sorbent tubes or the respirator cartridge.[13,14]

Flows through the respirator cartridge and through each sorbent tube are set and controlled/maintained using manual flow control valves on the outlet of each rotameter, and rotameters were calibrated against DryCal primary flow calibrators before and after testing. All equipment connections were leak tested prior to initiation of the test. Temperature, relative humidity, and pressure of the inlet gas/vapor stream are monitored by calibrated instrumentation.

Using Industrial Hygiene-approved materials, cartridge test equipment was constructed so that it would not influence/interfere with vapor analysis. Stainless steel or Teflon tubing and fittings were incorporated into the design where possible because of their relatively inert nature to the vapors being analyzed. Limited portions of the assembly used acrylic, Viton, glass, and Masterflex C-flex tubing, which are commonly used for various vapor-sampling applications.

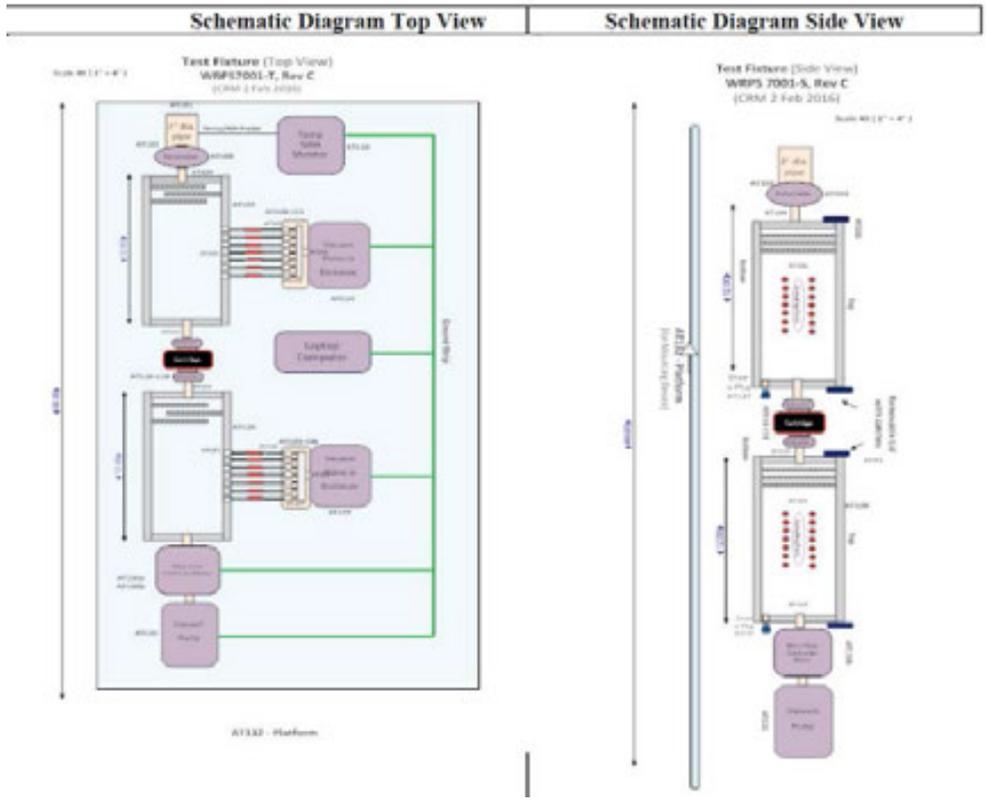


Figure A.1. General Schematic of Respirator Cartridge Test Apparatus

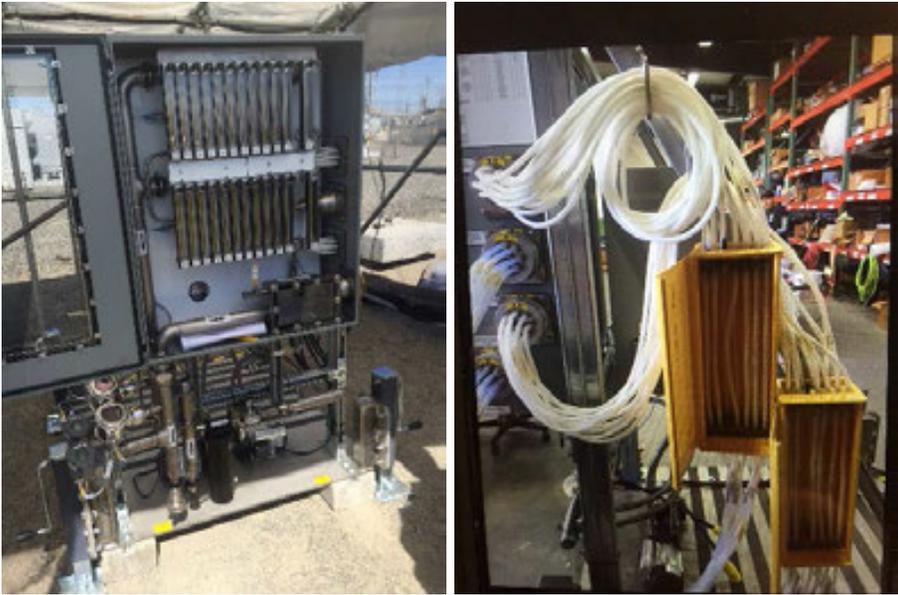


Figure A.2. Photographs of the Respirator Cartridge Test Equipment

Appendix B
Analytical Testing

Appendix B

Analytical Testing

The Sampling and Analysis Plan was developed under the direction and oversight of the Industrial Hygienist in conjunction with the Tank Farms Operations Contractor Retrieval and Closure, and Tank Farms Project and/or Production Operations Project Management Team.

Chemical compounds in the tank samples were analyzed using approved Industrial Hygiene methods or National Institute of Occupational Safety and Health-approved methods for quantifying hazardous airborne contaminants in the tank farm vapors. Methods including gas chromatography/mass spectrometry were used as the primary analytical techniques for identifying hazardous airborne contaminants (see Table B.1).

Table B.1. Information on Sorbent Media used to Capture Contaminants, Flow Rates Used, Analytical Methods to Extract Analyte from Sorbent Media, and Method Analysis to Quantify or Estimate the Concentrations of Hazardous Contaminant

Analyte	Media	Flow Rate (mL/min)	Analytical Method ^a	Instrument Used ^b	Analysis Location ^c
Acetonitrile	Charcoal Tube, SKC-226-09	100	NIOSH 1606	GC-FID	ALS
Acetonitrile	Carbotrap 300 TDU Tube	33	EPA TO-17 Modified	GC/MS	WRPS
Furans	TDU TenAX TA	33	EPA TO-17 Modified	GC/MS	WRPS
Semivolatile Organic Compounds	Carbotrap 150 TDU Tube	33	EPA TO-17 Modified	GC/MS	WRPS
Volatile Organic Compounds	Carbotrap 300 TDU tube	33	EPA TO-17 Modified	GC/MS	WRPS
Mercury	Anasorb C300, SKC-226-17-1A	250	NIOSH-6009	CVAA	WHL
Ammonia	Anasorb 747 (sulfuric acid), SKC-226-29	200	OSHA-ID-188	IC	WHL
1,3-butadiene	Charcoal, SKC-226-37, (Parts A and B)	200	NIOSH-1024	GC-FID	ALS
Aldehyde	DNPH Treated Silica Gel, SKC-226-119	200	EPA TO-11A	HPLC	ALS
Pyridine	Coconut Shell Charcoal, SKC-226-01 offsite	1000	NIOSH-1613	GC-FID	ALS

Analyte	Media	Flow Rate (mL/min)	Analytical Method^a	Instrument Used^b	Analysis Location^c
Nitrosamines	Thermosorb/N	2000	NIOSH-2522 Modified	GC-TEA	CBAL
Ethylamine	XAD-7 (NBD) Chloride), SKC 226-96	200	OSHA-ID-34, 36, 40, and 41	HPLC-UV	ALS

^a Analytical Method

NIOSH: National Institute of Occupation Safety and Health

EPA: U.S. Environmental Protection Agency

OSHA: Occupational Safety and Health Administration

^b Instrument Used

GC-FID: Gas Chromatography-Flame Ionization Detector

GC/MS: Gas Chromatography-Mass Spectrometry

CVAA: Cold Vapor Atomic Absorption

IC: Ion Chromatography

HPLC: High Performance Liquid Chromatography

GC-TEA: Gas Chromatography-Thermal Energy Analyzer

HPLC-UV: High Performance Liquid Chromatography-Ultraviolet Detector

^c Analysis Location

ALS: ALS Environmental Salt Lake City

WRPS-222S: Washington River Protection Solutions, Organic Studies Group

WHL-222S: Wastren Hanford Laboratory

CBAL: Columbia Basin Analytical Laboratory, part of the RJ Lee Group

Appendix C

Raw Analytical Data

Appendix C

Raw Analytical Data

Table of Contents

Description	C-2
Experiment parameters	C-4
Flow rates.....	C-4
Temperature, pressure and relative humidity.....	C-5
Raw analytical data	C-7
SVOC and SVOCTIC.....	C-7
VOC and VOCTIC.....	C-68
Furans.....	C-220
Amines.....	C-258
Acetonitrile.....	C-278
Mercury.....	C-296
Ammonia.....	C-314
Aldehydes.....	C-332
1, 3-Butadiene.....	C-365
Pyridines.....	C-397
Nitrosamines.....	C-415

Description

This appendix includes raw data of flow rate, temperature, pressure, and humidity, and analytical data for the AX-101 data set. Calculations using this data are given in Appendix D.

The raw analytical data is only given 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. The results were transferred into three rows in the spreadsheets. The first row contained the relevant information with the appropriate units. 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 given as '0.0.'

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 for a complete correlation of which Chemicals of Potential Concern used an RL or a DL). The WRPS laboratory provided a DL, in contrast to an RL. Neither RLs nor DLs were provided for tentatively identified compounds (TICs).

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 not provided.

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:

'BLANK' means measurements obtained from sorbent tubes that have not had any vapor stream passed through them. 'BASE' means measurements obtained for ambient air (fresh air vs. tank vapor) running through the test system before initiation of tank vapor testing.

'7837' designations correspond to testing with the SCOTT 7422-SD1 respirator cartridge, whereas '8068' designations correspond to testing with the SCOTT 7422-SC1 respirator cartridge.

Position designations 'A1' and 'A2' correspond to the respirator cartridge inlet and outlet measurements, respectively, at the 0- to 2-hour time intervals. Position designations 'B' through 'H' correspond to the subsequent 2-hour measurements for inlet (1) and outlet (2): B1/B2 (2 to 4 hours), C1/C2 (4 to 6 hours), D1/D2 (6 to 8 hours), E1/E2 (8 to 10 hours), F1/F2 (10 to 12 hours), G1/G2 (12 to 14 hours), and H1/H2 (14 to 16 hours).

The sample IDs embed the information given above. For example, sample ID 16-07837-5-A1 corresponds to the first cartridge survey (16-07837), sample line 5, and the first (0 to 2 hours) influent sample bundle (A1).

The flow rate passing through the respirator cartridge was approximately 30 L/min, while 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 in files 'AX Exhauster 9-9 through 9-10 Flow Rates.xlsx' for the first survey with SCOTT 7422-SD1 and 'AX Exhauster 9-10 through 9-11 Flow

Rates.xlsx' for the second survey with SCOTT 7422-SC1. The information is shown in the tables below. 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.

WRPS provided the temperature and humidity information in files 'AX Exhauster DRI 9-9 through 9-10.xls' and 'AX Exhauster DRI 9-10 through 9-11.xls.' The information is shown in the tables provided in this appendix. Note that the file names for flow rates and temperature and humidity information were mislabeled, referring to an AX "Exhauster" rather than "AX-101" tank headspace. 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 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 VOCs 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).

The raw analytical data for chemicals in each category are summarized together. Examples of chemicals in each category follow:

- SVOC (or SVOA): Biphenyl, Diethylphthalate, Tributyl phosphate, Dibutyl butylphosphonate, Dodecane, Hexadecane
- SVOCTIC (or SVOATIC): Undecane, Cyclotetrasiloxane, octamethyl, Decamethylcyclopentasiloxane, Dodecane,4,6-dimethyl
- VOC (or VOA): Acetone, Acetonitrile, Acetophenone, Benzene, Butanal,1-Butanol, Butanenitrile, 3-Buten-2-one, Cyclohexane, Decane, Ethanol, Ethylbenzene, Furan, Hexane, Hexanone, Methylene Chloride, Propanenitrile, Styrene, Tetrachloroethene, Toluene, Trichlorofluoromethane
- VOCTIC (or VOATIC): 2,6-Dimethyldecane, Decane, 2,3,5,8-tetramethyl-, Decane, 3,7-dimethyl-, Methenamine, Undecane, 2,6-dimethyl-
- Furans: 2,3-Dihydrofuran, 2-Pentylfuran, Furan, Tetrafulan
- Ethylamine (amines): Dimethylamine, Ethylamine, Methylamine
- Acetonitrile: Acetonitrile
- Mercury: Mercury
- Ammonia: Ammonia
- Aldehyde: Acetaldehyde, Acetone, Butyraldehyde, Formaldehyde, Hexanal, Propionaldehyde, Valeraldehyde
- 1,3 Butadiene: 1,3-Butadiene
- Pyridines: 2,4-Dimethylpyridine, Pyridine
- Nitrosamines: N-Nitrosodimethylamine.

SCOTT 7422-SD1 Cartridge (9/9/16 - 9/10/16) AX-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	4.04	4.07	3.84	3.82	3.80	3.80	3.75	3.77	3.64	3.71	3.72	3.67	3.71	3.87	3.91	3.88	4.14	3.90
VOC	B	4.20	3.89	3.87	3.64	4.00	3.58	3.49	3.62	3.68	3.65	3.94	3.73	3.94	3.73	4.01	3.88	3.93	3.93
Furans	C	4.14	6.08	3.78	5.83	3.73	5.54	3.68	5.38	3.70	5.47	3.72	5.91	3.87	5.83	3.81	5.93	3.89	5.91
Ethylamine	D	12.1	12.4	12.2	11.7	11.8	11.4	11.6	11.1	11.4	11.8	11.9	12.0	11.8	11.4	11.7	12.3	12.0	12.3
Acetonitrile	E	12.2	13.0	12.2	12.2	11.3	11.5	11.0	11.2	11.1	11.3	11.6	11.6	11.4	11.6	12.0	12.0	12.0	12.0
Mercury	F	29.4	29.4	30.0	28.6	28.0	29.1	27.5	28.8	28.8	28.9	28.8	28.7	29.1	29.5	29.4	29.1	29.8	29.4
Ammonia	G	24.2	24.8	24.0	23.6	23.5	23.3	23.3	22.9	22.9	22.6	23.6	23.0	23.4	23.2	23.7	23.4	23.9	23.4
Aldehyde	H	23.9	24.1	23.8	23.3	23.6	23.1	23.2	22.6	23.0	22.2	23.2	22.7	23.2	22.9	23.6	23.1	23.6	23.4
1,3-Butadiene	I	24.3	23.9	23.4	23.5	23.2	22.0	22.9	22.5	22.8	22.3	22.9	22.8	23.4	23.6	23.5	23.1	23.5	23.3
Pyridine	J	126	125	118	113	114	112	109	110	113	111	115	111	111	116	120	113	125	116
Nitrosamines	K	248	242	232	224	229	221	224	217	226	225	229	228	232	228	233	236	236	241

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	33.6	33.9	33.6	33.7	33.6	33.9	33.2	33.6	31.9	32.8	32.3	32.1	31.9	33.6	33.4	33.4	35.1	33.3
VOC	B	35.0	32.4	33.8	32.0	35.2	31.8	30.7	32.2	32.0	32.0	34.0	32.5	33.7	32.2	34.1	33.2	33.1	33.4
Furans	C	34.5	50.6	32.6	50.6	32.4	48.6	32.0	47.2	31.9	47.4	31.7	50.8	32.7	49.7	32.0	50.2	32.4	49.6
Ethylamine	D	101	103	105	101	102	100	101	96.7	98.0	102	101	103	99.4	96.8	97.5	104	99.1	103
Acetonitrile	E	102	108	105	106	98.4	101	95.7	98.1	95.0	98.1	98.6	100	96.3	98.4	101	101	100	101
Mercury	F	245	245	260	250	246	257	241	254	249	252	248	248	248	254	249	248	250	249
Ammonia	G	202	207	206	204	204	204	202	201	196	196	201	198	198	197	198	198	199	196
Aldehyde	H	199	201	207	205	208	205	204	200	200	195	201	197	199	197	200	198	199	199
1,3-Butadiene	I	202	199	203	206	203	195	200	198	197	195	196	197	199	202	198	196	197	197
Pyridine	J	1050	1045	1055	1020	1025	1015	980	1000	1005	995	1020	990	975	1025	1045	995	1080	1010
Nitrosamines	K	2070	2020	2035	1980	2030	1975	1985	1940	1985	1990	1995	1995	1995	1985	1995	2035	2000	2060

SCOTT 7422-SC1 Cartridge (9/10/16 - 9/11/16) AX-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	3.94	3.80	0.00	3.69	3.68	3.71	3.52	3.55	3.32	3.59	3.57	3.65	3.69	3.70	3.77	3.69	3.73	3.68
VOC	B	3.61	4.15	3.85	3.92	3.80	3.34	3.86	3.48	3.58	3.30	3.50	3.55	3.75	3.93	3.74	3.83	3.67	4.74
Furans	C	3.89	6.45	3.84	6.15	3.92	5.68	3.93	5.92	3.94	5.93	3.70	5.49	3.79	5.83	3.77	5.80	3.76	6.37
Ethylamine	D	12.9	12.9	12.5	11.9	11.2	11.0	11.2	11.0	11.2	11.0	11.2	11.1	11.4	11.3	11.4	11.3	11.5	11.3
Acetonitrile	E	12.6	13.4	12.6	11.9	11.1	11.7	11.2	11.7	11.4	11.6	11.3	11.3	11.4	11.4	11.4	11.3	11.4	11.2
Mercury	F	29.9	31.7	29.2	28.4	29.0	27.8	28.3	27.6	27.8	27.3	28.1	27.8	28.3	28.2	28.8	28.9	29.2	28.3
Ammonia	G	25.0	25.0	22.8	22.9	22.7	23.1	22.6	22.7	22.6	22.6	22.5	22.4	23.1	22.8	23.3	22.8	23.5	23.1
Aldehyde	H	24.7	25.4	23.2	23.1	22.8	23.2	22.6	21.8	22.2	21.6	22.1	21.9	22.8	22.5	23.0	22.6	22.7	22.8
1,3-Butadiene	I	24.4	25.0	23.3	23.1	23.4	22.7	23.1	22.5	22.6	22.2	22.4	22.4	22.8	22.4	23.4	22.7	22.9	23.0
Pyridine	J	130	127	120	117	113	114	112	114	112	113	114	113	113	113	114	115	114	118
Nitrosamines	K	230	243	220	215	214	211	209	209	209	210	219	217	224	224	224	228	224	228

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	32.9	31.6		33.0	33.3	33.8	32.3	32.8	30.4	33.1	32.0	33.0	32.5	32.9	33.1	32.6	32.6	32.5
VOC	B	30.1	34.6	34.0	34.9	34.3	30.3	35.2	32.0	32.7	30.3	31.2	32.0	33.0	34.8	32.7	33.7	32.0	41.6
Furans	C	32.4	53.8	33.5	54.1	34.9	51.0	35.4	53.7	35.5	53.9	32.6	48.8	32.9	51.0	32.5	50.4	32.3	55.3
Ethylamine	D	107	108	108	104	99.4	98.5	100	100	100	100	98.4	98.0	98.6	98.5	98.1	97.9	98.5	97.7
Acetonitrile	E	105	112	110	105	99.0	105	101	106	102	105	100	100	98.8	99.8	97.8	97.8	98.1	96.8
Mercury	F	249	265	257	252	260	251	257	252	252	250	249	249	247	249	250	253	253	247
Ammonia	G	208	208	199	201	202	207	203	206	203	204	198	199	200	199	201	198	202	200
Aldehyde	H	206	211	205	206	206	211	206	201	202	198	197	197	200	199	200	199	198	201
1,3-Butadiene	I	204	208	205	204	209	205	209	205	205	203	198	200	199	197	203	198	198	201
Pyridine	J	1080	1055	1085	1065	1040	1065	1045	1075	1045	1065	1040	1040	1015	1025	1020	1035	1015	1065
Nitrosamines	K	1915	2025	1955	1930	1945	1935	1915	1935	1915	1940	1965	1965	1985	1995	1970	2025	1960	2015

SCOTT 7422-SD1 Cartridge (9/9/16 - 9/10/16) AX-101 Headspace

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	42.7	83.8	66.7	59.3	65.6	77.5	74.1	72.2	84.5
Temperature	F	72.9	73.6	79	81.6	77.4	69.4	65.6	61.8	57.1
Pressure	Torr	745	739	738	737	736	737	736	735	736
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	42.2	63.8	57.9	64.3	77.51	77.8	77.2	84.9	85.2
Temperature	F	73.3	79.2	82.7	78.0	69.7	69.1	61.8	57.9	54.4
Pressure	Torr	744	738	737	736	736	736	735	735	735
NH3	ppm		99+	0						
VOC	ppm		10	0						

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	23.4	24.1	31.9	27.5	29.7	33.5	33.8	37.5	41.9
Temperature	F	73.6	73.1	80.5	84.1	79.0	70.0	66.2	63.2	57.6
Pressure	Torr	451	435	446	456	457	436	443	453	447
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	22.4	29.9	27.8	29.8	34.3	30.7	37.5	43.1	45.8
Temperature	F	76.2	82.7	85.3	80.6	71.5	69.7	63.2	58.4	54.9
Pressure	Torr	455	458	462	461	460	459	453	451	447
NH3	ppm		6	83+						
VOC	ppm		1.35	4.95						

SCOTT 7422-SC1 Cartridge (9/10/16 - 9/11/16) AX-101 Headspace

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	75.9	82.2	59.0	51.5	42.2	51.8	67.2	74.2	78.2
Temperature	F	59.5	71.5	85.6	91.0	93.3	85.8	74.8	70.5	69.0
Pressure	Torr	739	732	731	729	727	727	729	730	729
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	66.8	60.3	47.9	45.0	47.4	67.2	79.4	78.2	81.3
Temperature	F	69.4	84.7	90.6	93.4	89.6	75.2	70.9	69.0	67.9
Pressure	Torr	741	731	730	727	727	728	729	729	729
NH3	ppm		99+	99+	99+					
VOC	ppm		3.3	11.1	10+					

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	35.7	29.6	29.9	25.4	20.3	30.7	29.8	38.0	37.0
Temperature	F	59.5	71.2	87.6	92.8	98.2	78.4	77.0	71.4	69.8
Pressure	Torr	430	440	445	453	460	457	449	445	441
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	28.2	30.1	24.3	20.4	21.6	30.7	36.9	37.0	40.0
Temperature	F	69.6	87.6	84.1	100.0	95.4	78.4	72.0	69.8	69.2
Pressure	Torr	452	458	461	463	462	457	454	441	451
NH3	ppm		3.0	99+	99+					
VOC	ppm		3.6	4.3	10+					

John D. Jones
 10/20/16

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-BASE-EFF

Customer Sample ID: 16-07837-1-BASE-EFF

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T028731			8971-99-3	2,6,10-Trimethyldecane	NGS	110	<3.0	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T028731			85-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T028731			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T028731			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T028731			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T028731			84-96-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T028731			112-40-3	Dodecane	NGS	88	<0.60	37	n/a	n/a	n/a	n/a	0.55	n/a	
S16T028731			544-76-3	Hexadecane-	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T028731			829-80-4	Tetradecane	NGS	110	<3.9	5.1	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T028731			126-73-8	Tributyl phosphato	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T028731			829-50-5	Tridecane	NGS	96	<1.6	19	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028731			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T028731			829-82-9	Pentadecane	NGS	120	<3.0	5.1	n/a	n/a	n/a	n/a	3.0	n/a	J

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J - Estimated

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-BASE-IN

Customer Sample ID: 16-07837-1-BASE-IN

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T029732			3891-89-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029732			85-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029732			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029732			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029732			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029732			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029732			112-40-3	Dodecane	NGS	96	<0.60	18	n/a	n/a	n/a	n/a	0.60	n/a	
S16T029732			544-76-3	Hexadecane	NGS	130	<3.3	3.5	n/a	n/a	n/a	n/a	3.3	n/a	J
S16T029732			629-59-4	Tetradecane	NGS	110	<3.9	4.9	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029732			126-73-8	Tributyl phosphate	NGS	81	<6.6	<6.0	n/a	n/a	n/a	n/a	6.6	n/a	U
S16T029732			529-50-5	Tricicane	NGS	96	<1.6	7.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029732			629-78-7	Heptadecane	NGS	100	<2.4	3.0	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029732			629-62-9	Pentadecane	NGS	120	<3.0	7.8	n/a	n/a	n/a	n/a	3.0	n/a	J

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J - Estimated

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-BLANK1
 Customer Sample ID: 16-07837-1-BLANK1

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cal Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029733			3691-66-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029733			95-49-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029733			106-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029733			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029733			76-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029733			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029733			112-40-3	Dodecane	NGS	96	<0.60	1.4	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T029733			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029733			529-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029733			126-73-8	Tributyl phosphite	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029733			529-50-5	Tridecane	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029733			529-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029733			529-62-9	Pentadecane	NGS	120	<3.0	3.0	n/a	n/a	n/a	n/a	3.0	n/a	J

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N - Named TIC

J - Estimated

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 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-BLANK2
 Customer Sample ID: 16-07837-1-BLANK2

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029734			3891-88-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029734			95-49-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029734			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029734			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029734			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029734			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029734			112-40-3	Dodecane	NGS	98	<0.60	1.2	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T029734			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029734			829-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029734			126-73-8	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029734			829-50-5	Tridecane	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029734			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029734			829-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-A

Customer Sample ID: 16-07837-1-EFF-A

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029735			3691-66-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a,U
S16T029735			95-49-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a,U
S16T029735			106-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a,U
S16T029735			62-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a,U
S16T029735			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a,U
S16T029735			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a,U
S16T029735			112-40-3	Dodecane	NGS	96	<0.60	44	n/a	n/a	n/a	n/a	0.55		n/a
S16T029735			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a,U
S16T029735			829-69-4	Tetradecane	NGS	110	<3.9	5.0	n/a	n/a	n/a	n/a	3.9		n/a,J
S16T029735			126-73-8	Tributyl phosphata	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a,U
S16T029735			829-60-5	Tridecane	NGS	96	<1.6	18	n/a	n/a	n/a	n/a	1.6		n/a
S16T029735			829-78-7	Heptadecane	NGS	100	<2.4	2.7	n/a	n/a	n/a	n/a	2.4		n/a,J
S16T029735			829-62-9	Pentadecane	NGS	120	<3.0	5.4	n/a	n/a	n/a	n/a	3.0		n/a,J

U - Less Than Detection Limit
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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-B

Customer Sample ID: 16-07837-1-EFF-B

Sample#	R	AI	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029736			3591-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029736			85-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029736			106-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029736			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029736			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029736			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029736			112-40-3	Dodecane	NGS	98	<0.60	52	n/a	n/a	n/a	n/a	0.55	n/a	E
S16T029736			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029736			829-59-4	Tetradecane	NGS	110	<3.9	5.5	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029736			126-73-8	Tributyl phosphata	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029736			829-50-5	Tricicane	NGS	96	<1.5	20	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029736			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029736			829-62-9	Pentadecane	NGS	120	<3.0	5.2	n/a	n/a	n/a	n/a	3.0	n/a	J

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J - Estimated

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 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-C

Customer Sample ID: 16-07837-1-EFF-C

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029737			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029737			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029737			106-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029737			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029737			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029737			94-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029737			112-40-3	Dodecane	NGS	98	<0.60	42	n/a	n/a	n/a	n/a	0.65	n/a	
S16T029737			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029737			628-59-4	Tetradecane	NGS	110	<3.9	4.4	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029737			126-73-8	Tributyl phosphite	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029737			628-50-5	Tridecane	NGS	96	<1.6	19	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029737			628-78-7	Heptadecane	NGS	100	<2.4	3.1	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029737			628-62-9	Pentadecane	NGS	120	<3.0	7.3	n/a	n/a	n/a	n/a	3.0	n/a	U

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

N - Named TIC

J - Estimated

U - Less Than Detection Limit
 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-D

Customer Sample ID: 16-07837-1-EFF-D

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T029738			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029738			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029738			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029738			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029738			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029738			84-86-2	Diethyl phthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029738			112-40-3	Dodecane	NGS	98	<0.60	18	n/a	n/a	n/a	n/a	0.65	n/a	
S16T029738			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029738			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029738			126-73-8	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029738			629-50-5	Tridecane	NGS	96	<1.6	6.2	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029738			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029738			629-62-9	Pentadecane	NGS	120	<3.0	4.4	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit
 T - Tentatively Identified Compound

J - Estimated

N - Named TIC

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-EFF-E
 Customer Sample ID: 16-07837-1-EFF-E

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029739			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029739			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029739			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029739			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029739			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029739			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029739			112-40-3	Dodecane	NGS	98	<0.60	17	n/a	n/a	n/a	n/a	0.65	n/a	
S16T029739			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029739			629-59-4	Tetracane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029739			126-73-8	Tributyl phosphite	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029739			629-50-5	Tridecane	NGS	96	<1.6	6.0	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029739			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029739			629-62-9	Pentadecane	NGS	120	<3.0	4.4	n/a	n/a	n/a	n/a	3.0	n/a	U

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J - Estimated

N - Named TIC

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-EFF-F
 Customer Sample ID: 16-07837-1-EFF-F

Sample#	R	IAJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029740			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029740			95-48-7	2-Methylphenol	NGS	80	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029740			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029740			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029740			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029740			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029740			112-40-3	Dodecane	NGS	98	<0.60	23	n/a	n/a	n/a	n/a	0.65	n/a	
S16T029740			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029740			829-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029740			126-73-8	Tributyl phosphite	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029740			829-50-5	Tridecane	NGS	96	<1.6	6.7	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029740			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029740			829-82-9	Pentadecane	NGS	120	<3.0	3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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J - Estimated

N - Named TIC

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-G

Customer Sample ID: 16-07837-1-EFF-G

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T029741			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029741			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029741			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029741			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029741			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029741			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029741			112-40-3	Dodecane	NGS	98	<0.60	33	n/a	n/a	n/a	n/a	0.65	n/a	
S16T029741			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029741			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029741			126-73-8	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029741			629-50-5	Tridecane	NGS	96	<1.6	3.8	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029741			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029741			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
 E - Outside Calibration Range

N - Named TIC

J - Estimated

U - Less Than Detection Limit
 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-H

Customer Sample ID: 16-07837-1-EFF-H

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rsc %	Det Limit	Cst Err %	Deal Flags
VAPOR-TDU SVDA #2															
S161029742			3891-88-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S161029742			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S161029742			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S161029742			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S161029742			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S161029742			94-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S161029742			112-40-3	Dodecane	NGS	98	<0.60	17	n/a	n/a	n/a	n/a	0.55	n/a	
S161029742			544-76-3	Hexadecane-	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S161029742			829-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S161029742			126-73-6	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S161029742			829-59-5	Tridecane	NGS	95	<1.6	4.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029742			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S161029742			829-82-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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J - Estimated

M - Named TIC

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-IN-A
 Customer Sample ID: 16-07837-1-IN-A

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVDA #2															
S16T029743			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029743			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029743			109-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029743			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029743			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029743			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029743			112-40-3	Dodecane	NGS	98	<0.60	42	n/a	n/a	n/a	n/a	0.55	n/a	
S16T029743			544-78-3	Hexadecane	NGS	130	<3.3	4.1	n/a	n/a	n/a	n/a	3.3	n/a	J
S16T029743			829-59-4	Tetradecane	NGS	110	<3.9	6.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029743			126-73-6	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029743			829-50-5	Tridecane	NGS	96	<1.6	19	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029743			829-78-7	Heptadecane	NGS	100	<2.4	5.1	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029743			829-62-9	Pentadecane	NGS	120	<3.0	6.7	n/a	n/a	n/a	n/a	3.0	n/a	J

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M - Named TIC

J - Estimated

U - Less Than Detection Limit
 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-IN-B

Customer Sample ID: 16-07837-1-IN-B

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cr1 Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029744			3891-98-3	2,8,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029744			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029744			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029744			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029744			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029744			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029744			112-40-3	Dodecane	NGS	96	<0.60	72	n/a	n/a	n/a	n/a	0.60	n/a	E
S16T029744			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029744			629-59-4	Tetradecane	NGS	110	<3.9	9.3	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029744			126-73-6	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029744			629-50-5	Tridecane	NGS	96	<1.6	23	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029744			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029744			629-62-9	Pentadecane	NGS	120	<3.0	6.5	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit
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J - Estimated

N - Named TIC

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-IN-C
 Customer Sample ID: 16-07837-1-IN-C

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S161029745			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	5.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S161029745			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	J
S161029745			108-39-4/M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	J
S161029745			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	J
S161029745			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	J
S161029745			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	J
S161029745			112-40-3	Dodecane	NGS	98	<0.00	41	n/a	n/a	n/a	n/a	0.55	n/a	J
S161029745			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	J
S161029745			829-59-4	Tetradecane	NGS	110	<3.9	11	n/a	n/a	n/a	n/a	3.9	n/a	J
S161029745			126-73-6	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	J
S161029745			829-50-5	Tridecane	NGS	95	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029745			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	J
S161029745			829-62-9	Pentadecane	NGS	120	<3.0	6.0	n/a	n/a	n/a	n/a	3.0	n/a	J

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

M - Named TIC

J - Estimated

U - Less Than Detection Limit
 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-IN-D
 Customer Sample ID: 16-07837-1-IN-D

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029746			3891-98-3	2,6,10-Trimethylododecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029746			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029746			169-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029746			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029746			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029746			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029746			112-40-3	Dodecane	NGS	98	<0.60	32	n/a	n/a	n/a	n/a	0.55	n/a	
S16T029746			544-76-3	Hexadecane-	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029746			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029746			126-73-8	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029746			629-50-5	Tridecane	NGS	96	<1.6	7.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029746			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029746			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit
 T - Tentatively Identified Compound

J - Estimated

M - Named TIC

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-IN-E

Customer Sample ID: 16-07837-1-IN-E

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029747			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a
S16T029747			95-49-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	n/a
S16T029747			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S16T029747			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	n/a
S16T029747			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
S16T029747			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	n/a
S16T029747			112-40-3	Dodecane	NGS	98	<0.60	9.6	n/a	n/a	n/a	n/a	0.55	n/a	n/a
S16T029747			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a
S16T029747			829-59-4	Tetradecane	NGS	110	<3.9	7.2	n/a	n/a	n/a	n/a	3.9	n/a	n/a
S16T029747			126-73-8	Tributyl phosphata	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S16T029747			829-50-5	Tridecane	NGS	96	<1.6	4.2	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029747			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S16T029747			829-62-9	Pentadecane	NGS	120	<3.0	4.2	n/a	n/a	n/a	n/a	3.0	n/a	n/a

U - Less Than Detection Limit
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J - Estimated

N - Named TIC

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-IN-F
 Customer Sample ID: 16-07837-1-IN-F

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVDA #2															
S16T029748			3891-88-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029748			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029748			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029748			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029748			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029748			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029748			112-40-3	Dodecane	NGS	98	<0.60	20	n/a	n/a	n/a	n/a	0.55	n/a	
S16T029748			544-76-3	Hexadecane-	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029748			829-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029748			126-73-6	Tributyl phosphite	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029748			829-50-5	Tridecane	NGS	96	<1.6	3.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029748			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029748			829-82-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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J = Estimated

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 T = Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-IN-G
 Customer Sample ID: 16-07837-1-IN-G

Sample#	R	AI	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RFD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029749			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029749			95-48-7	2-Methylphenol	NGS	82	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S16T029749			106-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029749			82-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S16T029749			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S16T029749			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S16T029749			112-40-3	Dodecane	NGS	98	<0.60	0.8	n/a	n/a	n/a	n/a	0.55		n/a J
S16T029749			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029749			529-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029749			126-73-8	Tribonyl phosphata	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029749			529-50-5	Trisecane	NGS	96	<1.5	2.2	n/a	n/a	n/a	n/a	1.8		n/a J
S16T029749			529-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029749			529-62-9	Pentadecane	NGS	120	<3.0	3.2	n/a	n/a	n/a	n/a	3.0		n/a J

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J - Estimated

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-IN-H

Customer Sample ID: 16-07837-1-IN-H

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T029750			3381-08-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029750			95-48-7	2-Methylphenol	NGS	80	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029750			108-39-4M	Cresol (m & p)	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029750			92-52-4	Biphenyl	NGS	120	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029750			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029750			84-86-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029750			112-40-3	Dodecane	NGS	96	<0.60	15	n/a	n/a	n/a	n/a	0.95	n/a	
S16T029750			544-76-3	Heptadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029750			829-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029750			126-73-8	Tributyl phosphate	NGS	81	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029750			829-50-5	Tridecane	NGS	96	<1.6	7.3	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029750			829-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029750			829-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

U - Less Than Detection Limit
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19-Oct-2016 14:29:45
 DSR TIC: Hardcopy 2.7.32
 DSR Jar v. 3.0.12

*Opinion by
 10/20/16*

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-BASE-EFF
 Customer Sample ID: 16-07837-1-BASE-EFF

Sample#	R	Alt	GC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029731				Hydroxylamine, O-decyl-	28912-79-1	3.66	NGS	39	JNT
S16T029731				Cyclohexanone, octamethyl-	555-67-2	4.38	NGS	280	JNT
S16T029731				Cyclohexane, 1-methyl-5-(1-methyl-2-ethyl-1-oxoethyl)-	1461-27-4	4.86	NGS	78	JNT
S16T029731				Decane, 2,4,6-trimethyl-	62105-27-4	5.10	NGS	22	JNT
S16T029731				Acetophenone	98-86-2	5.18	NGS	12	JNT
S16T029731				Undecane	1120-21-4	5.45	NGS	61	JNT
S16T029731				Heptane, 2,4,6-trimethyl-	2813-81-8	5.50	NGS	34	JNT
S16T029731				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	88	JNT
S16T029731				Benzothiazole	95-16-9	6.60	NGS	45	JNT
S16T029731				Propanoic acid, 2-methyl-, 1-(74381-40-1	9.18	NGS	28	JNT

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-BASE-IN

Customer Sample ID: 16-07837-1-BASE-IN

Sample#	R	AS	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SYDA #2									
S16T029732				Hexanal	86-25-1	2.80	NGS	26	JNT
S16T029732				Cyclohexanone, hexamethyl-	541-05-9	2.91	NGS	76	JNT
S16T029732				Hexanal, 5-methyl-	1860-39-5	3.67	NGS	51	JNT
S16T029732				Cyclohexanone, octamethyl-	556-67-2	4.36	NGS	270	JNT
S16T029732				D-Limonene	5989-27-5	4.86	NGS	72	JNT
S16T029732				Decane, 2,4,6-trimethyl-	62108-27-4	5.10	NGS	23	JNT
S16T029732				Acetophenone	86-86-2	5.18	NGS	15	JNT
S16T029732				Undecane	1120-21-4	5.45	NGS	47	JNT
S16T029732				Decamethylcyclopentasiloxane	541-02-9	5.71	NGS	89	JNT
S16T029732				Benzothiazole	56-16-9	6.50	NGS	31	JNT
S16T029732				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	17	JNT
S16T029732				Undecane, 2-methyl-	7045-71-8	7.26	NGS	15	JNT

U - Less Than Detection Limit
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 N - Named TIC
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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-BLANK2

Customer Sample ID: 16-07837-1-BLANK2

Sample#	R	AS	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
S167029734				Cyclotrisiloxane, hexamethyl-	541-05-9	2.85	NGS	32	JNT

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-A
 Customer Sample ID: 16-07837-1-EFF-A

Sample#	R	Alt	OC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029735				Cyclohexisiloxane, hexamethyl-	541-05-9	2.91	NGS	93	JNT
S16T029735				2,4,6-Tetramethyl-1-undecene	59920-28-2	3.66	NGS	48	JNT
S16T029735				Benzaldehyde	100-52-7	4.25	NGS	28	JNT
S16T029735				Cyclohexasiloxane, octamethyl	558-67-2	4.37	NGS	220	JNT
S16T029735				Phenol	108-95-2	4.41	NGS	65	JNT
S16T029735				D-Limonene	5989-27-5	4.86	NGS	110	JNT
S16T029735				Decane, 2,4,6-trimethyl-	62105-27-4	5.10	NGS	34	JNT
S16T029735				Acetophenone	98-96-2	5.19	NGS	31	JNT
S16T029735				Octane, 2,3,6,7-tetramethyl-	52870-35-5	5.39	NGS	28	JNT
S16T029735				Undecane	1120-21-4	5.45	NGS	81	JNT
S16T029735				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	75	JNT
S16T029735				Benzothiazole	95-16-9	6.61	NGS	45	JNT
S16T029735				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	31	JNT
S16T029735				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.97	NGS	8.6	JNT
S16T029735				Dodecamethylcyclohexasiloxane	540-67-6	7.07	NGS	27	JNT
S16T029735				Undecane, 3,7-dimethyl-	17301-29-0	7.26	NGS	28	JNT
S16T029735				Propanoic acid, 2-methyl-, 1-	74381-40-1	8.19	NGS	59	JNT

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-B

Customer Sample ID: 16-07837-1-EFF-B

Sample#	R	Alt	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR: TDU SVDA #2									
S16T029736				Hexanal	86-25-1	2.80	NGS	26	JNT
S16T029736				Cyclotrisiloxane, hexamethyl-	541-05-9	2.91	NGS	71	JNT
S16T029736				Propane, 2-methyl-1-nitro-	825-74-1	3.23	NGS	91	JNT
S16T029736				Propanoic acid, 2,2-dimethyl-	75-98-9	3.23	NGS	92	JNT
S16T029736				Hexanal, 5-methyl-	1880-39-5	3.67	NGS	93	JNT
S16T029736				Benzaldehyde	100-52-7	4.25	NGS	32	JNT
S16T029736				Cyclotetrasiloxane, octamethyl	558-67-2	4.37	NGS	360	JNT
S16T029736				Phenol	108-95-2	4.41	NGS	46	JNT
S16T029736				D-Limonene	9899-27-5	4.86	NGS	150	JNT
S16T029736				Decane, 2,4,6-trimethyl-	82108-27-4	5.10	NGS	44	JNT
S16T029736				Acetophenone	98-96-2	5.19	NGS	48	JNT
S16T029736				2,3-Dimethyldecane	17312-44-6	5.39	NGS	33	JNT
S16T029736				Undecane	1120-21-4	5.45	NGS	140	JNT
S16T029736				Ethanol, 2-(hexyloxy)-	112-25-4	5.52	NGS	25	JNT
S16T029736				Decamethylcyclpentasiloxane	541-02-6	5.71	NGS	100	JNT
S16T029736				Benzoisazole	56-16-9	6.61	NGS	68	JNT
S16T029736				Dodecane, 4,6-dimethyl	81141-72-8	6.90	NGS	42	JNT
S16T029736				Dodecamethylcyclohexasiloxane	540-97-6	7.07	NGS	31	JNT
S16T029736				Dodecane, 2,8,11-trimethyl-	31295-55-4	7.26	NGS	34	JNT

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747
 SDG Number:
 Customer Sample ID: 16-07837-1-EFF-C
 Customer Sample ID: 16-07837-1-EFF-C

Sample#	R	Alt	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVCM #2									
S16T029737				Cyclotrisiloxane, hexamethyl-	541-05-9	2.91	NGS	63	JNT
S16T029737				Propane, 2-methyl-1-nitro-	625-74-1	3.17	NGS	33	JNT
S16T029737				2,4,6,8-Tetramethyl-1-undecene	59900-26-2	3.66	NGS	41	JNT
S16T029737				Benzaldehyde	100-52-7	4.24	NGS	27	JNT
S16T029737				Cyclotetrasiloxane, octamethyl	556-67-2	4.37	NGS	160	JNT
S16T029737				Phenol	108-95-2	4.40	NGS	38	JNT
S16T029737				D-Limonene	5889-27-5	4.86	NGS	100	JNT
S16T029737				Decane, 2,4,6-trimethyl-	62108-27-4	5.10	NGS	32	JNT
S16T029737				Acetophenone	99-86-2	5.19	NGS	35	JNT
S16T029737				Undecane	1120-21-4	5.45	NGS	82	JNT
S16T029737				Ethanol, 2-(hydroxy)-	112-25-4	5.52	NGS	30	JNT
S16T029737				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	50	JNT
S16T029737				Benzothiazole	99-16-9	6.60	NGS	37	JNT
S16T029737				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.90	NGS	21	JNT

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N - Named TIC

J - Estimated

U - Less Than Detection Limit
 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-D
 Customer Sample ID: 16-07837-1-EFF-D

Sample#	R	Alt	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR:TDU SVDA #2									
S16T029738				Cyclodisiloxane, hexamethyl-	541-05-9	2.91	NGS	68	JNT
S16T029738				Cyclotetrasiloxane, octamethyl	555-57-2	4.35	NGS	140	JNT
S16T029738				D-Limonene	989-27-5	4.88	NGS	76	JNT
S16T029738				Decane, 2,4,6-trimethyl-	82108-27-4	5.10	NGS	21	JNT
S16T029738				Undecane	1120-21-4	5.45	NGS	53	JNT
S16T029738				Decamethylcyclopentasiloxane	541-02-8	5.71	NGS	74	JNT
S16T029738				Benzothiazole	95-15-9	6.59	NGS	27	JNT
S16T029738				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	17	JNT

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N - Named TIC

J - Estimated

U - Less Than Detection Limit
 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-E

Customer Sample ID: 16-07837-1-EFF-E

Sample	R	Alt	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029739				Cyclohexane, hexamethyl-	541-05-9	2.91	NGS	27	JNT
S16T029739				Hydroxylamine, O-decyl-	29612-78-1	3.67	NGS	29	JNT
S16T029739				Cyclotetrasiloxane, octamethyl	556-67-2	4.36	NGS	120	JNT
S16T029739				Phenol	108-95-2	4.40	NGS	31	JNT
S16T029739				D-Limonene	5989-27-5	4.86	NGS	59	JNT
S16T029739				Decane, 2,4,6-trimethyl-	82108-27-4	5.10	NGS	16	JNT
S16T029739				Undecane	1120-21-4	5.45	NGS	43	JNT
S16T029739				Heptane, 2,4,6-trimethyl-	2613-61-8	5.51	NGS	16	JNT
S16T029739				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	58	JNT
S16T029739				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	14	JNT
S16T029739				Propanoic acid, 2-methyl-, 1-(74381-60-1	9.18	NGS	41	JNT

MA = Not Analyzed, ND = Not Detected
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J = Estimated

U = Less Than Detection Limit
 T = Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-F
 Customer Sample ID: 16-07837-1-EFF-F

Sample	R	Ad	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T02974D				Cydotrisloxane, hexamethyl-	541-05-9	2.91	NGS	30	JNT
S16T02974D				Cydotetrasloxane, octamethyl	555-57-2	4.35	NGS	150	JNT
S16T02974D				D-Limonene	5089-27-5	4.66	NGS	50	JNT
S16T02974D				Decane, 2,4,6-trimethyl-	82106-27-4	5.10	NGS	13	JNT
S16T02974D				Undecane	1120-21-4	5.45	NGS	57	JNT
S16T02974D				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	64	JNT
S16T02974D				Benzothiazole	85-16-9	6.59	NGS	28	JNT

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 T - Tentatively Identified Compound

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-G
 Customer Sample ID: 16-07837-1-EFF-G

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR:TDU SV0A #2									
S16T029741				Cyclohexane, hexamethyl-	541-05-9	2.92	NGS	170	JNT
S16T029741				Heptane, 2,4-dimethyl-	2213-23-2	2.98	NGS	52	JNT
S16T029741				Octane, 4-methyl-	2216-34-4	3.34	NGS	35	JNT
S16T029741				Cyclohexane, octamethyl-	556-67-2	4.37	NGS	190	JNT
S16T029741				1-Hexanol, 2-ethyl-	104-76-7	4.82	NGS	36	JNT
S16T029741				D-Limonene	5969-27-5	4.88	NGS	58	JNT
S16T029741				Decane, 2,4,6-trimethyl-	82108-27-4	5.11	NGS	80	JNT
S16T029741				2,3-Dimethyldecane	17312-44-6	5.39	NGS	30	JNT
S16T029741				Undecane	1120-21-4	5.45	NGS	170	JNT
S16T029741				2,6-Dimethyldecane	13150-61-7	5.50	NGS	27	JNT
S16T029741				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	51	JNT
S16T029741				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.69	NGS	15	JNT

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-EFF-H
 Customer Sample ID: 16-07837-1-EFF-H

Sample#	R	Ad	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU.SVOA.#2									
S16T029742				Cyclotrisiloxane, hexamethyl-	541-05-9	2.91	NGS	73	JNT
S16T029742				Cyclohexasiloxane, octamethyl	555-67-2	4.35	NGS	80	JNT
S16T029742				Cyclohexane, 1-methyl-5-(1-ethyl	1461-27-4	4.86	NGS	40	JNT
S16T029742				Undecane	1120-21-4	5.44	NGS	31	JNT
S16T029742				Decane, 2,4,6-trimethyl-	82108-27-4	5.50	NGS	14	JNT
S16T029742				Decamethylcyclopentasiloxane	541-02-8	5.71	NGS	49	JNT
S16T029742				Propanoic acid, 2-methyl-, 1-(74381-40-1	9.18	NGS	53	JNT

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-IN-A

Customer Sample ID: 16-07837-1-IN-A

Sample#	R	Alt	OC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029743				Cyclotrisiloxane, hexamethyl-	541-05-9	2.90	NGS	110 JNT	
S16T029743				Propane, 2-methyl-1-nitro-	625-74-1	3.20	NGS	57 JNT	
S16T029743				Heptane, 4-methyl-	589-53-7	3.40	NGS	29 JNT	
S16T029743				3-Hexanone, 5-methyl-	623-58-3	3.53	NGS	150 JNT	
S16T029743				2,4,6,8-Tetramethyl-1-undecane	56920-26-2	3.66	NGS	66 JNT	
S16T029743				Benzaldehyde	100-52-7	4.25	NGS	30 JNT	
S16T029743				Cyclotetrasiloxane, octamethyl	558-67-2	4.37	NGS	350 JNT	
S16T029743				Phenol	108-95-2	4.41	NGS	46 JNT	
S16T029743				1-Hexanol, 2-ethyl-	104-76-7	4.82	NGS	25 JNT	
S16T029743				D-Limonene	5899-27-5	4.86	NGS	150 JNT	
S16T029743				2,6-Dimethyldecane	13160-81-7	5.10	NGS	54 JNT	
S16T029743				Acetophenone	96-86-2	5.19	NGS	52 JNT	
S16T029743				Undecane	1120-21-4	5.45	NGS	190 JNT	
S16T029743				Decane, 2,4,6-trimethyl-	82108-27-4	5.50	NGS	24 JNT	
S16T029743				Ethanol, 2-(propoxy)-	112-25-4	5.52	NGS	27 JNT	
S16T029743				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	110 JNT	
S16T029743				Ethanol, 2-phenoxy-	122-89-6	6.52	NGS	55 JNT	
S16T029743				Benzothiazole	95-18-9	6.60	NGS	47 JNT	
S16T029743				Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	47 JNT	
S16T029743				Dodecane, 2,6,11-trimethyl-	31295-58-4	6.96	NGS	12 JNT	
S16T029743				Dodecamethylcyclohexasiloxane	540-87-6	7.07	NGS	39 JNT	
S16T029743				Undecane, 3,7-dimethyl-	17501-29-0	7.26	NGS	30 JNT	
S16T029743				Propanoic acid, 2-methyl-, 1-	74231-40-1	9.19	NGS	70 JNT	

U - Less Than Detection Limit
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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162747

SDG Number:

Customer Sample ID: 16-07837-1-IN-H

Customer Sample ID: 16-07837-1-IN-H

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029750				Cyclotrisiloxane, hexamethyl-	541-05-9	2.90	NGS	41	JNT
S16T029750				3-Hexanone, 5-methyl-	623-56-3	3.53	NGS	130	JNT
S16T029750				3-Hexanol, 5-methyl-	623-55-2	3.63	NGS	38	JNT
S16T029750				Cyclotetrasiloxane, octamethyl	558-67-2	4.35	NGS	77	JNT
S16T029750				Decane, 2,4,6-trimethyl-	62108-27-4	5.09	NGS	5.6	JNT
S16T029750				Undecane	1120-21-4	5.44	NGS	25	JNT
S16T029750				Dodecamethylcyclopentasiloxane	541-02-6	5.71	NGS	41	JNT

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-A
 Customer Sample ID: 16-08068-1-EFF-A

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cent Err %	Qual Flags
VAPOR-TDU SVOA II2															
S16T029755			3891-98-3	2,6,10-Trimethyldecane	NGS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029755			85-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029755			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029755			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029755			78-45-6	Dibutyl butylphosphonate	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029755			34-98-2	Dioctylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029755			112-40-3	Dodecane	NGS	92	<0.60	36	n/a	n/a	n/a	n/a	0.55	n/a	
S16T029755			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029755			629-59-4	Tetradecane	NGS	93	<3.9	6.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029755			126-73-8	Tributyl phosphite	NGS	75	<5.0	<5.0	n/a	n/a	n/a	n/a	5.0	n/a	U
S16T029755			629-50-5	Tridecane	NGS	83	<1.6	16	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029755			629-78-7	Heptadecane	NGS	95	<2.4	2.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029755			629-62-9	Pentadecane	NGS	100	<3.0	3.5	n/a	n/a	n/a	n/a	3.0	n/a	J

U - Less Than Detection Limit
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 J - Estimated
 N - Nierned TIC
 NA = Not Analyzed, ND = Not Detected
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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-B

Customer Sample ID: 16-08068-1-EFF-B

Sample#	R	AF	CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Est Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029756			3891-98-3	2,6,10-Trimethyldecane	NGS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029756			95-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029756			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029756			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029756			78-46-6	Dibutyl butylphosphonate	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029756			84-496-2	Dibutylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029756			112-40-3	Dodecane	NGS	92	<0.60	57	n/a	n/a	n/a	n/a	0.55	n/a	E
S16T029756			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029756			629-56-4	Tetradecane	NGS	93	<3.9	7.5	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029756			128-73-8	Tributyl phosphate	NGS	75	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029756			629-50-5	Tricocane	NGS	86	<1.6	27	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029756			629-78-7	Heptadecane	NGS	95	<2.4	3.2	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029756			629-62-9	Pentadecane	NGS	100	<3.0	4.5	n/a	n/a	n/a	n/a	3.0	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-C

Customer Sample ID: 16-08068-1-EFF-C

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T028757			891-88-3	2,6,10-Trimethyldecane	NGS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T028757			85-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T028757			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T028757			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T028757			78-46-6	Dibutyl butylphosphonate	NGS	88	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T028757			84-88-2	Diethylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T028757			112-40-3	Dodecane	NGS	92	<0.60	98	n/a	n/a	n/a	n/a	0.59	n/a	E
S16T028757			544-76-3	Heptadecane-	NGS	110	<3.3	5.5	n/a	n/a	n/a	n/a	3.3	n/a	J
S16T028757			829-59-4	Tetradecane	NGS	93	<3.9	9.3	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T028757			126-73-6	Tributyl phosphite	NGS	75	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T028757			829-50-5	Tridecane	NGS	88	<1.6	32	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T028757			829-78-7	Heptadecane	NGS	95	<2.4	6.0	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T028757			829-62-9	Pentadecane	NGS	100	<3.0	9.2	n/a	n/a	n/a	n/a	3.0	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-D
 Customer Sample ID: 16-08068-1-EFF-D

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Conc Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T029758			3891-98-3	2,6,10-Trimethyldecane	NGS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029758			85-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029758			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029758			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029758			78-46-6	Dibutyl butylphosphonate	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029758			84-86-2	Diethylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029758			112-60-3	Dodecane	NGS	92	<0.60	34	n/a	n/a	n/a	n/a	0.55	n/a	
S16T029758			544-76-3	Heaodecane	NGS	110	<3.3	4.7	n/a	n/a	n/a	n/a	3.3	n/a	J
S16T029758			629-59-4	Tetradecane	NGS	93	<3.9	7.4	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029758			128-73-8	Tributyl phosphite	NGS	75	<6.6	<6.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029758			629-50-5	Tridecane	NGS	88	<1.6	16	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029758			629-78-7	Heptadecane	NGS	95	<2.4	4.9	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029758			629-62-9	Pentadecane	NGS	100	<3.0	6.6	n/a	n/a	n/a	n/a	3.0	n/a	J

U - Less Than Detection Limit
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 J - Estimated
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 E - Outside Calibration Range
 NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-E

Customer Sample ID: 16-08068-1-EFF-E

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rac %	Det Limit	Cwt Err %	Qual Flags
VAPOUR:TDU SVQA #2															
S16T029759			3891-89-3	2,6,10-Trimethyldecane	NGS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029759			95-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029759			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029759			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029759			78-46-6	Dibutyl butylphosphonate	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029759			84-65-2	Diethylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029759			112-40-3	Dodecane	NGS	92	<0.60	25	n/a	n/a	n/a	n/a	0.65	n/a	
S16T029759			544-76-3	Hexadecane	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029759			629-59-4	Tetradecane	NGS	93	<3.9	6.0	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029759			126-73-8	Tributyl phosphate	NGS	76	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029759			629-50-5	Tridecane	NGS	88	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029759			629-78-7	Heptadecane	NGS	95	<2.4	3.4	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029759			629-62-9	Pentadecane	NGS	100	<3.0	5.6	n/a	n/a	n/a	n/a	3.0	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-F

Customer Sample ID: 16-08068-1-EFF-F

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T029760			3891-86-3	2,6,10-Trimethyldecane	NGS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029760			95-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029760			105-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029760			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029760			78-46-6	Diethyl butylphosphonate	NGS	94	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029760			94-88-2	Diethylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029760			112-40-3	Dodecane	NGS	92	<0.60	30	n/a	n/a	n/a	n/a	0.55	n/a	
S16T029760			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029760			629-59-4	Tetradecane	NGS	93	<3.9	4.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029760			125-73-8	Tributyl phosphite	NGS	75	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029760			629-50-5	Tridecane	NGS	84	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029760			629-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029760			629-62-9	Pentadecane	NGS	100	<3.0	3.9	n/a	n/a	n/a	n/a	3.0	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-G

Customer Sample ID: 16-08068-1-EFF-G

Sample#	R	AF	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU SVOM #2															
S16T029781			3881-88-3	2,6,10-Trimethyldecane	NCS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029781			65-48-7	2-Methylphenol	NCS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029781			108-39-4M	Cresol (m & p)	NCS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029781			92-52-4	Biphenyl	NCS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029781			76-46-6	Dibutyl butylphosphonate	NCS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029781			84-66-2	Diethylphthalate	NCS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029781			112-40-3	Dodecane	NCS	92	<0.60	49	n/a	n/a	n/a	n/a	0.65	n/a	
S16T029781			544-76-3	Hexadecane	NCS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029781			629-59-4	Tetradecane	NCS	90	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029781			126-73-8	Tributyl phosphate	NCS	75	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029781			629-50-5	Tridecane	NCS	88	<1.6	7.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029781			629-78-7	Heptadecane	NCS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029781			629-62-9	Pentadecane	NCS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-H

Customer Sample ID: 16-08068-1-EFF-H

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Dat Limit	Con Err %	Qual Flags
VAPOR-TDU SVQA #2															
S161029762			3891-88-3	2,6,10-Trimethyldecane	NGS	80	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S161029762			85-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S161029762			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S161029762			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S161029762			78-46-6	Dibutyl butylphosphonate	NGS	96	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S161029762			84-86-2	Diethylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S161029762			112-40-3	Dodecane	NGS	92	<0.60	21	n/a	n/a	n/a	n/a	0.65	n/a	
S161029762			544-76-3	Hexadecane	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S161029762			829-59-4	Tetradecane	NGS	93	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S161029762			126-73-8	Tributyl phosphate	NGS	75	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S161029762			829-50-5	Tridecane	NGS	88	<1.6	8.3	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029762			829-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S161029762			829-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-IN-A

Customer Sample ID: 16-08068-1-IN-A

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Conc Err %	Qual Flags
VAPOR:TDU SVQA #2															
S16T029763			3891-88-3	2,6,10-Trimethyldecane	NGS	88	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029763			95-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S16T029763			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029763			92-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S16T029763			78-46-6	Diethyl butylphosphonate	NGS	98	<3.5	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S16T029763			84-88-2	Diethylmalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S16T029763			112-40-3	Dodecane	NGS	92	<0.60	13	n/a	n/a	n/a	n/a	0.55		n/a
S16T029763			544-76-3	Hexadecane	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029763			828-59-4	Tetradecane	NGS	93	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029763			126-73-8	Tributyl phosphite	NGS	75	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029763			828-50-5	Tridecane	NGS	86	<1.6	7.3	n/a	n/a	n/a	n/a	1.6		n/a J
S16T029763			828-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029763			828-62-9	Pentadecane	NGS	100	<3.0	3.0	n/a	n/a	n/a	n/a	3.0		n/a J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-IN-H

Customer Sample ID: 16-08068-1-IN-H

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RSD %	Spk Rec %	Dat Limit	Cat Err %	Qual Flags
VAPOR-TDU SVQA #2															
S16T028768			3851-88-3	2,6,10-Trimethyldecane	NGS	89	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T028768			95-48-7	2-Methylphenol	NGS	87	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T028768			108-39-4M	Cresol (m & p)	NGS	87	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T028768			82-52-4	Biphenyl	NGS	91	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T028768			78-46-6	Dibutyl butylphosphonate	NGS	98	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T028768			84-86-2	Diethylphthalate	NGS	90	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T028768			112-40-3	Dodecane	NGS	92	<0.60	33	n/a	n/a	n/a	n/a	0.55	n/a	
S16T028768			544-76-3	Hexadecane	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T028768			629-59-4	Tetradecane	NGS	93	<3.9	4.2	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T028768			126-73-8	Tributyl phosphite	NGS	75	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T028768			629-50-5	Tridecane	NGS	88	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S16T028768			629-78-7	Heptadecane	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T028768			629-62-9	Pentadecane	NGS	100	<3.0	3.3	n/a	n/a	n/a	n/a	3.0	n/a	J

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John Dwyer
 10/20/16

**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-A

Customer Sample ID: 16-08068-1-EFF-A

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA RZ									
S161028755				Propanoic acid, 2,2-dimethyl-	75-98-9	3.21	NGS	35	JNT
S161028755				Heptanal	111-71-7	3.66	NGS	40	JNT
S161028755				Cyclotrasiloxane, octamethyl	555-87-2	4.37	NGS	120	JNT
S161028755				Nonane, 2,2,3-trimethyl-	55499-04-2	4.49	NGS	58	JNT
S161028755				Decane	124185	4.56	NGS	14	JNT
S161028755				D-Limonene	5989-27-5	4.86	NGS	120	JNT
S161028755				Decane, 3,7-dimethyl-	17312-54-8	5.06	NGS	90	JNT
S161028755				Decane, 2,4,6-trimethyl-	82106-27-4	5.10	NGS	20	JNT
S161028755				Acetophenone	98-89-2	5.19	NGS	31	JNT
S161028755				2,3-Dimethyldecane	17312-44-6	5.39	NGS	26	JNT
S161028755				Undecane	1120-21-4	5.45	NGS	82	JNT
S161028755				Decane-ethylcyclopentasiloxane	541-02-6	5.71	NGS	62	JNT
S161028755				Heanoic acid, 2-ethyl-	149-57-5	5.85	NGS	28	JNT
S161028755				Undecane, 2-methyl-	7045718	6.00	NGS	5.2	JNT
S161028755				Undecane, 3-methyl-	1002-43-3	6.05	NGS	5.2	JNT
S161028755				Benzo[b]azole	95-16-9	6.60	NGS	40	JNT
S161028755				Decane, 2,3,5,8-tetramethyl-	192823-15-7	6.90	NGS	33	JNT
S161028755				Dodecamethylcycloheasiloxane	540-07-8	7.07	NGS	28	JNT
S161028755				Dodecane, 4,6-dimethyl-	51141728	7.26	NGS	21	JNT
S161028755				Dodecane, 2,6,11-trimethyl-	31255064	7.40	NGS	12	JNT
S161028755			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	11	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-B
 Customer Sample ID: 16-08068-1-EFF-B

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVQA.#2									
S161029756				Cyclotrisiloxane, hexamethyl-	541-05-9	2.89	NGS	30	JNT
S161029756				Propanoic acid, 2,2-dimethyl-	75-95-9	3.28	NGS	80	JNT
S161029756				Heptanal	111-71-7	3.67	NGS	53	JNT
S161029756				Cyclotetrasiloxane, octamethyl	559-67-2	4.36	NGS	150	JNT
S161029756				2,2,7,7-Tetramethyldecane	1071-31-4	4.48	NGS	28	JNT
S161029756				Decane	124185	4.57	NGS	20	JNT
S161029756				3-Hexanol, 2,2-dimethyl-	4209-66-9	4.60	NGS	28	JNT
S161029756				D-Limonene	5089-27-5	4.85	NGS	130	JNT
S161029756				Decane, 3,7-dimethyl-	17312-54-6	5.06	NGS	130	JNT
S161029756				Decane, 2,4,6-trimethyl-	82108-27-4	5.11	NGS	39	JNT
S161029756				Acetophenone	98-86-2	5.19	NGS	63	JNT
S161029756				2,3-Dimethyldecane	17312-44-6	5.39	NGS	25	JNT
S161029756				Undecane	1120-31-4	5.45	NGS	140	JNT
S161029756				Hydroxylamine, O-decyl-	29812-79-1	5.50	NGS	30	JNT
S161029756				Ethanol, 2-(hexyloxy)-	112-25-4	5.53	NGS	32	JNT
S161029756				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	88	JNT
S161029756				Undecane, 2-methyl-	1045718	6.00	NGS	6.8	JNT
S161029756				Undecane, 3-methyl-	1002433	6.05	NGS	7.7	JNT
S161029756				Benzofluorene	85-16-9	6.61	NGS	72	JNT
S161029756				Ethylene diacrylate	2274-11-5	6.67	NGS	26	JNT
S161029756				Decane, 2,3,5,8-tetramethyl-	192823-15-7	6.90	NGS	55	JNT
S161029756				Dodecamethylcyclotrisiloxane	540-97-6	7.07	NGS	38	JNT
S161029756				Dodecane, 4,6-dimethyl-	5114128	7.27	NGS	37	JNT
S161029756				Dodecane, 2,5,11-trimethyl-	31295-56-4	7.41	NGS	17	JNT
S161029756			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	11	

U - Less Than Detection Limit
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J - Estimated
 N - Named TIC

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-C
 Customer Sample ID: 16-08068-1-EFF-C

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOUR-TDU SVQA #2									
S16T028757				Propanoic acid, 2,2-dimethyl-	75-98-9	3.27	NGS	48	JNT
S16T028757				Heptanal	111-71-7	3.67	NGS	38	JNT
S16T028757				Cyclotetrasiloxane, octamethyl	556-87-2	4.36	NGS	140	JNT
S16T028757				Decane	124-185	4.56	NGS	15	JNT
S16T028757				D-Limonene	5989-27-5	4.86	NGS	67	JNT
S16T028757				Decane, 3,7-dimethyl-	17312-54-8	5.06	NGS	84	JNT
S16T028757				Decane, 2,4,6-trimethyl-	82168-27-4	5.10	NGS	28	JNT
S16T028757				Acetophenone	98-86-2	5.19	NGS	47	JNT
S16T028757				Undecane	1120-21-4	5.45	NGS	99	JNT
S16T028757				Ethanol, 2-(hexyloxy)-	112-25-4	5.53	NGS	26	JNT
S16T028757				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	66	JNT
S16T028757				Hexanoic acid, 2-ethyl-	149-57-5	5.86	NGS	31	JNT
S16T028757				Undecane, 2-ethyl-	7045718	6.00	NGS	6.1	JNT
S16T028757				Undecane, 3-ethyl-	1002-43-3	6.05	NGS	5.7	JNT
S16T028757				Benzothiazole	95-16-9	6.61	NGS	59	JNT
S16T028757				Decane, 2,3,5,8-tetramethyl-	192823-15-7	6.90	NGS	38	JNT
S16T028757				Dodecamethylcyclohexasiloxane	540-97-8	7.07	NGS	31	JNT
S16T028757				Dodecane, 4,8-dimethyl-	81141728	7.26	NGS	26	JNT
S16T028757				Dodecane, 2,6,11-trimethyl-	81285-56-4	7.40	NGS	15	JNT
S16T028757				Propanoic acid, 2-methyl-, 1-(74381-40-1	9.18	NGS	28	JNT
S16T028757			BLNK	Chrysene-D12	1718-03-5	14.03	NGS	11	

U - Less Than Detection Limit
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 N - Named TIC

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-D
 Customer Sample ID: 16-08068-1-EFF-D

Sample#	R	AI	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029758				Propanoic acid, 2,2-dimethyl-	75-98-9	3.26	NGS	43 JNT	
S16T029758				Heptanal	111-71-7	3.87	NGS	40 JNT	
S16T029758				Cyclohexasiloxane, octamethyl	558-87-2	4.36	NGS	140 JNT	
S16T029758				Decane	124185	4.56	NGS	12 JNT	
S16T029758				D-Limonene	5889-27-5	4.86	NGS	54 JNT	
S16T029758				Decane, 3,7-dimethyl-	17312-54-8	5.06	NGS	82 JNT	
S16T029758				Decane, 2,4,8-trimethyl-	52108-27-4	5.11	NGS	27 JNT	
S16T029758				Acetophenone	98-06-2	5.19	NGS	42 JNT	
S16T029758				Undecane	1120-21-4	5.45	NGS	90 JNT	
S16T029758				Etanol, 2-(hexyloxy)-	112-25-4	5.52	NGS	27 JNT	
S16T029758				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	76 JNT	
S16T029758				Heptanoic acid, 2-ethyl-	3274-29-1	5.86	NGS	34 JNT	
S16T029758				Undecane, 2-methyl-	7045718	6.00	NGS	6.4 JNT	
S16T029758				Undecane, 3-methyl-	1002-43-3	6.05	NGS	5.1 JNT	
S16T029758				Benzofluorene	95-16-9	6.61	NGS	48 JNT	
S16T029758				Decane, 2,3,5,8-tetramethyl-	18283-15-7	6.90	NGS	38 JNT	
S16T029758				Dodecamethylcyclohexasiloxane	540-87-6	7.07	NGS	33 JNT	
S16T029758				Dodecane, 4,8-dimethyl-	51141728	7.26	NGS	23 JNT	
S16T029758				Dodecane, 2,6,11-trimethyl-	31295564	7.40	NGS	10 JNT	
S16T029758			BLANK	Chrysene-D12	1719-03-5	14.03	NGS	11	

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 N - Named TIC
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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-E
 Customer Sample ID: 16-08068-1-EFF-E

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOUR-TDU SVOA #2									
S161028759				Cyclotrisiloxane, hexamethyl-	541-05-9	2.90	NGS	28	JNT
S161028759				Propanoic acid, 2,2-dimethyl-	75-98-9	3.15	NGS	32	JNT
S161028759				Heptanal	111-71-7	3.66	NGS	27	JNT
S161028759				Cyclotrisiloxane, octamethyl	559-67-2	4.35	NGS	110	JNT
S161028759				Decane	124185	4.56	NGS	7.8	JNT
S161028759				D-Limonene	5989-27-5	4.86	NGS	83	JNT
S161028759				Decane, 3,7-dimethyl-	17312-54-8	5.05	NGS	76	JNT
S161028759				Decane, 2,4,6-trimethyl-	82106-27-4	5.10	NGS	25	JNT
S161028759				Acetophenone	98-06-2	5.19	NGS	31	JNT
S161028759				Undecane	1120-21-4	5.45	NGS	82	JNT
S161028759				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	66	JNT
S161028759				Benzothiazole	95-16-9	6.60	NGS	48	JNT
S161028759				Decane, 2,3,5,8-tetramethyl-	192823-15-7	6.89	NGS	26	JNT
S161028759				Dodecamethylcyclohexasiloxane	560-97-6	7.07	NGS	27	JNT
S161028759				Dodecane, 4,6-dimethyl-	51141728	7.26	NGS	19	JNT
S161028759				Dodecane, 2,6,11-trimethyl-	31295594	7.40	NGS	7.6	JNT
S161028759			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	11	

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J - Estimated

M - Named TIC

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**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-F
 Customer Sample ID: 16-08068-1-EFF-F

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA R2									
S16T029760				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	79	JNT
S16T029760				Cyclohexane, 1-methyl-5-(1-met	1481-27-4	4.96	NGS	46	JNT
S16T029760				Decane, 2,4,6-trimethyl-	82106-27-4	5.10	NGS	15	JNT
S16T029760				Acetophenone	98-86-2	5.18	NGS	17	JNT
S16T029760				Undecane	1120-21-4	5.45	NGS	62	JNT
S16T029760				Decamethylcyclopentasiloxane	341-02-6	5.71	NGS	54	JNT
S16T029760				Undecane, 2-methyl-	7045718	6.00	NGS	5.1	JNT
S16T029760				Undecane, 3-methyl-	1002433	6.05	NGS	5.0	JNT
S16T029760				Benzothiazole	95-16-9	6.60	NGS	39	JNT
S16T029760				Dodecane, 4,6-dimethyl-	31141726	7.25	NGS	12	JNT
S16T029760				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.40	NGS	6.4	JNT
S16T029760			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	11	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850
 SDG Number:
 Customer Sample ID: 16-08068-1-EFF-G
 Customer Sample ID: 16-08068-1-EFF-G

Sample#	R	M	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029761				Cyclohexane, hexamethyl-	541-05-9	2.95	NGS	61	JNT
S16T029761				Cyclohexasiloxane, octamethyl	358-67-2	4.37	NGS	120	JNT
S16T029761				Decane	124-185	4.56	NGS	13	JNT
S16T029761				1-Hexanol, 2-ethyl-	104-76-7	4.83	NGS	34	JNT
S16T029761				D-Limonene	5988-27-5	4.86	NGS	36	JNT
S16T029761				Decane, 3,7-dimethyl-	17312-54-8	5.07	NGS	130	JNT
S16T029761				2,6-Dimethyldecane	13150-81-7	5.11	NGS	55	JNT
S16T029761				5-Ethyl-1-nonene	19780-74-6	5.25	NGS	30	JNT
S16T029761				2,3-Dimethyldecane	17312-44-6	5.39	NGS	26	JNT
S16T029761				Undecane	1120-21-4	5.47	NGS	150	JNT
S16T029761				Decane, 2,4,6-trimethyl-	82108-27-4	5.51	NGS	31	JNT
S16T029761				Decamethylcyclopentasiloxane	541-02-6	5.72	NGS	40	JNT
S16T029761				Undecane, 2-methyl-	7045718	6.00	NGS	8.1	JNT
S16T029761				Undecane, 3-methyl-	1002-43-3	6.05	NGS	7.2	JNT
S16T029761				Undecane, 2,6-dimethyl-	17301-23-4	6.40	NGS	7.2	JNT
S16T029761				Dodecane, 4,6-dimethyl-	81141728	7.25	NGS	12	JNT
S16T029761			BLNK	Chrysene-D12	1718-03-5	14.03	NGS	11	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-EFF-H

Customer Sample ID: 16-08068-1-EFF-H

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S16T029762				Cyclotrisiloxane, hexamethyl-	541-05-9	2.90	NGS	40	JNT
S16T029762				2,2-Dimethyl-3-heptanone	19078-97-8	3.53	NGS	170	JNT
S16T029762				1-Octen-4-ol	40575-42-6	3.61	NGS	54	JNT
S16T029762				Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	77	JNT
S16T029762				1-Hexanol, 2-ethyl-	104-76-7	4.82	NGS	29	JNT
S16T029762				D-Limonene	9899-27-5	4.85	NGS	28	JNT
S16T029762				Decane, 3,7-dimethyl-	17312-54-8	5.05	NGS	32	JNT
S16T029762				Decane, 2,4,6-trimethyl-	52106-27-4	5.10	NGS	12	JNT
S16T029762				Acetophenone	90-06-2	5.10	NGS	17	JNT
S16T029762				Undecane	1120-21-4	5.44	NGS	43	JNT
S16T029762				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	51	JNT
S16T029762				Benzothiazole	95-16-9	6.59	NGS	25	JNT
S16T029762				Dodecane, 4,6-dimethyl-	61141728	7.25	NGS	13	JNT
S16T029762			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	11	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-IN-A

Customer Sample ID: 16-08068-1-IN-A

Sample#	R	AI	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S161029763				Propanoic acid, 2,2-dimethyl-	75-98-9	3.21	NGS	37 JNT	
S161029763				β-Hexanone, 5-methyl-	523-56-3	3.53	NGS	62 JNT	
S161029763				Cyclotetrasiloxane, octamethyl	558-87-2	4.35	NGS	78 JNT	
S161029763				D-Limonene	5989-27-5	4.85	NGS	27 JNT	
S161029763				Decane, 2,4,6-trimethyl-	52108-27-4	5.10	NGS	7.3 JNT	
S161029763				Acetophenone	98-86-2	5.18	NGS	9.8 JNT	
S161029763				Undecane	1120-21-4	5.44	NGS	28 JNT	
S161029763				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	57 JNT	
S161029763				Benzothiazole	95-16-9	6.59	NGS	17 JNT	
S161029763				Dodecane, 4,6-dimethyl	51141-72-8	6.89	NGS	13 JNT	
S161029763				Dodecane, 2,6,11-trimethyl-	31295-56-4	7.25	NGS	11 JNT	
S161029763			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	11	

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**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162850

SDG Number:

Customer Sample ID: 16-08068-1-IN-H

Customer Sample ID: 16-08068-1-IN-H

Sample#	R	Ad	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVGA #2									
S161029768				Cyclotrisiloxane, octamethyl	556-87-2	4.35	NGS	59_JNT	
S161029768				Decane, 2,4,8-trimethyl-	32109-27-4	5.05	NGS	16_JNT	
S161029768				Acetophenone	98-86-2	5.18	NGS	7.8_JNT	
S161029768				Undecane	1120-21-4	5.44	NGS	32_JNT	
S161029768				Decamethylcyclopentasiloxane	541-02-6	5.71	NGS	41_JNT	
S161029768				Benzothiazole	95-16-9	6.00	NGS	39_JNT	
S161029768				Dodecane, 2,6,11-trimethyl-	31295-58-4	7.25	NGS	14_JNT	
S161029768				Dodecane, 4,6-dimethyl-	91141726	7.40	NGS	5.2_JNT	
S161029768				BLANK	1719-03-5	14.03	NGS	11	

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 T - Tentatively Identified Compound

J. J. J.
 11/8/16

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748

SDG Number:

Customer Sample ID: 16-08068-1-BASE-EFF
 Customer Sample ID: 16-08068-1-BASE-EFF

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cal Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029751			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<-3.9	<-3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029751			95-48-7	2-Methylphenol	NGS	95	<-4.9	<-4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S16T029751			108-39-4M	Cresol (m & p)	NGS	97	<-5.6	<-5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029751			82-52-4	Biphenyl	NGS	110	<-4.0	<-4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S16T029751			75-45-6	Diethyl butylphosphonate	NGS	130	<-3.6	<-3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S16T029751			84-66-2	Diethylphthalate	NGS	120	<-7.0	<-7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S16T029751			112-40-3	Dodecane	NGS	97	<-0.60	16	n/a	n/a	n/a	n/a	0.55		n/a
S16T029751			544-75-3	Hexadecane	NGS	130	<-3.3	<-3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029751			629-59-4	Tetradecane	NGS	120	<-3.9	<-3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029751			128-73-8	Tributyl phosphite	NGS	85	<-5.6	<-5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029751			629-50-5	Tridecane	NGS	96	<-1.6	8.2	n/a	n/a	n/a	n/a	1.6		n/a J
S16T029751			629-78-7	Heptadecane	NGS	110	<-2.4	<-2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029751			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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J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748
 SDG Number:
 Customer Sample ID: 16-08068-1-BASE-IN
 Customer Sample ID: 16-08068-1-BASE-IN

Sample#	R	AB	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029752			3891-96-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029752			95-48-7	2-Methylphenol	NGS	98	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S16T029752			108-39-4M	Cresol (m & p)	NGS	97	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029752			92-32-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S16T029752			76-46-6	Diethyl butylphosphonate	NGS	136	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S16T029752			84-96-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S16T029752			112-40-3	Dodecane	NGS	97	<0.60	4.0	n/a	n/a	n/a	n/a	0.55		n/a U
S16T029752			644-76-3	Heptadecane	NGS	136	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029752			628-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029752			128-73-8	Tributyl phosphite	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029752			628-60-5	Tridecane	NGS	98	<1.6	2.2	n/a	n/a	n/a	n/a	1.6		n/a J
S16T029752			628-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029752			628-62-9	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

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748
 SDG Number:
 Customer Sample ID: 16-08068-1-BLANK-EFF
 Customer Sample ID: 16-08068-1-BLANK-EFF

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU SVOA.#2															
S16T029753			3891-98-3	2,8,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029753			95-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029753			108-39-4M	Cresol (m & p)	NGS	97	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029753			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029753			78-46-6	Dibutyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029753			84-86-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029753			112-40-3	Dodecane	NGS	97	<0.60	0.90	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T029753			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029753			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029753			126-73-8	Tri-n-yl phosphite	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029753			629-50-5	Tridecane	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029753			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029753			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

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748
 SDG Number:
 Customer Sample ID: 16-08068-1-BLANK-IN
 Customer Sample ID: 16-08068-1-BLANK-IN

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TOU SYDA #2															
S16T029754			1391-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029754			85-48-7	2-Methylphenol	NGS	96	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029754			108-39-4M	Cresol (m & p)	NGS	97	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029754			82-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029754			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029754			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029754			112-49-3	Dodecane	NGS	97	<0.60	1.3	n/a	n/a	n/a	n/a	0.55	n/a	J
S16T029754			544-76-3	Hexadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029754			629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029754			126-73-8	Triethyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029754			829-59-5	Tridecane	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029754			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029754			829-82-9	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

U - Less Than Detection Limit

E - Outside Calibration Range

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748

SDG Number:

Customer Sample ID: 16-08068-1-IN-B

Customer Sample ID: 16-08068-1-IN-B

Sample#	R	AB	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029764			3891-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029764			86-48-7	2-Methylphenol	NGS	98	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029764			108-39-4M	Cresol (m & p)	NGS	97	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029764			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029764			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029764			84-96-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029764			112-40-3	Dodecane	NGS	97	<0.60	89	n/a	n/a	n/a	n/a	0.55	n/a	E
S16T029764			644-76-3	Heptadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029764			628-59-4	Tetradecane	NGS	120	<3.9	15	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029764			128-73-8	Tributyl phosphite	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029764			628-60-5	Tridecane	NGS	96	<1.6	35	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029764			628-78-7	Heptadecane	NGS	110	<2.4	3.7	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029764			628-62-9	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

U - Less Than Detection Limit

E - Outside Calibration Range

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748
 SDG Number:
 Customer Sample ID: 16-08068-1-IN-C
 Customer Sample ID: 16-08068-1-IN-C

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029765			3691-88-3	2,6,10-Trimethyldecane	NGS	110	<3.9	8.8	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029765			95-48-7	2-Methylphenol	NGS	98	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029765			108-39-4M	Cresol (m & p)	NGS	97	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029765			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029765			78-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029765			84-66-2	Diethylphthalate	NGS	130	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029765			112-40-3	Dodecane	NGS	97	<0.60	50	n/a	n/a	n/a	n/a	0.55	n/a	
S16T029765			644-76-3	Hexadecane-	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029765			629-59-4	Tetradecane	NGS	120	<3.9	16	n/a	n/a	n/a	n/a	3.9	n/a	
S16T029765			126-73-6	Tributyl phosphite	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029765			629-59-5	Tridecane	NGS	96	<1.6	22	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029765			629-73-7	Heptadecane	NGS	110	<2.4	2.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029765			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

MA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748

SDG Number:

Customer Sample ID: 16-08068-1-IN-D

Customer Sample ID: 16-08068-1-IN-D

Sample#	R	AB	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR:TDU S/OA #2															
S16T029766			3691-98-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029766			96-48-7	2-Methylphenol	NGS	98	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9		n/a U
S16T029766			108-39-4M	Cresol (m & p)	NGS	97	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029766			90-32-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0		n/a U
S16T029766			76-46-6	Diethyl butylphosphonate	NGS	130	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6		n/a U
S16T029766			34-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0		n/a U
S16T029766			112-40-3	Dodecane	NGS	97	<0.60	62	n/a	n/a	n/a	n/a	0.55		n/a E
S16T029766			644-76-3	Heptadecane	NGS	130	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029766			629-59-4	Tetradecane	NGS	120	<3.9	6.3	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029766			128-73-8	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029766			629-50-5	Tridecane	NGS	96	<1.6	18	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029766			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029766			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

U - Less Than Detection Limit

E - Outside Calibration Range

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162748

SDG Number:

Customer Sample ID: 16-08068-1-IN-E

Customer Sample ID: 16-08068-1-IN-E

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Sph Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU SVOA #2															
S16T029767			3891-68-3	2,6,10-Trimethyldecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029767			56-48-7	2-Methylphenol	NGS	98	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S16T029767			108-39-4M	Cresol (m & p)	NGS	97	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029767			32-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S16T029767			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S16T029767			84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S16T029767			112-40-3	Dodecane	NGS	97	<9.60	9.5	n/a	n/a	n/a	n/a	9.55	n/a	J
S16T029767			544-76-3	Heaodecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029767			629-59-4	Tetradecane	NGS	120	<3.9	8.6	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029767			126-73-6	Tributyl phosphate	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029767			629-50-5	Tridecane	NGS	96	<1.6	4.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029767			629-78-7	Hopsidecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029767			629-62-9	Pentadecane	NGS	120	<3.0	3.8	n/a	n/a	n/a	n/a	3.0	n/a	J

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

E - Outside Calibration Range

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

James D. Jones
 10/10/16

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BASE-EFF
 Customer Sample ID: 16-08068-2-BASE-EFF

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cal Err %	Qual Flags
VAPOR-TDU VOA R2															
S16T029711			79-34-3	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029711			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029711			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029711			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029711			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029711			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029711			108-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029711			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029711			71-36-3	1-Buflanol	NGS	140	<8.9	53	n/a	n/a	n/a	n/a	8.9	n/a	Ya
S16T029711			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029711			71-23-8	1-Propanol	NGS	120	<3.0	62	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029711			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029711			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029711			78-93-3	2-Butanone	NGS	93	<1.9	3.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029711			110-43-0	2-Heptanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029711			591-78-6	2-Hexanone	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029711			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029711			78-54-4	3-Buten-2-one	NGS	89	<1.7	2.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029711			106-35-4	3-Heptanone	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029711			106-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029711			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029711			108-10-1	4-Methyl-2-Pentanone	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029711			67-64-1	Acetone	NGS	88	<4.3	29	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029711			75-05-8	Acetonitrile	NGS	91	<1.8	120	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029711			98-86-2	Acetophenone	NGS	96	<2.6	7.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029711			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029711			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029711			107-05-1	Allyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U

Y - Comment
 a - LCS Outside Range
 U - Less Than Detection Limit
 J - Estimated
 E - Outside Calibration Range
 NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BASE-EFF
 Customer Sample ID: 16-08068-2-BASE-EFF

Sample#	R	Ad	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029711			71-43-2	Benzene	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029711			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029711			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S16T029711			106-74-0	Butanenitrile	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029711			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029711			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029711			75-00-3	Chloroethane	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029711			57-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029711			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S16T029711			124-18-5	Decane	NGS	94	<2.8	6.8	n/a	n/a	n/a	n/a	2.8		n/a J
S16T029711			54-17-5	Ethanol	NGS	110	<7.4	11	n/a	n/a	n/a	n/a	7.4		n/a J
S16T029711			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029711			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029711			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029711			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029711			528-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029711			125-68-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029711			75-05-2	Methylene Chloride	NGS	100	<2.7	3.8	n/a	n/a	n/a	n/a	2.7		n/a J
S16T029711			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S16T029711			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S16T029711			110-59-8	Pentanenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029711			107-12-0	Propenenitrile	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029711			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S16T029711			100-42-5	Styrene	NGS	100	<1.6	2.0	n/a	n/a	n/a	n/a	1.6		n/a J
S16T029711			127-18-4	Tetrachloroethene	NGS	110	<1.6	25	n/a	n/a	n/a	n/a	1.6		n/a
S16T029711			103-89-3	Toluene	NGS	98	<1.5	2.5	n/a	n/a	n/a	n/a	1.5		n/a J
S16T029711			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029711			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BASE-EFF
 Customer Sample ID: 16-08068-2-BASE-EFF

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cent Err %	Qual Flags
VAPOR-TDU VOA B2															
S16T023711			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T023711			123-86-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T023711			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T023711			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	J

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BASE-IN
 Customer Sample ID: 16-08068-2-BASE-IN

Sample#	R	Ad	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029712			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			71-35-3	1-Butanol	NGS	140	<8.9	130	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			71-23-8	1-Propanol	NGS	120	<3.0	80	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			78-93-3	2-Butanone	NGS	93	<1.9	18	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			110-43-0	2-Heptanone	NGS	97	<1.6	29	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			591-78-6	2-Hexanone	NGS	95	<1.2	8.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			78-94-4	3-Buten-2-one	NGS	89	<1.7	2.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			105-35-4	3-Heptanone	NGS	97	<1.5	170	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			105-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	2.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			108-10-1	4 Methyl-2-Pentanone	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			67-64-1	Acetone	NGS	86	<4.3	60	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			75-05-8	Acetonitrile	NGS	91	<1.8	160	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			98-86-2	Acetophenone	NGS	98	<2.6	5.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S16T029712			107-05-1	Allyl Chloride	NGS	88	<2.3	<2.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BASE-IN
 Customer Sample ID: 16-08068-2-BASE-IN

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU VOCs R2															
S16T029712			71-43-2	Benzene	NGS	98	<1.2	3.2	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029712			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029712			123-72-8	Butanal	NGS	110	<2.1	4.8	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T029712			109-74-0	Butanenitrile	NGS	97	<1.2	2.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029712			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029712			109-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029712			75-00-3	Chloroethane	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029712			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029712			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029712			124-18-5	Decane	NGS	94	<2.8	3.5	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029712			64-17-5	Ethanol	NGS	110	<7.4	64	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T029712			141-78-6	Ethyl acetate	NGS	82	<1.5	2.7	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029712			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029712			110-60-9	Furan	NGS	94	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029712			110-54-3	Hexane	NGS	96	<1.7	6.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029712			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029712			126-98-7	Methacrylonitrile	NGS	99	<1.6	7.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029712			75-05-2	Methylene Chloride	NGS	100	<2.7	2.7	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029712			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029712			98-55-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029712			110-59-8	Pentanenitrile	NGS	97	<1.6	2.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029712			107-12-0	Propanenitrile	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029712			110-86-1	Pyridine	NGS	130	<3.8	4.2	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029712			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029712			127-18-4	Tetrachloroethene	NGS	110	<1.6	17	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029712			108-88-3	Toluene	NGS	96	<1.5	6.9	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029712			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029712			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	4.7	n/a	n/a	n/a	n/a	1.6	n/a	J

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BASE-IN
 Customer Sample ID: 16-08068-2-BASE-IN

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029712			10051-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029712			123-88-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029712			142-82-5	m-Heptane	NGS	96	<1.4	4.8	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029712			10051-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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 a - LCS Outside Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BLANK-EFF
 Customer Sample ID: 16-08068-2-BLANK-EFF

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicates	Average	RPD-%	Spk Rec %	Det Limit	Com Err %	Qual Flags
VAPOR-TDU VOCs II															
S16T029713			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029713			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029713			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029713			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029713			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029713			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029713			108-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029713			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029713			71-36-3	1-Butanol	NGS	140	<8.9	46	n/a	n/a	n/a	n/a	8.9	n/a	Ya
S16T029713			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029713			71-23-8	1-Propanol	NGS	120	<3.0	94	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029713			168-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029713			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029713			78-40-3	2-Butanone	NGS	93	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029713			110-43-0	2-Heptanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029713			591-78-6	2-Hexanone	NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029713			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029713			78-84-4	3-Buten-2-one	NGS	89	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029713			106-35-4	3-Heptanone	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029713			106-68-3	3-Octanone	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029713			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029713			108-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029713			67-64-1	Acetone	NGS	65	<4.3	15	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029713			75-05-8	Acetonitrile	NGS	91	<1.8	200	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029713			98-86-2	Acetophenone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029713			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029713			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029713			107-05-1	Allyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BLANK-EFF
 Customer Sample ID: 16-08068-2-BLANK-EFF

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA_R2															
S16T029713			71-43-2	Benzene	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029713			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029713			123-72-6	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S16T029713			109-74-0	Butanenitrile	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029713			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029713			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			75-00-3	Chloroethane	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029713			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S16T029713			124-18-5	Decane	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029713			64-17-5	Ethanol	NGS	110	<7.4	21	n/a	n/a	n/a	n/a	7.4		n/a U
S16T029713			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			110-00-9	Furan	NGS	94	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029713			628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			126-98-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029713			75-09-2	Methylene Chloride	NGS	100	<2.7	3.7	n/a	n/a	n/a	n/a	2.7		n/a U
S16T029713			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S16T029713			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S16T029713			110-99-8	Nitrobenitrile	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029713			107-12-0	Propanenitrile	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029713			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S16T029713			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029713			122-18-4	Tetrachloroethene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029713			108-88-3	Toluene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			78-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029713			75-69-4	Trichlorofluoromethane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BLANK-EFF
 Customer Sample ID: 16-08068-2-BLANK-EFF

Sample#	R	Ad	CAS #	Analyte	Unit	Std %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T023713			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T023713			123-86-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T023713			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T023713			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BLANK-IN
 Customer Sample ID: 16-08068-2-BLANK-IN

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029714			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a/U
S16T029714			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a/U
S16T029714			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a/U
S16T029714			75-35-4	1,1-Dichloroethane	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a/U
S16T029714			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a/U
S16T029714			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2		n/a/U
S16T029714			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a/U
S16T029714			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a/U
S16T029714			71-35-3	1-Bromoethane	NGS	140	<8.9	4.1	n/a	n/a	n/a	n/a	8.9		n/a/Na
S16T029714			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a/U
S16T029714			71-23-8	1-Propanol	NGS	120	<3.0	7.5	n/a	n/a	n/a	n/a	3.0		n/a/U
S16T029714			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a/U
S16T029714			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a/U
S16T029714			78-53-3	2-Butanone	NGS	93	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a/U
S16T029714			110-43-0	2-Heptanone	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a/U
S16T029714			591-78-6	2-Hexanone	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a/U
S16T029714			534-22-5	2-Methylbutan-2-ol	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a/U
S16T029714			78-54-4	3-Bromo-2-one	NGS	89	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a/U
S16T029714			105-35-4	3-Heptanone	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a/U
S16T029714			105-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a/U
S16T029714			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a/U
S16T029714			105-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a/U
S16T029714			67-64-1	Acetone	NGS	88	<4.3	13	n/a	n/a	n/a	n/a	4.3		n/a
S16T029714			75-05-8	Acetonitrile	NGS	91	<1.8	14.0	n/a	n/a	n/a	n/a	1.8		n/a
S16T029714			98-86-2	Acetophenone	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a/U
S16T029714			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a/U
S16T029714			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a/U
S16T029714			107-05-1	Allyl Chloride	NGS	88	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a/U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-06068
 Customer Sample ID: 16-06068-2-BLANK-IN
 Customer Sample ID: 16-06068-2-BLANK-IN

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029714			71-43-2	Benzene	NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029714			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029714			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029714			100-74-0	Butanenitrile	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029714			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029714			106-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029714			75-00-3	Chloroethane	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029714			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029714			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029714			124-18-5	Decane	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029714			64-17-5	Ethanol	NGS	110	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T029714			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029714			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029714			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029714			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029714			628-73-9	Hexamethylo	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029714			126-98-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029714			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029714			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029714			86-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029714			110-59-8	Pentamethyl	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029714			107-12-0	Preparazine	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029714			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029714			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029714			127-18-4	Tetrachloroethene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029714			108-88-3	Toluene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029714			78-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029714			75-66-4	Trichlorofluoroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-BLANK-IN
 Customer Sample ID: 16-08068-2-BLANK-IN

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029714			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029714			123-88-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029714			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029714			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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

J - Estimated

U - Less Than Detection Limit

Y - Comment
 a - LCS Outside Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-B
 Customer Sample ID: 16-08068-2-IN-B

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RSD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029724			78-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029724			78-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029724			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029724			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029724			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029724			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029724			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029724			123-91-1	1,4-Dioxane	NGS	100	<1.7	3.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029724			71-36-3	1-Butanol	NGS	140	<8.9	640	n/a	n/a	n/a	n/a	8.9	n/a	Ya
S16T029724			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029724			71-23-8	1-Propanol	NGS	120	<3.0	430	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029724			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029724			1708-29-3	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029724			78-83-3	2-Butanone	NGS	93	<1.9	510	n/a	n/a	n/a	n/a	1.9	n/a	E
S16T029724			110-43-0	2-Heptanone	NGS	97	<1.6	68	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029724			591-78-8	2-Hexanone	NGS	95	<1.2	48	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029724			534-22-5	2-Methylfuran	NGS	94	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029724			78-94-4	3-Buten-2-one	NGS	89	<1.7	37	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029724			106-35-4	3-Heptanone	NGS	97	<1.5	410	n/a	n/a	n/a	n/a	1.5	n/a	E
S16T029724			106-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029724			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029724			108-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	7.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029724			67-64-1	Acetone	NGS	88	<4.3	6.3E+03	n/a	n/a	n/a	n/a	4.3	n/a	EY
S16T029724			75-05-8	Acetonitrile	NGS	91	<1.8	960	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029724			98-96-2	Acetophenone	NGS	98	<2.5	27	n/a	n/a	n/a	n/a	2.5	n/a	E
S16T029724			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029724			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029724			107-05-1	Allyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U

Y - Comment
 a - LCS Outside Range
 U - Less Than Detection Limit
 J - Estimated
 NA = Not Analyzed, ND = Not Detected
 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-B
 Customer Sample ID: 16-08068-2-IN-B

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU VQA R2															
S16T029724			71-43-2	Benzene	NGS	98	<1.2	10	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029724			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029724			123-72-8	Butanal	NGS	110	<2.1	47	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029724			109-74-0	Butanenitrile	NGS	97	<1.2	51	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029724			58-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029724			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029724			75-00-3	Chloroethane	NGS	98	<1.9	6.5	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029724			87-86-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029724			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029724			124-18-5	Decane	NGS	94	<2.8	14	n/a	n/a	n/a	n/a	2.8	n/a	
S16T029724			66-17-5	Ethanol	NGS	110	<7.4	540	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029724			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029724			100-41-4	Ethylbenzene	NGS	100	<1.5	2.4	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029724			110-00-9	Furan	NGS	94	<1.5	<1.5	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029724			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029724			628-73-9	Hexanenitrile	NGS	100	<1.5	6.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029724			126-98-7	Methacrylonitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029724			75-09-2	Methylene Chloride	NGS	100	<2.7	3.9	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029724			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029724			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029724			110-59-8	Pentanenitrile	NGS	97	<1.6	16	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029724			107-12-0	Propanenitrile	NGS	96	<1.4	61	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029724			110-86-1	Pyridine	NGS	130	<3.6	29	n/a	n/a	n/a	n/a	3.6	n/a	
S16T029724			100-42-5	Styrene	NGS	100	<1.6	3.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029724			127-18-4	Tetrachloroethene	NGS	110	<1.6	62	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029724			108-88-3	Toluene	NGS	94	<1.5	14	n/a	n/a	n/a	n/a	1.5	n/a	
S16T029724			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029724			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	130	n/a	n/a	n/a	n/a	1.6	n/a	

Y - Comment
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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-B
 Customer Sample ID: 16-08068-2-IN-B

Sampled	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S167029724			10061-01-5	dis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S167029724			123-86-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S167029724			142-82-5	n-Heptane	NGS	95	<1.4	19	n/a	n/a	n/a	n/a	1.4	n/a	U
S167029724			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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

J - Estimated

U - Less Than Detection Limit

Y - Comment
 a - LCS Outside Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-C
 Customer Sample ID: 16-08068-2-IN-C

SampleID	R	AP	CAS #	Analyte	Unit	STD %	Blank	Resist	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Qual Flags
VAPOR-TOU VOA #2														
S161029725			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a,U
S161029725			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a,U
S161029725			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a,U
S161029725			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a,U
S161029725			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a,U
S161029725			542-75-6	1,3-Dichloropropane (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a,U
S161029725			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a,U
S161029725			123-91-1	1,4-Dioxane	NGS	100	<1.7	4.3	n/a	n/a	n/a	n/a	1.7	n/a,J
S161029725			71-36-3	1-Butanol	NGS	140	<8.9	74.0	n/a	n/a	n/a	n/a	8.9	n/a,Ya
S161029725			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a,U
S161029725			71-23-8	1-Propanol	NGS	120	<3.0	46.0	n/a	n/a	n/a	n/a	3.0	n/a,U
S161029725			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a,U
S161029725			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a,U
S161029725			78-99-3	2-Butanone	NGS	93	<1.9	55.0	n/a	n/a	n/a	n/a	1.9	n/a,E
S161029725			110-43-0	2-Heptanone	NGS	97	<1.6	7.6	n/a	n/a	n/a	n/a	1.6	n/a
S161029725			581-78-6	2-Hexanone	NGS	95	<1.2	3.1	n/a	n/a	n/a	n/a	1.2	n/a
S161029725			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a,U
S161029725			78-94-4	3-Buten-2-one	NGS	89	<1.7	3.5	n/a	n/a	n/a	n/a	1.7	n/a
S161029725			106-35-4	3-Heptanone	NGS	97	<1.5	42.0	n/a	n/a	n/a	n/a	1.5	n/a,E
S161029725			106-68-3	3-Octanone	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a,U
S161029725			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a,U
S161029725			108-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	6.4	n/a	n/a	n/a	n/a	1.9	n/a,J
S161029725			67-64-1	Acetone	NGS	88	<4.3	7.1E+03	n/a	n/a	n/a	n/a	4.3	n/a,EY
S161029725			75-05-8	Acetonitrile	NGS	91	<1.8	1.0E+03	n/a	n/a	n/a	n/a	1.8	n/a,E
S161029725			88-68-2	Acetophenone	NGS	98	<2.6	53	n/a	n/a	n/a	n/a	2.6	n/a
S161029725			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a,U
S161029725			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a,U
S161029725			107-95-1	Allyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a,U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-06068
 Customer Sample ID: 16-06068-2-IN-C
 Customer Sample ID: 16-06068-2-IN-C

Sample#	R	M	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029725			71-43-2	Benzene	NGS	98	<1.2	10	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029725			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029725			123-72-8	Butanal	NGS	110	<2.1	39	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029725			109-74-0	Butanenitrile	NGS	97	<1.2	56	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029725			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029725			106-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029725			75-00-3	Chloroethane	NGS	98	<1.9	6.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029725			87-68-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029725			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029725			124-18-5	Decane	NGS	94	<2.8	18	n/a	n/a	n/a	n/a	2.8	n/a	
S16T029725			84-17-5	Ethanol	NGS	110	<7.4	620	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029725			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029725			100-41-4	Ethylbenzene	NGS	100	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029725			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029725			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029725			628-73-9	Hexanenitrile	NGS	100	<1.5	5.2	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029725			126-98-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029725			75-09-2	Methylene Chloride	NGS	100	<2.7	3.0	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029725			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029725			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029725			110-59-8	Perlanonitrile	NGS	97	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029725			107-12-0	Propanenitrile	NGS	96	<1.4	70	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029725			110-96-1	Pyridine	NGS	130	<3.8	30	n/a	n/a	n/a	n/a	3.8	n/a	
S16T029725			100-42-5	Styrene	NGS	100	<1.6	2.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029725			127-18-4	Tetrachloroethene	NGS	110	<1.6	48	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029725			108-88-3	Toluene	NGS	98	<1.5	9.1	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029725			78-01-6	Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029725			75-68-4	Trichlorofluoromethane	NGS	100	<1.6	140	n/a	n/a	n/a	n/a	1.6	n/a	

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 NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-C
 Customer Sample ID: 16-08068-2-IN-C

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicates	Average	RPD %	Spk Rec %	Det Limit	Cal Err %	Qual Flags
VAPOR-TDU VOA II2															
S16T029725			10051-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029725			123-86-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029725			142-82-5	n-Heptane	NGS	96	<1.4	12	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029725			16051-02-8	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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

J - Estimated

U - Less Than Detection Limit

Y - Comment
 a - LCS Outside Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-D
 Customer Sample ID: 16-08068-2-IN-D

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD-%	Spk Rec %	Det Limit	Cal Err %	Qual Flags
VAPOR-TDU VOCs B2															
S16T029726			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029726			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029726			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029726			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029726			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029726			54-2-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029726			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029726			123-91-1	1,4-Dioxane	NGS	100	<1.7	3.5	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029726			71-36-3	1-Bromobenzene	NGS	140	<8.9	550	n/a	n/a	n/a	n/a	8.9	n/a	Ya
S16T029726			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029726			71-23-8	1-Propanol	NGS	120	<3.0	380	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029726			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029726			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029726			78-03-3	2-Butanone	NGS	93	<1.9	400	n/a	n/a	n/a	n/a	1.9	n/a	E
S16T029726			110-43-0	2-Heptanone	NGS	97	<1.6	43	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029726			581-78-6	2-Hexanone	NGS	95	<1.2	42	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029726			534-22-5	2-Methylfuran	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029726			78-84-4	3-Buten-2-one	NGS	89	<1.7	30	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029726			105-35-4	3-Heptanone	NGS	97	<1.5	260	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029726			108-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029726			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029726			108-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	5.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029726			67-64-1	Acetone	NGS	88	<4.3	5.9E+03	n/a	n/a	n/a	n/a	4.3	n/a	EY
S16T029726			75-05-8	Acetonitrile	NGS	91	<1.8	970	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029726			98-86-2	Acetophenone	NGS	98	<2.6	19	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029726			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029726			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029726			107-05-1	Allyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U

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

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-D
 Customer Sample ID: 16-08068-2-IN-D

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU VOA B2															
S16T029726			71-43-2	Benzene	NGS	98	<1.2	9.1	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029726			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029726			123-72-8	Butanal	NGS	110	<2.1	30	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T029726			109-74-0	Butanenitrile	NGS	97	<1.2	42	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029726			56-23-5	Carbon tetrachloride	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			75-00-3	Chloroethane	NGS	98	<1.9	5.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029726			57-85-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T029726			124-18-5	Decane	NGS	94	<2.8	9.5	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029726			64-17-5	Ethanol	NGS	110	<7.4	500	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T029726			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029726			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029726			528-73-9	Hexanenitrile	NGS	100	<1.5	5.6	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			128-98-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029726			75-09-2	Methylene Chloride	NGS	100	<2.7	3.2	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029726			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	J
S16T029726			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029726			110-99-6	Nitrobenzitrile	NGS	97	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029726			107-12-0	Propenenitrile	NGS	96	<1.4	62	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029726			110-85-1	Pyridine	NGS	130	<3.8	26	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029726			100-42-5	Styrene	NGS	100	<1.6	2.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029726			127-18-4	Tetrachloroethene	NGS	110	<1.6	35	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029726			108-88-3	Toluene	NGS	98	<1.5	10	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029726			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	130	n/a	n/a	n/a	n/a	1.6	n/a	J

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-D
 Customer Sample ID: 16-08068-2-IN-D

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Results	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA B2															
S16T029726			10061-01-5	cis-1,3-Dichloropropene	MG/S	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029726			123-86-4	n-Butyl acetate	MG/S	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029726			742-82-5	n-Heptane	MG/S	96	<1.4	16	n/a	n/a	n/a	n/a	1.4		n/a
S16T029726			10061-02-6	trans-1,3-Dichloropropene	MG/S	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-E
 Customer Sample ID: 16-08068-2-IN-E

Sample#	R	M	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	DetLimit	Cat Err %	Qual Flags
VAPOR:TOU.VOA #2															
S16T029727			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029727			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029727			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029727			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029727			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029727			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029727			105-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S16T029727			123-91-1	1,4-Dioxane	NGS	100	<1.7	3.0	n/a	n/a	n/a	n/a	1.7		n/a J
S16T029727			71-36-3	1-B-Arrol	NGS	140	<8.9	560	n/a	n/a	n/a	n/a	8.9		n/a Ya
S16T029727			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029727			71-23-8	1-Propanol	NGS	120	<3.0	340	n/a	n/a	n/a	n/a	3.0		n/a
S16T029727			100-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029727			1706-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029727			78-93-3	2-Butanone	NGS	93	<1.9	300	n/a	n/a	n/a	n/a	1.9		n/a
S16T029727			110-43-0	2-Heptanone	NGS	97	<1.6	41	n/a	n/a	n/a	n/a	1.6		n/a
S16T029727			591-78-8	2-Hexanone	NGS	95	<1.2	30	n/a	n/a	n/a	n/a	1.2		n/a
S16T029727			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029727			78-94-4	3-Buten-2-one	NGS	89	<1.7	16	n/a	n/a	n/a	n/a	1.7		n/a
S16T029727			106-35-4	3-Heptanone	NGS	97	<1.5	260	n/a	n/a	n/a	n/a	1.5		n/a
S16T029727			106-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029727			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029727			108-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	2.9	n/a	n/a	n/a	n/a	1.9		n/a J
S16T029727			67-64-1	Acetone	NGS	88	<4.3	4.2E+03	n/a	n/a	n/a	n/a	4.3		n/a EY
S16T029727			75-05-8	Acetonitrile	NGS	91	<1.8	1000	n/a	n/a	n/a	n/a	1.8		n/a E
S16T029727			98-06-2	Acetophenone	NGS	98	<2.6	21	n/a	n/a	n/a	n/a	2.6		n/a
S16T029727			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029727			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U
S16T029727			107-05-1	Allyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-E
 Customer Sample ID: 16-08068-2-IN-E

Sample#	R	Ad	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029727			71-43-2	Benzene	NGS	98	<1.2	8.8	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029727			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029727			123-72-8	Bisaryl	NGS	110	<2.1	1.7	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T029727			109-74-0	Butanenitrile	NGS	97	<1.2	4.1	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029727			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029727			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029727			75-00-3	Chloroethane	NGS	98	<1.9	7.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029727			87-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029727			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T029727			124-18-5	Decane	NGS	94	<2.8	8.9	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029727			84-17-5	Ethanol	NGS	110	<7.4	500	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T029727			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029727			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029727			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029727			110-54-3	n-Heptane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029727			828-73-9	n-Nonanenitrile	NGS	100	<1.5	3.6	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029727			126-98-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029727			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029727			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	J
S16T029727			86-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029727			110-59-8	Pentanenitrile	NGS	97	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029727			107-12-0	Propanenitrile	NGS	96	<1.4	65	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029727			110-86-1	Pyridine	NGS	136	<3.6	18	n/a	n/a	n/a	n/a	3.6	n/a	J
S16T029727			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029727			127-18-4	Tetrachloroethene	NGS	116	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029727			108-88-3	Toluene	NGS	98	<1.5	6.7	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029727			79-01-8	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029727			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	140	n/a	n/a	n/a	n/a	1.6	n/a	J

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-E
 Customer Sample ID: 16-08068-2-IN-E

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt	Er %	Qual Flags
VAPOR-TOU VOA #2																
S16T029727			10051-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3			n/a U
S16T029727			123-69-4	n-Butyl acetate	NGS	86	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4			n/a U
S16T029727			142-82-5	n-Heptane	NGS	96	<1.4	12	n/a	n/a	n/a	n/a	1.4			n/a J
S16T029727			10051-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2			n/a U

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

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-F
 Customer Sample ID: 16-08068-2-IN-F

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Dat Limit	Cnt Err %	Qual Flags
VAPOR-TDU VDA #2															
S16T029728			78-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029728			78-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029728			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029728			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029728			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029728			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029728			105-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029728			123-91-1	1,4-Dioxane	NGS	100	<1.7	2.3	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029728			71-36-3	1-BuJanol	NGS	140	<8.9	4.60	n/a	n/a	n/a	n/a	8.9	n/a	Ye
S16T029728			111-70-5	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029728			71-23-8	1-Propanol	NGS	120	<3.0	2.90	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029728			105-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029728			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029728			78-53-3	2-BuJanone	NGS	93	<1.9	2.70	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029728			110-43-0	2-Heptanone	NGS	97	<1.6	3.8	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029728			591-78-6	2-Hexanone	NGS	95	<1.2	2.6	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029728			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029728			78-94-4	3-BuJan-2-one	NGS	88	<1.7	1.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029728			105-35-4	3-Heptanone	NGS	97	<1.5	2.70	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029728			105-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029728			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029728			105-10-1	4-Methyl-2-Pentanone	NGS	97	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029728			67-64-1	Acetone	NGS	88	<4.3	3.7E+03	n/a	n/a	n/a	n/a	4.3	n/a	EY
S16T029728			75-05-8	Acetonitrile	NGS	91	<1.8	7.20	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029728			98-95-2	Acetophenone	NGS	98	<2.6	1.4	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029728			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029728			107-18-5	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S16T029728			107-05-1	Allyl Chloride	NGS	88	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U

Y - Comment
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 J - Estimated
 E - Outside Calibration Range
 NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-F
 Customer Sample ID: 16-08068-2-IN-F

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029728			71-43-2	Benzene	NGS	96	<1.2	7.0	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029728			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029728			123-72-8	Bulanal	NGS	110	<2.1	15	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029728			109-74-0	Bulaminylide	NGS	97	<1.2	31	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029728			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029728			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	
S16T029728			75-00-3	Chloroethane	NGS	96	<1.9	7.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029728			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029728			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029728			124-18-5	Decane	NGS	94	<2.8	5.4	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029728			64-17-5	Ethanol	NGS	110	<7.4	360	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T029728			141-79-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029728			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029728			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029728			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029728			628-73-9	Hexanenitrile	NGS	100	<1.5	2.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029728			126-98-7	Methacrylonitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029728			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029728			81-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029728			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029728			110-59-8	Pentamethyl	NGS	97	<1.6	8.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029728			107-12-0	Propenitrile	NGS	96	<1.4	50	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029728			110-86-1	Pyridine	NGS	130	<3.8	15	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029728			100-42-5	Styrene	NGS	100	<1.6	2.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029728			127-18-4	Tetrachloroethene	NGS	110	<1.6	8.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029728			108-88-3	Toluene	NGS	98	<1.5	5.1	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029728			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029728			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	110	n/a	n/a	n/a	n/a	1.6	n/a	

Y - Comment
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 E - Outside Calibration Range

**Cartridge Evaluation
 Data Summary of All Results**

Sample Group: 20162746

Survey ID: 16-08068

Customer Sample ID: 16-08068-2-IN-F

Customer Sample ID: 16-08068-2-IN-F

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029728			10051-91-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029728			123-88-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029728			142-82-5	n-Heptane	NGS	96	<1.4	8.8	n/a	n/a	n/a	n/a	1.4		n/a J
S16T029728			10061-92-8	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-G
 Customer Sample ID: 16-08068-2-IN-G

Sample#	R	AI	CAS #	Analyte	Unit	std %	Blank	Result	Duplicate	Average	RPD %	Spl Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029729			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029729			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029729			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029729			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029729			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029729			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029729			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S16T029729			123-91-1	1,4-Dioxane	NGS	100	<1.7	2.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029729			71-36-3	1-Butanol	NGS	140	<8.9	470	n/a	n/a	n/a	n/a	8.9	n/a	
S16T029729			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	J
S16T029729			71-23-8	1-Propanol	NGS	120	<3.0	250	n/a	n/a	n/a	n/a	3.0	n/a	
S16T029729			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	J
S16T029729			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029729			76-53-3	2-Butanone	NGS	93	<1.9	300	n/a	n/a	n/a	n/a	1.9	n/a	
S16T029729			110-43-0	2-Heptanone	NGS	97	<1.6	28	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029729			591-78-6	2-Hexanone	NGS	95	<1.2	30	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029729			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029729			78-54-4	3-Buten-2-one	NGS	89	<1.7	22	n/a	n/a	n/a	n/a	1.7	n/a	
S16T029729			105-35-4	3-Heptanone	NGS	97	<1.5	170	n/a	n/a	n/a	n/a	1.5	n/a	
S16T029729			106-68-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	J
S16T029729			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029729			108-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	3.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029729			67-64-1	Acetone	NGS	88	<4.3	3.6E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T029729			75-05-8	Acetonitrile	NGS	91	<1.8	3.2E+03	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029729			98-96-2	Acetophenone	NGS	98	<2.6	11	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029729			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029729			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	J
S16T029729			107-05-1	Allyl Chloride	NGS	88	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	J

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-G
 Customer Sample ID: 16-08068-2-IN-G

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TOU VOA #2															
S16T029729			71-43-2	Benzene	NGS	98	<1.2	6.8	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029729			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029729			123-72-8	Butanal	NGS	110	<2.1	26	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029729			109-74-0	Butanenitrile	NGS	97	<1.2	30	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029729			58-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029729			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029729			75-00-3	Chloroethane	NGS	98	<1.9	3.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029729			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029729			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029729			124-18-5	Decane	NGS	94	<2.8	4.3	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029729			64-17-5	Ethanol	NGS	110	<7.4	320	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029729			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029729			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029729			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029729			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029729			628-73-9	Hexanenitrile	NGS	99	<1.5	2.3	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029729			126-98-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029729			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029729			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029729			96-85-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029729			110-59-8	Pentanitrile	NGS	97	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029729			107-12-0	Propanenitrile	NGS	96	<1.4	4.7	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029729			110-86-1	Pyridine	NGS	100	<3.8	20	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029729			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029729			127-18-4	Tetrachloroethene	NGS	110	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029729			108-88-3	Toluene	NGS	98	<1.5	5.9	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029729			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029729			75-69-4	Trichlorofluoroethane	NGS	100	<1.6	99	n/a	n/a	n/a	n/a	1.6	n/a	

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162746
 Survey ID: 16-08068
 Customer Sample ID: 16-08068-2-IN-G
 Customer Sample ID: 16-08068-2-IN-G

Sample#	R	Adj	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOM #2															
S161023729			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161023729			123-86-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S161023729			142-82-5	n-Heptane	NGS	96	<1.4	8.5	n/a	n/a	n/a	n/a	1.4	n/a	J
S161023729			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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 E - Outside Calibration Range

J - Estimated

U - Less Than Detection Limit

Y - Comment
 # - LCS Outside Range

*Open Aug
 10/12/16*

**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744
SDG Number:
Customer Sample ID: 16-07837-2-BASE-EFF
Customer Sample ID: 16-07837-2-BASE-EFF

Sampled	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA II															
S161029691			75-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029691			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029691			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029691			75-35-4	1,1-Dichloroethane	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029691			107-65-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029691			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029691			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S161029691			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S161029691			71-36-3	1-Butanol	NGS	120	<8.9	26	n/a	n/a	n/a	n/a	8.9	n/a	Y
S161029691			111-70-6	1-Hepanol	NGS	66	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S161029691			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S161029691			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S161029691			1708-29-6	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S161029691			78-93-3	2-Butanone	NGS	100	<1.9	5.4	n/a	n/a	n/a	n/a	1.9	n/a	J
S161029691			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029691			591-78-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029691			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029691			78-94-4	3-Buten-2-one	NGS	100	<1.7	2.4	n/a	n/a	n/a	n/a	1.7	n/a	J
S161029691			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029691			106-63-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S161029691			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029691			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029691			57-64-1	Acetone	NGS	89	<4.3	36	n/a	n/a	n/a	n/a	4.3	n/a	U
S161029691			75-05-8	Acetonitrile	NGS	90	<1.8	15	n/a	n/a	n/a	n/a	1.8	n/a	U
S161029691			98-86-2	Acetophenone	NGS	96	<2.6	6.2	n/a	n/a	n/a	n/a	2.6	n/a	J
S161029691			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S161029691			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BASE-EFF
 Customer Sample ID: 16-07837-2-BASE-EFF

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029691			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a U
S161029691			71-43-2	Benzene	NGS	97	<1.2	1.4	n/a	n/a	n/a	n/a	1.2	n/a	n/a J
S161029691			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a U
S161029691			123-72-8	Benzal	NGS	110	<2.1	4.0	n/a	n/a	n/a	n/a	2.1	n/a	n/a J
S161029691			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a U
S161029691			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a U
S161029691			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a U
S161029691			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a U
S161029691			87-88-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a U
S161029691			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	n/a U
S161029691			124-18-5	Decane	NGS	95	<2.8	13	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S161029691			94-17-5	Ethanol	NGS	99	<7.4	15	n/a	n/a	n/a	n/a	7.4	n/a	n/a J
S161029691			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a U
S161029691			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a U
S161029691			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a U
S161029691			110-54-3	Hexane	NGS	97	<1.7	1.9	n/a	n/a	n/a	n/a	1.7	n/a	n/a J
S161029691			828-73-8	Hexamethylenetriamine	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a U
S161029691			126-88-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a U
S161029691			75-09-2	Methylene Chloride	NGS	98	<2.7	4.0	n/a	n/a	n/a	n/a	2.7	n/a	n/a J
S161029691			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	n/a U
S161029691			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	n/a U
S161029691			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a U
S161029691			107-12-0	Propanenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	n/a U
S161029691			110-86-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	n/a U
S161029691			100-42-5	Styrene	NGS	100	<1.6	3.3	n/a	n/a	n/a	n/a	1.6	n/a	n/a J
S161029691			127-18-4	Tetrachloroethene	NGS	100	<1.6	1.0	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S161029691			108-88-3	Toluene	NGS	96	<1.5	3.8	n/a	n/a	n/a	n/a	1.5	n/a	n/a J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BASE-EFF
 Customer Sample ID: 16-07837-2-BASE-EFF

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Est Err %	Qual Flags
VAPOR-TDU VOA I2															
S16T029691			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029691			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029691			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029691			123-86-4	n-Butyl acetate	NGS	94	<1.4	1.8	n/a	n/a	n/a	n/a	1.4		n/a J
S16T029691			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029691			10061-02-8	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BASE-IN
 Customer Sample ID: 16-07837-2-BASE-IN

Sample#	R	#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TOU VOA II2															
S16T029692		79-34-5		1,1,2,2-Tetrachloroethane	NGS	100	<1.3	2.6	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029692		79-00-5		1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029692		75-34-3		1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029692		75-35-4		1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029692		107-06-2		1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029692		542-75-8		1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029692		106-46-7		1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029692		123-91-1		1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029692		71-38-3		1-Butanol	NGS	120	<8.9	45	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029692		111-70-6		1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029692		71-23-6		1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029692		108-47-4		2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029692		1708-29-8		2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029692		78-93-3		2-Butanone	NGS	100	<1.9	8.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029692		110-43-0		2-Heptanone	NGS	95	<1.6	2.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029692		591-78-6		2-Hexanone	NGS	92	<1.2	2.0	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029692		534-22-5		2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029692		78-84-4		3-Buten-2-one	NGS	100	<1.7	5.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029692		106-35-4		3-Heptanone	NGS	95	<1.5	1.9	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029692		106-68-3		3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029692		106-42-0		4-Methyl-2-heptanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029692		106-10-1		4-Methyl-2-pentanone	NGS	96	<1.9	16	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029692		57-64-1		Acetone	NGS	89	<4.3	80	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029692		75-05-8		Acetonitrile	NGS	90	<1.8	23	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029692		86-86-2		Acetophenone	NGS	96	<2.6	5.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029692		107-13-1		Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029692		107-18-6		Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BASE-IN
 Customer Sample ID: 16-07837-2-BASE-IN

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TOU VOA #2															
S161029692			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S161029692			71-43-2	Benzene	NGS	97	<1.2	7.0	n/a	n/a	n/a	n/a	1.2	n/a	J
S161029692			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029692			123-72-8	Buzanal	NGS	110	<2.1	7.8	n/a	n/a	n/a	n/a	2.1	n/a	J
S161029692			109-74-0	Buzanenitrile	NGS	94	<1.2	3.4	n/a	n/a	n/a	n/a	1.2	n/a	J
S161029692			56-23-5	Carbon tetrachloride	NGS	100	<1.6	1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029692			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029692			75-00-3	Chloroethane	NGS	95	<1.0	<1.0	n/a	n/a	n/a	n/a	1.0	n/a	U
S161029692			57-86-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029692			110-83-7	Cyclohexane	NGS	99	<1.8	4.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S161029692			124-18-5	Decane	NGS	95	<2.8	10	n/a	n/a	n/a	n/a	2.8	n/a	J
S161029692			84-17-5	Ethanol	NGS	99	<7.4	73	n/a	n/a	n/a	n/a	7.4	n/a	
S161029692			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029692			100-41-4	Ethylbenzene	NGS	99	<1.5	2.2	n/a	n/a	n/a	n/a	1.5	n/a	J
S161029692			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029692			110-54-3	Hexane	NGS	97	<1.7	11	n/a	n/a	n/a	n/a	1.7	n/a	J
S161029692			628-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029692			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029692			75-09-2	Methylene Chloride	NGS	98	<2.7	2.8	n/a	n/a	n/a	n/a	2.7	n/a	J
S161029692			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S161029692			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S161029692			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029692			107-12-0	Propanenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S161029692			110-85-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S161029692			100-42-5	Styrene	NGS	100	<1.6	2.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029692			127-18-4	Tetrachloroethene	NGS	100	<1.6	150	n/a	n/a	n/a	n/a	1.6	n/a	
S161029692			108-88-3	Toluene	NGS	96	<1.5	27	n/a	n/a	n/a	n/a	1.5	n/a	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-BASE-IN

Customer Sample ID: 16-07837-2-BASE-IN

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S18T029692			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S18T029692			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	5.2	n/a	n/a	n/a	n/a	1.8	n/a	J
S18T029692			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S18T029692			123-85-4	n-Butyl acetate	NGS	94	<1.4	2.4	n/a	n/a	n/a	n/a	1.4	n/a	J
S18T029692			142-82-5	n-Heptane	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S18T029692			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BLANK1
 Customer Sample ID: 16-07837-2-BLANK1

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR:TDU VOA 12															
S16T029693			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a,U
S16T029693			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a,U
S16T029693			75-34-3	1,1-Dichloroethane	NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a,U
S16T029693			75-35-4	1,1-Dichloroethane	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a,U
S16T029693			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a,U
S16T029693			54-2-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a,U
S16T029693			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a,U
S16T029693			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a,U
S16T029693			71-36-3	1-Butanol	NGS	120	<6.9	<6.9	n/a	n/a	n/a	n/a	8.9		n/a,U
S16T029693			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a,U
S16T029693			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a,U
S16T029693			103-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a,U
S16T029693			1703-29-6	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a,U
S16T029693			78-93-3	2-Butanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a,U
S16T029693			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a,U
S16T029693			591-78-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a,U
S16T029693			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a,U
S16T029693			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a,U
S16T029693			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a,U
S16T029693			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a,U
S16T029693			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a,U
S16T029693			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a,U
S16T029693			37-64-1	Acetone	NGS	89	<4.3	6.6	n/a	n/a	n/a	n/a	4.3		n/a,U
S16T029693			75-05-6	Acetonitrile	NGS	90	<1.8	4.4	n/a	n/a	n/a	n/a	1.8		n/a,U
S16T029693			98-86-2	Acetophenone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a,U
S16T029693			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a,U
S16T029693			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a,U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BLANK1
 Customer Sample ID: 16-07837-2-BLANK1

Sample#	R	AI	CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TOU VOA #2															
S16T029693			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029693			71-43-2	Benzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029693			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029693			123-72-8	Buzanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029693			109-74-0	Buzanonitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029693			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029693			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029693			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029693			87-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029693			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029693			124-18-5	Decane	NGS	95	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029693			84-17-5	Ethanol	NGS	99	<7.4	7.8	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T029693			141-78-6	Ethyl acetate	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029693			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029693			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029693			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029693			528-73-9	Hexamethylnitro	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029693			125-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029693			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029693			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029693			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029693			110-59-8	Pentanitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029693			107-12-0	Propanenitrile	NGS	99	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029693			110-86-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029693			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029693			127-18-4	Tetrachloroethene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029693			108-88-3	Toluene	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BLANK1
 Customer Sample ID: 16-07837-2-BLANK1

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cmt Err %	Qual Flags
VAPOR:TDU VOA #2															
S16T029693			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029693			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029693			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029693			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029693			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029693			10061-02-6	trans-1,3-Dichloropropene	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BLANK2
 Customer Sample ID: 16-07837-2-BLANK2

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029694			75-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029694			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029694			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029694			75-35-4	1,1-Dichloroethane	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029694			107-65-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029694			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029694			123-81-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029694			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	UY
S16T029694			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029694			71-23-6	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029694			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029694			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029694			78-93-3	2-Butanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029694			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			591-78-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029694			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029694			78-84-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029694			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029694			106-98-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029694			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029694			106-10-1	4-Methyl-2-Pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029694			87-66-1	Acetone	NGS	89	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029694			75-05-8	Acetonitrile	NGS	90	<1.8	14	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029694			96-86-2	Acetophenone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029694			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029694			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-BLANK2
 Customer Sample ID: 16-07837-2-BLANK2

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cal Er %	Qual Flags
VAPOR-TDU VOA #2															
S16T029694			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029694			71-43-2	Benzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029694			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029694			123-72-8	Buzanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029694			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029694			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029694			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029694			57-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029694			110-62-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029694			124-18-5	Decane	NGS	95	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029694			64-17-5	Ethanol	NGS	99	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T029694			141-78-6	Ethyl acetate	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029694			100-41-4	Ethylbenzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029694			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029694			828-73-9	Hexamethilo	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029694			126-58-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029694			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029694			98-05-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029694			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			107-12-0	Propanenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029694			110-85-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029694			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			127-18-4	Tetrachloroethene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029694			108-88-3	Toluene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-BLANK2

Customer Sample ID: 16-07837-2-BLANK2

Sample #	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA 12															
S16T029694			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a/U
S16T029694			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a/U
S16T029694			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a/U
S16T029694			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a/U
S16T029694			142-82-3	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a/U
S16T029694			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a/U

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-A
 Customer Sample ID: 16-07837-2-EFF-A

Sample#	R	As	CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOL #2															
S16T029695			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	1.4	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029695			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029695			75-34-3	1,1-Dichloroethane	NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029695			75-35-4	1,1-Dichloroethane	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029695			107-05-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029695			542-75-6	1,3-Dichloropropane (Total)	NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029695			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029695			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029695			71-39-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	UY
S16T029695			111-70-6	1-Heptanol	NGS	86	<5.6	6.8	n/a	n/a	n/a	n/a	5.6	n/a	J
S16T029695			71-23-6	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029695			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029695			1708-20-3	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029695			78-93-3	2-Butanone	NGS	100	<1.9	5.4	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029695			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029695			591-78-6	2-Hexanone	NGS	98	<1.2	1.3	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029695			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029695			76-94-4	3-Buten-2-one	NGS	100	<1.7	3.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029695			106-35-4	3-Heptanone	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029695			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029695			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029695			109-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029695			57-64-1	Acetone	NGS	89	<4.3	44	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029695			75-05-8	Acetonitrile	NGS	90	<1.8	59	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029695			58-86-2	Acetophenone	NGS	96	<2.6	11	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029695			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029695			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-A
 Customer Sample ID: 16-07837-2-EFF-A

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR:TDU VOA #2															
S16T029695			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029695			71-43-2	Benzene	NGS	97	<1.2	2.1	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029695			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029695			123-72-8	Butanal	NGS	110	<2.1	3.4	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T029695			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029695			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029695			103-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029695			75-00-3	Chloroethane	NGS	95	<1.9	2.4	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029695			57-68-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029695			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029695			124-18-5	Decane	NGS	95	<2.8	19	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029695			84-17-5	Ethanol	NGS	99	<7.4	16	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T029695			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029695			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029695			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029695			110-54-3	Hexane	NGS	97	<1.7	1.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029695			828-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029695			128-86-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029695			75-09-2	Methylene Chloride	NGS	98	<2.7	3.8	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029695			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029695			98-05-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029695			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029695			107-12-0	Propanenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029695			110-86-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029695			100-42-5	Styrene	NGS	100	<1.6	2.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029695			127-18-4	Tetrachloroethene	NGS	100	<1.6	72	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029695			108-88-3	Toluene	NGS	96	<1.5	2.4	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-A
 Customer Sample ID: 16-07837-2-EFF-A

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S18T029695			75-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S18T029695			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S18T029695			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S18T029695			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S18T029695			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S18T029695			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-B
 Customer Sample ID: 16-07837-2-EFF-B

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029696			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029696			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029696			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029696			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029696			107-66-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029696			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	3.0	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029696			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029696			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029696			71-36-3	1-Butanol	NGS	120	<8.9	57	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029696			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029696			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029696			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029696			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029696			78-93-3	2-Butanone	NGS	100	<1.9	7.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029696			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029696			591-78-6	2-Hexanone	NGS	92	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029696			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029696			78-94-4	3-Buten-2-one	NGS	100	<1.7	3.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029696			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029696			106-88-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029696			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029696			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029696			97-64-1	Acetone	NGS	89	<4.3	44	n/a	n/a	n/a	n/a	4.3	n/a	
S16T029696			75-05-8	Acetonitrile	NGS	90	<1.8	210	n/a	n/a	n/a	n/a	1.8	n/a	
S16T029696			98-85-2	Acetophenone	NGS	96	<2.6	12	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029696			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029696			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-B
 Customer Sample ID: 16-07837-2-EFF-B

Sample#	R	AI	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Det Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029696			107-05-1	Alyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029696			71-43-2	Benzene	NGS	97	<1.2	2.0	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029696			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029696			123-72-8	Butanal	NGS	110	<2.1	3.3	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T029696			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029696			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029696			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029696			75-00-3	Chloroethane	NGS	95	<1.9	4.5	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029696			87-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029696			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029696			124-18-5	Decane	NGS	95	<2.8	14	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029696			94-17-5	Ethanol	NGS	99	<7.4	65	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T029696			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029696			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029696			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029696			110-54-3	Hexane	NGS	97	<1.7	2.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029696			828-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029696			126-88-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029696			75-09-2	Methylene Chloride	NGS	98	<2.7	5.9	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029696			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029696			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029696			110-59-8	Pentanitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029696			107-12-0	Propanenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029696			110-86-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029696			100-42-5	Styrene	NGS	100	<1.8	2.4	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T029696			127-18-4	Tetrachloroethene	NGS	100	<1.6	66	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029696			108-88-3	Toluene	NGS	96	<1.5	2.4	n/a	n/a	n/a	n/a	1.5	n/a	J

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 Y - Comment
 U - Less Than Detection Limit
 MA = Not Analyzed, ND = Not Detected
 J - Estimated
 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-B
 Customer Sample ID: 16-07837-2-EFF-B

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S18T029698			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S18T029698			75-09-4	Trichlorofluoromethane	NGS	98	<1.6	2.1	n/a	n/a	n/a	n/a	1.6		n/a J
S18T029698			10081-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	3.0	n/a	n/a	n/a	n/a	1.3		n/a J
S18T029698			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S18T029698			142-82-5	n-Heptane	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S18T029698			10081-02-8	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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 E - Outside Calibration Range

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-C
 Customer Sample ID: 16-07837-2-EFF-C

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicates	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VQA #2															
S16T029697			79-34-5	1,1,1,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029697			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029697			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029697			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029697			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029697			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029697			105-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S16T029697			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029697			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9		n/a UY
S16T029697			111-70-6	1-Heptanol	NGS	66	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029697			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S16T029697			103-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029697			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029697			78-60-3	2-Butanone	NGS	100	<1.9	5.3	n/a	n/a	n/a	n/a	1.9		n/a J
S16T029697			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029697			591-75-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029697			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029697			78-94-4	3-Buten-2-one	NGS	100	<1.7	3.0	n/a	n/a	n/a	n/a	1.7		n/a J
S16T029697			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029697			106-63-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029697			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029697			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029697			87-64-1	Acetone	NGS	89	<4.3	42	n/a	n/a	n/a	n/a	4.3		n/a
S16T029697			75-05-8	Acetonitrile	NGS	90	<1.8	270	n/a	n/a	n/a	n/a	1.8		n/a
S16T029697			98-86-2	Acetophenone	NGS	96	<2.8	8.7	n/a	n/a	n/a	n/a	2.8		n/a J
S16T029697			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029697			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-C
 Customer Sample ID: 16-07837-2-EFF-C

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicates	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029697			107-65-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S161029697			71-43-2	Benzene	NGS	97	<1.2	1.8	n/a	n/a	n/a	n/a	1.2		n/a J
S161029697			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S161029697			123-72-8	Butanal	NGS	110	<2.1	3.3	n/a	n/a	n/a	n/a	2.1		n/a J
S161029697			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S161029697			36-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S161029697			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S161029697			75-00-3	Chloroethane	NGS	95	<1.9	4.3	n/a	n/a	n/a	n/a	1.9		n/a J
S161029697			87-68-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S161029697			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S161029697			124-18-5	Decane	NGS	95	<2.8	9.5	n/a	n/a	n/a	n/a	2.8		n/a J
S161029697			84-17-5	Ethanol	NGS	99	<7.4	130	n/a	n/a	n/a	n/a	7.4		n/a
S161029697			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S161029697			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S161029697			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S161029697			110-54-3	Heptane	NGS	97	<1.7	1.9	n/a	n/a	n/a	n/a	1.7		n/a J
S161029697			828-73-9	Hexamethylo	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S161029697			126-88-7	Methacrylonitrile	NGS	100	<1.6	3.8	n/a	n/a	n/a	n/a	1.6		n/a J
S161029697			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S161029697			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S161029697			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S161029697			110-59-8	Pentanitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S161029697			107-12-0	Propenenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S161029697			110-96-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S161029697			100-42-5	Styrene	NGS	100	<1.6	2.4	n/a	n/a	n/a	n/a	1.6		n/a J
S161029697			127-18-4	Tetrachloroethene	NGS	100	<1.6	64	n/a	n/a	n/a	n/a	1.6		n/a
S161029697			108-88-3	Toluene	NGS	96	<1.5	2.1	n/a	n/a	n/a	n/a	1.5		n/a J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-EFF-C

Customer Sample ID: 16-07837-2-EFF-C

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T025697			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T025697			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	4.8	n/a	n/a	n/a	n/a	1.6		n/a J
S16T025697			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T025697			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T025697			142-82-5	n-Heptane	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T025697			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-D
 Customer Sample ID: 16-07837-2-EFF-D

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029698			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029698			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029698			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029698			75-35-4	1,1-Dichloroethane	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029698			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029698			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029698			108-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029698			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029698			71-38-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	UY
S16T029698			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029698			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029698			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029698			1706-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029698			78-93-3	2-Butanone	NGS	100	<1.9	2.9	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029698			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	Y
S16T029698			591-78-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	Y
S16T029698			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	Y
S16T029698			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	Y
S16T029698			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	Y
S16T029698			106-69-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029698			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029698			108-10-1	4-Methyl-2-Pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029698			87-64-1	Acetone	NGS	89	<4.3	86	n/a	n/a	n/a	n/a	4.3	n/a	
S16T029698			75-05-8	Acetonitrile	NGS	90	<1.8	1.2E+03	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029698			98-86-2	Acetophenone	NGS	96	<2.6	9.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029698			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029698			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-D
 Customer Sample ID: 16-07837-2-EFF-D

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VQA #2															
S16T029698			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029698			71-43-2	Benzene	NGS	97	<1.2	1.3	n/a	n/a	n/a	n/a			n/a J
S16T029698			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029698			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S16T029698			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a			n/a U
S16T029698			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029698			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029698			75-00-3	Chloroethane	NGS	95	<1.9	5.7	n/a	n/a	n/a	n/a	1.9		n/a J
S16T029698			57-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029698			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S16T029698			124-18-5	Decane	NGS	95	<2.8	9.9	n/a	n/a	n/a	n/a	2.8		n/a J
S16T029698			64-17-5	Ethanol	NGS	99	<7.4	240	n/a	n/a	n/a	n/a	7.4		n/a
S16T029698			141-76-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029698			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029698			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029698			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029698			528-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029698			126-86-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029698			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S16T029698			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S16T029698			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S16T029698			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029698			107-12-0	Propanenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029698			110-86-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S16T029698			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029698			127-18-4	Tetrachloroethene	NGS	100	<1.6	43	n/a	n/a	n/a	n/a	1.6		n/a
S16T029698			108-88-3	Toluene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-EFF-D

Customer Sample ID: 16-07837-2-EFF-D

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOUR-TDU VOA #2															
S18T020698			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S18T020698			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S18T020698			10091-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S18T020698			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S18T020698			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S18T020698			10091-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-E
 Customer Sample ID: 16-07837-2-EFF-E

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VQA #2															
S16T029699			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029699			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029699			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029699			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029699			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029699			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029699			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029699			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029699			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	UY
S16T029699			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029699			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029699			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029699			1704-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029699			78-93-3	2-Butanone	NGS	100	<1.9	2.4	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029699			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029699			591-78-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029699			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029699			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029699			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029699			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029699			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029699			103-10-1	4-Methyl-2-Pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029699			57-64-1	Acetone	NGS	89	<4.3	240	n/a	n/a	n/a	n/a	4.3	n/a	
S16T029699			75-05-9	Acetonitrile	NGS	90	<1.8	370	n/a	n/a	n/a	n/a	1.8	n/a	
S16T029699			88-66-2	Acetophenone	NGS	96	<2.6	4.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029699			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029699			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-E
 Customer Sample ID: 16-07837-2-EFF-E

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Est Err %	Qual Flags
VAPOR-TDU VOA #2															
S18T029699			107-05-1	Alyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S18T029699			71-43-2	Benzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S18T029699			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S18T029699			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S18T029699			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S18T029699			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S18T029699			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S18T029699			75-00-3	Chloroethane	NGS	95	<1.9	5.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S18T029699			87-68-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S18T029699			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S18T029699			124-18-5	Decane	NGS	95	<2.8	5.1	n/a	n/a	n/a	n/a	2.8	n/a	J
S18T029699			84-17-5	Ethanol	NGS	99	<7.4	280	n/a	n/a	n/a	n/a	7.4	n/a	
S18T029699			141-78-8	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S18T029699			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S18T029699			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S18T029699			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S18T029699			528-73-9	Hexamethylo	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S18T029699			128-85-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S18T029699			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S18T029699			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S18T029699			98-05-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S18T029699			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S18T029699			107-12-0	Propanenitrile	NGS	98	<1.4	2.3	n/a	n/a	n/a	n/a	1.4	n/a	J
S18T029699			110-85-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S18T029699			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S18T029699			127-18-4	Tetrachloroethene	NGS	100	<1.6	29	n/a	n/a	n/a	n/a	1.6	n/a	
S18T029699			108-88-3	Toluene	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-E
 Customer Sample ID: 16-07837-2-EFF-E

Sample#	R	AI	CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Est Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA 12															
S16T029699			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029699			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	58	n/a	n/a	n/a	n/a	1.6		n/a
S16T029699			10001-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029699			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029699			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029699			10061-02-5	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-F
 Customer Sample ID: 16-07837-2-EFF-F

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VQA #2															
S16T029700			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029700			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029700			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029700			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029700			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029700			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029700			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S16T029700			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029700			71-36-3	1-Butanol	NGS	120	<6.9	<6.9	n/a	n/a	n/a	n/a	8.9		n/a UY
S16T029700			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a U
S16T029700			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0		n/a U
S16T029700			103-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029700			1706-29-6	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029700			78-93-3	2-Butanone	NGS	100	<1.9	2.4	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029700			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029700			591-78-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029700			334-22-6	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029700			78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029700			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029700			106-69-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029700			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029700			108-10-1	4-Methyl-2-Pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029700			87-84-1	Acetone	NGS	89	<4.3	120	n/a	n/a	n/a	n/a	4.3		n/a
S16T029700			75-05-8	Acetonitrile	NGS	90	<1.8	300	n/a	n/a	n/a	n/a	1.8		n/a
S16T029700			98-89-2	Acetophenone	NGS	96	<2.6	3.0	n/a	n/a	n/a	n/a	2.6		n/a J
S16T029700			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029700			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-F
 Customer Sample ID: 16-07837-2-EFF-F

Sample#	R	A#	CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA 12															
S16T029700			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029700			71-43-2	Benzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029700			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029700			123-72-8	Buzanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S16T029700			109-74-0	Buzanitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029700			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029700			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029700			75-00-3	Chloroethane	NGS	95	<1.9	3.3	n/a	n/a	n/a	n/a	1.9		n/a J
S16T029700			87-86-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029700			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S16T029700			124-18-5	Decane	NGS	95	<2.8	3.5	n/a	n/a	n/a	n/a	2.8		n/a J
S16T029700			84-17-5	Ethanol	NGS	99	<7.4	230	n/a	n/a	n/a	n/a	7.4		n/a
S16T029700			141-78-8	Ethyl acetate	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029700			100-41-4	Ethylbenzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029700			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029700			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029700			528-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029700			125-86-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029700			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S16T029700			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S16T029700			86-85-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S16T029700			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029700			107-12-0	Propanenitrile	NGS	98	<1.4	2.7	n/a	n/a	n/a	n/a	1.4		n/a J
S16T029700			110-85-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S16T029700			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029700			127-18-4	Tetrachloroethene	NGS	100	<1.6	27	n/a	n/a	n/a	n/a	1.6		n/a
S16T029700			108-88-3	Toluene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-F
 Customer Sample ID: 16-07837-2-EFF-F

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat. Err %	Qual Flags
VAPOR-TDU VOA #2															
S18T029700			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S18T029700			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	58	n/a	n/a	n/a	n/a	1.6		n/a
S18T029700			10051-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S18T029700			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S18T029700			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S18T029700			10051-02-6	trans-1,3-Dichloropropene	NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-G
 Customer Sample ID: 16-07837-2-EFF-G

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Est. Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029701		75-34-5		1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029701		75-00-5		1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029701		75-34-3		1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029701		75-35-4		1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029701		107-05-2		1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029701		542-75-6		1,3-Dichloropropene (Total)	NGS	99	<1.2	3.3	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029701		106-46-7		1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029701		123-91-1		1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029701		71-36-3		1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	UY
S16T029701		111-70-6		1-Heptanol	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029701		71-23-8		1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029701		103-47-4		2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029701		1708-29-6		2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029701		78-80-3		2-Butanone	NGS	100	<1.9	2.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029701		110-43-0		2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029701		991-73-6		2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029701		534-23-5		2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029701		78-04-4		3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029701		106-35-4		3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029701		106-68-3		3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029701		105-42-0		4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029701		108-10-1		4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029701		87-64-1		Acetone	NGS	89	<4.3	1.2E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T029701		75-05-8		Acetonitrile	NGS	90	<1.8	450	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029701		98-85-2		Acetophenone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029701		107-13-1		Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029701		107-18-6		Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-G
 Customer Sample ID: 16-07837-2-EFF-G

Sampled	R	AM	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Em %	Qual Flags
VAPOR-TDU VOA II2															
S161029701			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S161029701			71-43-2	Benzene	NGS	97	<1.2	1.5	n/a	n/a	n/a	n/a	1.2	n/a	J
S161029701			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029701			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S161029701			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029701			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029701			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029701			75-00-3	Chloroethane	NGS	95	<1.9	5.4	n/a	n/a	n/a	n/a	1.9	n/a	J
S161029701			67-68-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029701			110-82-7	Cyclohexane	NGS	99	<1.8	8.9	n/a	n/a	n/a	n/a	1.8	n/a	J
S161029701			124-18-5	Decane	NGS	95	<2.8	12	n/a	n/a	n/a	n/a	2.8	n/a	J
S161029701			64-17-5	Ethanol	NGS	99	<7.4	4.23	n/a	n/a	n/a	n/a	7.4	n/a	
S161029701			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029701			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029701			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029701			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S161029701			628-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029701			126-88-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S161029701			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S161029701			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S161029701			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S161029701			110-59-8	Pentanenitrile	NGS	92	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029701			107-12-0	Propanenitrile	NGS	98	<1.4	13	n/a	n/a	n/a	n/a	1.4	n/a	
S161029701			110-86-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S161029701			100-42-5	Styrene	NGS	100	<1.6	4.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029701			127-18-4	Tetrachloroethene	NGS	100	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S161029701			108-88-3	Toluene	NGS	96	<1.5	4.8	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-G
 Customer Sample ID: 16-07837-2-EFF-G

Sample#	R	AP	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Conc Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029701			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029701			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	1.90	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029701			10061-01-5	trans-1,3-Dichloropropene	NGS	100	<1.3	3.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029701			123-86-4	n-Butyl acetate	NGS	94	<1.4	3.7	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029701			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029701			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-H
 Customer Sample ID: 16-07837-2-EFF-H

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029702			78-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029702			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029702			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029702			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029702			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029702			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029702			108-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029702			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029702			71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	UY
S16T029702			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029702			71-23-8	1-Propanol	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029702			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029702			1705-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029702			78-93-3	2-Butanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029702			110-43-0	2-Heptanone	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029702			591-78-6	2-Hexanone	NGS	92	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029702			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029702			78-94-4	3-Butan-2-one	NGS	100	<1.7	2.1	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029702			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029702			105-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029702			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029702			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029702			67-64-1	Acetone	NGS	89	<4.3	2.1E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T029702			75-05-3	Acetonitrile	NGS	90	<1.8	659	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029702			98-85-2	Acetophenone	NGS	96	<2.6	3.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029702			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029702			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-H
 Customer Sample ID: 16-07837-2-EFF-H

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA 12															
S16T029702			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029702			71-43-2	Benzene	NGS	97	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029702			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029702			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1		n/a U
S16T029702			109-74-0	Butanenitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029702			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029702			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029702			75-00-3	Chloroethane	NGS	96	<1.9	5.7	n/a	n/a	n/a	n/a	1.9		n/a J
S16T029702			57-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029702			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S16T029702			124-18-5	Decane	NGS	95	<2.8	3.8	n/a	n/a	n/a	n/a	2.8		n/a J
S16T029702			54-17-5	Ethanol	NGS	99	<7.4	530	n/a	n/a	n/a	n/a	7.4		n/a U
S16T029702			141-73-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029702			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029702			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029702			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029702			628-73-9	Hexamethylo	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029702			126-88-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029702			75-09-2	Methylone Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7		n/a U
S16T029702			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7		n/a U
S16T029702			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6		n/a U
S16T029702			110-59-8	Pentanitrile	NGS	92	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8		n/a U
S16T029702			107-12-0	Propenitrile	NGS	98	<1.4	29	n/a	n/a	n/a	n/a	1.4		n/a
S16T029702			110-86-1	Pyridine	NGS	120	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8		n/a U
S16T029702			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029702			127-18-4	Tetrachloroethane	NGS	100	<1.6	18	n/a	n/a	n/a	n/a	1.6		n/a
S16T029702			106-88-3	Toluene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U

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

**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-H
 Customer Sample ID: 16-07837-2-EFF-H

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RFD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029702			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029702			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	260	n/a	n/a	n/a	n/a	1.6		n/a
S16T029702			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029702			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029702			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029702			10061-02-8	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

N - Named TIC
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a - LCS Outside Range
 T - Tentatively Identified Compound

Y - Consent
 U - Less Than Detection Limit

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-A
 Customer Sample ID: 16-07837-2-IN-A

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029703			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029703			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029703			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029703			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029703			107-05-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029703			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	7.9	n/a	n/a	n/a	n/a	1.2		n/a
S16T029703			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S16T029703			123-91-1	1,4-Dioxane	NGS	98	<1.7	3.6	n/a	n/a	n/a	n/a	1.7		n/a J
S16T029703			71-36-3	1-Butanol	NGS	120	<8.9	610	n/a	n/a	n/a	n/a	8.9		n/a Y
S16T029703			111-70-6	1-Heptanol	NGS	86	<5.6	8.2	n/a	n/a	n/a	n/a	5.6		n/a J
S16T029703			71-23-8	1-Propanol	NGS	110	<3.0	330	n/a	n/a	n/a	n/a	3.0		n/a
S16T029703			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029703			1706-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029703			78-83-3	2-Butanone	NGS	100	<1.9	470	n/a	n/a	n/a	n/a	1.9		n/a E
S16T029703			110-43-0	2-Heptanone	NGS	95	<1.6	25	n/a	n/a	n/a	n/a	1.6		n/a
S16T029703			591-78-6	2-Hexanone	NGS	92	<1.2	30	n/a	n/a	n/a	n/a	1.2		n/a
S16T029703			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029703			78-84-4	3-Buten-2-one	NGS	100	<1.7	29	n/a	n/a	n/a	n/a	1.7		n/a
S16T029703			106-35-4	3-Heptanone	NGS	95	<1.5	140	n/a	n/a	n/a	n/a	1.5		n/a
S16T029703			106-88-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029703			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029703			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	13	n/a	n/a	n/a	n/a	1.9		n/a
S16T029703			67-64-1	Acetone	NGS	89	<4.3	6.2E+03	n/a	n/a	n/a	n/a	4.3		n/a EY
S16T029703			75-05-8	Acetonitrile	NGS	90	<1.8	340	n/a	n/a	n/a	n/a	1.8		n/a
S16T029703			98-86-2	Acetophenone	NGS	96	<2.6	19	n/a	n/a	n/a	n/a	2.6		n/a
S16T029703			107-13-1	Acrylonitrile	NGS	98	<1.7	5.0	n/a	n/a	n/a	n/a	1.7		n/a J
S16T029703			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-A
 Customer Sample ID: 16-07837-2-IN-A

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VQA #2															
S16T029703			107-05-1	Alyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029703			71-43-2	Benzene	NGS	97	<1.2	11	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029703			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029703			123-72-8	Butanal	NGS	110	<2.1	23	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029703			109-74-0	Butanenitrile	NGS	94	<1.2	49	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029703			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029703			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029703			75-00-3	Chloroethane	NGS	95	<1.9	7.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029703			87-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029703			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029703			124-18-5	Decane	NGS	95	<2.8	21	n/a	n/a	n/a	n/a	2.8	n/a	
S16T029703			84-17-5	Ethanol	NGS	99	<7.4	600	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029703			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029703			100-41-4	Ethylbenzene	NGS	99	<1.5	3.2	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029703			110-00-8	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029703			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029703			828-73-9	Hexanenitrile	NGS	95	<1.5	93	n/a	n/a	n/a	n/a	1.5	n/a	
S16T029703			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029703			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029703			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029703			86-85-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029703			110-59-8	Pentanenitrile	NGS	92	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029703			107-12-0	Propanenitrile	NGS	98	<1.4	70	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029703			110-86-1	Pyridine	NGS	120	<3.8	19	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029703			100-42-5	Styrene	NGS	100	<1.6	3.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029703			127-18-4	Tetrachloroethene	NGS	100	<1.6	140	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029703			108-88-3	Toluene	NGS	96	<1.5	19	n/a	n/a	n/a	n/a	1.5	n/a	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-A
 Customer Sample ID: 16-07837-2-IN-A

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029703		75-01-6		Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029703		75-69-4		Trichlorofluoromethane	NGS	98	<1.6	130	n/a	n/a	n/a	n/a	1.8	n/a	
S16T029703		10061-01-5		cis-1,3-Dichloropropene	NGS	100	<1.3	7.9	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029703		123-86-4		n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029703		142-82-5		n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029703		10061-02-6		trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-B
 Customer Sample ID: 16-07837-2-IN-B

Sampled	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029704			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S16T029704			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029704			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S16T029704			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S16T029704			107-06-2	1,2-Dichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029704			542-75-8	1,3-Dichloropropene (Total)	NGS	99	<1.2	5.0	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S16T029704			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S16T029704			123-91-1	1,4-Dioxane	NGS	98	<1.7	3.9	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S16T029704			71-36-3	1-Butanol	NGS	120	<6.9	7.60	n/a	n/a	n/a	n/a	8.9	n/a	n/a
S16T029704			111-70-6	1-Heptanol	NGS	86	<5.6	6.3	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S16T029704			71-23-8	1-Propanol	NGS	110	<3.0	3.70	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S16T029704			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a
S16T029704			1708-29-5	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S16T029704			78-93-3	2-Butanone	NGS	100	<1.9	4.40	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S16T029704			110-43-0	2-Heptanone	NGS	95	<1.6	4.7	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029704			591-78-6	2-Hexanone	NGS	92	<1.2	3.9	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S16T029704			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S16T029704			78-94-4	3-Buten-2-one	NGS	100	<1.7	2.9	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S16T029704			106-35-4	3-Heptanone	NGS	95	<1.5	2.60	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029704			108-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S16T029704			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S16T029704			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	1.1	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S16T029704			67-64-1	Acetone	NGS	88	<4.3	6.7E+03	n/a	n/a	n/a	n/a	4.3	n/a	n/a
S16T029704			75-05-8	Acetonitrile	NGS	90	<1.8	500	n/a	n/a	n/a	n/a	1.8	n/a	n/a
S16T029704			88-88-2	Acetophenone	NGS	96	<2.6	12	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S16T029704			107-13-1	Acrylonitrile	NGS	98	<1.7	5.4	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S16T029704			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-B
 Customer Sample ID: 16-07837-2-IN-B

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicates	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOUR-TDU VOA #2															
S16T029704			107-05-1	Alyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029704			71-43-2	Benzene	NGS	97	<1.2	12	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029704			100-47-0	Benzonitrile	NGS	58	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029704			123-72-8	Butanal	NGS	110	<2.1	23	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029704			109-74-0	Butanenitrile	NGS	94	<1.2	54	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029704			36-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029704			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029704			75-00-3	Chloroethane	NGS	55	<1.9	8.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029704			37-68-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029704			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029704			124-18-5	Decane	NGS	95	<2.8	12	n/a	n/a	n/a	n/a	2.8	n/a	
S16T029704			84-17-5	Ethanol	NGS	99	<1.4	720	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029704			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029704			100-41-4	Ethylbenzene	NGS	99	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029704			110-00-9	Furan	NGS	95	<1.8	1.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T029704			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029704			528-73-8	Hexanenitrile	NGS	95	<1.5	160	n/a	n/a	n/a	n/a	1.5	n/a	
S16T029704			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029704			75-09-2	Methylene Chloride	NGS	98	<2.7	3.3	n/a	n/a	n/a	n/a	2.7	n/a	J
S16T029704			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029704			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029704			110-59-8	Pentanenitrile	NGS	92	<1.6	17	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029704			107-12-0	Propanenitrile	NGS	98	<1.4	95	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029704			110-66-1	Pyridine	NGS	120	<3.8	28	n/a	n/a	n/a	n/a	3.8	n/a	
S16T029704			100-42-5	Styrene	NGS	100	<1.6	4.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029704			127-18-4	Tetrachloroethene	NGS	100	<1.6	110	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029704			108-88-3	Toluene	NGS	96	<1.5	14	n/a	n/a	n/a	n/a	1.5	n/a	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-B
 Customer Sample ID: 16-07837-2-IN-B

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TOU VOA #2															
S16T029704			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029704			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	160	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029704			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	5.0	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029704			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029704			142-82-5	n-Heptane	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029704			10061-02-8	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-C
 Customer Sample ID: 16-07837-2-IN-C

Sampled	R	AP	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029705			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S161029705			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S161029705			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S161029705			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S161029705			107-06-2	1,2-Dichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S161029705			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	1.8	n/a	n/a	n/a	n/a	1.2		n/a U
S161029705			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S161029705			123-51-1	1,4-Dioxane	NGS	98	<1.7	3.4	n/a	n/a	n/a	n/a	1.7		n/a J
S161029705			71-36-3	1-Butanol	NGS	120	<8.9	630	n/a	n/a	n/a	n/a	8.9		n/a Y
S161029705			111-70-6	1-Heptanol	NGS	86	<5.6	7.1	n/a	n/a	n/a	n/a	5.6		n/a J
S161029705			71-23-9	1-Propanol	NGS	110	<3.0	280	n/a	n/a	n/a	n/a	3.0		n/a U
S161029705			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S161029705			1705-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S161029705			78-93-3	2-Butanone	NGS	100	<1.9	330	n/a	n/a	n/a	n/a	1.9		n/a U
S161029705			110-43-0	2-Heptanone	NGS	95	<1.8	48	n/a	n/a	n/a	n/a	1.8		n/a U
S161029705			591-78-6	2-Hexanone	NGS	92	<1.2	36	n/a	n/a	n/a	n/a	1.2		n/a U
S161029705			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S161029705			78-94-4	3-Butan-2-one	NGS	100	<1.7	21	n/a	n/a	n/a	n/a	1.7		n/a U
S161029705			106-35-4	3-Heptanone	NGS	95	<1.5	270	n/a	n/a	n/a	n/a	1.5		n/a U
S161029705			106-69-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S161029705			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S161029705			106-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	7.1	n/a	n/a	n/a	n/a	1.9		n/a J
S161029705			67-64-1	Acetone	NGS	89	<4.3	5.2E+03	n/a	n/a	n/a	n/a	4.3		n/a EY
S161029705			75-05-8	Acetonitrile	NGS	90	<1.8	460	n/a	n/a	n/a	n/a	1.8		n/a E
S161029705			98-86-2	Acetophenone	NGS	96	<2.6	22	n/a	n/a	n/a	n/a	2.6		n/a U
S161029705			107-13-1	Acrylonitrile	NGS	98	<1.7	4.1	n/a	n/a	n/a	n/a	1.7		n/a J
S161029705			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-C
 Customer Sample ID: 16-07837-2-IN-C

Sample#	R	AB	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029705			107-05-1	Alyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029705			71-43-2	Benzene	NGS	97	<1.2	10	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029705			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029705			123-72-8	Butanal	NGS	110	<2.1	20	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029705			109-74-0	Butanenitrile	NGS	94	<1.2	46	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029705			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029705			106-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029705			75-00-3	Chloroethane	NGS	95	<1.9	6.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029705			67-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029705			110-82-7	Cyclohexane	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029705			124-18-5	Decane	NGS	95	<2.8	15	n/a	n/a	n/a	n/a	2.8	n/a	
S16T029705			64-17-5	Ethanol	NGS	99	<7.4	570	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029705			141-76-6	Ethyl acetate	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029705			100-41-4	Ethylbenzene	NGS	99	<1.5	1.6	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029705			110-00-9	Furan	NGS	95	<1.6	1.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029705			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029705			628-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029705			125-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029705			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029705			91-200-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029705			98-85-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029705			110-59-8	Pentamethylene	NGS	92	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029705			107-12-0	Propanenitrile	NGS	98	<1.4	70	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029705			110-88-1	Pyridine	NGS	120	<3.8	23	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029705			100-42-5	Styrene	NGS	100	<1.6	3.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029705			127-18-4	Tetrachloroethane	NGS	100	<1.6	71	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029705			108-88-3	Toluene	NGS	96	<1.5	11	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-C
 Customer Sample ID: 16-07837-2-IN-C

Sample#	R	#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TOU VOA #2															
S16T029705			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029705			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	140	n/a	n/a	n/a	n/a	1.8	n/a	
S16T029705			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	1.8	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029705			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029705			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029705			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-D
 Customer Sample ID: 16-07837-2-IN-D

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029706			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029706			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029706			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029706			75-35-4	1,1-Dichloroethene	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029706			107-05-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029706			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029706			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029706			123-81-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029706			71-38-3	1-Butanol	NGS	120	<8.9	380	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029706			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029706			71-23-6	1-Propanol	NGS	110	<3.0	150	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029706			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029706			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029706			78-93-3	2-Butanone	NGS	100	<1.9	450	n/a	n/a	n/a	n/a	1.9	n/a	E
S16T029706			110-43-0	2-Heptanone	NGS	95	<1.6	35	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029706			591-78-6	2-Hexanone	NGS	92	<1.2	33	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029706			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029706			78-84-4	3-Buten-2-one	NGS	100	<1.7	20	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029706			106-35-4	3-Heptanone	NGS	95	<1.5	220	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029706			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029706			106-42-0	4-Methyl-2-heptanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029706			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	5.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029706			57-64-1	Acetone	NGS	89	<4.3	6.2E+03	n/a	n/a	n/a	n/a	4.3	n/a	EY
S16T029706			75-05-8	Acetonitrile	NGS	90	<1.8	420	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029706			98-86-2	Acetophenone	NGS	96	<2.6	4.5	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029706			107-13-1	Acrylonitrile	NGS	98	<1.7	3.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029706			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-D
 Customer Sample ID: 16-07837-2-IN-D

Sampled	R	AM	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cal Em %	Qual Flags
VAPOR-TDU VOA #2															
S161029706			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S161029706			71-43-2	Benzene	NGS	97	<1.2	10	n/a	n/a	n/a	n/a	1.2	n/a	J
S161029706			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029706			123-72-8	Butanal	NGS	110	<2.1	39	n/a	n/a	n/a	n/a	2.1	n/a	
S161029706			109-74-0	Butanenitrile	NGS	94	<1.2	40	n/a	n/a	n/a	n/a	1.2	n/a	
S161029706			96-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029706			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029706			75-00-3	Chloroethane	NGS	95	<1.9	5.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S161029706			87-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029706			110-52-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S161029706			124-18-5	Decane	NGS	95	<2.6	4.9	n/a	n/a	n/a	n/a	2.6	n/a	J
S161029706			84-17-5	Ethanol	NGS	99	<7.4	110	n/a	n/a	n/a	n/a	7.4	n/a	
S161029706			141-78-6	Ethyl acetate	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029706			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029706			110-00-9	Furan	NGS	95	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029706			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S161029706			828-73-9	Hexanenitrile	NGS	95	<1.5	120	n/a	n/a	n/a	n/a	1.5	n/a	
S161029706			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029706			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S161029706			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S161029706			88-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S161029706			110-59-8	Pentanenitrile	NGS	92	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029706			107-12-0	Propenenitrile	NGS	98	<1.4	66	n/a	n/a	n/a	n/a	1.4	n/a	
S161029706			110-86-1	Pyridine	NGS	120	<3.8	13	n/a	n/a	n/a	n/a	3.8	n/a	J
S161029706			100-42-5	Styrene	NGS	100	<1.6	2.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029706			127-18-4	Tetrachloroethene	NGS	100	<1.6	31	n/a	n/a	n/a	n/a	1.6	n/a	
S161029706			106-86-3	Toluene	NGS	96	<1.5	8.0	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-D
 Customer Sample ID: 16-07837-2-IN-D

Sample#	R	AM	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029706			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029706			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	140	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029706			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029706			123-86-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029706			142-32-5	n-Heptane	NGS	96	<1.4	110	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029706			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-E
 Customer Sample ID: 16-07837-2-IN-E

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029707			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029707			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029707			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	OU
S161029707			75-35-4	1,1-Dichloroethane	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	OU
S161029707			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	OU
S161029707			542-75-6	1,3-Dichloropropane (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029707			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S161029707			123-91-1	1,4-Dioxane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	OU
S161029707			71-38-3	1-Butanol	NGS	120	<8.9	330	n/a	n/a	n/a	n/a	8.9	n/a	QY
S161029707			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S161029707			71-23-8	1-Propanol	NGS	110	<3.0	7.8	n/a	n/a	n/a	n/a	3.0	n/a	JQ
S161029707			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S161029707			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	OU
S161029707			78-93-3	2-Butanone	NGS	100	<1.9	340	n/a	n/a	n/a	n/a	1.9	n/a	Q
S161029707			110-43-0	2-Heptanone	NGS	95	<1.6	45	n/a	n/a	n/a	n/a	1.6	n/a	
S161029707			591-78-6	2-Hexanone	NGS	92	<1.2	36	n/a	n/a	n/a	n/a	1.2	n/a	
S161029707			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	OU
S161029707			78-94-4	3-Buten-2-one	NGS	100	<1.7	18	n/a	n/a	n/a	n/a	1.7	n/a	Q
S161029707			106-35-4	3-Heptanone	NGS	95	<1.5	280	n/a	n/a	n/a	n/a	1.5	n/a	
S161029707			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S161029707			105-42-0	4-Methyl-2-pentanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029707			109-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	5.9	n/a	n/a	n/a	n/a	1.9	n/a	JQ
S161029707			67-64-1	Acetone	NGS	89	<4.3	5.1E+03	n/a	n/a	n/a	n/a	4.3	n/a	ECY
S161029707			75-05-8	Acetonitrile	NGS	90	<1.8	120	n/a	n/a	n/a	n/a	1.8	n/a	Q
S161029707			96-88-2	Acetophenone	NGS	98	<2.6	11	n/a	n/a	n/a	n/a	2.6	n/a	J
S161029707			107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	OU
S161029707			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	OU

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-E
 Customer Sample ID: 16-07837-2-IN-E

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA 12															
S16T029707			107-65-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	OU
S16T029707			71-43-2	Benzene	NGS	97	<1.2	11	n/a	n/a	n/a	n/a	1.2	n/a	JO
S16T029707			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029707			123-72-8	Butanal	NGS	110	<2.1	32	n/a	n/a	n/a	n/a	2.1	n/a	Q
S16T029707			109-74-0	Butanenitrile	NGS	94	<1.2	38	n/a	n/a	n/a	n/a	1.2	n/a	Q
S16T029707			56-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	OU
S16T029707			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029707			75-00-3	Chloroethane	NGS	95	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	OU
S16T029707			57-88-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	OU
S16T029707			110-32-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	OU
S16T029707			124-18-5	Decane	NGS	95	<2.8	6.6	n/a	n/a	n/a	n/a	2.8	n/a	OU
S16T029707			54-17-5	Ethanol	NGS	99	<7.4	9.3	n/a	n/a	n/a	n/a	7.4	n/a	JQ
S16T029707			141-78-8	Ethyl acetate	NGS	99	<1.5	17	n/a	n/a	n/a	n/a	1.5	n/a	Q
S16T029707			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029707			110-00-9	Furan	NGS	95	<1.8	2.0	n/a	n/a	n/a	n/a	1.8	n/a	JQ
S16T029707			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	OU
S16T029707			528-73-9	Hexanenitrile	NGS	95	<1.5	160	n/a	n/a	n/a	n/a	1.5	n/a	
S16T029707			126-58-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	OU
S16T029707			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	OU
S16T029707			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029707			98-95-3	Nitrobenzene	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029707			110-59-8	Pentanenitrile	NGS	92	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029707			107-12-0	Propanenitrile	NGS	98	<1.4	65	n/a	n/a	n/a	n/a	1.4	n/a	Q
S16T029707			110-86-1	Pyridine	NGS	120	<3.8	22	n/a	n/a	n/a	n/a	3.8	n/a	JQ
S16T029707			100-42-5	Styrene	NGS	100	<1.6	1.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029707			127-18-4	Tetrachloroethene	NGS	100	<1.6	28	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029707			105-88-3	Toluene	NGS	96	<1.5	8.8	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-E
 Customer Sample ID: 16-07837-2-IN-E

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S18T029707			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a QU
S18T029707			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	120	n/a	n/a	n/a	n/a	1.8		n/a Q
S18T029707			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a QU
S18T029707			123-66-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S18T029707			142-82-6	n-Heptane	NGS	96	<1.4	14	n/a	n/a	n/a	n/a	1.4		n/a Q
S18T029707			10061-02-8	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a QU

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-F
 Customer Sample ID: 16-07837-2-IN-F

Sampled	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Em %	Qual Flags
VAPOR-TDU VOA I2															
S16T029708			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029708			79-00-5	1,1,2-Trichloroethane	NGS	97	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029708			75-34-3	1,1-Dichloroethane	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029708			75-35-4	1,1-Dichloroethane	NGS	99	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029708			107-06-2	1,2-Dichloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029708			542-75-6	1,3-Dichloropropene (Total)	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029708			106-46-7	1,4-Dichlorobenzene	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029708			123-91-1	1,4-Dioxane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029708			71-36-3	1-Butanol	NGS	120	<6.9	3.89	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029708			111-70-6	1-Heptanol	NGS	86	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029708			71-23-8	1-Propanol	NGS	110	<3.0	95	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029708			108-47-4	2,4-Dimethylpyridine	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029708			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029708			78-93-3	2-Butanone	NGS	100	<1.9	2.90	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029708			110-43-0	2-Heptanone	NGS	95	<1.6	35	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029708			591-78-6	2-Hexanone	NGS	92	<1.2	33	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029708			534-22-5	2-Methylfuran	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029708			78-94-4	3-Buten-2-one	NGS	100	<1.7	16	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029708			106-35-4	3-Heptanone	NGS	95	<1.5	220	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029708			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029708			105-42-0	4-Methyl-2-hexanone	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029708			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	4.2	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029708			67-64-1	Acetone	NGS	89	<4.3	4.4E+03	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T029708			75-05-8	Acetonitrile	NGS	90	<1.8	420	n/a	n/a	n/a	n/a	1.8	n/a	E
S16T029708			98-88-2	Acetophenone	NGS	96	<2.6	8.5	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029708			107-13-1	Acrylonitrile	NGS	98	<1.7	2.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029708			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-F
 Customer Sample ID: 16-07837-2-IN-F

Sampled	R	AM	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDUVOA.32															
S16T029708			107-05-1	Alyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S16T029708			71-43-2	Benzene	NGS	97	<1.2	9.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S16T029708			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S16T029708			123-72-8	Butanal	NGS	110	<2.1	31	n/a	n/a	n/a	n/a	2.1	n/a	n/a
S16T029708			109-74-0	Butanenitrile	NGS	94	<1.2	36	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S16T029708			96-23-5	Carbon tetrachloride	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029708			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029708			75-00-3	Chloroethane	NGS	95	<1.9	6.5	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S16T029708			67-66-3	Chloroform	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029708			110-82-7	Cyclohexane	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	n/a
S16T029708			124-18-5	Decane	NGS	95	<2.8	5.6	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S16T029708			54-17-5	Ethanol	NGS	99	<7.4	120	n/a	n/a	n/a	n/a	7.4	n/a	n/a
S16T029708			141-78-6	Ethyl acetate	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029708			100-41-4	Ethylbenzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029708			110-00-9	Furan	NGS	95	<1.6	2.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029708			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S16T029708			828-73-9	Hexanenitrile	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S16T029708			126-98-7	Methacrylonitrile	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029708			75-09-2	Methylene Chloride	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	n/a
S16T029708			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	n/a
S16T029708			98-05-3	Nitrobenzene	NGS	97	<2.6	3.3	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S16T029708			110-59-8	Perbenzotriole	NGS	92	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029708			107-12-0	Propanenitrile	NGS	98	<1.4	61	n/a	n/a	n/a	n/a	1.4	n/a	n/a
S16T029708			110-86-1	Pyridine	NGS	120	<3.8	13	n/a	n/a	n/a	n/a	3.8	n/a	n/a
S16T029708			100-42-5	Styrene	NGS	100	<1.6	2.4	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029708			127-18-4	Tetrachloroethene	NGS	100	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S16T029708			106-98-3	Toluene	NGS	96	<1.5	7.4	n/a	n/a	n/a	n/a	1.5	n/a	n/a

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-F
 Customer Sample ID: 16-07837-2-IN-F

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cent Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029706			79-01-6	Trichloroethene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029706			75-69-4	Trichlorofluoromethane	NGS	98	<1.6	110	n/a	n/a	n/a	n/a	1.6	n/a	
S161029706			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029706			123-85-4	n-Butyl acetate	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S161029706			142-82-3	n-Heptane	NGS	95	<1.4	61	n/a	n/a	n/a	n/a	1.4	n/a	
S161029706			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-G
 Customer Sample ID: 16-07837-2-IN-G

Sampled	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Em %	Qual Flags
VAPOR-TDU VOA #2															
S161029709			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S161029709			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S161029709			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S161029709			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S161029709			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S161029709			542-75-8	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S161029709			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	n/a
S161029709			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S161029709			71-30-3	1-Buanel	NGS	140	<8.9	350	n/a	n/a	n/a	n/a	8.9	n/a	Ys
S161029709			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	n/a
S161029709			71-23-8	1-Propanol	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	n/a
S161029709			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	n/a
S161029709			1768-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	n/a
S161029709			78-93-3	2-Butanone	NGS	93	<1.9	340	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S161029709			110-43-0	2-Heptanone	NGS	97	<1.6	43	n/a	n/a	n/a	n/a	1.6	n/a	n/a
S161029709			591-78-6	2-Hexanone	NGS	95	<1.9	32	n/a	n/a	n/a	n/a	1.2	n/a	n/a
S161029709			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S161029709			78-94-4	3-Buten-2-one	NGS	89	<1.7	13	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S161029709			106-35-4	3-Heptanone	NGS	97	<1.5	270	n/a	n/a	n/a	n/a	1.5	n/a	n/a
S161029709			108-68-3	3-Octanone	NGS	96	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	n/a
S161029709			105-42-0	4-Methyl-2-heptanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	n/a
S161029709			109-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	3.7	n/a	n/a	n/a	n/a	1.9	n/a	n/a
S161029709			67-64-1	Acetone	NGS	86	<4.3	5.5E+03	n/a	n/a	n/a	n/a	4.3	n/a	EY
S161029709			75-05-8	Acetonitrile	NGS	91	<1.8	600	n/a	n/a	n/a	n/a	1.8	n/a	E
S161029709			88-86-2	Acetophenone	NGS	58	<2.6	6.3	n/a	n/a	n/a	n/a	2.6	n/a	n/a
S161029709			107-13-1	Acrylonitrile	NGS	92	<1.7	2.0	n/a	n/a	n/a	n/a	1.7	n/a	n/a
S161029709			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	n/a

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-G
 Customer Sample ID: 16-07837-2-IN-G

Sample#	R	#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029709			107-05-1	Allyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S161029709			71-43-2	Benzene	NGS	98	<1.2	10	n/a	n/a	n/a	n/a	1.2	n/a	J
S161029709			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029709			123-72-8	Buzanal	NGS	110	<2.1	34	n/a	n/a	n/a	n/a	2.1	n/a	
S161029709			109-74-0	Butanenitrile	NGS	97	<1.2	36	n/a	n/a	n/a	n/a	1.2	n/a	
S161029709			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029709			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029709			75-00-3	Chloroethane	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029709			87-86-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029709			110-50-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S161029709			124-18-5	Decane	NGS	94	<2.8	4.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S161029709			54-17-5	Ethanol	NGS	110	<7.4	<7.4	n/a	n/a	n/a	n/a	7.4	n/a	U
S161029709			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029709			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029709			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029709			110-54-3	Hexane	NGS	96	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S161029709			328-73-9	Hexanenitrile	NGS	100	<1.5	2.4	n/a	n/a	n/a	n/a	1.5	n/a	J
S161029709			126-98-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029709			75-09-2	Methylene Chloride	NGS	100	<2.7	5.0	n/a	n/a	n/a	n/a	2.7	n/a	J
S161029709			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S161029709			98-05-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S161029709			110-09-8	Pentanenitrile	NGS	97	<1.6	9.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029709			107-12-0	Propanenitrile	NGS	96	<1.4	58	n/a	n/a	n/a	n/a	1.4	n/a	
S161029709			110-86-1	Pyridine	NGS	130	<3.8	15	n/a	n/a	n/a	n/a	3.8	n/a	J
S161029709			100-42-5	Styrene	NGS	100	<1.6	2.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S161029709			127-18-4	Tetrachloroethene	NGS	110	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	
S161029709			106-88-3	Toluene	NGS	98	<1.5	7.8	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-G
 Customer Sample ID: 16-07837-2-IN-G

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029709			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029709			75-69-4	Trichloroacromethane	NGS	100	<1.6	140	n/a	n/a	n/a	n/a	1.6	n/a	
S161029709			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029709			123-86-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S161029709			142-50-5	n-Heptane	NGS	96	<1.4	69	n/a	n/a	n/a	n/a	1.4	n/a	
S161029709			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-H
 Customer Sample ID: 16-07837-2-IN-H

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S161029710			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029710			79-00-5	1,1,2-Trichloroethane	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029710			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029710			75-35-4	1,1-Dichloroethene	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029710			107-96-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S161029710			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029710			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S161029710			123-91-1	1,4-Oxolene	NGS	100	<1.7	2.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S161029710			71-36-3	1-Butanol	NGS	140	<8.9	4.10	n/a	n/a	n/a	n/a	8.9	n/a	Y,a
S161029710			111-70-6	1-Heptanol	NGS	100	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S161029710			71-23-8	1-Propanol	NGS	120	<3.0	260	n/a	n/a	n/a	n/a	3.0	n/a	U
S161029710			106-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S161029710			1708-26-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S161029710			78-93-3	2-Butanone	NGS	93	<1.9	350	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029710			110-43-0	2-Heptanone	NGS	95	<1.2	45	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029710			591-78-6	2-Hexanone	NGS	95	<1.2	35	n/a	n/a	n/a	n/a	1.2	n/a	U
S161029710			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S161029710			78-94-4	3-Buten-2-one	NGS	89	<1.7	18	n/a	n/a	n/a	n/a	1.7	n/a	U
S161029710			106-35-4	3-Heptanone	NGS	97	<1.5	260	n/a	n/a	n/a	n/a	1.5	n/a	U
S161029710			106-66-3	3-Octanone	NGS	98	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S161029710			105-42-0	4-Methyl-2-hexanone	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S161029710			109-10-1	4-Methyl-2-pentanone	NGS	97	<1.9	3.5	n/a	n/a	n/a	n/a	1.9	n/a	J
S161029710			67-64-1	Acetone	NGS	88	<4.3	4.9E+03	n/a	n/a	n/a	n/a	4.3	n/a	EY
S161029710			75-05-8	Acetonitrile	NGS	91	<1.8	470	n/a	n/a	n/a	n/a	1.8	n/a	E
S161029710			86-86-2	Acetophenone	NGS	98	<2.6	2.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S161029710			107-13-1	Acrylonitrile	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S161029710			107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-H
 Customer Sample ID: 16-07837-2-IN-H

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029710			107-05-1	Alyl Chloride	NGS	89	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029710			71-43-2	Benzene	NGS	98	<1.2	9.1	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029710			100-47-0	Benzonitrile	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029710			123-72-8	Butanal	NGS	110	<2.1	48	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029710			109-74-0	Butanenitrile	NGS	97	<1.2	38	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029710			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.5	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029710			108-90-7	Chlorobenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029710			75-00-3	Chloroethane	NGS	98	<1.9	6.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029710			67-68-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029710			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029710			124-18-5	Decane	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029710			64-17-5	Ethanol	NGS	110	<7.4	380	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029710			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029710			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029710			110-00-9	Furan	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029710			110-54-3	Hexane	NGS	96	<1.7	6.9	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029710			628-73-9	Hexanenitrile	NGS	100	<1.5	2.9	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029710			126-96-7	Methacrylonitrile	NGS	99	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029710			75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029710			91-20-3	Naphthalene	NGS	97	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029710			98-95-3	Nitrobenzene	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029710			110-59-8	Pentamethyl	NGS	97	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029710			107-12-0	Propanenitrile	NGS	96	<1.4	70	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029710			110-86-1	Pyridine	NGS	130	<3.8	16	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029710			100-42-5	Synone	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029710			127-18-4	Tetrachloroethene	NGS	110	<1.6	14	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029710			108-88-3	Toluene	NGS	98	<1.5	7.6	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-H
 Customer Sample ID: 16-07837-2-IN-H

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029710			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029710			75-69-4	Trichlorofluoromethane	NGS	100	<1.5	110	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029710			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029710			123-86-4	n-Butyl acetate	NGS	82	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029710			142-82-5	m-Hexane	NGS	96	<1.4	14	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029710			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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James Dwyer
 10/12/14

**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-BASE-EFF

Customer Sample ID: 16-07837-2-BASE-EFF

Sample#	R	Ad	CC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR:TDU VOA #2									
S167029891			BUNK	1,1,1,3,5,5,7,7-Tetrahydro-3H	33146-99-5	25.25	NGS	30	

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**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-BASE-IN

Customer Sample ID: 16-07837-2-BASE-IN

Sample#	R	As	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU									
518T026892			BLANK	1,1,1,3,5,5,7,7-Nonamethyl-3	38146-89-5	25.25	NCS	30	

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**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-BLANK1

Customer Sample ID: 16-07837-2-BLANK1

Sample#	R	Alt	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
S16T029893			BLNK	1,1,1,3,3,3,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-BLANK2

Customer Sample ID: 16-07837-2-BLANK2

Sample#	R	Ad	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR:TDU VOA #2									
S16T028654			BLNK	1,1,1,3,5,5,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-EFF-A

Customer Sample ID: 16-07837-2-EFF-A

Sample#	R	AI	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S161029695				Unknown-1	-	8.25	NGS	59 JT	
S161029695				Formamide	75-12-7	14.07	NGS	35 JNT	
S161029695				Cyclotetrasiloxane, octamethyl	556-87-2	20.43	NGS	250 JNT	
S161029695				D-Limonene	5698-27-5	22.61	NGS	130 JNT	
S161029695				Decane, 2,4,6-trimethyl-	62105-27-4	22.37	NGS	88 JNT	
S161029695				2,6-Dimethyldecane	13150-81-7	23.11	NGS	32 JNT	
S161029695				Undecane, 5,7-dimethyl-	17312-83-3	23.83	NGS	60 JNT	
S161029695				Heptane, 2,4,6-trimethyl-	2613-61-8	23.91	NGS	78 JNT	
S161029695				Unknown-2	-	24.23	NGS	330 JT	
S161029695				Undecane, 2,6-dimethyl-	17301-23-4	25.25	NGS	40 JNT	
S161029695				1,2-Benzisothiazole	272-16-2	26.34	NGS	130 JNT	
S161029695				Unknown-3	-	26.43	NGS	57 JT	
S161029695				1,2,3,4,5-Cyclopentaneperanol	56772-25-9	26.62	NGS	27 JNT	
S161029695				Undecane, 2-methyl-	7045-71-8	27.01	NGS	35 JNT	
S161029695			BLNK	1,1,1,3,5,5,7,7-Nonamethyl-3	36146-99-5	25.25	NGS	30	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-B
 Customer Sample ID: 16-07837-2-EFF-B

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAJOR-TDU VOA #2									
S16T026696				Formaldehyde	75-12-7	14.09	NGS	64	JNT
S16T026696				Cyclohexasiloxane, octamethyl	556-67-2	20.43	NGS	190	JNT
S16T026696				D-Limonene	5089-27-5	22.61	NGS	100	JNT
S16T026696				Decane, 2,4,6-trimethyl-	82106-27-4	22.98	NGS	68	JNT
S16T026696				2,6-Dimethyldecane	13150-81-7	23.12	NGS	25	JNT
S16T026696				Undecane, 5,7-dimethyl-	17312-83-3	23.83	NGS	48	JNT
S16T026696				3,3-Dimethylhexane	583-16-6	23.92	NGS	44	JNT
S16T026696				Unknown-1	-	24.22	NGS	260	JT
S16T026696				Undecane, 2,6-dimethyl-	17301-23-4	25.25	NGS	36	JNT
S16T026696				Acetic acid, trifluoro-, 3,7-4	28745-07-5	25.40	NGS	25	JNT
S16T026696				Unknown-2	-	26.00	NGS	34	JT
S16T026696				Methanamine	100-97-0	26.22	NGS	27	JNT
S16T026696				1,2-Benzisothiazole	273-16-2	26.34	NGS	100	JNT
S16T026696				Unknown-3	-	26.43	NGS	42	JT
S16T026696				Propanoic acid, 2-methyl-, 1-1	74381-40-1	26.57	NGS	41	JNT
S16T026696				Undecane, 2-methyl-	1045-71-8	27.01	NGS	25	JNT
S16T026696				1,1,1,3,5,5,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-C
 Customer Sample ID: 16-07837-2-EFF-C

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029697				Unknown-1	-	8.25	NGS	31 JT	
S16T029697				Formamide	75-12-7	14.10	NGS	93 JNT	
S16T029697				Cyclohexanone, octamethyl	556-67-2	20.43	NGS	120 JNT	
S16T029697				Cyclohexane, 1-methyl-5-(1-met	1461-27-4	22.61	NGS	67 JNT	
S16T029697				Decane, 2,4,6-trimethyl-	62105-27-4	22.98	NGS	45 JNT	
S16T029697				Undecane, 5,7-dimethyl-	17312-83-3	23.83	NGS	31 JNT	
S16T029697				heptane, 2,4,6-trimethyl-	2613-61-8	23.91	NGS	31 JNT	
S16T029697				Unknown-2	-	24.22	NGS	220 JT	
S16T029697				Undecane, 2,6-dimethyl-	17301-23-4	25.26	NGS	36 JNT	
S16T029697				Methanamine	100-97-0	26.23	NGS	130 JNT	
S16T029697				1,2-Benzisothiazole	272-16-2	26.35	NGS	93 JNT	
S16T029697				Propanoic acid, 2-methyl-, 1-(74381-40-1	26.58	NGS	41 JNT	
S16T029697			BLNK	1,1,1,3,5,5,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-D
 Customer Sample ID: 16-07837-2-EFF-D

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Min/Sec)	Unit	Result	Qual Flags
VAJOR-TDU VOA #2									
S16T025698				Methyl Isomale	107-31-3	4.73	NGS	31	JNT
S16T025698				Unknown-1	-	8.27	NGS	42	JT
S16T025698				Feramide	75-12-7	14.09	NGS	54	JNT
S16T025698				Cyclotetrasiloxane, octamethyl	356-07-2	20.43	NGS	81	JNT
S16T025698				D-Limonene	5089-27-5	22.61	NGS	75	JNT
S16T025698				Decane, 2,4,6-trimethyl-	82106-27-4	22.97	NGS	48	JNT
S16T025698				Undecane, 5,7-dimethyl-	17312-83-3	23.82	NGS	29	JNT
S16T025698				Heptane, 2,4,6-trimethyl-	2613-61-8	23.91	NGS	29	JNT
S16T025698				Unknown-2	-	24.22	NGS	160	JT
S16T025698				Undecane, 2,6-dimethyl-	17301-23-4	25.25	NGS	17	JNT
S16T025698				Methanamine	100-97-0	26.20	NGS	180	JNT
S16T025698				1,2-Benzisothiazole	273-16-2	26.32	NGS	31	JNT
S16T025698				Undecane, 2-methyl-	7045-71-8	26.99	NGS	17	JNT
S16T025698		BLNK		1,1,1,3,5,5,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-E
 Customer Sample ID: 16-07837-2-EFF-E

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029699				Methyl formate	107-31-3	4.72	NGS	43	JNT
S16T029699				Unknown-1	-	8.29	NGS	41	JT
S16T029699				Formamide	75-12-7	14.10	NGS	56	JNT
S16T029699				Cyclooctasioxane, octamethyl	556-67-2	20.43	NGS	52	JNT
S16T029699				D-Limonene	5989-27-5	22.61	NGS	41	JNT
S16T029699				Decane, 2,4,6-trimethyl-	82106-27-4	22.97	NGS	23	JNT
S16T029699				Unknown-2	-	24.22	NGS	100	JT
S16T029699				Undecane, 2,6-dimethyl-	17301-23-4	25.25	NGS	13	JNT
S16T029699				Methanamine	100-97-0	26.20	NGS	120	JNT
S16T029699				1,2-Benzisothiazole	272-16-2	26.32	NGS	42	JNT
S16T029699				Propanoic acid, 2-methyl-, 1-	74381-40-1	26.54	NGS	140	JNT
S16T029699			BLANK	1,1,1,3,5,5,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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

Y - Comment
 U - Less Than Detection Limit

a - LCS Outside Range
 T - Tentatively Identified Compound

N - Named TIC
 Q - Qualitative

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-F
 Customer Sample ID: 16-07837-2-EFF-F

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029700				Methyl formate	107-31-3	4.72	NGS	41	JNT
S16T029700				Unknown-1	-	8.23	NGS	40	JT
S16T029700				Formamide	75-12-7	14.07	NGS	38	JNT
S16T029700				Cyclohexanone, octamethyl	595-87-2	20.43	NGS	54	JNT
S16T029700				D-Limonene	5985-27-5	22.61	NGS	31	JNT
S16T029700				Decane, 2,4,6-trimethyl-	82108-27-4	22.97	NGS	21	JNT
S16T029700				Unknown-2	-	24.22	NGS	100	JT
S16T029700				Methanamine	100-97-0	26.19	NGS	140	JNT
S16T029700				1,2-Benzisothiazole	272-16-2	26.32	NGS	46	JNT
S16T029700				Propanoic acid, 2-methyl-, 1-	74381-40-1	26.53	NGS	78	JNT
S16T029700			BLNK	1,1,1,3,5,5,7,7-Nonamethyl-3	38145-09-5	25.25	NGS	30	

N - Named TIC
 Q - Qualitative

a - LCS Outside Range
 T - Tentatively Identified Compound

Y - Comment
 U - Less Than Detection Limit

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-EFF-G

Customer Sample ID: 16-07837-2-EFF-G

Sample#	R	Ad	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU NOA #2									
S16T029701				Methyl formate	607-31-3	4.72	NGS	26 JNT	
S16T029701				Di(1,2,5-oxadiazolo)(3,4-b;3,4	188205-18-5	5.76	NGS	36 JNT	
S16T029701				Formamide	75-12-7	14.18	NGS	35 JNT	
S16T029701				Cyclotrisiloxane, hexamethyl-	541-05-9	17.02	NGS	94 JNT	
S16T029701				Heptane, 2,4-dimethyl-	2213-23-2	17.28	NGS	130 JNT	
S16T029701				Octane, 3-chloro-	1117-79-9	17.67	NGS	34 JNT	
S16T029701				Cyclotetrasiloxane, octamethyl	558-67-2	20.43	NGS	210 JNT	
S16T029701				1-Hexanol, 2-ethyl-	104-76-7	21.99	NGS	31 JNT	
S16T029701				D-Limonene	5899-27-5	22.61	NGS	72 JNT	
S16T029701				Decane, 2,4,6-trimethyl-	52106-27-4	22.97	NGS	250 JNT	
S16T029701				2,6-Dimethyldecane	13150-81-7	23.12	NGS	97 JNT	
S16T029701				2,6-Dimethyl-4-trifluoroacetox	61986-67-2	23.47	NGS	38 JNT	
S16T029701				Undecane, 5,7-dimethyl-	17312-83-3	23.83	NGS	140 JNT	
S16T029701				3,3-Dimethylhexane	563-16-6	23.93	NGS	58 JNT	
S16T029701				Unknown-1	-	24.22	NGS	130 JT	
S16T029701				Undecane, 2,6-dimethyl-	17301-23-4	25.25	NGS	22 JNT	
S16T029701				1,1,1,3,3,5,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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

Y - Comment
 U - Less Than Detection Limit

a - LCS Outside Range
 T - Tentatively Identified Compound

N - Named TIC
 Q - Qualitative

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-EFF-H
 Customer Sample ID: 16-07837-2-EFF-H

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029702				Methyl formate	107-31-3	4.72	NGS	63 JNT	
S16T029702				Unknown-1	-	8.23	NGS	38 JT	
S16T029702				Feramide	75-12-7	14.11	NGS	61 JNT	
S16T029702				Cyclotetrasiloxane, octamethyl	556-67-2	20.43	NGS	38 JNT	
S16T029702				D-Limonene	5989-27-5	22.60	NGS	31 JNT	
S16T029702				Decane, 2,4,6-trimethyl-	82108-27-4	22.97	NGS	18 JNT	
S16T029702				Unknown-2	-	24.22	NGS	79 JT	
S16T029702				Undecane, 2,6-dimethyl-	17301-23-4	25.25	NGS	9.0 JNT	
S16T029702				Methanamine	100-97-0	26.21	NGS	130 JNT	
S16T029702				1,2-Benzisothiazole	272-16-2	26.33	NGS	32 JNT	
S16T029702				BLNK	38146-99-5	25.25	NGS	30	

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

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744
 SDG Number:
 Customer Sample ID: 16-07837-2-IN-A
 Customer Sample ID: 16-07837-2-IN-A

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S161029703				Di(1,2,5-oxadiazolo(3,4-b)3,4	166205-18-5	5.24	NGS	34	JNT
S161029703				Methoxytrimethylsilane	1625-61-2	8.69	NGS	58	JNT
S161029703				Tetrahydrofuran	109-99-9	11.97	NGS	13	JNT
S161029703				Ethylene Glycol	107-21-1	13.94	NGS	120	JNT
S161029703				Octane, 2,3-dimethyl-, cis-	1758-33-4	14.17	NGS	250	JNT
S161029703				Unknown-1	-	14.40	NGS	37	JT
S161029703				Propane, 2-methyl-1-nitro-	625-74-1	16.54	NGS	64	JNT
S161029703				Cyclotrisiloxane, hexamethyl-	541-05-9	17.02	NGS	110	JNT
S161029703				Cyclotetrasiloxane, octamethyl	568-67-2	20.43	NGS	410	JNT
S161029703				D-Limonene	5889-27-5	22.61	NGS	120	JNT
S161029703				Decane, 2,4,6-trimethyl-	62108-27-4	22.97	NGS	140	JNT
S161029703				2,6-Dimethyldecane	13150-81-7	23.11	NGS	50	JNT
S161029703				Undecane, 5,7-dimethyl-	17312-83-3	23.82	NGS	98	JNT
S161029703				3,3-Dimethylthioane	563-16-6	23.92	NGS	83	JNT
S161029703				Unknown-2	-	24.22	NGS	360	JT
S161029703				Undecane, 2,6-dimethyl-	17301-23-4	25.25	NGS	49	JNT
S161029703				Ethanol, 2-phenoxy-	122-99-6	25.82	NGS	54	JNT
S161029703				1,2-Benzisothiazole	272-16-2	26.34	NGS	62	JNT
S161029703				Octane, 2,3,6,7-tetramethyl-	52670-34-5	26.43	NGS	65	JNT
S161029703				Unknown-3	-	26.55	NGS	45	JT
S161029703				1,2,3,4,5-Cyclopentaneperital	56772-25-9	26.62	NGS	38	JNT
S161029703				Undecane, 2-methyl-	7045-71-8	27.01	NGS	31	JNT
S161029703				1,1,1,3,5,5,7,7-Nonamethyl-3	38146-99-5	25.25	NGS	30	

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-IN-B

Customer Sample ID: 16-07837-2-IN-B

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU YOA #2									
S161029704			BLNK	1,1,1,3,5,5,7,7-Nonamethyl-3	38146-89-5	25.25	NGS	30	

N - Named TIC
 Q - Qualitative

a - LCS Outside Range
 T - Tentatively Identified Compound

Y - Comment
 U - Less Than Detection Limit

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

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**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-IN-C

Customer Sample ID: 16-07837-2-IN-C

Sample#	R	Alt	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S161028705			BLNK	1,1,1,3,5,5,7,7-Nonamethyl-3	98146-99-5	25.25	NGS	30	

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

Y - Comment
 U - Less Than Detection Limit

a - LCS Outside Range
 T - Tentatively Identified Compound

N - Named TIC
 Q - Qualitative

**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-IN-D

Customer Sample ID: 16-07837-2-IN-D

Sample#	R	Alt	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU NOA #2									
S18T029706			BLANK	1,1,1,3,5,5,7,7-Nonamethyl-3	38146-99-5	25.25	MGS	30	

N - Named TIC
 Q - Qualitative

a - LCS Outside Range
 T - Tentatively Identified Compound

Y - Comment
 U - Less Than Detection Limit

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-IN-E

Customer Sample ID: 16-07837-2-IN-E

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Min/Sec)	Unit	Result	Qual Flags
VAPOR:TDU VOA #2									
S161020707			BLNK	1,1,1,3,3,5,7,7-Nonamethyl-3	38145-99-5	25.25	NGS	30	

N - Named TIC
 Q - Qualitative

a - LCS Outside Range
 T - Tentatively Identified Compound

Y - Comment
 U - Less Than Detection Limit

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

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-IN-F

Customer Sample ID: 16-07837-2-IN-F

Sample#	R	As	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S161029706			BLNK	1,1,1,3,5,5,7,7-Nonamethyl-3	88146-99-5	25.25	NGS	30	

N - Named TIC
 Q - Qualitative

a - LCS Outside Range
 T - Tentatively Identified Compound

Y - Comment
 U - Less Than Detection Limit

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

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-IN-G

Customer Sample ID: 16-07837-2-IN-G

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU YOA #2									
S16T020709			BLNK	Unknown-1	-	8.25	NGS	22	
S16T020709			BLNK	Unknown-2	-	24.23	NGS	30	

N - Named TIC
 Q - Qualitative

a - LCS Outside Range
 T - Tentatively Identified Compound

Y - Comment
 U - Less Than Detection Limit

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162744

SDG Number:

Customer Sample ID: 16-07837-2-IN-H

Customer Sample ID: 16-07837-2-IN-H

Sample#	R	AI	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Resalt	Qual Flags
VAPOR-TDU VOA #2									
S16T029710				Di(1,2,5-oxadiazolo)[3,4-b:3',4'	185205-18-5	7.86	NGS	43	JNT
S16T029710				Tetrahydrofuran	109-99-9	11.86	NGS	10	JNT
S16T029710				4,8-Dioxatricyclo[5.1.0.0(3,5)	42569-59-5	14.17	NGS	51	JNT
S16T029710				Formamide	75-12-7	14.59	NGS	80	JNT
S16T029710				Acetonitrile, hydroxy-	107-16-4	16.25	NGS	30	JNT
S16T029710				Cyclotrisiloxane, octamethyl	555-67-2	20.43	NGS	67	JNT
S16T029710				Cyclohexane, 1-methyl-4-(1-met	7705-14-8	22.60	NGS	29	JNT
S16T029710				Decane, 2,4,6-trimethyl-	62104-27-4	22.97	NGS	18	JNT
S16T029710				Unknown-1	-	24.22	NGS	72	BJT
S16T029710				Unknown-2	-	25.85	NGS	36	JT
S16T029710			BLNK	Unknown-1	-	8.25	NGS	22	
S16T029710			BLNK	Unknown-2	-	24.23	NGS	30	

N - Named TIC
 Q - Qualitative

0 - LCS Outside Range
 T - Tentatively Identified Compound

Y - Comment
 U - Less Than Detection Limit

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

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-A

Customer Sample ID: 16-08068-2-EFF-A

Sample#	R	AI	CAS #	Analyte	Unit	STO %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029715			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029715			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029715			79-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029715			75-35-4	1,1-Dichloroethane	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029715			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029715			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029715			105-66-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029715			123-81-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029715			71-38-3	1-B.Janol	NGS	130	<8.9	54	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029715			111-70-6	1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T029715			71-23-8	1-Propanol	NGS	120	<3.0	76	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029715			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029715			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029715			78-93-3	2-B.Janone	NGS	95	<1.9	6.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029715			110-43-0	2-Heptanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029715			591-78-6	2-Heptanone	NGS	95	<1.2	1.4	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029715			534-22-5	2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029715			78-84-4	3-B.Jen-2-one	NGS	89	<1.7	4.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029715			105-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029715			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029715			105-42-0	4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029715			108-10-1	4-Methyl-2-pentanone	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029715			87-94-1	Acetone	NGS	87	<4.3	75	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029715			75-05-8	Acetonitrile	NGS	88	14	51.0	n/a	n/a	n/a	n/a	1.8	n/a	BE
S16T029715			96-85-2	Acetophenone	NGS	94	<2.6	25	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029715			107-13-1	Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029715			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-A
 Customer Sample ID: 16-08068-2-EFF-A

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Col Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029715			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029715			71-43-2	Benzene	NGS	100	<1.2	1.8	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029715			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029715			123-72-8	Bisnial	NGS	110	<2.1	3.2	n/a	n/a	n/a	n/a	2.1	n/a	J
S16T029715			109-74-0	Bisnecitrile	NGS	94	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029715			58-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029715			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029715			75-00-3	Chloroethane	NGS	100	<1.9	4.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029715			87-86-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029715			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029715			124-18-5	Decane	NGS	94	<2.6	17	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029715			64-17-5	Ethanol	NGS	110	<7.4	95	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T029715			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029715			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029715			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029715			110-54-3	Hexane	NGS	87	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029715			828-73-9	Hexanenitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029715			126-98-7	Methacrylonitrile	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029715			75-09-2	Methylene Chloride	NGS	98	3.0	7.8	n/a	n/a	n/a	n/a	2.7	n/a	BJ
S16T029715			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029715			98-95-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029715			110-50-8	Pentanenitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029715			107-12-0	Propenenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029715			110-88-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029715			100-42-5	Styrene	NGS	100	<1.6	2.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029715			127-18-4	Tetrachloroethene	NGS	110	<1.6	35	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029715			108-88-3	Toluene	NGS	100	<1.5	2.1	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-A

Customer Sample ID: 16-08068-2-EFF-A

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
VAPOR-TDU VOLA #2															
S16T028715			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T028715			75-69-4	Trichlorofluoromethane	NGS	100	<1.5	8.9	n/a	n/a	n/a	n/a	1.6		n/a J
S16T028715			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T028715			123-88-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T028715			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T028715			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-B
 Customer Sample ID: 16-08068-2-EFF-B

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029716		79-34-5		1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029716		79-00-5		1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029716		79-34-3		1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029716		79-35-4		1,1-Dichloroethane	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029716		107-06-2		1,2-Dichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029716		542-75-6		1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029716		106-48-7		1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029716		123-91-1		1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029716		71-38-3		1-BuJanol	NGS	130	<8.9	72	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029716		111-70-6		1-Propanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S16T029716		71-23-8		1-Propanol	NGS	120	<3.0	84	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029716		108-47-4		2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029716		1708-29-8		2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029716		78-93-3		2-BuJanone	NGS	95	<1.9	8.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029716		110-43-0		2-Heptanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029716		691-78-6		2-Hexanone	NGS	95	<1.2	1.8	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029716		534-22-5		2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029716		78-94-4		3-BuJen-2-one	NGS	89	<1.7	4.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029716		105-35-4		3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029716		105-88-3		3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029716		105-42-0		4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029716		105-10-1		4-Methyl-2-Pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029716		67-64-1		Acetone	NGS	87	<4.3	180	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029716		75-05-8		Acetonitrile	NGS	88	14	560	n/a	n/a	n/a	n/a	1.8	n/a	BE
S16T029716		88-86-2		Acetophenone	NGS	94	<2.6	29	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029716		107-13-1		Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029716		107-18-6		Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-B
 Customer Sample ID: 16-08068-2-EFF-B

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T028716			107-05-1	Methyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T028716			71-43-2	Benzene	NGS	100	<1.2	2.2	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T028716			100-47-0	Benzonitrile	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T028716			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T028716			109-74-0	Butanenitrile	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T028716			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028716			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028716			75-00-3	Chloroethane	NGS	100	<1.9	4.1	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T028716			87-88-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028716			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T028716			124-18-5	Decane	NGS	94	<2.6	17	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T028716			64-17-5	Ethanol	NGS	110	<7.4	150	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T028716			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028716			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028716			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028716			110-54-3	Hexane	NGS	97	<1.7	2.6	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T028716			628-73-9	Hexanenitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028716			126-88-7	Methacrylonitrile	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028716			75-08-2	Methylene Chloride	NGS	98	3.9	3.7	n/a	n/a	n/a	n/a	2.7	n/a	BJ
S16T028716			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T028716			98-95-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T028716			110-59-8	Pentanitrile	NGS	94	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028716			107-12-0	Propanenitrile	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T028716			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T028716			100-42-5	Styrene	NGS	100	<1.6	2.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T028716			127-18-4	Tetrachloroethene	NGS	110	<1.6	48	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028716			108-88-3	Toluene	NGS	100	<1.5	2.9	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-B

Customer Sample ID: 16-08068-2-EFF-B

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Conc Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029716			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029716			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	15	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029716			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029716			123-86-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029716			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029716			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-C
 Customer Sample ID: 16-08068-2-EFF-C

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Dat Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029717			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029717			79-00-5	1,1,2-Trichloroethane	NGS	116	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029717			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029717			75-35-4	1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029717			107-06-2	1,2-Dichloroethane	NGS	116	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029717			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029717			105-48-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029717			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029717			71-36-3	1-Butanol	NGS	130	<8.9	44	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029717			111-70-6	1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T029717			71-23-8	1-Propanol	NGS	120	<3.0	58	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029717			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029717			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029717			78-93-3	2-Butanone	NGS	95	<1.9	8.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029717			110-43-0	2-Heptanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029717			891-78-6	2-Hexanone	NGS	95	<1.2	1.8	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029717			534-22-5	2-Methylfuran	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029717			78-94-4	3-Eulen-2-one	NGS	86	<1.7	4.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029717			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029717			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029717			105-42-0	4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029717			108-10-1	4-Methyl-2-pentanone	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029717			87-64-1	Acetone	NGS	87	<4.3	280	n/a	n/a	n/a	n/a	4.3	n/a	BE
S16T029717			75-05-8	Acetonitrile	NGS	88	14	910	n/a	n/a	n/a	n/a	1.8	n/a	BE
S16T029717			84-86-2	Acetophenone	NGS	94	<2.6	27	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029717			107-13-1	Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029717			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SOG Number:
 Customer Sample ID: 16-08068-2-EFF-C
 Customer Sample ID: 16-08068-2-EFF-C

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029717			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029717			71-43-2	Benzene	NGS	100	<1.2	1.9	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029717			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029717			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029717			109-74-0	Butanenitrile	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029717			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029717			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029717			75-00-3	Chloroethane	NGS	100	<1.9	4.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029717			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029717			110-62-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029717			124-18-5	Decane	NGS	94	<2.8	15	n/a	n/a	n/a	n/a	2.8	n/a	
S16T029717			64-17-5	Ethanol	NGS	110	<7.4	220	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029717			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029717			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029717			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029717			110-54-3	Heptane	NGS	97	<1.7	2.2	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029717			628-72-9	Hexanenitrile	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029717			128-98-7	Methacrylonitrile	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029717			75-09-2	Methylene Chloride	NGS	98	3.9	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029717			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029717			98-95-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029717			110-59-8	Pentanenitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029717			107-12-0	Propanenitrile	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029717			110-88-1	Pyridine	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029717			100-42-5	Styrene	NGS	100	<1.6	2.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029717			127-18-4	Tetrachloroethene	NGS	110	<1.6	56	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029717			108-88-3	Toluene	NGS	100	<1.5	2.8	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-C
 Customer Sample ID: 16-08068-2-EFF-C

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Res:R	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029717			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029717			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	13	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029717			10051-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S16T029717			123-86-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029717			142-82-5	n-Heptane	NGS	96	<1.4	1.9	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029717			10051-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-D
 Customer Sample ID: 16-08068-2-EFF-D

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Est Err %	Qual Flags
VAPOR-TDU VOA BZ															
S16T029718			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029718			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029718			75-35-4	1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029718			107-06-2	1,2-Dichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			54-2-75-5	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029718			108-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029718			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029718			71-39-3	1-Butanol	NGS	130	<8.9	76	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029718			111-70-6	1-Propanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T029718			71-23-8	1-Propanol	NGS	120	<3.0	97	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029718			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029718			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029718			76-93-3	2-Butanone	NGS	95	<1.9	6.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029718			110-43-0	2-Heptanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029718			591-78-6	2-Hexanone	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029718			534-22-5	2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029718			76-94-4	3-Buten-2-one	NGS	89	<1.7	2.0	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029718			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			106-66-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029718			105-42-0	4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029718			108-10-1	4-Methyl-2-pentanone	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029718			67-64-1	Acetone	NGS	87	<4.3	260	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029718			75-05-8	Acetonitrile	NGS	86	14	2.3E+04	n/a	n/a	n/a	n/a	1.8	n/a	BE
S16T029718			86-86-2	Acetophenone	NGS	94	<2.6	30	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029718			107-13-1	Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029718			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-D
 Customer Sample ID: 16-08068-2-EFF-D

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Res:1	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA RZ															
S16T029718			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029718			71-43-2	Benzene	NGS	100	<1.2	1.4	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029718			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029718			123-72-8	Benzol	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029718			109-74-0	Benzonitrile	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029718			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029718			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			75-00-3	Chloroethane	NGS	100	<1.9	5.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029718			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029718			124-18-5	Decane	NGS	94	<2.8	1.3	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029718			64-17-5	Ethanol	NGS	110	<7.4	27.0	n/a	n/a	n/a	n/a	7.4	n/a	U
S16T029718			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029718			110-54-3	Hexane	NGS	97	<1.7	1.8	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029718			628-73-9	Hexanitride	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029718			128-98-7	Methoxybenzole	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029718			75-09-2	Methylene Chloride	NGS	98	3.9	5.5	n/a	n/a	n/a	n/a	2.7	n/a	BJ
S16T029718			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029718			98-05-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029718			110-59-8	Pentanitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029718			107-12-0	Propanenitrile	NGS	96	<1.4	5.5	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029718			110-86-1	Pyridine	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029718			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029718			127-18-4	Tetrachloroethene	NGS	110	<1.6	7.1	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029718			108-88-3	Toluene	NGS	100	<1.5	2.5	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-D
 Customer Sample ID: 16-08068-2-EFF-D

Sample#	R	AI	CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029718			75-01-6	Trichloroethane	NGS	116	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/b/U
S16T029718			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	14	n/a	n/a	n/a	n/a	1.6		n/b
S16T029718			10081-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/b/U
S16T029718			123-86-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/b/U
S16T029718			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/b/U
S16T029718			10081-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/b/U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-E
 Customer Sample ID: 16-08068-2-EFF-E

Sample#	R	AS	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T028719			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T028719			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028719			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T028719			75-35-4	1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T028719			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028719			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T028719			105-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T028719			123-81-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T028719			71-38-3	1-BzJanol	NGS	130	<8.9	389	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T028719			111-70-6	1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T028719			71-23-8	1-Propanol	NGS	120	<3.0	51	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T028719			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T028719			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T028719			78-93-3	2-BzJanone	NGS	95	<1.9	3.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T028719			110-43-0	2-Heptanone	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T028719			691-78-6	2-Heptanone	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T028719			534-22-5	2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T028719			78-94-4	3-BzJan-2-one	NGS	89	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T028719			105-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028719			105-89-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T028719			105-42-0	4-Methyl-2-Pentanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T028719			108-10-1	4-Methyl-2-Pentanone	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T028719			87-84-1	Acetone	NGS	87	<4.3	410	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T028719			75-05-8	Acetonitrile	NGS	88	14	990	n/a	n/a	n/a	n/a	1.8	n/a	BE
S16T028719			96-86-2	Acetophenone	NGS	94	<2.8	17	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T028719			107-13-1	Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T028719			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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 Y - Comment
 B - Blank Contamination
 J - Estimated
 T - Tentatively Identified Compound
 NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-E
 Customer Sample ID: 16-08068-2-EFF-E

Sample#	R	AI	CAS #	Analyte	Unit	STO %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029719			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029719			71-43-2	Benzene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029719			100-47-0	Benzonitrile	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029719			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029719			109-74-0	Butanenitrile	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029719			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029719			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029719			75-00-3	Chloroethane	NGS	100	<1.9	8.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029719			87-88-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029719			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029719			124-18-5	Decane	NGS	94	<2.8	8.4	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029719			64-17-5	Ethanol	NGS	110	<7.4	320	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T029719			141-76-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029719			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029719			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029719			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029719			828-73-9	Hexanenitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029719			126-86-7	Methacrylonitrile	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029719			75-09-2	Methylene Chloride	NGS	98	3.9	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029719			81-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029719			86-95-3	Nitrobenzene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029719			110-50-8	Pentanitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029719			107-12-0	Propanenitrile	NGS	96	<1.4	2.6	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029719			110-86-1	Pyridine	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029719			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029719			127-18-4	Tetrachloroethene	NGS	110	<1.6	45	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029719			108-88-3	Toluene	NGS	100	<1.5	2.0	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-E

Customer Sample ID: 16-09068-2-EFF-E

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T028719			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028719			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S16T028719			19061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T028719			123-88-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T028719			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T028719			19061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-F
 Customer Sample ID: 16-08068-2-EFF-F

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cent Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029720		79-34-5		1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029720		79-03-5		1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720		79-34-3		1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029720		79-35-4		1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029720		107-06-2		1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029720		542-75-6		1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029720		106-46-7		1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029720		123-81-1		1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029720		71-38-3		1-Butanol	NGS	130	<8.9	56	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029720		111-70-6		1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T029720		71-23-8		1-Propanol	NGS	120	<3.0	78	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029720		108-47-4		2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029720		1708-29-8		2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029720		76-93-3		2-Butanone	NGS	95	<1.9	2.5	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029720		110-43-0		2-Heptanone	NGS	96	<1.5	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029720		591-78-6		2-Hexanone	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029720		534-22-5		2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029720		76-94-4		3-Buten-2-one	NGS	89	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029720		106-35-4		3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720		106-66-3		3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029720		105-42-0		4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029720		108-10-1		4-Methyl-2-pentanone	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029720		67-64-1		Acetone	NGS	87	<4.3	250	n/a	n/a	n/a	n/a	4.3	n/a	U
S16T029720		75-05-8		Acetonitrile	NGS	88	14	1.1E+03	n/a	n/a	n/a	n/a	1.8	n/a	BE
S16T029720		96-86-2		Acetophenone	NGS	94	<2.6	9.9	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029720		107-13-1		Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029720		107-18-6		Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-F
 Customer Sample ID: 16-08068-2-EFF-F

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029720			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029720			71-43-2	Benzene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029720			100-47-9	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029720			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029720			109-74-0	Butanenitrile	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029720			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029720			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720			75-00-3	Chloroethane	NGS	100	<1.9	7.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029720			67-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029720			124-18-5	Decane	NGS	94	<2.8	5.6	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029720			84-17-5	Ethanol	NGS	110	<7.4	28.0	n/a	n/a	n/a	n/a	7.4	n/a	J
S16T029720			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029720			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029720			628-73-9	Hexanenitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720			128-98-7	Methacrylonitrile	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029720			75-09-2	Methylene Chloride	NGS	98	3.9	2.8	n/a	n/a	n/a	n/a	2.7	n/a	BU
S16T029720			81-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029720			98-95-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029720			110-69-8	Pentanitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029720			107-12-0	Propanenitrile	NGS	98	<1.4	4.0	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029720			110-88-1	Pyridine	NGS	100	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029720			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029720			127-18-4	Tetrachloroethene	NGS	110	<1.6	3.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029720			108-88-3	Toluene	NGS	100	<1.5	1.5	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-F
 Customer Sample ID: 16-08068-2-EFF-F

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029720			79-01-5	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029720			75-69-4	Trichlorofluoromethane	NGS	100	<1.5	33	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029720			10081-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029720			123-86-4	n-Butyl acetate	NGS	80	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029720			142-82-5	n-Heptane	NGS	56	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029720			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-G
 Customer Sample ID: 16-08068-2-EFF-G

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cst Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029721			79-34-5	1,1,2,2-tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029721			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029721			79-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029721			79-35-4	1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029721			107-05-2	1,2-Dichloroethene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029721			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029721			106-66-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S16T029721			123-91-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029721			71-38-3	1-BuJanol	NGS	130	<8.9	80	n/a	n/a	n/a	n/a	8.9	n/a	Y
S16T029721			111-70-6	1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	LU
S16T029721			71-23-8	1-Propanol	NGS	120	<3.0	99	n/a	n/a	n/a	n/a	3.0	n/a	U
S16T029721			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S16T029721			1706-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029721			76-93-3	2-BuJanone	NGS	95	<1.9	2.4	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029721			110-43-0	2-Heptanone	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029721			591-76-6	2-Hexanone	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029721			534-22-5	2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029721			76-94-4	3-BuJan-2-one	NGS	89	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029721			106-35-4	3-Heptanone	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029721			106-66-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S16T029721			105-42-0	4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029721			108-10-1	4-Methyl-2-Pentanone	NGS	98	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029721			67-64-1	Acetone	NGS	87	<4.3	700	n/a	n/a	n/a	n/a	4.3	n/a	E
S16T029721			76-05-8	Acetonitrile	NGS	88	14	1.2E+03	n/a	n/a	n/a	n/a	1.8	n/a	BE
S16T029721			96-86-2	Acetophenone	NGS	94	<2.6	6.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S16T029721			107-13-1	Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029721			107-18-5	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-G
 Customer Sample ID: 16-08068-2-EFF-G

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T028721			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T028721			71-43-2	Benzene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T028721			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T028721			123-72-6	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T028721			109-74-0	Butanenitrile	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T028721			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028721			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028721			75-00-3	Chloroethane	NGS	100	<1.9	6.7	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T028721			67-68-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028721			110-82-7	Cyclohexane	NGS	100	<1.8	3.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S16T028721			124-18-5	Decane	NGS	94	<2.6	17	n/a	n/a	n/a	n/a	2.6	n/a	
S16T028721			64-17-5	Ethanol	NGS	110	<7.4	41.0	n/a	n/a	n/a	n/a	7.4	n/a	
S16T028721			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028721			100-41-4	Ethylbenzene	NGS	100	<1.5	1.5	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T028721			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028721			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T028721			628-73-9	Hexanenitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028721			128-68-7	Methacrylonitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028721			75-09-2	Methylene Chloride	NGS	98	3.9	3.3	n/a	n/a	n/a	n/a	2.7	n/a	BU
S16T028721			81-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T028721			98-55-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T028721			110-59-8	Pentanitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T028721			107-12-0	Propanenitrile	NGS	98	<1.4	11	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T028721			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T028721			100-42-5	Styrene	NGS	100	<1.6	5.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T028721			127-18-4	Tetrachloroethane	NGS	110	<1.6	22	n/a	n/a	n/a	n/a	1.6	n/a	
S16T028721			108-68-3	Toluene	NGS	100	<1.5	4.2	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-G
 Customer Sample ID: 16-08068-2-EFF-G

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Est Err %	Qual Flags
VAPOR-TDU VDA #2															
S16T029721			79-01-6	Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029721			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029721			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029721			123-86-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029721			142-82-5	n-Heptane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029721			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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L - LLS Outside Range
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U - Less Than Detection Limit
 N - Named TIC

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-H
 Customer Sample ID: 16-08068-2-EFF-H

Sample#	R	AB	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029722		79-34-5		1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029722		79-00-5		1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029722		75-34-3		1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029722		75-35-4		1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029722		107-06-2		1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6		n/a U
S16T029722		542-75-6		1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U
S16T029722		106-66-7		1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0		n/a U
S16T029722		123-91-1		1,4-Dioxane	NGS	100	<1.7	2.0	n/a	n/a	n/a	n/a	1.7		n/a J
S16T029722		71-38-3		1-Bz.Janol	NGS	130	<8.9	420	n/a	n/a	n/a	n/a	8.9		n/a Y
S16T029722		111-70-6		1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6		n/a LU
S16T029722		71-23-8		1-Propanol	NGS	120	<3.0	24.0	n/a	n/a	n/a	n/a	3.0		n/a
S16T029722		108-47-4		2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3		n/a U
S16T029722		1708-29-8		2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8		n/a U
S16T029722		78-03-3		2-Bz.Lanose	NGS	95	<1.9	230	n/a	n/a	n/a	n/a	1.9		n/a
S16T029722		110-43-0		2-Heptanone	NGS	96	<1.6	34	n/a	n/a	n/a	n/a	1.6		n/a
S16T029722		591-78-6		2-Hexanone	NGS	95	<1.2	27	n/a	n/a	n/a	n/a	1.2		n/a
S16T029722		534-22-5		2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9		n/a U
S16T029722		78-04-4		3-Bz.Lan-2-ona	NGS	89	<1.7	13	n/a	n/a	n/a	n/a	1.7		n/a
S16T029722		105-35-4		3-Heptanone	NGS	95	<1.5	210	n/a	n/a	n/a	n/a	1.5		n/a
S16T029722		105-68-3		3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4		n/a U
S16T029722		105-42-0		4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029722		108-10-1		4-Methyl-2-Pentanone	NGS	98	<1.9	2.0	n/a	n/a	n/a	n/a	1.9		n/a J
S16T029722		67-54-1		Acetone	NGS	87	<4.3	3.5E+03	n/a	n/a	n/a	n/a	4.3		n/a E
S16T029722		75-05-8		Acetonitrile	NGS	88	14	840	n/a	n/a	n/a	n/a	1.8		n/a BE
S16T029722		98-86-2		Acetophenone	NGS	94	<2.6	7.8	n/a	n/a	n/a	n/a	2.6		n/a J
S16T029722		107-13-1		Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7		n/a U
S16T029722		107-18-6		Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-H
 Customer Sample ID: 16-08068-2-EFF-H

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029722			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029722			71-43-2	Benzene	NGS	100	<1.2	6.8	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029722			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029722			123-72-8	Butanal	NGS	110	<2.1	19	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029722			109-74-0	Butacrylonitrile	NGS	98	<1.2	27	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029722			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029722			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029722			75-00-3	Chloroethane	NGS	100	<1.9	4.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029722			87-98-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029722			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029722			124-18-5	Decane	NGS	94	<2.8	2.9	n/a	n/a	n/a	n/a	2.8	n/a	J
S16T029722			64-17-5	Ethanol	NGS	110	<7.4	340	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029722			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029722			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029722			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029722			110-54-3	Hexane	NGS	87	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029722			608-73-9	Hexanamide	NGS	99	<1.5	2.3	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029722			126-98-7	Methacrylonitrile	NGS	98	<1.0	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029722			75-09-2	Methylene Chloride	NGS	98	3.9	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029722			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029722			98-95-3	Nitrobenzene	NGS	96	<2.0	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029722			110-59-8	Pentanamide	NGS	96	<1.6	6.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029722			107-12-0	Propanenitrile	NGS	96	<1.4	4.9	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029722			110-86-1	Pyridine	NGS	130	<3.8	13	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029722			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029722			127-18-4	Tetrachloroethane	NGS	110	<1.6	7.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029722			108-88-3	Toluene	NGS	100	<1.5	5.1	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162351

SDG Number:

Customer Sample ID: 16-08068-2-EFF-H

Customer Sample ID: 16-08068-2-EFF-H

Sample#	R	As	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VDA #2															
S16T029722			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029722			75-69-4	Trichlorofluoromethane	NGS	100	<1.5	110	n/a	n/a	n/a	n/a	1.5	n/a	
S16T029722			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T029722			123-86-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T029722			142-82-5	n-Heptane	NGS	96	<1.4	8.9	n/a	n/a	n/a	n/a	1.4	n/a	J
S16T029722			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-IN-A

Customer Sample ID: 16-08068-2-IN-A

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cal Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T028723			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	n/a	1.3	n/a U
S16T028723			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	n/a	1.5	n/a U
S16T028723			75-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	n/a	1.2	n/a U
S16T028723			75-35-4	1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	n/a	1.3	n/a U
S16T028723			107-06-2	1,2-Dichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	n/a	1.5	n/a U
S16T028723			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	n/a	1.2	n/a U
S16T028723			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	n/a	2.0	n/a U
S16T028723			123-91-1	1,4-Dioxane	NGS	100	<1.7	3.5	n/a	n/a	n/a	n/a	n/a	1.7	n/a J
S16T028723			71-36-3	1-Butanol	NGS	130	<8.9	580	n/a	n/a	n/a	n/a	n/a	8.9	n/a Y
S16T028723			111-70-5	1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	n/a	5.6	n/a LU
S16T028723			71-23-8	1-Propanol	NGS	120	<3.0	310	n/a	n/a	n/a	n/a	n/a	3.0	n/a U
S16T028723			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	n/a	3.3	n/a U
S16T028723			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	n/a	2.8	n/a U
S16T028723			78-93-3	2-Butanone	NGS	95	<1.9	350	n/a	n/a	n/a	n/a	n/a	1.9	n/a
S16T028723			110-43-0	2-Heptanone	NGS	96	<1.6	81	n/a	n/a	n/a	n/a	n/a	1.6	n/a
S16T028723			591-78-6	2-Hexanone	NGS	95	<1.2	25	n/a	n/a	n/a	n/a	n/a	1.2	n/a
S16T028723			534-22-5	2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	n/a	1.9	n/a U
S16T028723			78-94-4	3-Buton-2-one	NGS	89	<1.7	16	n/a	n/a	n/a	n/a	n/a	1.7	n/a
S16T028723			105-35-4	3-Heptanone	NGS	95	<1.5	350	n/a	n/a	n/a	n/a	n/a	1.5	n/a
S16T028723			106-68-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	n/a	2.4	n/a U
S16T028723			105-42-0	4-Methyl-2-hexanone	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	n/a	1.3	n/a U
S16T028723			105-10-1	4-Methyl-2-Pentanone	NGS	98	<1.9	3.6	n/a	n/a	n/a	n/a	n/a	1.9	n/a J
S16T028723			87-64-1	Acetone	NGS	87	<4.3	4.2E+03	n/a	n/a	n/a	n/a	n/a	4.3	n/a E
S16T028723			75-05-8	Acetonitrile	NGS	88	14	890	n/a	n/a	n/a	n/a	n/a	1.8	n/a BE
S16T028723			58-85-2	Acetophenone	NGS	94	<2.6	33	n/a	n/a	n/a	n/a	n/a	2.6	n/a
S16T028723			107-13-1	Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	n/a	1.7	n/a U
S16T028723			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	n/a	3.9	n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-IN-A
 Customer Sample ID: 16-08068-2-IN-A

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Est Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029723			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029723			71-43-2	Benzene	NGS	100	<1.2	8.2	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029723			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029723			123-72-8	Butanal	NGS	110	<2.1	16	n/a	n/a	n/a	n/a	2.1	n/a	
S16T029723			109-74-0	Butanenitrile	NGS	94	<1.2	41	n/a	n/a	n/a	n/a	1.2	n/a	
S16T029723			56-23-6	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029723			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029723			75-00-3	Chloroethane	NGS	100	<1.9	8.3	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029723			87-88-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029723			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029723			124-18-5	Decane	NGS	94	<2.8	14	n/a	n/a	n/a	n/a	2.8	n/a	
S16T029723			64-17-5	Ethanol	NGS	110	<7.4	420	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029723			141-79-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029723			100-41-4	Ethylbenzene	NGS	100	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S16T029723			110-00-9	Furan	NGS	87	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029723			110-54-3	Hexane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S16T029723			828-73-9	Hexanenitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029723			126-88-7	Methacrylonitrile	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029723			75-09-2	Methylene Chloride	NGS	98	3.9	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S16T029723			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029723			98-95-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029723			110-59-8	Pentanitrile	NGS	98	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029723			107-12-0	Propenenitrile	NGS	98	<1.4	58	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029723			110-86-1	Pyridine	NGS	130	<3.8	22	n/a	n/a	n/a	n/a	3.8	n/a	J
S16T029723			100-42-5	Styrene	NGS	100	<1.6	2.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029723			127-18-4	Tetrachloroethene	NGS	110	<1.6	32	n/a	n/a	n/a	n/a	1.6	n/a	J
S16T029723			108-88-3	Toluene	NGS	100	<1.5	7.8	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-IN-A
 Customer Sample ID: 16-08068-2-IN-A

Sample#	R	AI	CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029723			79-01-6	Trichloroethene	NGS	116	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5		n/a U
S16T029723			75-69-4	Trichlorofluoromethane	NGS	100	<1.6	120	n/a	n/a	n/a	n/a	1.6		n/a
S16T029723			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3		n/a U
S16T029723			123-86-4	n-Butyl acetate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029723			142-82-5	n-Heptane	NGS	56	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4		n/a U
S16T029723			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		n/a U

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L - LLS Outside Range
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U - Less Than Detection Limit
 N - Named TIC

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-IN-H
 Customer Sample ID: 16-08068-2-IN-H

Sample#	R	Adj	CAS #	Analyte	Unit	STD %	Blank	Res:R	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cont Err %	Qual Flags
VAPOR-TDU VDA #2															
S16T029730			79-34-5	1,1,2,2-Tetrachloroethane	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	n/a	1.3	n/a U
S16T029730			79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	n/a	1.5	n/a U
S16T029730			79-34-3	1,1-Dichloroethane	NGS	99	<1.2	<1.2	n/a	n/a	n/a	n/a	n/a	1.2	n/a U
S16T029730			79-35-4	1,1-Dichloroethene	NGS	96	<1.3	<1.3	n/a	n/a	n/a	n/a	n/a	1.3	n/a U
S16T029730			107-06-2	1,2-Dichloroethane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	n/a	1.6	n/a U
S16T029730			54-2-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	n/a	1.2	n/a U
S16T029730			106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	n/a	2.0	n/a U
S16T029730			123-81-1	1,4-Dioxane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	n/a	1.7	n/a U
S16T029730			71-39-3	1-Butanol	NGS	130	<8.9	85	n/a	n/a	n/a	n/a	n/a	8.9	n/a Y
S16T029730			111-70-6	1-Heptanol	NGS	96	<5.6	<5.6	n/a	n/a	n/a	n/a	n/a	5.6	n/a LU
S16T029730			71-23-8	1-Propanol	NGS	120	<3.0	55	n/a	n/a	n/a	n/a	n/a	3.0	n/a U
S16T029730			108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	n/a	3.3	n/a U
S16T029730			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	n/a	2.8	n/a U
S16T029730			76-90-3	2-Butanone	NGS	95	<1.9	4.4	n/a	n/a	n/a	n/a	n/a	1.9	n/a U
S16T029730			110-43-0	2-Heptanone	NGS	96	<1.6	3.2	n/a	n/a	n/a	n/a	n/a	1.6	n/a U
S16T029730			591-78-6	2-Hexanone	NGS	95	<1.2	<1.2	n/a	n/a	n/a	n/a	n/a	1.2	n/a U
S16T029730			534-22-5	2-Methylfuran	NGS	99	<1.9	<1.9	n/a	n/a	n/a	n/a	n/a	1.9	n/a U
S16T029730			76-94-4	3-Buten-2-one	NGS	89	<1.7	15	n/a	n/a	n/a	n/a	n/a	1.7	n/a U
S16T029730			106-35-4	3-Heptanone	NGS	95	<1.5	18	n/a	n/a	n/a	n/a	n/a	1.5	n/a U
S16T029730			106-66-3	3-Octanone	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	n/a	2.4	n/a U
S16T029730			105-42-0	4-Methyl-2-hexanone	NGS	95	<1.3	1.8	n/a	n/a	n/a	n/a	n/a	1.3	n/a U
S16T029730			108-10-1	4-Methyl-2-pentanone	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	n/a	1.9	n/a U
S16T029730			67-64-1	Acetone	NGS	87	<4.3	2.5E+03	n/a	n/a	n/a	n/a	n/a	4.3	n/a E
S16T029730			75-05-8	Acetonitrile	NGS	88	14	2.1E+03	n/a	n/a	n/a	n/a	n/a	1.8	n/a BE
S16T029730			96-86-2	Acetophenone	NGS	94	<2.6	5.2	n/a	n/a	n/a	n/a	n/a	2.6	n/a U
S16T029730			107-13-1	Acrylonitrile	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	n/a	1.7	n/a U
S16T029730			107-18-6	Allyl Alcohol	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	n/a	3.9	n/a U

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-IN-H

Customer Sample ID: 16-08068-2-IN-H

Sample#	R	AJ	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD-%	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T029730			107-05-1	Allyl Chloride	NGS	91	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029730			71-43-2	Benzene	NGS	100	<1.2	1.4	n/a	n/a	n/a	n/a	1.2	n/a	J
S16T029730			100-47-0	Benzonitrile	NGS	96	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S16T029730			123-72-8	Butanal	NGS	110	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S16T029730			109-74-0	Butanenitrile	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U
S16T029730			56-23-5	Carbon tetrachloride	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029730			108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029730			75-00-3	Chloroethane	NGS	100	<1.9	6.4	n/a	n/a	n/a	n/a	1.9	n/a	J
S16T029730			57-66-3	Chloroform	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029730			110-82-7	Cyclohexane	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S16T029730			124-18-5	Decane	NGS	94	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S16T029730			64-17-5	Ethanol	NGS	110	<7.4	610	n/a	n/a	n/a	n/a	7.4	n/a	
S16T029730			141-78-6	Ethyl acetate	NGS	82	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029730			100-41-4	Ethylbenzene	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029730			110-00-9	Furan	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029730			110-54-3	Hexane	NGS	97	<1.7	2.6	n/a	n/a	n/a	n/a	1.7	n/a	J
S16T029730			528-73-9	Hexanenitrile	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T029730			128-98-7	Methacrylonitrile	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029730			75-09-2	Methylene Chloride	NGS	98	3.9	5.0	n/a	n/a	n/a	n/a	2.7	n/a	BU
S16T029730			91-20-3	Naphthalene	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S16T029730			98-95-3	Nitrobenzene	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S16T029730			110-59-8	Pentanitrile	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029730			107-12-0	Propanenitrile	NGS	98	<1.4	37	n/a	n/a	n/a	n/a	1.4	n/a	
S16T029730			110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	n/a	U
S16T029730			100-42-5	Styrene	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S16T029730			127-18-4	Tetrachloroethane	NGS	110	<1.5	15	n/a	n/a	n/a	n/a	1.6	n/a	
S16T029730			108-88-3	Toluene	NGS	100	<1.5	2.2	n/a	n/a	n/a	n/a	1.5	n/a	J

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-IN-H

Customer Sample ID: 16-08068-2-IN-H

Sample#	R	AJ	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	NPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S16T028730			79-01-6	Trichloroethene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S16T028730			75-69-4	Trichlorofluoromethane	NGS	100	<1.5	320	n/a	n/a	n/a	n/a	1.5	n/a	
S16T028730			10061-01-5	cis-1,3-Dichloropropene	NGS	100	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S16T028730			123-86-4	n-Butyl acrylate	NGS	83	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T028730			142-82-5	n-Heptane	NGS	98	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S16T028730			10061-02-6	trans-1,3-Dichloropropene	NGS	100	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a	U

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 E - Outside Calibration Range

Y - Comment
 B - Blank Contamination

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

Quintus
 10/20/14

**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-A

Customer Sample ID: 16-08068-2-EFF-A

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029715				2-Propanol, 2-methyl-	75-05-0	7.15	NGS	27 JNT	
S16T029715				Acetic acid	64-19-7	9.58	NGS	43 JNT	
S16T029715				Formamide	75-12-7	14.07	NGS	30 JNT	
S16T029715				Propanoic acid, 2,2-dimethyl-	75-98-9	16.50	NGS	33 JNT	
S16T029715				Cyclotrisiloxane, octamethyl	558-87-2	20.43	NGS	120 JNT	
S16T029715				2,2,7,7-Tetraamethylcyclazone	1071-31-4	21.49	NGS	31 JNT	
S16T029715				D-Limonene	5889-27-5	22.61	NGS	130 JNT	
S16T029715				3-Ethyl-3-methylheptane	17302-01-1	22.98	NGS	99 JNT	
S16T029715				Decane, 2,4,8-trimethyl-	82108-27-4	23.11	NGS	44 JNT	
S16T029715				Heptanoic acid, 2-ethyl-	3274-29-1	23.69	NGS	100 JNT	
S16T029715				Undecane	1120-21-4	23.83	NGS	71 JNT	
S16T029715				Undecane, 5,7-dimethyl-	17312-83-3	23.93	NGS	48 JNT	
S16T029715				Unknown-1	-	24.23	NGS	330 JT	
S16T029715				Undecane, 3-methyl-	1602-43-3	24.68	NGS	6.5 JNT	
S16T029715				Dodecane	112-40-3	25.25	NGS	41 JNT	
S16T029715				Methanamine	160-07-0	26.21	NGS	80 JNT	
S16T029715				Benzothiazole	56-16-9	26.33	NGS	110 JNT	
S16T029715				Dodecane, 4,6-dimethyl-	51141728	26.42	NGS	59 JNT	
S16T029715				Tridecane	8265905	26.57	NGS	15 JNT	
S16T029715				Unknown-2	-	26.61	NGS	38 JT	
S16T029715				Tetradecane	828-59-4	26.99	NGS	35 JNT	

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Y - Comment
 B - Blank Contamination

L - LLS Outside Range
 E - Outside Calibration Range

U - Less Than Detection Limit
 N - Named TIC

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-B
 Customer Sample ID: 16-08068-2-EFF-B

Sample#	R	AF	GC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Quali Flag
VAPOR-TDU VOA #2									
S161029716				2-Propanol, 2-methyl-	75-65-0	7.15	NGS	50 JNT	
S161029716				Acetic acid	64-19-7	9.55	NGS	34 JNT	
S161029716				Formamide	75-12-7	14.08	NGS	50 JNT	
S161029716				Propanoic acid, 2,2-dimethyl-	75-98-9	16.52	NGS	51 JNT	
S161029716				Cyclohexane, octamethyl	568-67-2	20.43	NGS	140 JNT	
S161029716				2-Limonene	589-27-5	22.61	NGS	130 JNT	
S161029716				2,6-Dimethyldecane	13150-81-7	22.97	NGS	100 JNT	
S161029716				Decane, 2,4,6-trimethyl-	62109-27-4	23.11	NGS	39 JNT	
S161029716				Heptanoic acid, 2-ethyl-	3274-29-1	23.68	NGS	120 JNT	
S161029716				Undecane	1120-21-4	23.83	NGS	83 JNT	
S161029716				Undecane, 5,7-dimethyl-	17312-83-3	23.92	NGS	72 JNT	
S161029716				Unknown-1	-	24.22	NGS	320 JT	
S161029716				Undecane, 3-methyl	1602433	24.68	NGS	11 JNT	
S161029716				Dodecane	112-40-3	25.25	NGS	50 JNT	
S161029716				2-Propanoic acid, ethyl ester	2499-59-4	25.40	NGS	29 JNT	
S161029716				Unknown-2	-	26.00	NGS	46 JT	
S161029716				Ethylene diacrylate	2274-11-5	26.03	NGS	28 JNT	
S161029716				Benzothiazole	95-16-9	26.34	NGS	140 JNT	
S161029716				Dodecane, 4,6-dimethyl-	51141728	26.43	NGS	64 JNT	
S161029716				Dodecane, 2,6,11-trimethyl-	51295-58-4	26.55	NGS	20 JNT	
S161029716				Tridecane	6285005	26.58	NGS	17 JNT	
S161029716				1,2,3,4,5-Cyclopentaneperitol	56772-25-9	26.63	NGS	34 JNT	
S161029716				Tetradecane	628594	27.01	NGS	38 JNT	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-C
 Customer Sample ID: 16-08068-2-EFF-C

Sample#	R	AF	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029717				2-Propanol, 2-methyl-	75-65-0	7.14	NGS	59 JNT	
S16T029717				Acetic acid	64-19-7	9.44	NGS	19 JNT	
S16T029717				Formamide	75-12-7	14.08	NGS	62 JNT	
S16T029717				Propanoic acid, 2,2-dimethyl-	75-98-9	18.51	NGS	44 JNT	
S16T029717				Cyclotetrasiloxane, octamethyl	556-57-2	20.43	NGS	130 JNT	
S16T029717				D-Limonene	5889-27-5	22.81	NGS	120 JNT	
S16T029717				3-Ethyl-3-methylheptane	17302-01-1	22.97	NGS	93 JNT	
S16T029717				Decane, 2,4,6-trimethyl-	52-06-27-4	23.11	NGS	34 JNT	
S16T029717				Hexanoic acid, 2-ethyl-	149-57-5	23.68	NGS	98 JNT	
S16T029717				Undecane	1120-21-4	23.83	NGS	74 JNT	
S16T029717				Undecane, 5,7-dimethyl-	17312-83-3	23.92	NGS	63 JNT	
S16T029717				Undecane, 2-ethyl-	7045718	24.04	NGS	19 JNT	
S16T029717				Unknown-1	-	24.22	NGS	340 JT	
S16T029717				Undecane, 3-ethyl-	1002433	24.88	NGS	7.8 JNT	
S16T029717				Dodecane	112-40-3	25.25	NGS	62 JNT	
S16T029717				2-Propanoic acid, octyl ester	2499-59-4	25.99	NGS	30 JNT	
S16T029717				Benzothiazole	95-16-9	26.33	NGS	150 JNT	
S16T029717				Dodecane, 4,6-dimethyl-	51141728	26.42	NGS	54 JNT	
S16T029717				Tridecane	529505	26.57	NGS	31 JNT	
S16T029717				1,2,3,4,5-Cyclopentaneperital	56772-25-9	26.82	NGS	38 JNT	
S16T029717				Tetradecane	629504	27.00	NGS	30 JNT	

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 E - Outside Calibration Range

U - Less Than Detection Limit
 N - Named TIC

**Cartridge Evaluation
 Data Summary Report**

Sample Group: 20162851
SDG Number:
Customer Sample ID: 16-08068-2-EFF-D
Customer Sample ID: 16-08068-2-EFF-D

SampleID	R	AF	OC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029718				Cyclobutylamine	2516-34-9	5.30	NGS	61 JNT	
S16T029718				2-Propanol, 2-methyl-	75-65-0	7.15	NGS	44 JNT	
S16T029718				Acetic acid	64-19-7	9.45	NGS	18 JNT	
S16T029718				Formamide	75-12-7	14.09	NGS	53 JNT	
S16T029718				Propanoic acid, 2,2-dimethyl-	75-98-9	16.51	NGS	39 JNT	
S16T029718				Cyclohexane, octamethyl	566-87-2	20.43	NGS	110 JNT	
S16T029718				Cyclohexane, 1-methyl-5-(1-met	1461-27-4	22.61	NGS	120 JNT	
S16T029718				2,6-Dimethyldecane	13150-81-7	22.97	NGS	92 JNT	
S16T029718				Decane, 2,4,6-trimethyl-	62108-27-4	23.11	NGS	35 JNT	
S16T029718				Heptanoic acid, 2-ethyl-	3274-29-1	23.68	NGS	120 JNT	
S16T029718				Undecane	1120-21-4	23.83	NGS	80 JNT	
S16T029718				Undecane, 5,7-dimethyl-	17312-83-3	23.92	NGS	61 JNT	
S16T029718				Undecane, 2-methyl-	7045718	24.04	NGS	22 JNT	
S16T029718				Unknown-1	-	24.22	NGS	260 JT	
S16T029718				Undecane, 3-methyl-	1002-43-3	24.68	NGS	6.5 JNT	
S16T029718				Dodecane	112-40-3	25.25	NGS	33 JNT	
S16T029718				Benzothiazole	95-16-9	26.34	NGS	70 JNT	
S16T029718				Dodecane, 4,6-dimethyl-	5114172B	26.43	NGS	52 JNT	
S16T029718				Dodecane, 2,6,11-trimethyl-	51295-58-4	26.55	NGS	31 JNT	
S16T029718				Unknown-2	-	26.62	NGS	37 JT	
S16T029718				Dodecane, 2,6,10-trimethyl-	3881983	26.74	NGS	8.7 JNT	
S16T029718				Tetradecane	529594	27.01	NGS	33 JNT	

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-E

Customer Sample ID: 16-08068-2-EFF-E

Sample#	R	Ad	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA.#2									
S16T029719				Acetic anhydride	108-24-7	5.28	NGS	77	JNT
S16T029719				2-Propenol, 2-methyl-	75-65-0	7.15	NGS	28	JNT
S16T029719				Formamide	75-12-7	14.09	NGS	53	JNT
S16T029719				Cyclotrisiloxane, octamethyl	556-87-2	20.43	NGS	68	JNT
S16T029719				D-Limonene	5989-27-5	22.61	NGS	81	JNT
S16T029719				2,6-Dimethyldecane	13150-81-7	22.97	NGS	54	JNT
S16T029719				Decane, 2,4,6-trimethyl-	82108-27-4	23.11	NGS	20	JNT
S16T029719				1-Undecene, 4-methyl-	74630-39-0	23.76	NGS	5.9	JNT
S16T029719				Undecane	1120214	23.76	NGS	5.9	JNT
S16T029719				Undecane, 4,7-dimethyl-	17301-35-5	23.83	NGS	41	JNT
S16T029719				Undecane, 5,7-dimethyl-	17312-83-3	23.93	NGS	31	JNT
S16T029719				Undecane, 2-methyl-	7045718	24.04	NGS	11	JNT
S16T029719				Unknown-1	-	24.22	NGS	200	JT
S16T029719				Dodecane	112-40-3	25.25	NGS	29	JNT
S16T029719				Methanamine	100-97-9	28.22	NGS	10	JNT
S16T029719				Benzothiazole	95-16-9	26.33	NGS	110	JNT
S16T029719				Dodecane, 4,8-dimethyl-	81141726	26.42	NGS	42	JNT
S16T029719				Propanoic acid, 2-methyl-, 2,2	74367-33-2	26.57	NGS	39	JNT
S16T029719				Unknown-2	-	26.61	NGS	31	JT
S16T029719				Dodecane, 2,6,10-trimethyl-	3891963	26.73	NGS	8.2	JNT
S16T029719				Tetradecane	829594	27.00	NGS	24	JNT

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-F

Customer Sample ID: 16-08068-2-EFF-F

Sample#	R	Alt	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029720				Methyl formate	107-31-3	4.72	NGS	43 JNT	
S16T029720				Unknown-1	-	8.28	NGS	49 JT	
S16T029720				Formamide	75-12-7	14.10	NGS	48 JNT	
S16T029720				Cyclohexanone, octamethyl	556-67-2	20.43	NGS	51 JNT	
S16T029720				D-Limonene	5989-27-5	22.61	NGS	52 JNT	
S16T029720				2,6-Dimethyldecane	13150-81-7	22.97	NGS	40 JNT	
S16T029720				Decane, 2,4,6-trimethyl-	62108-27-4	23.11	NGS	15 JNT	
S16T029720				Hydroxylamine, O-decyl-	29812-79-1	23.71	NGS	33 JNT	
S16T029720				Undecane, 4,6-dimethyl-	17312-82-2	23.82	NGS	40 JNT	
S16T029720				Undecane, 5,7-dimethyl-	17312-83-3	23.92	NGS	36 JNT	
S16T029720				Undecane, 2-methyl-	7045718	24.04	NGS	14 JNT	
S16T029720				Unknown-2	-	24.22	NGS	180 JT	
S16T029720				Undecane, 3-methyl-	1002433	24.86	NGS	5.8 JNT	
S16T029720				Dodecane	112-40-3	25.25	NGS	34 JNT	
S16T029720				2-Propenoic acid, octyl ester	2499-59-4	25.99	NGS	35 JNT	
S16T029720				Methanamine	100-97-0	26.21	NGS	74 JNT	
S16T029720				Benzothiazole	96-16-9	26.34	NGS	94 JNT	
S16T029720				Dodecane, 4,6-dimethyl-	61141728	26.42	NGS	33 JNT	
S16T029720				Dodecane, 2,5,11-trimethyl-	51265664	26.73	NGS	6.3 JNT	
S16T029720				Tetradecane	629594	27.00	NGS	19 JNT	

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 E - Outside Calibration Range

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851
 SDG Number:
 Customer Sample ID: 16-08068-2-EFF-G
 Customer Sample ID: 16-08068-2-EFF-G

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR:TDU VOA #2									
S16T029721				Methyl formate	107-31-3	4.72	NGS	43	JNT
S16T029721				Unknown-1	-	5.37	NGS	56	JT
S16T029721				Formamide	75-12-7	14.11	NGS	54	JNT
S16T029721				Cycloisoxane, hexamethyl-	541-05-9	17.02	NGS	69	JNT
S16T029721				Heptane, 2,4-dimethyl-	2213-23-2	17.26	NGS	110	JNT
S16T029721				Octane, 3-chloro-	1117-79-9	17.67	NGS	28	JNT
S16T029721				Octane, 4-methyl-	2216-34-4	18.09	NGS	56	JNT
S16T029721				Cycloisoxane, octamethyl	596-67-2	20.43	NGS	260	JNT
S16T029721				1-Hexanol, 2-ethyl-	104-76-7	21.99	NGS	37	JNT
S16T029721				D-Limonene	5989-27-5	22.61	NGS	96	JNT
S16T029721				Octane, 2,3,6,7-tetramethyl-	62670-34-5	22.89	NGS	39	JNT
S16T029721				3-Ethyl-3-methylheptane	17302-01-1	22.97	NGS	390	JNT
S16T029721				Decane, 2,4,6-trimethyl-	62108-27-4	23.11	NGS	150	JNT
S16T029721				Decane, 3-methyl-	13151-34-3	23.19	NGS	26	JNT
S16T029721				Cyclooctane, 1,4-dimethyl-, tr	13151-99-9	23.47	NGS	58	JNT
S16T029721				Cyclooctane, 1,4-dimethyl-, d	13151-99-0	23.55	NGS	33	JNT
S16T029721				Hexanoic acid, 2-ethyl-	149-57-5	23.68	NGS	62	JNT
S16T029721				Undecane	1120-21-4	23.71	NGS	110	JNT
S16T029721				2,3-Dimethyldecane	17312-44-6	23.76	NGS	30	JNT
S16T029721				Undecane, 5,7-dimethyl-	17312-83-3	23.83	NGS	260	JNT
S16T029721				Undecane, 4,7-dimethyl-	17301-32-5	23.93	NGS	110	JNT
S16T029721				Decane, 3,7-dimethyl-	17312-54-8	24.04	NGS	50	JNT
S16T029721				Undecane-2	-	24.22	NGS	200	JT
S16T029721				Undecane, 3-methyl-	1092-43-3	24.88	NGS	20	JNT
S16T029721				Dodecane	112-40-3	25.25	NGS	53	JNT
S16T029721				Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	35	JNT
S16T029721				Dodecane, 2,6,11-trimethyl-	51295664	26.56	NGS	6.5	JNT

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Cartridge Evaluation
Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-G

Customer Sample ID: 16-08068-2-EFF-G

Sample#	R	Alt	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
S16T029721				Tetradecano	629594	27.02	NCS	16 JNT	

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

Y - Comment
B - Blank Contamination

L - LLS Outside Range
E - Outside Calibration Range

U - Less Than Detection Limit
N - Named TIC

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-EFF-H

Customer Sample ID: 16-08068-2-EFF-H

Sample#	R	Alt	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S16T029722				Methyl formate	107-31-3	4.72	NGS	64	JNT
S16T029722				4-Methoxy-1-pentene	96388-09-5	7.15	NGS	32	JNT
S16T029722				Acetic anhydride	108-24-7	7.46	NGS	38	JNT
S16T029722				Tetrahydrofuran	109-96-9	11.98	NGS	7.8	JNT
S16T029722				Formamide	75-12-7	14.11	NGS	60	JNT
S16T029722				2-Pentanone	107-87-9	14.17	NGS	45	JNT
S16T029722				Neopentane	463-82-1	15.76	NGS	61	JNT
S16T029722				Cyclohexasiloxane, octamethyl	566-67-2	20.43	NGS	64	JNT
S16T029722				D-Limonene	5989-27-5	22.61	NGS	26	JNT
S16T029722				2,6-Dimethyldecane	13150-81-7	22.97	NGS	25	JNT
S16T029722				Decane, 2,4,6-trimethyl-	62108-27-4	23.11	NGS	10	JNT
S16T029722				Undecane, 4,7-dimethyl-	17301-32-5	23.82	NGS	25	JNT
S16T029722				Unknown-1	-	24.22	NGS	110	JT
S16T029722				Dodecane	112603	25.25	NGS	15	JNT
S16T029722				Unknown-2	-	25.86	NGS	26	JT
S16T029722				Methanamine	100-97-0	26.21	NGS	130	JNT
S16T029722				Benzothiazole	95-16-9	26.33	NGS	49	JNT
S16T029722				Dodecane, 4,6-dimethyl-	61141728	28.42	NGS	14	JNT
S16T029722				Tetradecane	629594	27.00	NGS	8.6	JNT

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-IN-A

Customer Sample ID: 16-08068-2-IN-A

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (minutes)	Unit	Result	Qual Flags
VAPOR:TDU VOA #2									
S16T029723				Methyl formate	107-31-3	4.72	NGS	71 JNT	
S16T029723				2-Propanol, 2-methyl-	75-65-0	7.16	NGS	100 JNT	
S16T029723				Methyl Acetate	79-20-9	7.46	NGS	41 JNT	
S16T029723				Acetic acid	64-19-7	9.65	NGS	40 JNT	
S16T029723				Tetrahydrofuran	109-96-9	11.96	NGS	9.3 JNT	
S16T029723				2-Pentanone	107-87-9	14.17	NGS	150 JNT	
S16T029723				Cyclopentanol	96-41-3	14.40	NGS	35 JNT	
S16T029723				Neopentane	463-82-1	15.76	NGS	77 JNT	
S16T029723				Propanoic acid, 2,2-dimethyl-	75-98-9	16.54	NGS	55 JNT	
S16T029723				Cyclohexanone, hexamethyl-	641-05-9	17.02	NGS	62 JNT	
S16T029723				4-Heptanone	123-19-3	18.32	NGS	30 JNT	
S16T029723				Cyclohexasiloxane, octamethyl	556-67-2	20.43	NGS	180 JNT	
S16T029723				2,2,7,7-Tetramethylcyclohexane	1071-31-4	21.49	NGS	34 JNT	
S16T029723				1-Hexanol, 2-ethyl-	104-76-7	21.99	NGS	31 JNT	
S16T029723				D-Limonene	5989-27-5	22.61	NGS	110 JNT	
S16T029723				3-Ethyl-3-methylheptane	17302-01-1	22.97	NGS	100 JNT	
S16T029723				Decane, 2,4,6-trimethyl-	62106-27-4	23.11	NGS	46 JNT	
S16T029723				Hexanoic acid, 2-ethyl-	149-57-5	23.60	NGS	110 JNT	
S16T029723				Undecane, 4,7-dimethyl-	17301-32-5	23.82	NGS	94 JNT	
S16T029723				Undecane, 5,7-dimethyl-	17312-63-3	23.91	NGS	60 JNT	
S16T029723				Unknown-1	-	24.22	NGS	270 JT	
S16T029723				Undecane, 3-methyl-	1002433	24.88	NGS	7.4 JNT	
S16T029723				Dodecane	112-40-3	25.25	NGS	35 JNT	
S16T029723				Ethanol, 2-phenoxy-	122-99-6	25.82	NGS	36 JNT	
S16T029723				Methanamine	100-97-0	26.22	NGS	60 JNT	
S16T029723				Benzothiazole	95-16-9	28.34	NGS	47 JNT	
S16T029723				Dodecane, 4,5-dimethyl-	81141726	28.43	NGS	35 JNT	

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

Y - Comment
 B - Blank Contamination

L - LLS Outside Range
 E - Outside Calibration Range

U - Less Than Detection Limit
 N - Named TIC

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-IN-A

Customer Sample ID: 16-08068-2-IN-A

Sample#	R	Ad	GC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR:TDJ VOA.P2									
S161029723				1,2,3,4,5-Cyclopentansperitol	58772-25-9	26.62	NGS	26	JNT
S161029723				Tetradecane	802684	27.01	NGS	18	JNT

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

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162851

SDG Number:

Customer Sample ID: 16-08068-2-IN-H

Customer Sample ID: 16-08068-2-IN-H

Sample#	R	Alt	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR:TDU VOA #2									
S161029730				Methyl formate	107-31-3	4.72	NGS	48	JNT
S161029730				Formamide	75-12-7	14.10	NGS	54	JNT
S161029730				D-Limonene	6989-27-5	22.61	NGS	31	JNT
S161029730				Decane, 2,4,6-trimethyl-	62168-27-4	22.97	NGS	6.7	JNT
S161029730				Undecane	1120-21-4	23.82	NGS	6.6	JNT
S161029730				Unknown-1	-	24.22	NGS	79	JT
S161029730				Dodecane	112403	25.25	NGS	6.4	JNT
S161029730				Unknown-2	-	26.87	NGS	38	JT
S161029730				Methanamine	100-97-0	26.22	NGS	140	JNT
S161029730				Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	16	JNT
S161029730				Tetradecane	629505	27.02	NGS	9.0	JNT

U - Less Than Detection Limit
 N - Named TIC

L - LLS Outside Range
 E - Outside Calibration Range

Y - Comment
 B - Blank Contamination

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

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Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-BASE-EFF
 Customer Sample ID: 16-07837-3-BASE-EFF

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029769			1191-09-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161029769			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029769			625-95-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029769			3777-71-7	2-Hepylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029769			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029769			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029769			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029769			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029769			109-99-9	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-BASE-IN
 Customer Sample ID: 16-07637-3-BASE-IN

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Col Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029770			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029770			1703-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029770			525-68-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029770			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029770			534-22-5	2-Methylfuran	NGS	66	<0.46	0.46	n/a	n/a	n/a	n/a	0.46		n/a J
S16T029770			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029770			4229-91-6	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029770			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029770			109-69-9	Tetrahydrofuran	NGS	68	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-BLANK1
 Customer Sample ID: 16-07837-3-BLANK1

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029771			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029771			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029771			525-88-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029771			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029771			534-22-5	2-Methylfuran	NGS	66	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029771			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029771			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029771			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029771			109-69-8	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-BLANK2
 Customer Sample ID: 16-07837-3-BLANK2

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RFD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029772			1191-69-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161029772			1706-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029772			825-86-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029772			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029772			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029772			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029772			4226-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029772			110-00-6	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029772			109-99-8	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-EFF-A
 Customer Sample ID: 16-07837-3-EFF-A

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029773			1181-89-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161029773			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029773			625-86-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029773			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029773			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029773			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029773			4226-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029773			110-00-8	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029773			109-99-8	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-EFF-B
 Customer Sample ID: 16-07637-3-EFF-B

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S18T029774			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S18T029774			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	0.41	n/a	n/a	n/a	n/a	0.33		n/a J
S18T029774			525-88-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S18T029774			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S18T029774			534-22-5	2-Methylfuran	NGS	66	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S18T029774			3777-69-3	2-Pentylfuran	NGS	120	<0.90	0.88	n/a	n/a	n/a	n/a	0.90		n/a J
S18T029774			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S18T029774			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S18T029774			109-99-9	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-EFF-C
 Customer Sample ID: 16-07837-3-EFF-C

Sampled	R	AI	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029775			1181-09-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a/U
S16T029775			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	0.43	n/a	n/a	n/a	n/a	0.33		n/a/J
S16T029775			625-86-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a/U
S16T029775			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a/U
S16T029775			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a/U
S16T029775			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a/U
S16T029775			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a/U
S16T029775			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a/U
S16T029775			109-96-8	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a/U

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-EFF-D
 Customer Sample ID: 16-07637-3-EFF-D

Sample#	R	AE	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Er %	Qual Flags
Furans in Vapor Samples by SIM															
S161029776			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161029776			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	0.37	n/a	n/a	n/a	n/a	0.33		n/a J
S161029776			625-86-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029776			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029776			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029776			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029776			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029776			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029776			109-99-8	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-EFF-E
 Customer Sample ID: 16-07637-3-EFF-E

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029777			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029777			1703-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029777			525-66-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029777			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029777			534-22-5	2-Methylfuran	NGS	66	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029777			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029777			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029777			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029777			109-89-9	Tetrahydrofuran	NGS	68	<0.23	0.25	n/a	n/a	n/a	n/a	0.23		n/a J

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-EFF-F
 Customer Sample ID: 16-07637-3-EFF-F

Sample#	R	AF	CAS #	Analysis	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans In Vapor Samples by SIM															
S16T029778			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029778			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029778			525-88-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029778			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029778			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029778			3777-89-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029778			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029778			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029778			109-89-9	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-EFF-H
 Customer Sample ID: 16-07637-3-EFF-H

Sample#	R	AF	CAS #	Analyte	Unit	STD-%	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029780			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029780			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029780			523-88-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029780			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029780			534-22-5	2-Methylfuran	NGS	66	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029780			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029780			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029780			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029780			109-89-9	Tetrahydrofuran	NGS	88	<0.23	1.1	n/a	n/a	n/a	n/a	0.23		n/a J

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-IN-A
 Customer Sample ID: 16-07637-3-IN-A

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029781			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	2.1	n/a	n/a	n/a	n/a	0.23		n/a J
S16T029781			1703-29-6	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029781			525-65-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029781			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029781			534-23-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029781			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029781			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029781			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029781			109-99-9	Tetrahydrofuran	NGS	88	<0.23	8.6	n/a	n/a	n/a	n/a	0.23		n/a

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

**Cartridge Evaluation
 Data Summary of All Results**

Sample Group: 20162749
SDG Number:
Customer Sample ID: 16-07837-3-IN-B
Customer Sample ID: 16-07837-3-IN-B

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029782			1181-89-7	2,3-Dihydrofuran	NGS	74	<0.23	2.3	n/a	n/a	n/a	n/a	0.23		n/a J
S16T029782			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029782			626-96-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029782			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029782			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029782			3777-69-3	2-Pernylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029782			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029782			110-00-0	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029782			109-99-9	Tetrahydrofuran	NGS	88	<0.23	12	n/a	n/a	n/a	n/a	0.23		n/a

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07637-3-IN-C
 Customer Sample ID: 16-07637-3-IN-C

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029783			1191-69-7	2,3-Dihydrofuran	NGS	74	<0.23	2.1	n/a	n/a	n/a	n/a	0.23	n/a	J
S16T029783			1708-29-6	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T029783			525-88-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T029783			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T029783			534-23-5	2-Methylfuran	NGS	66	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T029783			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T029783			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T029783			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T029783			109-89-9	Tetrahydrofuran	NGS	88	<0.23	11	n/a	n/a	n/a	n/a	0.23	n/a	U

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-IN-D
 Customer Sample ID: 16-07837-3-IN-D

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029784			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	1.6	n/a	n/a	n/a	n/a	0.23		n/a J
S16T029784			1703-29-6	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029784			825-65-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029784			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029784			534-23-5	2-Methylfuran	NGS	66	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029784			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029784			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029784			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029784			109-89-9	Tetrahydrofuran	NGS	88	<0.23	13	n/a	n/a	n/a	n/a	0.23		n/a

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-IN-E
 Customer Sample ID: 16-07837-3-IN-E

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	\$pk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029785			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	1.7	n/a	n/a	n/a	n/a	0.23		n/a J
S16T029785			1708-29-6	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029785			825-96-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029785			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029785			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029785			3777-69-3	2-Pentylfuran	NGS	120	<0.50	<0.50	n/a	n/a	n/a	n/a	0.50		n/a U
S16T029785			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029785			110-00-8	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029785			109-99-9	Tetrahydrofuran	NGS	88	<0.23	17	n/a	n/a	n/a	n/a	0.23		n/a

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-IN-F
 Customer Sample ID: 16-07837-3-IN-F

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Sp. Rec %	Det Limit	Cat Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029786			1191-89-7	2,3-Dihydrofuran	NGS	74	<0.23	0.54	n/a	n/a	n/a	n/a	0.23	n/a	J
S16T029786			1708-28-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	J
S16T029786			625-86-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	J
S16T029786			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	J
S16T029786			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	J
S16T029786			3777-89-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	J
S16T029786			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	J
S16T029786			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	J
S16T029786			109-89-9	Tetrahydrofuran	NGS	88	<0.23	.16	n/a	n/a	n/a	n/a	0.23	n/a	J

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-IN-G
 Customer Sample ID: 16-07837-3-IN-G

Sample#	R	AB	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029787			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	0.60	n/a	n/a	n/a	n/a	0.23		J
S16T029787			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		J
S16T029787			665-86-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		J
S16T029787			3777-71-7	2-Hexylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		J
S16T029787			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		J
S16T029787			3777-66-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		J
S16T029787			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		J
S16T029787			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		J
S16T029787			109-99-9	Tetrahydrofuran	NGS	86	<0.23	.21	n/a	n/a	n/a	n/a	0.23		J

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary of All Results

Sample Group: 20162749
 SDG Number:
 Customer Sample ID: 16-07837-3-IN-H
 Customer Sample ID: 16-07837-3-IN-H

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spl Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029788			1191-99-7	2,3-Dihydrofuran	NGS	74	<0.23	0.41	n/a	n/a	n/a	n/a	0.23		n/a J
S16T029788			1709-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029788			625-85-5	2,5-Dimethylfuran	NGS	100	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029788			3777-71-7	2-Heptylfuran	NGS	130	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029788			534-22-5	2-Methylfuran	NGS	86	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029788			3777-69-3	2-Pentylfuran	NGS	120	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029788			4229-91-8	2-Propylfuran	NGS	110	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029788			110-00-9	Furan	NGS	71	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029788			109-99-9	Tetrahydrofuran	NGS	88	<0.23	15	n/a	n/a	n/a	n/a	0.23		n/a

J - Estimated

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

Spencer
 11/21/16

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-06068-3-BASE-EFF
 Customer Sample ID: 16-06068-3-BASE-EFF

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
Furans In Vapor Samples by SIM															
S161029789			1191-99-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S161029789			1708-29-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S161029789			825-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S161029789			3777-71-7	2-Heptylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S161029789			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S161029789			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S161029789			4229-91-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S161029789			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S161029789			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

NA = Not Analyzed, ND = Not Detected

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-BASE-IN
 Customer Sample ID: 16-08068-3-BASE-IN

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029790			1191-99-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029790			1708-29-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029790			623-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029790			3777-71-7	2-Heptylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029790			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029790			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029790			4229-91-8	2-Propylfuran	NGS	96	<0.82	<0.82	n/a	n/a	n/a	n/a	0.82		n/a U
S16T029790			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029790			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750

SDG Number:

Customer Sample ID: 16-08068-3-BLANK-EFF

Customer Sample ID: 16-08068-3-BLANK-EFF

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicates	Average	RFD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
Furans In Vapor Samples by SIM															
S16T023791			1191-99-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T023791			1706-29-3	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T023791			825-89-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T023791			3777-71-7	2-Heptylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T023791			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T023791			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T023791			4229-91-3	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T023791			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T023791			109-89-9	Tetrahydrofuran	NGS	90	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-BLANK-IN
 Customer Sample ID: 16-08068-3-BLANK-IN

Sample#	R	IA#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cre Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161028792			1191-89-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161028792			1708-29-6	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161028792			625-66-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161028792			3777-71-7	2-Heptylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161028792			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161028792			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161028792			4229-91-6	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161028792			110-60-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161028792			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

NA = Not Analyzed, ND = Not Detected

J - Estimated

U - Less Than Detection Limit

Q - Qualitative

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750

SDG Number:

Customer Sample ID: 16-06068-3-EFF-A

Customer Sample ID: 16-06068-3-EFF-A

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Conc Err %	Qual Flags
Furans In Vapor Samples by SIM															
S161029793			1191-69-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161029793			1708-26-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029793			625-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029793			3777-71-7	2-Hexylfuran	NGS	110	<0.86	1.1	n/a	n/a	n/a	n/a	0.86		n/a J
S161029793			634-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029793			3777-69-3	2-Pentylfuran	NGS	110	<0.90	1.0	n/a	n/a	n/a	n/a	0.90		n/a U
S161029793			4229-91-8	2-Propylfuran	NGS	98	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029793			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029793			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

NA = Not Analyzed, ND = Not Detected

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-EFF-B
 Customer Sample ID: 16-08068-3-EFF-B

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029794			1191-99-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029794			1708-29-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029794			625-96-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029794			3777-71-7	2-Heptylfuran	NGS	110	<0.86	0.87	n/a	n/a	n/a	n/a	0.86		n/a J
S16T029794			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029794			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029794			4229-91-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029794			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029794			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-06068-3-EFF-C
 Customer Sample ID: 16-06068-3-EFF-C

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Limit	Cnt	Err %	Qual Flags
Furans in Vapor Samples by SIM																
S161029795			1191-89-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23			n/a U
S161029795			1708-29-8	2,5-Dihydrofuran	NGS	88	<0.33	0.66	n/a	n/a	n/a	n/a	0.33			n/a J
S161029795			625-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75			n/a U
S161029795			3777-71-7	2-Heptylfuran	NGS	110	<0.86	1.1	n/a	n/a	n/a	n/a	0.86			n/a J
S161029795			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46			n/a U
S161029795			3777-69-3	2-Pentylfuran	NGS	110	<0.90	1.5	n/a	n/a	n/a	n/a	0.90			n/a J
S161029795			4229-81-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62			n/a U
S161029795			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37			n/a U
S161029795			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23			n/a U

NA = Not Analyzed, ND = Not Detected

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-06068-3-EFF-D
 Customer Sample ID: 16-06068-3-EFF-D

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans In Vapor Samples by SIM															
S161029796			1191-69-7	2,3-Dihydrofuran	NGS	77	<0.23	0.55	n/a	n/a	n/a	n/a	0.23		n/a J
S161029796			1708-29-8	2,5-Dihydrofuran	NGS	88	<0.33	0.68	n/a	n/a	n/a	n/a	0.33		n/a J
S161029796			625-35-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029796			3777-71-7	2-Hexylfuran	NGS	110	<0.86	1.1	n/a	n/a	n/a	n/a	0.86		n/a J
S161029796			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029796			3777-69-3	2-Pentylfuran	NGS	110	<0.90	1.3	n/a	n/a	n/a	n/a	0.90		n/a J
S161029796			4229-91-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029796			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029796			106-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750

SDG Number:

Customer Sample ID: 16-06068-3-EFF-E

Customer Sample ID: 16-06068-3-EFF-E

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029797			1191-99-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161029797			1708-29-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029797			825-95-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029797			3777-71-7	2-Hexylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029797			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029797			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029797			4228-91-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029797			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029797			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750

SDG Number:

Customer Sample ID: 16-08068-3-EFF-F

Customer Sample ID: 16-08068-3-EFF-F

Sample#	R	AI#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cat Err %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029798			1191-98-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029798			1708-29-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029798			625-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029798			3777-71-7	2-Heptylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S16T029798			504-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029798			3777-68-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S16T029798			4229-81-8	2-Propylfuran	NGS	98	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029798			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029798			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-EFF-G
 Customer Sample ID: 16-08068-3-EFF-G

Sample#	R	AF	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans In Vapor Samples by SIM															
S16T029789			1191-99-7	2,3-Dihydrofuran	NGS	77	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S16T029789			1708-20-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S16T029789			625-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S16T029789			3777-71-7	2-Heptylfuran	NGS	110	<0.86	0.87	n/a	n/a	n/a	n/a	0.86		n/a J
S16T029789			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S16T029789			3777-69-3	2-Pentylfuran	NGS	110	<0.90	1.2	n/a	n/a	n/a	n/a	0.90		n/a J
S16T029789			4229-91-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S16T029789			110-00-9	Furan	NGS	68	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S16T029789			109-99-9	Tetrahydrofuran	NGS	92	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-EFF-H
 Customer Sample ID: 16-08068-3-EFF-H

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029800			1191-89-7	2,3-Dihydrofuran	NGS	77	<0.23	1.9	n/a	n/a	n/a	n/a	0.23		n/a, J
S161029800			1705-29-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a, U
S161029800			625-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a, U
S161029800			3777-71-7	2-Hexylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a, U
S161029800			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a, U
S161029800			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a, U
S161029800			4229-01-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a, U
S161029800			110-00-9	Furan	NGS	68	<0.37	1.1	n/a	n/a	n/a	n/a	0.37		n/a, J
S161029800			109-99-9	Tetrahydrofuran	NGS	92	<0.23	1.3	n/a	n/a	n/a	n/a	0.23		n/a

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-IN-A
 Customer Sample ID: 16-08068-3-IN-A

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029801			1181-89-7	2,3-Dihydrofuran	NGS	77	<0.23	3.2	n/a	n/a	n/a	n/a	0.23		n/a, J
S161029801			1708-29-6	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a, U
S161029801			625-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a, U
S161029801			3777-71-7	2-Heptylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a, U
S161029801			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a, U
S161029801			3777-69-3	2-Pentylfuran	NGS	110	<0.90	1.2	n/a	n/a	n/a	n/a	0.90		n/a, J
S161029801			4229-91-6	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a, U
S161029801			110-00-9	Furan	NGS	88	<0.37	1.5	n/a	n/a	n/a	n/a	0.37		n/a, J
S161029801			109-98-9	Tetrahydrofuran	NGS	92	<0.23	9.2	n/a	n/a	n/a	n/a	0.23		n/a

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-IN-B
 Customer Sample ID: 16-08068-3-IN-B

Sampled	R	AM	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cm Em %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029602			1181-69-7	2,3-Dihydrofuran	NGS	77	<0.23	4.9	n/a	n/a	n/a	n/a	0.23	n/a	
S16T029602			1768-29-8	2,5-Dihydrofuran	NGS	88	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T029602			625-86-5	2,5-Dimethylfuran	NGS	91	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T029602			3777-71-7	2-Heptylfuran	NGS	110	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T029602			534-22-5	2-Methylfuran	NGS	82	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T029602			3777-69-3	2-Pentylfuran	NGS	110	<0.90	1.4	n/a	n/a	n/a	n/a	0.90	n/a	J
S16T029602			4228-91-8	2-Propylfuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T029602			110-00-9	Furan	NGS	68	<0.37	1.8	n/a	n/a	n/a	n/a	0.37	n/a	J
S16T029602			109-99-9	Tetrahydrofuran	NGS	92	<0.23	8.9	n/a	n/a	n/a	n/a	0.23	n/a	

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-IN-D
 Customer Sample ID: 16-08068-3-IN-D

Sampled	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Con Em %	Qual Flags
Furans in Vapor Samples by SIM															
S161029604			1191-69-7	2,3-Dihydrofuran	NGS	75	<0.23	1.2	n/a	n/a	n/a	n/a	0.23	n/a	JQ
S161029604			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	OU
S161029604			625-56-5	2,5-Dimethylfuran	NGS	89	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	OU
S161029604			3777-71-7	2-Hexylfuran	NGS	120	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S161029604			534-22-5	2-Methylfuran	NGS	81	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	OU
S161029604			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S161029604			4229-91-8	2-Propylfuran	NGS	94	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S161029604			110-06-9	Furan	NGS	70	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	OU
S161029604			109-99-9	Tetrahydrofuran	NGS	92	<0.23	9.4	n/a	n/a	n/a	n/a	0.23	n/a	OU

C - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-IN-E
 Customer Sample ID: 16-08068-3-IN-E

Sample#	R	Alt	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans In Vapor Samples by SIM															
S161029805			1191-89-7	2,3-Dihydrofuran	NGS	75	<0.23	1.9	n/a	n/a	n/a	n/a	0.23		n/a J
S161029805			1709-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029805			825-86-5	2,5-Dimethylfuran	NGS	89	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029805			3777-71-7	2-Heptylfuran	NGS	120	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029805			534-22-5	2-Methylfuran	NGS	81	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029805			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029805			4229-81-8	2-Propylfuran	NGS	94	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029805			110-00-0	Furan	NGS	70	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029805			109-99-9	Tetrahydrofuran	NGS	92	<0.23	1.4	n/a	n/a	n/a	n/a	0.23		n/a

Q - Qualitative

U - Less Than Detection Limit

J - Estimated

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-IN-F
 Customer Sample ID: 16-08068-3-IN-F

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029806			1191-99-7	2,3-Dihydrofuran	NGS	75	<0.23	1.8	n/a	n/a	n/a	n/a	0.23		n/a J
S161029806			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029806			625-86-5	2,5-Dimethylfuran	NGS	89	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029806			3777-71-7	2-Heptylfuran	NGS	120	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029806			534-22-5	2-Methylfuran	NGS	81	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029806			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029806			4228-91-8	2-Propylfuran	NGS	94	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029806			110-00-8	Furan	NGS	70	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029806			109-89-9	Tetrahydrofuran	NGS	92	<0.23	14	n/a	n/a	n/a	n/a	0.23		n/a

Q - Qualitative

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-IN-G
 Customer Sample ID: 16-08068-3-IN-G

Sample#	R	AI	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Em %	Qual Flags
Furans in Vapor Samples by SIM															
S16T029607			1181-88-7	2,3-Dihydrofuran	NGS	75	<0.23	1.8	n/a	n/a	n/a	n/a	0.23	n/a	J
S16T029607			1708-29-8	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S16T029607			625-86-5	2,6-Dimethylfuran	NGS	89	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S16T029607			3777-71-7	2-Hexylfuran	NGS	120	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S16T029607			534-22-5	2-Methylfuran	NGS	81	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S16T029607			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S16T029607			4229-81-8	2-Propylfuran	NGS	94	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S16T029607			110-00-9	Furan	NGS	70	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S16T029607			109-98-9	Tetrahydrofuran	NGS	82	<0.23	17	n/a	n/a	n/a	n/a	0.23	n/a	

Q - Qualitative

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Cartridge Evaluation
 Data Summary Report

Sample Group: 20162750
 SDG Number:
 Customer Sample ID: 16-08068-3-IN-H
 Customer Sample ID: 16-08068-3-IN-H

Sample	R	AI	CAS #	Analyte	Mult	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Crit Err %	Qual Flags
Furans in Vapor Samples by SIM															
S161029808			1191-99-7	2,3-Dihydrofuran	NGS	75	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23		n/a U
S161029808			1706-29-6	2,5-Dihydrofuran	NGS	87	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		n/a U
S161029808			625-86-5	2,5-Dimethylfuran	NGS	89	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75		n/a U
S161029808			3777-71-7	2-Heptylfuran	NGS	120	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86		n/a U
S161029808			534-22-5	2-Methylfuran	NGS	81	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46		n/a U
S161029808			3777-69-3	2-Pentylfuran	NGS	110	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90		n/a U
S161029808			4226-91-8	2-Propylfuran	NGS	94	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62		n/a U
S161029808			110-00-9	Furan	NGS	70	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		n/a U
S161029808			109-99-9	Tetrahydrofuran	NGS	92	<0.23	0.56	n/a	n/a	n/a	n/a	0.23		n/a J

Q - Qualitative

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NA = Not Analyzed, ND = Not Detected



ANALYTICAL REPORT

Report Date: September 20, 2016

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20162741

Workorder: **34-1625968**

Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029631		Collected: 09/10/2016		
Lab ID: 1625968001		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Sampling Parameter: Air Volume Not Provided		
Analyzed: 09/19/2016				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029632		Collected: 09/10/2016		
Lab ID: 1625968002		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Sampling Parameter: Air Volume Not Provided		
Analyzed: 09/19/2016				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029633		Collected: 09/10/2016		
Lab ID: 1625968003		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Sampling Parameter: Air Volume Not Provided		
Analyzed: 09/19/2016				
Analyte	Result (ug/sample)	Result (mg/m ³)	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

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ANALYTICAL REPORT

Workorder: 34-1625968
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Table with 4 columns: Analyte, Result (ug/sample), Result (mg/m^3), Result (ppm), RL (ug/sample). Rows include Dimethylamine, Ethylamine, and Methylamine with results <0.10.

Table with 4 columns: Analyte, Result (ug/sample), Result (mg/m^3), Result (ppm), RL (ug/sample). Rows include Dimethylamine, Ethylamine, and Methylamine with results <0.10.

Table with 4 columns: Analyte, Result (ug/sample), Result (mg/m^3), Result (ppm), RL (ug/sample). Rows include Dimethylamine, Ethylamine, and Methylamine with results <0.10.

Table with 4 columns: Analyte, Result (ug/sample), Result (mg/m^3), Result (ppm), RL (ug/sample). Rows include Dimethylamine, Ethylamine, and Methylamine with results <0.10.



ANALYTICAL REPORT

Workorder: 34-1625968
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Table with 5 columns: Analyte, Result (ug/sample), Result (mg/m³), Result (ppm), RL (ug/sample). Rows include sample ID, lab ID, sampling location, method, media, and results for Dimethylamine, Ethylamine, and Methylamine.

Table with 5 columns: Analyte, Result (ug/sample), Result (mg/m³), Result (ppm), RL (ug/sample). Rows include sample ID, lab ID, sampling location, method, media, and results for Dimethylamine, Ethylamine, and Methylamine.

Table with 5 columns: Analyte, Result (ug/sample), Result (mg/m³), Result (ppm), RL (ug/sample). Rows include sample ID, lab ID, sampling location, method, media, and results for Dimethylamine, Ethylamine, and Methylamine.

Table with 5 columns: Analyte, Result (ug/sample), Result (mg/m³), Result (ppm), RL (ug/sample). Rows include sample ID, lab ID, sampling location, method, media, and results for Dimethylamine, Ethylamine, and Methylamine.



ANALYTICAL REPORT

Workorder: **34-1625968**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029642	Collected: 09/10/2016			
Lab ID: 1625968012	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
	Sampling Parameter: Air Volume Not Provided			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029643	Collected: 09/10/2016			
Lab ID: 1625968013	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
	Sampling Parameter: Air Volume Not Provided			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029644	Collected: 09/10/2016			
Lab ID: 1625968014	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
	Sampling Parameter: Air Volume Not Provided			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.43	NA	NA	0.10

Sample ID: S16T029645	Collected: 09/10/2016			
Lab ID: 1625968015	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
	Sampling Parameter: Air Volume Not Provided			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.46	NA	NA	0.10



ANALYTICAL REPORT

Workorder: **34-1625968**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029646	Collected: 09/10/2016			
Lab ID: 1625968016	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.38	NA	NA	0.10

Sample ID: S16T029647	Collected: 09/10/2016			
Lab ID: 1625968017	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029648	Collected: 09/10/2016			
Lab ID: 1625968018	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.13	NA	NA	0.10

Sample ID: S16T029649	Collected: 09/10/2016			
Lab ID: 1625968019	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: **34-1625968**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029650	Collected: 09/10/2016			
Lab ID: 1625968020	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]			
	Analyzed: 09/19/2016			
	Sampling Parameter: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Christopher Winter 09/20/2016 10:33	/S/ Thomas Bosch 09/20/2016 11:19

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ANALYTICAL REPORT

Workorder: **34-1625968**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 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	http://www.anab.org/accredited-organizations/	
	Utah (NELAC)	DATA 1	http://health.utah.gov/lab/labimpl/	
	Nevada	UT00009	http://ndep.nv.gov/bdsv/labservice.htm	
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/	
	Iowa	IA# 376	http://www.iowadnr.gov/inside/CNR/Regulatory/Water.aspx	
	Texas (TNI)	T 104704456-11.1	http://www.tceq.texas.gov/field/lab/accred_certif.html	
	Washington	C595-16	http://www.ecy.wa.gov/programs/eep/labs/index.html	
	Kansas	E-10416	http://www.kcheks.gov/lpo/index.html	
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org	
	Washington	C595-16	http://www.ecy.wa.gov/programs/eep/labs/index.html	
Lead Testing	CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
	Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aiclasscorp.com	

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: 1625968

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: BH Aliphatic Amines
Batch: ILC/12667 (HBN: 176905)
Analyzed By: Christopher Winter

Blank

LMB: 518831			
Analyzed: 09/19/2016 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: 518832					LCS/D: 518833				
Analyzed: 09/19/2016 00:00					Analyzed: 09/19/2016 00:00				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Dimethylamine	4.07	4.00	102	60.4 134.6	4.03	101	0.987	0.0 20.0	
Ethylamine	4.42	4.00	110	40.0 160.0	4.42	111	0.0679	0.0 20.0	
Methylamine	4.29	4.00	107	40.0 160.0	4.28	107	0.420	0.0 20.0	

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Christopher Winter 09/20/2016 10:33	/S/ Thomas Bosch 09/20/2016 11:19

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
- 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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Contract/Requestor: COAL KNOBOLD TV
 Telephone No. 373-4963
 MSIN: 76-03 FAX: 373-1878

Sample Origin: CARBONITE EVALUATOR
 Purchase Order/Charge Code: 1218171230

Project Title: CARBONITE EVALUATOR
 Job Order No. 033
 Temp. ON ICE

Shipped To (Lab): ALS
 Method of Shipment: Bill of Lading/air Bill No. 7772 2770 4728

Inspected: S/A
 Date Turnaround: 10 DAYS
 Parts and Room No. 41310

Sample No.	Lab ID	Date	Time	Na/Type Container	Sample Analysis	Preservative
	8167029642	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2BT-G	R/A
	8167029642	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2BT-H	R/A
	8167029642	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-A	R/A
	8167029644	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-B	R/A
	8167029645	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-C	R/A
	8167029646	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-D	R/A
	8167029647	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-E	R/A
	8167029648	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-F	R/A
	8167029649	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-G	R/A
	8167029650	VA	9/10/16	XAD-7-H8D	ACTINES 16-08068-4-2B-H	R/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS Yes No

SPECIAL INSTRUCTIONS:
 Send Results to Carl Rowald IV & Greg Moore
 Carl @ RowaldIV.com and Greg @ MooreC1.gov
 see PDF for email
 CONTRACT 55302
 RELEASE 9

Requested by: *Sign* *Print*
 Requested by: *Sign* *Print*
 Requested by: *Sign* *Print*

Received by: *Sign* *Print*
 Received by: *Sign* *Print*
 Received by: *Sign* *Print*

Date/Time: 9/14/16 0900
 Date/Time: 9/14/16 1416
 Date/Time: 9/14/16 1400

Method: *FEDEX*

Material: Soil DL Drum Liquids
 Sediment T Tissue
 Solid WA Waste
 Sludge L Liquid
 Water V Vegetation
 Oil VA Vapor
 Air X Other
 DS Drum Solids

Final Sample Disposition: *Consumed*

Disposition Method (e.g., Return to customer, per inc procedure, used for research): *Consumed*

Date/Time: 9/15/16

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.



ANALYTICAL REPORT

Report Date: September 21, 2016

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

Workorder: **34-1625969**

Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029611	Collected: 09/10/2016			
Lab ID: 1625969001	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029612	Collected: 09/10/2016			
Lab ID: 1625969002	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029613	Collected: 09/10/2016			
Lab ID: 1625969003	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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

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environmental

www.alsglobal.com

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ANALYTICAL REPORT

Workorder: **34-1625969**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029614		Collected: 09/10/2016		
Lab ID: 1625969004		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029615		Collected: 09/10/2016		
Lab ID: 1625969005		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029616		Collected: 09/10/2016		
Lab ID: 1625969006		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029617		Collected: 09/10/2016		
Lab ID: 1625969007		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: 34-1625969
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029618		Collected: 09/10/2016		
Lab ID: 1625969008		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029619		Collected: 09/10/2016		
Lab ID: 1625969009		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029620		Collected: 09/10/2016		
Lab ID: 1625969010		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029621		Collected: 09/10/2016		
Lab ID: 1625969011		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: **34-1625969**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029622		Collected: 09/10/2016		
Lab ID: 1625969012		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029623		Collected: 09/10/2016		
Lab ID: 1625969013		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029624		Collected: 09/10/2016		
Lab ID: 1625969014		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029625		Collected: 09/10/2016		
Lab ID: 1625969015		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: **34-1625969**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029626		Collected: 09/10/2016		
Lab ID: 1625969016		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
Sampling Location: CARTRIDGE EVALUATION		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029627		Collected: 09/10/2016		
Lab ID: 1625969017		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
Sampling Location: CARTRIDGE EVALUATION		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029628		Collected: 09/10/2016		
Lab ID: 1625969018		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
Sampling Location: CARTRIDGE EVALUATION		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029629		Collected: 09/10/2016		
Lab ID: 1625969019		Received: 09/15/2016		
Method: Amines-VOA Aliphatic VAA-1		Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride]		
Sampling Location: CARTRIDGE EVALUATION		Analyzed: 09/20/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: **34-1625969**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029630	Collected: 09/10/2016			
Lab ID: 1625969020	Received: 09/15/2016			
Method: Amines-VOA Aliphatic VAA-1	Media: SKC 226-96, XAD-7 Tube 50/100mg ((NBD) Chloride)			
Sampling Parameter: Air Volume Not Provided				
Method: Amines-VOA Aliphatic VAA-1	Analyzed: 09/20/2016			
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Christopher Winter 09/21/2016 11:59	/S/ Thomas Bosch 09/21/2016 12:53

Laboratory Contact Information

ALS Environmental
 960 W Levoy Drive
 Salt Lake City, Utah 84123

Phone: (801) 266-7700
 Email: als@ALSglobal.com
 Web: www.als-slc.com



ANALYTICAL REPORT

Workorder: **34-1625969**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 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	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bdwlabservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/insideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Industrial Hygiene	Kansas	E-10416	http://www.kdhehs.gov/lpo/index.html
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Washington		C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Lead Testing:		
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
	Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aiclasscorp.com

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: 1625969		
Limits: Historical/Performance	Preparation: NA	Analysis: IH Aliphatic Amines
Basis: ALS Laboratory Group	Batch: NA	Batch: ILC/12671 (HBN: 176915)
	Prepared By: NA	Analyzed By: Christopher Winter

Blank

LMB: 518903			
Analyzed: 09/20/2016 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: 518904					LCSD: 518905			
Analyzed: 09/20/2016 00:00					Analyzed: 09/20/2016 00:00			
Dilution: 1					Dilution: 1			
Units: ug/sample					Units: ug/sample			
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Dimethylamine	4.05	4.00	101	60.4 134.6	4.01	100	0.992	0.0 20.0
Ethylamine	4.63	4.00	116	40.0 160.0	4.57	114	1.28	0.0 20.0
Methylamine	4.29	4.00	107	40.0 160.0	4.20	105	1.98	0.0 20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Christopher Winter 09/21/2016 11:59	/S/ Thomas Bosch 09/21/2016 12:53

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
- 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



1028904

ASSEMBLER: N/A
 C.O.C. No. 20162740
 Page 1 of 2

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Telephone No. 313-68 61 MSIN FAX 372-1878
 Contact/Releaser: CAL, XOMAL3 TV
 Sample Origin: PROGRAM OPERATOR/CHARGE CODE
 Project Title: 2025021020
 Conditions Evaluation: ION CHEST NO. 425-033 Temp. 00 ICE
 Shipped To (Lab): BIL of LABORATOR No. 772 2770 4728
 Method of Shipment: PETS and RETURN No. 41310
 Protocol: N/A

Sample No.	Lab ID	Date	Time	No/Type Container	Sample Analysis	Preservative
	\$16T029611	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029612	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029613	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029614	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029615	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029616	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029617	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029618	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029619	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A
	\$16T029620	VA	9/10/16	XAD-7-8BD	MIXES 16-07837-4-8ASIS-EFF1	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS Yes No

SPECIAL INSTRUCTIONS
 Send Results to Carl Rowald IV & Greg Moore
 Carl.W.Rowald@epa.gov and Greg.Moore@epa.gov
 see 309 for email
 CONTRACT 55592
 RELEASE 9

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Sharon L. Walker	M. J. Walker		9/14/16 07:00	WRPS	Julia Fackler		9/14/16 09:00
Relinquished by	WRPS	Julia Fackler	9/14/16 14:00	Received by	WRPS	Julia Fackler	9/14/16 14:00
Relinquished by				Received by			

FINAL SAMPLE EXPOSITION
 Disposal Method (e.g., Return to customer, per lab procedure, LULU process)
 Disposed By: Carl Rowald
 Date/Time: 9/14/16 14:45

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: September 22, 2016

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

20162743

Workorder: 34-1625962

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results *9 cont 9/26/16*

Sample ID: S16T021671		Collected: 09/10/2016	
Lab ID: 1625962001		Received: 09/15/2016	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

9 cont 9/26/16

Sample ID: S16T021672		Collected: 09/10/2016	
Lab ID: 1625962002		Received: 09/15/2016	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
Acetonitrile	<0.010	NA	NA 0.010

9 cont 9/26/16

Sample ID: S16T021673		Collected: 09/10/2016	
Lab ID: 1625962003		Received: 09/15/2016	
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	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

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ANALYTICAL REPORT

Workorder: 34-1625962

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results *9 cont 9/20/16*

Sample ID: S16T021674 Lab ID: 1625962004	Sampling Location: CARTRIDGE EVALUATION	Collected: 09/10/2016 Received: 09/15/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m ³)
Acetonitrile	<0.010	NA
		Result (ppm)
		NA
		RL (mg/sample)
		0.010

9 cont 9/20/16

Sample ID: S16T021675 Lab ID: 1625962005	Sampling Location: CARTRIDGE EVALUATION	Collected: 09/10/2016 Received: 09/15/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m ³)
Acetonitrile	<0.010	NA
		Result (ppm)
		NA
		RL (mg/sample)
		0.010

9 cont 9/20/16

Sample ID: S16T021676 Lab ID: 1625962006	Sampling Location: CARTRIDGE EVALUATION	Collected: 09/10/2016 Received: 09/15/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m ³)
Acetonitrile	<0.010	NA
		Result (ppm)
		NA
		RL (mg/sample)
		0.010

9 cont 9/20/16

Sample ID: S16T021677 Lab ID: 1625962007	Sampling Location: CARTRIDGE EVALUATION	Collected: 09/10/2016 Received: 09/15/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m ³)
Acetonitrile	<0.010	NA
		Result (ppm)
		NA
		RL (mg/sample)
		0.010

9 cont 9/20/16

Sample ID: S16T021678 Lab ID: 1625962008	Sampling Location: CARTRIDGE EVALUATION	Collected: 09/10/2016 Received: 09/15/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg	Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided		
Analyte	Result (mg/sample)	Result (mg/m ³)
Acetonitrile	<0.010	NA
		Result (ppm)
		NA
		RL (mg/sample)
		0.010



ANALYTICAL REPORT

Workorder: 34-1625962
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results 9 and 9/20/16

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

9 and 9/20/16

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, 0.013, NA, NA, 0.010.

9 and 9/20/16

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

9 and 9/20/16

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

9 and 9/20/16

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.



ANALYTICAL REPORT

Workorder: 34-1625962
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results 9 cont 9/26/16

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 5 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.



ANALYTICAL REPORT

Workorder: 34-1625962
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results 9 each 9/22/16

Table with 3 columns: Sample ID, Lab ID, and Sampling Location. Includes Method: NIOSH 1606, Media: SKC 226-09, Charcoal Tube 400/200mg, and Analyte: Acetonitrile with results <0.010, NA, NA, 0.010.

Table with 3 columns: Sample ID, Lab ID, and Sampling Location. Includes Method: NIOSH 1606, Media: SKC 226-09, Charcoal Tube 400/200mg, and Analyte: Acetonitrile with results <0.010, NA, NA, 0.010.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Table with 3 columns: Method, Analyst, and Peer Review. Shows NIOSH 1606 method, analyst /S/ Young Hee Yoon, and peer review by /S/ Steven J. Sagers.

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alst.lab@ALSGlobal.com
Web: www.alslc.com



ANALYTICAL REPORT

Workorder: **34-1625962**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

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	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT03009	http://indep.nv.gov/bsdwlabservice.htm
	Oklahoma	UT03009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/insideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/fieldqa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Industrial Hygiene	Kansas	E-10416	http://www.kdheks.gov/lpo/index.html
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101674	http://www.aihaaccreditedlabs.org
Lead Testing:	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	CPSC	AIHA LAP LLC (ISO 17025, CPSC)	ADE-1420
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101674	http://www.aihaaccreditedlabs.org
	Dietary Supplements	ACLASS (ISO 17025)	ADE-1420

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: 1625962 Limits: Historical/Performance Basis: ALS Laboratory Group	Preparation: NA Batch: NA Prepared By: NA	Analysis: IH GC-FID QC Batch: IFID/7750 (HBN: 170711) Analyzed By: Young Hee Yoon
--	---	---

Blank

MB: 518329 Analyzed: 09/15/2016 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

MB: 518332 Analyzed: 09/15/2016 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 518330 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample					LCS0: 518331 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.307	0.312	98.4	86.6 115.3	0.313	100	1.94	0.0 20.0	

LCS: 518333 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample					LCS0: 518334 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.259	0.250	104	86.6 115.3	0.244	97.8	5.96	0.0 20.0	

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Reviewer
/S/ Young Hee Yoon 09/22/2016 11:23	/S/ Steven J. Sagers 09/22/2016 12:03

Symbols and Definitions

- | | |
|---|---|
| <ul style="list-style-type: none"> * - 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 | <ul style="list-style-type: none"> 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 |
|---|---|



1625962

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Assembly: M/A
 C.O.C. No. 201627243
 Page 1 of 2
 Telephone No. 313-4861
 MISON 16-02 FAX 372-1878
 Purchase Order/Charge Code 305542/CALO
 Sample Origin: LABORATORY
 Project Title: CHEMICAL ANALYSIS
 Shipped To (Lab): AAS
 Method of Shipment: ON ICE
 Bill of Lading/AV Bill No. 7772 2770 4728
 Parts and Return No. 41310

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16702071	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-0ASE-EFF-1	N/A
	S16702072	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-0ASE-20	N/A
	S16702073	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-BLANK-EFF-*	N/A
	S16702074	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-BLANK-20	N/A
	S16702075	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-EFF-A	N/A
	S16702076	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-EFF-B	N/A
	S16702077	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-EFF-C	N/A
	S16702078	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-EFF-D	N/A
	S16702079	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-EFF-E	N/A
	S16702080	VA	9/16/16	CHASCOAL TUBE	Acetonitrile 16-08068-5-EFF-F	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known/warning) MSDS Yes No
 SPECIAL INSTRUCTIONS
 Send results to Carl Rowald IV & Greg Moore
 Carl Rowald: crowald@ci.gov and Gregory Moore: gmoore@ci.gov
 for TCF email
 REFERENCE Contract # 55592

Received By	Date/Time	Received By	Date/Time	Material
Dianna Turner WRPS 9/16/16 9:00	9/16/16 9:00	Julia Goodrich WRPS 9/16/16	9/16/16 0900	Soil Drum Liquids DL Tissue T Wipe W Liquid L Sludge S Water V Oil O A X Other Other
Received By WRPS 9/16/16 1400	9/16/16 1400	Received By WRPS 9/16/16 2500	9/16/16 2500	Drum Solids DS

Disposal Method (e.g., Return to customer, per lab procedure, per process)
 Disposed By: Gregory Moore Date: Sept. 16, 2016 14:30 PM

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

Assembled
S/A

Collector
JONES

SOFT No.
S/A

Project Title
CARTRIDGE EVALUATION

Shipped To (Lab)
ALS

Preload
S/A

Telephone No. 713-4461
MSB
FAX 372-1575

Purchase Order/Change Code
240207/020

Ice Chest No.
WJ3-033

Temp.
ON ICE

Bill of Lading/ID No.
7122 2720 4722

Parts and Return No.
41310

Page 2 of 2

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
S162021081	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-0	S/A
S162021082	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-X	S/A
S162021073	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-A	S/A
S162021084	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-B	S/A
S162021085	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-C	S/A
S162021086	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-D	S/A
S162021087	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-E	S/A
S162021088	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-F	S/A
S162021089	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-G	S/A
S162021090	VA	5/10/16		CRACKCAL TUBE	Acetonitrile 16-28058-5-2P-H	S/A

POSSIBLE SAMPLE HAZARDS/REMARKS (Use all known events) MSDS Yes No

SPECIAL INSTRUCTIONS
Send Results to Carl Rowland IV & Greg Moore
Carl W. Rowland@c1.gov and Gregory_S_Moore@e1.gov
gov for email
RELEASE 3
Reference Contract # 54502

Notified by	Sign	Date/Time	Received by	Sign	Date/Time	Method
Diane Tucker	[Signature]	9/14/16	J.A. Gradisher	[Signature]	9/14/16	FEDEX
J.A. Gradisher	[Signature]	9/14/16	WRPS	[Signature]	9/14/16	FEDEX
Notified by			Received by			
Notified by			Received by			

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, (See #1 process))
 Shipped to: Govt - On Sep 16, 2016 02:30 PM

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.



ANALYTICAL REPORT

Report Date: September 22, 2016

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

Workorder: **34-1625967**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results *9 out of 9/colic*

Sample ID: S15Y02051		Collected: 09/10/2016			
Lab ID: 1625967001		Received: 09/15/2016			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/15/2016	
Sampling Parameter: Air Volume Not Provided					
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

9 out of 9/colic

Sample ID: S15Y02052		Collected: 09/10/2016			
Lab ID: 1625967002		Received: 09/15/2016			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/15/2016	
Sampling Parameter: Air Volume Not Provided					
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

9 out of 9/colic

Sample ID: S15Y02053		Collected: 09/10/2016			
Lab ID: 1625967003		Received: 09/15/2016			
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/15/2016	
Sampling Parameter: Air Volume Not Provided					
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah 84121 USA TEL: +1 801 266 7700 FAX: +1 801 268 9992
ALS GLOBAL, INC., An ALS Limited Company



RIGHT SOLUTIONS. RIGHT PARTNERS.



ANALYTICAL REPORT

Workorder: 34-1625967
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results 9 out of 9/20/16

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: Acetonitrile, <0.010, NA, NA, 0.010.



ANALYTICAL REPORT

Workorder: 34-1625967

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results 9 cont 9/26/16

Sample ID: S16T021859		Collected: 09/10/2016		
Lab ID: 1625967009		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 cont 9/26/16

Sample ID: S16T021860		Collected: 09/10/2016		
Lab ID: 1625967010		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 cont 9/26/16

Sample ID: S16T021861		Collected: 09/10/2016		
Lab ID: 1625967011		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/15/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 cont 9/26/16

Sample ID: S16T021862		Collected: 09/10/2016		
Lab ID: 1625967012		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 cont 9/26/16

Sample ID: S16T021863		Collected: 09/10/2016		
Lab ID: 1625967013		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010



ANALYTICAL REPORT

Workorder: 34-1625967

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results 9 out of 9/26/16

Sample ID: S16T021864		Collected: 09/10/2016		
Lab ID: 1625967014		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 out of 9/26/16

Sample ID: S16T021865		Collected: 09/10/2016		
Lab ID: 1625967015		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 out of 9/26/16

Sample ID: S16T021866		Collected: 09/10/2016		
Lab ID: 1625967016		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 out of 9/26/16

Sample ID: S16T021867		Collected: 09/10/2016		
Lab ID: 1625967017		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 out of 9/26/16

Sample ID: S16T021868		Collected: 09/10/2016		
Lab ID: 1625967018		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	0.015	NA	NA	0.010



ANALYTICAL REPORT

Workorder: **34-1625967**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results *9 anal 9/20/16*

Sample ID: S16Y021869		Collected: 09/10/2016		
Lab ID: 1625967019		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sample Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

9 anal 9/20/16

Sample ID: S16Y021870		Collected: 09/10/2016		
Lab ID: 1625967020		Received: 09/15/2016		
Method: NIOSH 1606		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 09/16/2016
Sample Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	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 09/22/2016 11:23	/S/ Steven J. Sagers 09/22/2016 12:03

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: als@lab@ALSGlobal.com
Web: www.alsinc.com



ANALYTICAL REPORT

Workorder: **34-1625967**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

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	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimpl/
	Nevada	UT00009	http://ndep.nv.gov/bsdwlabservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/insideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704455-11-1	http://www.tceq.texas.gov/fields/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Industrial Hygiene	Kansas	E-10-16	http://www.kdheks.gov/lpo/index.html
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	CPSC	ANAB (ISO 17025, CPSC)	ADE-1420
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Dietary Supplements	ACLASS (ISO 17025)	ADE-1420

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: 1625967 Limit: Historical/Performance Basis: ALS Laboratory Group	Prepared: NA Batch: NA Prepared By: NA	Analyte: IH GC-FID QC Batch: IFID/7758 (HSN: 176711) Analyzed By: Young Hee Yoon
---	---	---

Blank

MR: 518329 Analyzed: 09/15/2016 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

MR: 518332 Analyzed: 09/15/2016 00:00 Units: mg/sample			
Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 518330 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample					LCS: 518331 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.307	0.312	98.4	86.6 115.3	0.313	100	1.94	0.0 20.0	

LCS: 518333 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample					LCS: 518334 Analyzed: 09/15/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Acetonitrile	0.259	0.250	104	86.6 115.3	0.244	97.8	5.96	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 09/22/2016 11:23	/S/ Steven J. Sagers 09/22/2016 12:03

Symbols and Definitions

- | | |
|---|---|
| <ul style="list-style-type: none"> * - 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 3 times the reporting limit ⊖ - Result is above the calibration range | <ul style="list-style-type: none"> RPD - Relative % Difference (Spike / Spike Duplicate) ND - Not Detected (U - Control also flags analyte as not detected) NA - Not Applicable QC results are not adjusted for moisture correction, where applicable |
|---|---|



1625967

Assembler: N/A
CO.C. No. 20162742
Page 1 of 2

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collecter: JAMES
SAP No.: N/A
Project Title: CARTRIDGE CONSTRUCTION
Shipped To (Lab): AuP
Method of Shipment: s/w
Temp: ON ICE
Lab Order No.: 033
Bill of Lading/IRI No.: 772 2780 4728
Parts and Return No.: 41310

Telephone No.: 313-4861
MISN: 1-92 FAX: 312-1878
Pyrolytic Origin/Charge Code: 330-02/000

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
S16702-1531	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1532	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1533	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1534	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1535	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1536	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1537	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1538	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1539	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A
S16702-1540	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-8A3F-22F	N/A

POSSIBLE SAMPLE HAZARD/REMARKS (List all known wastes) M/SOS Yes No
 SPECIAL INSTRUCTIONS
 Send results to Carl Rowland IV, C-600, W-600
 Carl.Rowland@epa.gov and cgrayson@epa.gov
 Reference Contract # 15582

Requisitioned By: *Print* *Sign*
 Diana Turner, Diana Turner 9/14/16
 Requisitioned By: *Print* *Sign*
 WRPS Julie Goodwin 9/14/16
 Requisitioned By: *Print* *Sign*
 WRPS Julie Goodwin 9/14/16
 Requisitioned By: *Print* *Sign*
 M. J. ... 9/14/16

Dispose Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By: *Print* *Sign*
 Young, L. ... Sept 16, 2016 4:50 PM

FINAL SAMPLE DISPOSITION
 All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Assembler: N/A
 Collector: N/A
 Sample Origin: N/A
 Project Title: N/A
 Shipped To (Lab): N/A
 Protocol: N/A

Telephone No: 373-6841
 MSLN: YC-02 FAX: 372-1878
 Purchase Order/Charge Code: 2021575237
 Ion Card No: N/A
 Bill of Lading/IRB No: 7722770 4728
 Parts and Return No: 41310

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
8167025603	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-827-G	N/A
8167025602	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-827-B	N/A
8167025603	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-A	N/A
8167025604	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-B	N/A
8167025605	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-C	N/A
8167025606	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-D	N/A
8167025607	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-E	N/A
8167025608	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-F	N/A
8167025609	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-G	N/A
8167025610	VA	9/10/16		CHARCOAL TUBE	Acetonitrile 16-07837-5-18-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS Yes No

SPECIAL INSTRUCTIONS
 Seed Material to Carl Novold IV & Greg Moore
 CLEI: gmoore@delaware.gov and Gregory_Moore@delaware.gov for email
 REC-EAS 9
 Refersence Contract # 35592

Relinquished By: Diana Turner
 Relinquished By: JA Greider
 Relinquished By: Tally

Received By: WRPS
 Received By: Julie Grashon
 Received By: Tally

Date/Time: 9/16/16 09:00
 Date/Time: 9/16/16
 Date/Time: 9/16/16

Matrix: Soil Drum Liquids
 Sediment Tissue
 Solid Wipe
 Sludge Liquid
 Water Vegetation
 Oil VA
 Air Vapor
 Drum Solids Other

Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed by: Guy M. Ginn Sept 16, 2016

NARRATIVE

**FINAL REPORT ON MERCURY VAPOR TUBES
FOR CARTRIDGE EVALUATION
COLLECTED SEPTEMBER 10, 2016**

This final report presents the results of forty mercury vapor tubes received at the 222-S Laboratory on September 12, 2016, in good condition and with adequate paperwork. The mercury vapor tubes were logged into sample delivery group 20162725.

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
Mercury by OSHA ID-140	LA-325-109, Rev. 2-4	LA-325-109, Rev. 2-4

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).

For the mercury analysis, the blank results for tube lot number 9473 were below the detection limit; therefore, no blank correction was required. Sixteen of the forty mercury results for sample group 20162725 were above the reporting limit of 0.05 µg per sample. For these samples, the total result includes the contribution from the back glass wool portion even though the back glass wool portion result is lower than the reporting limit (see Attachment 1).

20162725 Rev. 0

Attachment 1

DATA SUMMARY REPORT

4 of 18

C.299

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162725

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-07837-6-BASE-EFF	Total	S16T029302	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-BASE-EFF	Resin	S16T029303	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-BASE-EFF	Glass Wool	S16T029304	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-BASE-IN	Total	S16T029305	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-BASE-IN	Resin	S16T029306	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-BASE-IN	Glass Wool	S16T029307	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-BLANK1	Total	S16T029308	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-BLANK1	Resin	S16T029309	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-BLANK1	Glass Wool	S16T029310	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-BLANK2	Total	S16T029311	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-BLANK2	Resin	S16T029312	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-BLANK2	Glass Wool	S16T029313	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-A	Total	S16T029314	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-A	Resin	S16T029315	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-A	Glass Wool	S16T029316	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-B	Total	S16T029317	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-B	Resin	S16T029318	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-B	Glass Wool	S16T029319	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-C	Total	S16T029320	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-C	Resin	S16T029321	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-C	Glass Wool	S16T029322	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-D	Total	S16T029323	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-D	Resin	S16T029324	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-D	Glass Wool	S16T029325	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-E	Total	S16T029326	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-E	Resin	S16T029327	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-E	Glass Wool	S16T029328	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-F	Total	S16T029329	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-F	Resin	S16T029330	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-F	Glass Wool	S16T029331	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-G	Total	S16T029332	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-G	Resin	S16T029333	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-G	Glass Wool	S16T029334	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-H	Total	S16T029335	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-07837-6-EFF-H	Resin	S16T029336	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-EFF-H	Glass Wool	S16T029337	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-IN-A	Total	S16T029338	Mercury	ug/sample	n/a	<0.0500	0.159	0.0500
16-07837-6-IN-A	Resin	S16T029339	Mercury	ug/sample	103	<0.0500	0.154	0.0500
16-07837-6-IN-A	Glass Wool	S16T029340	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-IN-B	Total	S16T029341	Mercury	ug/sample	n/a	<0.0500	0.170	0.0500
16-07837-6-IN-B	Resin	S16T029342	Mercury	ug/sample	103	<0.0500	0.165	0.0500
16-07837-6-IN-B	Glass Wool	S16T029343	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-IN-C	Total	S16T029344	Mercury	ug/sample	n/a	<0.0500	0.144	0.0500
16-07837-6-IN-C	Resin	S16T029345	Mercury	ug/sample	103	<0.0500	0.139	0.0500
16-07837-6-IN-C	Glass Wool	S16T029346	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-IN-D	Total	S16T029347	Mercury	ug/sample	n/a	<0.0500	0.138	0.0500
16-07837-6-IN-D	Resin	S16T029348	Mercury	ug/sample	103	<0.0500	0.133	0.0500
16-07837-6-IN-D	Glass Wool	S16T029349	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162725

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-07837-6-IN-E	Total	S16T029350	Mercury	ug/sample	n/a	<0.0500	0.138	0.0500
16-07837-6-IN-E	Resin	S16T029351	Mercury	ug/sample	103	<0.0500	0.133	0.0500
16-07837-6-IN-E	Glass Wool	S16T029352	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-IN-F	Total	S16T029353	Mercury	ug/sample	n/a	<0.0500	0.152	0.0500
16-07837-6-IN-F	Resin	S16T029354	Mercury	ug/sample	103	<0.0500	0.147	0.0500
16-07837-6-IN-F	Glass Wool	S16T029355	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-IN-G	Total	S16T029356	Mercury	ug/sample	n/a	<0.0500	0.114	0.0500
16-07837-6-IN-G	Resin	S16T029357	Mercury	ug/sample	103	<0.0500	0.109	0.0500
16-07837-6-IN-G	Glass Wool	S16T029358	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-07837-6-IN-H	Total	S16T029359	Mercury	ug/sample	n/a	<0.0500	0.104	0.0500
16-07837-6-IN-H	Resin	S16T029360	Mercury	ug/sample	103	<0.0500	0.0994	0.0500
16-07837-6-IN-H	Glass Wool	S16T029361	Mercury	ug/sample	103	<0.0500	<0.0500	0.0500
16-08068-6-BASE-EFF	Total	S16T029362	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-BASE-EFF	Resin	S16T029363	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-BASE-EFF	Glass Wool	S16T029364	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-BASE-IN	Total	S16T029365	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-BASE-IN	Resin	S16T029366	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-BASE-IN	Glass Wool	S16T029367	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-BLANK-EFF	Total	S16T029368	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-BLANK-EFF	Resin	S16T029369	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-BLANK-EFF	Glass Wool	S16T029370	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-BLANK-IN	Total	S16T029371	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-BLANK-IN	Resin	S16T029372	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-BLANK-IN	Glass Wool	S16T029373	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-A	Total	S16T029374	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-EFF-A	Resin	S16T029375	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-A	Glass Wool	S16T029376	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-B	Total	S16T029820	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-EFF-B	Resin	S16T029821	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-B	Glass Wool	S16T029822	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-C	Total	S16T029823	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-EFF-C	Resin	S16T029824	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-C	Glass Wool	S16T029825	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-D	Total	S16T029826	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-EFF-D	Resin	S16T029827	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-D	Glass Wool	S16T029828	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-E	Total	S16T029829	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-EFF-E	Resin	S16T029830	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-E	Glass Wool	S16T029831	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-F	Total	S16T029832	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-EFF-F	Resin	S16T029833	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-F	Glass Wool	S16T029834	Mercury	ug/sample	97.1	<0.0500	<0.0500	0.0500
16-08068-6-EFF-G	Total	S16T029835	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-EFF-G	Resin	S16T029836	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-EFF-G	Glass Wool	S16T029837	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-EFF-H	Total	S16T029838	Mercury	ug/sample	n/a	<0.0500	0.115	0.0500
16-08068-6-EFF-H	Resin	S16T029839	Mercury	ug/sample	94.6	<0.0500	0.110	0.0500
16-08068-6-EFF-H	Glass Wool	S16T029840	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162725

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08068-6-IN-A	Total	S16T029841	Mercury	ug/sample	n/a	<0.0500	0.153	0.0500
16-08068-6-IN-A	Resin	S16T029842	Mercury	ug/sample	94.6	<0.0500	0.148	0.0500
16-08068-6-IN-A	Glass Wool	S16T029843	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-B	Total	S16T029844	Mercury	ug/sample	n/a	<0.0500	0.122	0.0500
16-08068-6-IN-B	Resin	S16T029845	Mercury	ug/sample	94.6	<0.0500	0.117	0.0500
16-08068-6-IN-B	Glass Wool	S16T029846	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-C	Total	S16T029847	Mercury	ug/sample	n/a	<0.0500	0.144	0.0500
16-08068-6-IN-C	Resin	S16T029848	Mercury	ug/sample	94.6	<0.0500	0.139	0.0500
16-08068-6-IN-C	Glass Wool	S16T029849	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-D	Total	S16T029850	Mercury	ug/sample	n/a	<0.0500	0.158	0.0500
16-08068-6-IN-D	Resin	S16T029851	Mercury	ug/sample	94.6	<0.0500	0.152	0.0500
16-08068-6-IN-D	Glass Wool	S16T029852	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-E	Total	S16T029853	Mercury	ug/sample	n/a	<0.0500	0.146	0.0500
16-08068-6-IN-E	Resin	S16T029854	Mercury	ug/sample	94.6	<0.0500	0.141	0.0500
16-08068-6-IN-E	Glass Wool	S16T029855	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-F	Total	S16T029856	Mercury	ug/sample	n/a	<0.0500	0.142	0.0500
16-08068-6-IN-F	Resin	S16T029857	Mercury	ug/sample	94.6	<0.0500	0.136	0.0500
16-08068-6-IN-F	Glass Wool	S16T029858	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-G	Total	S16T029859	Mercury	ug/sample	n/a	<0.0500	0.111	0.0500
16-08068-6-IN-G	Resin	S16T029860	Mercury	ug/sample	94.6	<0.0500	0.106	0.0500
16-08068-6-IN-G	Glass Wool	S16T029861	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-H	Total	S16T029862	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08068-6-IN-H	Resin	S16T029863	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500
16-08068-6-IN-H	Glass Wool	S16T029864	Mercury	ug/sample	94.6	<0.0500	<0.0500	0.0500

20162725 Rev. 0

Attachment 2

ANALYSIS DATE REPORT

8 of 18

C.303

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162725

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T029303	16-07837-6-BASE-EFF	Mercury	09/14/2016 08:00	09/14/2016 13:02
S16T029304	16-07837-6-BASE-EFF	Mercury	09/14/2016 08:00	09/14/2016 13:03
S16T029306	16-07837-6-BASE-IN	Mercury	09/14/2016 08:00	09/14/2016 13:05
S16T029307	16-07837-6-BASE-IN	Mercury	09/14/2016 08:00	09/14/2016 13:07
S16T029309	16-07837-6-BLANK1	Mercury	09/14/2016 08:00	09/14/2016 13:08
S16T029310	16-07837-6-BLANK1	Mercury	09/14/2016 08:00	09/14/2016 13:10
S16T029312	16-07837-6-BLANK2	Mercury	09/14/2016 08:00	09/14/2016 13:15
S16T029313	16-07837-6-BLANK2	Mercury	09/14/2016 08:00	09/14/2016 13:16
S16T029315	16-07837-6-EFF-A	Mercury	09/14/2016 08:00	09/14/2016 13:18
S16T029316	16-07837-6-EFF-A	Mercury	09/14/2016 08:00	09/14/2016 13:20
S16T029318	16-07837-6-EFF-B	Mercury	09/14/2016 08:00	09/14/2016 13:21
S16T029319	16-07837-6-EFF-B	Mercury	09/14/2016 08:00	09/14/2016 13:23
S16T029321	16-07837-6-EFF-C	Mercury	09/14/2016 08:00	09/14/2016 13:24
S16T029322	16-07837-6-EFF-C	Mercury	09/14/2016 08:00	09/14/2016 13:26
S16T029324	16-07837-6-EFF-D	Mercury	09/14/2016 08:00	09/14/2016 13:28
S16T029325	16-07837-6-EFF-D	Mercury	09/14/2016 08:00	09/14/2016 13:29
S16T029327	16-07837-6-EFF-E	Mercury	09/14/2016 08:00	09/14/2016 13:34
S16T029328	16-07837-6-EFF-E	Mercury	09/14/2016 08:00	09/14/2016 13:36
S16T029330	16-07837-6-EFF-F	Mercury	09/14/2016 08:00	09/14/2016 13:37
S16T029331	16-07837-6-EFF-F	Mercury	09/14/2016 08:00	09/14/2016 13:39
S16T029333	16-07837-6-EFF-G	Mercury	09/14/2016 08:00	09/14/2016 13:46
S16T029334	16-07837-6-EFF-G	Mercury	09/14/2016 08:00	09/14/2016 13:47
S16T029336	16-07837-6-EFF-H	Mercury	09/14/2016 08:00	09/14/2016 13:57
S16T029337	16-07837-6-EFF-H	Mercury	09/14/2016 08:00	09/14/2016 13:58
S16T029339	16-07837-6-IN-A	Mercury	09/14/2016 08:00	09/14/2016 14:00
S16T029340	16-07837-6-IN-A	Mercury	09/14/2016 08:00	09/14/2016 14:02
S16T029342	16-07837-6-IN-B	Mercury	09/14/2016 08:00	09/14/2016 14:03
S16T029343	16-07837-6-IN-B	Mercury	09/14/2016 08:00	09/14/2016 14:05
S16T029345	16-07837-6-IN-C	Mercury	09/14/2016 08:00	09/14/2016 14:07
S16T029346	16-07837-6-IN-C	Mercury	09/14/2016 08:00	09/14/2016 14:08
S16T029348	16-07837-6-IN-D	Mercury	09/14/2016 08:00	09/14/2016 14:10
S16T029349	16-07837-6-IN-D	Mercury	09/14/2016 08:00	09/14/2016 14:12
S16T029351	16-07837-6-IN-E	Mercury	09/14/2016 08:00	09/14/2016 14:17
S16T029352	16-07837-6-IN-E	Mercury	09/14/2016 08:00	09/14/2016 14:19
S16T029354	16-07837-6-IN-F	Mercury	09/14/2016 08:00	09/14/2016 14:20
S16T029355	16-07837-6-IN-F	Mercury	09/14/2016 08:00	09/14/2016 14:22
S16T029357	16-07837-6-IN-G	Mercury	09/14/2016 08:00	09/14/2016 14:24
S16T029358	16-07837-6-IN-G	Mercury	09/14/2016 08:00	09/14/2016 14:26
S16T029360	16-07837-6-IN-H	Mercury	09/14/2016 08:00	09/14/2016 14:27
S16T029361	16-07837-6-IN-H	Mercury	09/14/2016 08:00	09/14/2016 14:29
S16T029363	16-08068-6-BASE-EEF	Mercury	09/14/2016 10:00	09/14/2016 16:15
S16T029364	16-08068-6-BASE-EEF	Mercury	09/14/2016 10:00	09/14/2016 16:16
S16T029366	16-08068-6-BASE-IN	Mercury	09/14/2016 10:00	09/14/2016 16:18
S16T029367	16-08068-6-BASE-IN	Mercury	09/14/2016 10:00	09/14/2016 16:20
S16T029369	16-08068-6-BLANK-EFF	Mercury	09/14/2016 10:00	09/14/2016 16:21
S16T029370	16-08068-6-BLANK-EFF	Mercury	09/14/2016 10:00	09/14/2016 16:23

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162725

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T029372	16-08068-6-BLANK-IN	Mercury	09/14/2016 10:00	09/14/2016 16:28
S16T029373	16-08068-6-BLANK-IN	Mercury	09/14/2016 10:00	09/14/2016 16:29
S16T029375	16-08068-6-EFF-A	Mercury	09/14/2016 10:00	09/14/2016 16:31
S16T029376	16-08068-6-EFF-A	Mercury	09/14/2016 10:00	09/14/2016 16:32
S16T029821	16-08068-6-EFF-B	Mercury	09/14/2016 10:00	09/14/2016 16:34
S16T029822	16-08068-6-EFF-B	Mercury	09/14/2016 10:00	09/14/2016 16:35
S16T029824	16-08068-6-EFF-C	Mercury	09/14/2016 10:00	09/14/2016 16:37
S16T029825	16-08068-6-EFF-C	Mercury	09/14/2016 10:00	09/14/2016 16:38
S16T029827	16-08068-6-EFF-D	Mercury	09/14/2016 10:00	09/14/2016 16:40
S16T029828	16-08068-6-EFF-D	Mercury	09/14/2016 10:00	09/14/2016 16:41
S16T029830	16-08068-6-EFF-E	Mercury	09/14/2016 10:00	09/14/2016 16:46
S16T029831	16-08068-6-EFF-E	Mercury	09/14/2016 10:00	09/14/2016 16:48
S16T029833	16-08068-6-EFF-F	Mercury	09/14/2016 10:00	09/14/2016 16:49
S16T029834	16-08068-6-EFF-F	Mercury	09/14/2016 10:00	09/14/2016 16:51
S16T029836	16-08068-6-EFF-G	Mercury	09/14/2016 10:00	09/14/2016 16:58
S16T029837	16-08068-6-EFF-G	Mercury	09/14/2016 10:00	09/14/2016 16:59
S16T029839	16-08068-6-EFF-H	Mercury	09/14/2016 10:00	09/14/2016 17:04
S16T029840	16-08068-6-EFF-H	Mercury	09/14/2016 10:00	09/14/2016 17:06
S16T029842	16-08068-6-IN-A	Mercury	09/14/2016 10:00	09/14/2016 17:08
S16T029843	16-08068-6-IN-A	Mercury	09/14/2016 10:00	09/14/2016 17:10
S16T029845	16-08068-6-IN-B	Mercury	09/14/2016 10:00	09/14/2016 17:12
S16T029846	16-08068-6-IN-B	Mercury	09/14/2016 10:00	09/14/2016 17:14
S16T029848	16-08068-6-IN-C	Mercury	09/14/2016 10:00	09/14/2016 17:15
S16T029849	16-08068-6-IN-C	Mercury	09/14/2016 10:00	09/14/2016 17:17
S16T029851	16-08068-6-IN-D	Mercury	09/14/2016 10:00	09/14/2016 17:19
S16T029852	16-08068-6-IN-D	Mercury	09/14/2016 10:00	09/14/2016 17:21
S16T029854	16-08068-6-IN-E	Mercury	09/14/2016 10:00	09/14/2016 17:26
S16T029855	16-08068-6-IN-E	Mercury	09/14/2016 10:00	09/14/2016 17:28
S16T029857	16-08068-6-IN-F	Mercury	09/14/2016 10:00	09/14/2016 17:30
S16T029858	16-08068-6-IN-F	Mercury	09/14/2016 10:00	09/14/2016 17:32
S16T029860	16-08068-6-IN-G	Mercury	09/14/2016 10:00	09/14/2016 17:34
S16T029861	16-08068-6-IN-G	Mercury	09/14/2016 10:00	09/14/2016 17:35
S16T029863	16-08068-6-IN-H	Mercury	09/14/2016 10:00	09/14/2016 17:37
S16T029864	16-08068-6-IN-H	Mercury	09/14/2016 10:00	09/14/2016 17:39

20162725 Rev. 0

Attachment 3

RECEIPT PAPERWORK

11 of 18

C.306

Cartridge Testing

222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST			ATS-LO-090-101 Rev DG-1
Date Samples Received: <u>9-12-16</u> Total Number of Samples: <u>478</u> Group #: <u>20162725-H9</u>				
Sample Custodian: <u>Dianne Turner</u> IH Technician: <u>Chad Moore</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°C</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>dlr</u> Date: <u>9-12-16</u>				
If No, comment on communication and resolution:				
WRPS SHIP 280 Run 118 WHL Run 80 (40NH ₃ , 40H ₂) Acetonitrile 40				
† Broken Furan Tube Number of IH Samples Received:				
Aldehyde Screen: <u>40</u>	Amines: <u>40</u>	Ammonia: <u>40</u>	Aromatic HC: _____	Asbestos: _____
Beryllium: _____	Be-Bulk: _____	Be-Filter: _____	Be-Wipe: _____	1,3-Butadiene: <u>80</u>
Formaldehyde: _____	Furans: <u>40</u>	Mercury: <u>40</u>	Methanol: _____	Nitrosamines: <u>40</u>
Nitrous Oxide: _____	Pyridines: <u>40</u>	SVOA: <u>38</u>	VOA: <u>40</u>	Other-IH: _____

A-6205-302 (REV 4)

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 9/10/16	
CACN: 202062		COA: CB30		Survey No.: 16-07837 - Cartridge Testing	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: NA
Return Report To: Caldwell, Joyce A				MSIN: R1-06	Phone: (509)376-0737
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
5167029303	16-07837-6-BASE-EFF / Hydrar (SKC 226-17-1A) 5167029303 5167029304	Hg-Elemental Source			
5167029305	16-07837-6-BASE-IN / Hydrar (SKC 226-17-1A) 5167029306 5167029307	Hg-Elemental Source			
5167029308	16-07837-6-BLANK1 / Hydrar (SKC 226-17-1A) 5167029309 5167029310	Hg-Elemental Source			
5167029311	16-07837-6-BLANK2 / Hydrar (SKC 226-17-1A) 5167029312 5167029313	Hg-Elemental Source			
5167029314	16-07837-6-EFF-A / Hydrar (SKC 226-17-1A) 5167029315 5167029314 5167029316	Hg-Elemental Source			
5167029317	16-07837-6-EFF-B / Hydrar (SKC 226-17-1A) 5167029318 5167029319	Hg-Elemental Source			
5167029320	16-07837-6-EFF-C / Hydrar (SKC 226-17-1A) 5167029321 5167029322	Hg-Elemental Source			
5167029323	16-07837-6-EFF-D / Hydrar (SKC 226-17-1A) 5167029324 5167029325	Hg-Elemental Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>[Signature]</i>	RYAN BURNS	2704 RV H104	9/10/16	0631
Retrieved from Storage:	<i>[Signature]</i>	Christie Mosh		9/12/16	1057
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	Christie Mosh	9/12/16	1330	
Received By:	<i>[Signature]</i>	Sharon L. Holdre	9/12/16	1330	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 1/10/16		
CACN: 202062		COA: EB20	Survey No.: 16-07837 - Cartridge Testing		
Contact Name: Jones, Parker L		Phone: (509)373-4968		Turnaround: NA	
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
516T029326	16-07837-6-EFF-E / Hydrar (SKC 226-17-1A) . 516T029327 516T029328	Hg-Elemental Source			
516T029329	16-07837-6-EFF-F / Hydrar (SKC 226-17-1A) . 516T029330 516T029331	Hg-Elemental Source			
516T029332	16-07837-6-EFF-G / Hydrar (SKC 226-17-1A) . 516T029333 516T029334	Hg-Elemental Source			
516T029335	16-07837-6-EFF-H / Hydrar (SKC 226-17-1A) . 516T029336 516T029337	Hg-Elemental Source			
516T029338	16-07837-6-IN-A / Hydrar (SKC 226-17-1A) . 516T029339 516T029340	Hg-Elemental Source			
516T029341	16-07837-6-IN-B / Hydrar (SKC 226-17-1A) . 516T029342 516T029343	Hg-Elemental Source			
516T029344	16-07837-6-IN-C / Hydrar (SKC 226-17-1A) . 516T029345 516T029346	Hg-Elemental Source			
516T029347	16-07837-6-IN-D / Hydrar (SKC 226-17-1A) . 516T029348 516T029349	Hg-Elemental Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>RC</i>	RYAN BURNS	2704 HV H104	9/10/16	0639
Retrieved from Storage:	<i>CMOON</i>	Christie MOON		9/12/16	1057
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>CMOON</i>	Christie MOON	9/12/16	1330	
Received By:	<i>Sharon Wildden</i>	Sharon Wildden	9-12-16	1330	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 9/10/16		
CACN: 202062	COA: CB20	Survey No.: 16-07837 - Cartridge Testing			
Contact Name: Jones, Parker L		Phone: (509)373-4966	Turnaround: NA		
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
5167029350	16-07837-6-IN-E / Hydrar (SKC 226-17-1A) 5167029351 5167029352	Hg-Elemental Source			
5167029353	16-07837-6-IN-F / Hydrar (SKC 226-17-1A) 5167029354 5167029355	Hg-Elemental Source			
5167029356	16-07837-6-IN-G / Hydrar (SKC 226-17-1A) 5167029357 5167029358	Hg-Elemental Source			
5167029359	16-07837-6-IN-H / Hydrar (SKC 226-17-1A) 5167029360 5167029361	Hg-Elemental Source			
16-07837-7-BASE-EFF / CISA (SKC 226-29)		NH3-Source			
16-07837-7-BASE-IN / CISA (SKC 226-29)		NH3 Source			
16-07837-7-BLANK1 / CISA (SKC 226-29)		NH3 Source			
16-07837-7-BLANK2 / CISA (SKC 226-29)		NH3 Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>[Signature]</i>	RYAN BURNS	2704 HU 1104	9/10/16	0639
Retrieved from Storage:	<i>[Signature]</i>	Christemow		9/12/16	1057
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>[Signature]</i>	Christemow	9/12/16	1330	
Received By:	<i>[Signature]</i>	Sharon Lohden	9-12-16	1330	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions				Date Sampled: 9/10/16	
CACN: 202062	COA: CB20	Survey No.: 16-08068 - Cartridge Testing			
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
5167029362	16-08068-6-BASE-EFF / Hydrar (SKC 226-17-1A) , 5167029363 5167029364	Hg-Elemental Source			
5167029365	16-08068-6-BASE-IN / Hydrar (SKC 226-17-1A) , 5167029366 5167029367	Hg-Elemental Source			
5167029368	16-08068-6-BLANK-EFF / Hydrar (SKC 226-17-1A) , 5167029369 5167029370	Hg-Elemental Source			
5167029371	16-08068-6-BLANK-IN / Hydrar (SKC 226-17-1A) , 5167029372 5167029373	Hg-Elemental Source			
5167029374	16-08068-6-EFF-A / Hydrar (SKC 226-17-1A) , 5167029375 5167029376	Hg-Elemental Source			
5167029820	16-08068-6-EFF-B / Hydrar (SKC 226-17-1A) , 5167029821 5167029822	Hg-Elemental Source			
5167029823	16-08068-6-EFF-C / Hydrar (SKC 226-17-1A) , 5167029824 5167029825	Hg-Elemental Source			
5167029826	16-08068-6-EFF-D / Hydrar (SKC 226-17-1A) , 5167029827 5167029828	Hg-Elemental Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Chris Moon</i>	Chris Moon	A704HU/H104	9/10/16	0300
Retrieved from Storage:	<i>Chris Moon</i>	Chris Moon		9/12/16	1154
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Chris Moon</i>	Chris Moon	9/12/16	1330	
Received By:	<i>Dianne Turner</i>	DIANNE TURNER	9-12-16	13:30	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 9/10/16		
CACN: 202062	COA: CB20	Survey No.: 16-08068 - Cartridge Testing			
Contact Name: Jones, Parker L		Phone: (509)373-4966	Turnaround: N/A		
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
SI6T029 829	16-08068-6-EFF-E / Hydrar (SKC 226-17-1A), SI6T029 830 SI6T029 831	Hg-Elemental Source			
SI6T029 832	16-08068-6-EFF-F / Hydrar (SKC 226-17-1A), SI6T029 833 SI6T029 834	Hg-Elemental Source			
SI6T029 835	16-08068-6-EFF-G / Hydrar (SKC 226-17-1A), SI6T029 836 SI6T029 837	Hg-Elemental Source			
SI6T029 838	16-08068-6-EFF-H / Hydrar (SKC 226-17-1A), SI6T029 837 SI6T029 840	Hg-Elemental Source			
SI6T029 841	16-08068-6-IN-A / Hydrar (SKC 226-17-1A), SI6T029 842 SI6T029 843	Hg-Elemental Source			
SI6T029 844	16-08068-6-IN-B / Hydrar (SKC 226-17-1A), SI6T029 845 SI6T029 846	Hg-Elemental Source			
SI6T029 847	16-08068-6-IN-C / Hydrar (SKC 226-17-1A), SI6T029 848 SI6T029 849	Hg-Elemental Source			
SI6T029 850	16-08068-6-IN-D / Hydrar (SKC 226-17-1A), SI6T029 851 SI6T029 852	Hg-Elemental Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Chris Moon	Chris Moon	2704 HU / H104	9/10/16	0300
Retrieved from Storage:	Chris Moon	Chris Moon		9/12/16	1154
	Signature	Printed Name	Date	Time	
Relinquished By:	Chris Moon	Chris Moon	9/12/16	1330	
Received By:	Dianne Turner	Dianne Turner	9-12-16	13180	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 9/10/16		
CACN: 202562	COA: E.B20	Survey No.: 16-08068 - Cartridge Testing			
Contact Name: Jones, Parker L	Phone: (509)373-4988	Turnaround: N/A			
Return Report To: Calkwell, Joyce A		MSIN: R1-06	Phone: (509)376-0737		
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
5167029853	16-08068-6-IN-E / Hydrar (SKC 226-17-1A) • 5167029854 5167029855	Hg-Elemental Source			
5167029856	16-08068-6-IN-F / Hydrar (SKC 226-17-1A) • 5167029857 5167029858	Hg-Elemental Source			
5167029859	16-08068-6-IN-G / Hydrar (SKC 226-17-1A) • 5167029860 5167029861	Hg-Elemental Source			
5167029862	16-08068-6-IN-H / Hydrar (SKC 226-17-1A) • 5167029863 5167029864	Hg-Elemental Source			
16-08068-7-BASE-EFF / CISA (SKC 226-29)		NH3 Source			
16-08068-7-BASE-IN / CISA (SKC 226-29)		NH3 Source			
16-08068-7-BLANK-EFF / CISA (SKC 226-29)		NH3 Source			
16-08068-7-BLANK-IN / CISA (SKC 226-29)		NH3 Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Chris Mow</i>	Chris Mow	2704HU/H104	9/10/16	0300
Retrieved from Storage:	<i>EMOON</i>	Chris Mow		9/12/16	1654
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>C Mow</i>	Chris Mow	9-12-16	1530	
Received By:	<i>Dianne Turney</i>	Dianne Turney	9-12-16	1330	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					

**FINAL REPORT ON AMMONIA VAPOR TUBES
FOR CARTRIDGE EVALUATION
COLLECTED SEPTEMBER 10, 2016**

Document No.: 20162724 Rev. 0

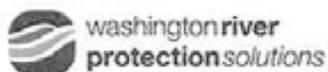
Michael A. Purcell
WAI Hanford Laboratory

Date Published
October 12, 2016



LAB # 184777

Prepared for:

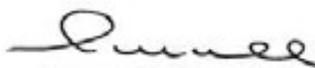


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Prepared by:



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1955 Jadwin Ave, Suite 330
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509-373-3240

 October 12, 2016
Michael A. Purcell, WHL Project Coordinator

NARRATIVE

**FINAL REPORT ON AMMONIA VAPOR TUBES
FOR CARTRIDGE EVALUATION
COLLECTED SEPTEMBER 10, 2016**

This final report presents the results of forty ammonia vapor tubes received at the 222-S Laboratory on September 12, 2016, in good condition and with adequate paperwork. The samples were logged into sample delivery group 20162724.

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. 2-5 LA-503-157, Rev. 2-6

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 89 - 111% for LA-533-117 and 80 - 120% for LA-503-157, 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. Thirty-two of the forty ammonia results for sample group 20162724 were above the reporting limit of 10 µg per sample. For these samples, the total result includes the contribution from the back resin portion even though the back resin portion result is lower than the reporting limit (see Attachment 1).

20162724 Rev. 0

Attachment 1

DATA SUMMARY REPORT

4 of 18

C.317

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162724

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-07837-7-BASE-EFF	Total	S16T029865	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-07837-7-BASE-EFF	Front Resin	S16T029866	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-BASE-EFF	Back Resin	S16T029867	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-BASE-IN	Total	S16T029868	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-07837-7-BASE-IN	Front Resin	S16T029869	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-BASE-IN	Back Resin	S16T029870	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-BLANK1	Total	S16T029871	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-07837-7-BLANK1	Front Resin	S16T029872	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-BLANK1	Back Resin	S16T029873	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-BLANK2	Total	S16T029874	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-07837-7-BLANK2	Front Resin	S16T029875	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-BLANK2	Back Resin	S16T029876	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-A	Total	S16T029877	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-07837-7-EFF-A	Front Resin	S16T029878	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-A	Back Resin	S16T029879	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-B	Total	S16T029880	Ammonia	ug/sample	n/a	<10.0	683	100
16-07837-7-EFF-B	Front Resin	S16T029881	Ammonia	ug/sample	101	<10.0	682	100
16-07837-7-EFF-B	Back Resin	S16T029882	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-C	Total	S16T029883	Ammonia	ug/sample	n/a	<10.0	2.11E+03	250
16-07837-7-EFF-C	Front Resin	S16T029884	Ammonia	ug/sample	101	<10.0	2.11E+03	250
16-07837-7-EFF-C	Back Resin	S16T029885	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-D	Total	S16T029886	Ammonia	ug/sample	n/a	<10.0	1.34E+03	250
16-07837-7-EFF-D	Front Resin	S16T029887	Ammonia	ug/sample	101	<10.0	1.34E+03	250
16-07837-7-EFF-D	Back Resin	S16T029888	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-E	Total	S16T029889	Ammonia	ug/sample	n/a	<10.0	2.56E+03	500
16-07837-7-EFF-E	Front Resin	S16T029890	Ammonia	ug/sample	101	<10.0	2.56E+03	500
16-07837-7-EFF-E	Back Resin	S16T029891	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-F	Total	S16T029892	Ammonia	ug/sample	n/a	<10.0	2.30E+03	250
16-07837-7-EFF-F	Front Resin	S16T029893	Ammonia	ug/sample	101	<10.0	2.30E+03	250
16-07837-7-EFF-F	Back Resin	S16T029894	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-G	Total	S16T029895	Ammonia	ug/sample	n/a	<10.0	2.53E+03	500
16-07837-7-EFF-G	Front Resin	S16T029896	Ammonia	ug/sample	101	<10.0	2.53E+03	500
16-07837-7-EFF-G	Back Resin	S16T029897	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-EFF-H	Total	S16T029898	Ammonia	ug/sample	n/a	<10.0	2.39E+03	500
16-07837-7-EFF-H	Front Resin	S16T029899	Ammonia	ug/sample	101	<10.0	2.39E+03	500
16-07837-7-EFF-H	Back Resin	S16T029900	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-IN-A	Total	S16T029901	Ammonia	ug/sample	n/a	<10.0	2.93E+03	500
16-07837-7-IN-A	Front Resin	S16T029902	Ammonia	ug/sample	101	<10.0	2.93E+03	500
16-07837-7-IN-A	Back Resin	S16T029903	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-IN-B	Total	S16T029904	Ammonia	ug/sample	n/a	<10.0	3.21E+03	500
16-07837-7-IN-B	Front Resin	S16T029905	Ammonia	ug/sample	101	<10.0	3.21E+03	500
16-07837-7-IN-B	Back Resin	S16T029906	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-IN-C	Total	S16T029907	Ammonia	ug/sample	n/a	<10.0	3.25E+03	500
16-07837-7-IN-C	Front Resin	S16T029908	Ammonia	ug/sample	101	<10.0	3.25E+03	500
16-07837-7-IN-C	Back Resin	S16T029909	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-IN-D	Total	S16T029910	Ammonia	ug/sample	n/a	<10.0	2.91E+03	500
16-07837-7-IN-D	Front Resin	S16T029911	Ammonia	ug/sample	101	<10.0	2.91E+03	500
16-07837-7-IN-D	Back Resin	S16T029912	Ammonia	ug/sample	101	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162724

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-07837-7-IN-E	Total	S16T029913	Ammonia	ug/sample	n/a	<10.0	3.07E+03	500
16-07837-7-IN-E	Front Resin	S16T029914	Ammonia	ug/sample	101	<10.0	3.07E+03	500
16-07837-7-IN-E	Back Resin	S16T029915	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-IN-F	Total	S16T029916	Ammonia	ug/sample	n/a	<10.0	3.05E+03	500
16-07837-7-IN-F	Front Resin	S16T029917	Ammonia	ug/sample	101	<10.0	3.05E+03	500
16-07837-7-IN-F	Back Resin	S16T029918	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-IN-G	Total	S16T029919	Ammonia	ug/sample	n/a	<10.0	3.04E+03	500
16-07837-7-IN-G	Front Resin	S16T029920	Ammonia	ug/sample	101	<10.0	3.04E+03	500
16-07837-7-IN-G	Back Resin	S16T029921	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-07837-7-IN-H	Total	S16T029922	Ammonia	ug/sample	n/a	<10.0	2.51E+03	500
16-07837-7-IN-H	Front Resin	S16T029923	Ammonia	ug/sample	92.6	<10.0	2.51E+03	500
16-07837-7-IN-H	Back Resin	S16T029924	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-BASE-EFF	Total	S16T029925	Ammonia	ug/sample	n/a	<10.0	10.1	10.0
16-08068-7-BASE-EFF	Front Resin	S16T029926	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-BASE-EFF	Back Resin	S16T029927	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-BASE-IN	Total	S16T029928	Ammonia	ug/sample	n/a	<10.0	15.5	10.0
16-08068-7-BASE-IN	Front Resin	S16T029929	Ammonia	ug/sample	92.6	<10.0	15.2	10.0
16-08068-7-BASE-IN	Back Resin	S16T029930	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-BLANK-EFF	Total	S16T029931	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-08068-7-BLANK-EFF	Front Resin	S16T029932	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-BLANK-EFF	Back Resin	S16T029933	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-BLANK-IN	Total	S16T029934	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-08068-7-BLANK-IN	Front Resin	S16T029935	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-BLANK-IN	Back Resin	S16T029936	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-IN-A	Total	S16T029937	Ammonia	ug/sample	n/a	<10.0	2.71E+03	500
16-08068-7-IN-A	Front Resin	S16T029938	Ammonia	ug/sample	92.6	<10.0	2.71E+03	500
16-08068-7-IN-A	Back Resin	S16T029939	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-IN-B	Total	S16T029940	Ammonia	ug/sample	n/a	<10.0	2.59E+03	500
16-08068-7-IN-B	Front Resin	S16T029941	Ammonia	ug/sample	92.6	<10.0	2.59E+03	500
16-08068-7-IN-B	Back Resin	S16T029942	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-IN-C	Total	S16T029943	Ammonia	ug/sample	n/a	<10.0	2.88E+03	500
16-08068-7-IN-C	Front Resin	S16T029944	Ammonia	ug/sample	92.6	<10.0	2.88E+03	500
16-08068-7-IN-C	Back Resin	S16T029945	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-IN-D	Total	S16T029946	Ammonia	ug/sample	n/a	<10.0	2.92E+03	500
16-08068-7-IN-D	Front Resin	S16T029947	Ammonia	ug/sample	92.6	<10.0	2.92E+03	500
16-08068-7-IN-D	Back Resin	S16T029948	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-IN-E	Total	S16T029949	Ammonia	ug/sample	n/a	<10.0	2.85E+03	500
16-08068-7-IN-E	Front Resin	S16T029950	Ammonia	ug/sample	92.6	<10.0	2.85E+03	500
16-08068-7-IN-E	Back Resin	S16T029951	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-IN-F	Total	S16T029952	Ammonia	ug/sample	n/a	<10.0	2.79E+03	500
16-08068-7-IN-F	Front Resin	S16T029953	Ammonia	ug/sample	92.6	<10.0	2.79E+03	500
16-08068-7-IN-F	Back Resin	S16T029954	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-IN-G	Total	S16T029955	Ammonia	ug/sample	n/a	<10.0	2.85E+03	500
16-08068-7-IN-G	Front Resin	S16T029956	Ammonia	ug/sample	105	<10.0	2.85E+03	500
16-08068-7-IN-G	Back Resin	S16T029957	Ammonia	ug/sample	105	<10.0	<10.0	10.0
16-08068-7-IN-H	Total	S16T029958	Ammonia	ug/sample	n/a	<10.0	2.57E+03	500
16-08068-7-IN-H	Front Resin	S16T029959	Ammonia	ug/sample	92.6	<10.0	2.57E+03	500
16-08068-7-IN-H	Back Resin	S16T029960	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162724

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08068-7-EFF-A	Total	S16T029961	Ammonia	ug/sample	n/a	<10.0	19.5	10.0
16-08068-7-EFF-A	Front Resin	S16T029962	Ammonia	ug/sample	92.6	<10.0	19.0	10.0
16-08068-7-EFF-A	Back Resin	S16T029963	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-B	Total	S16T029964	Ammonia	ug/sample	n/a	<10.0	614	500
16-08068-7-EFF-B	Front Resin	S16T029965	Ammonia	ug/sample	92.6	<10.0	614	500
16-08068-7-EFF-B	Back Resin	S16T029966	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-C	Total	S16T029967	Ammonia	ug/sample	n/a	<10.0	2.00E+03	500
16-08068-7-EFF-C	Front Resin	S16T029968	Ammonia	ug/sample	92.6	<10.0	2.00E+03	500
16-08068-7-EFF-C	Back Resin	S16T029969	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-D	Total	S16T029970	Ammonia	ug/sample	n/a	<10.0	781	500
16-08068-7-EFF-D	Front Resin	S16T029971	Ammonia	ug/sample	92.6	<10.0	781	500
16-08068-7-EFF-D	Back Resin	S16T029972	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-E	Total	S16T029973	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-08068-7-EFF-E	Front Resin	S16T029974	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-E	Back Resin	S16T029975	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-F	Total	S16T029976	Ammonia	ug/sample	n/a	<10.0	2.13E+03	500
16-08068-7-EFF-F	Front Resin	S16T029977	Ammonia	ug/sample	92.6	<10.0	2.13E+03	500
16-08068-7-EFF-F	Back Resin	S16T029978	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-G	Total	S16T029979	Ammonia	ug/sample	n/a	<10.0	2.52E+03	500
16-08068-7-EFF-G	Front Resin	S16T029980	Ammonia	ug/sample	92.6	<10.0	2.52E+03	500
16-08068-7-EFF-G	Back Resin	S16T029981	Ammonia	ug/sample	92.6	<10.0	<10.0	10.0
16-08068-7-EFF-H	Total	S16T029982	Ammonia	ug/sample	n/a	<10.0	3.08E+03	500
16-08068-7-EFF-H	Front Resin	S16T029983	Ammonia	ug/sample	105	<10.0	3.07E+03	500
16-08068-7-EFF-H	Back Resin	S16T029984	Ammonia	ug/sample	105	<10.0	<10.0	10.0

20162724 Rev. 0

Attachment 2

ANALYSIS DATE REPORT

8 of 18

C.321

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162724

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T029866	16-07837-7-BASE-EFF	Ammonia	09/14/2016 08:45	09/14/2016 15:17
S16T029867	16-07837-7-BASE-EFF	Ammonia	09/14/2016 08:45	09/14/2016 15:40
S16T029869	16-07837-7-BASE-IN	Ammonia	09/14/2016 08:45	09/14/2016 16:03
S16T029870	16-07837-7-BASE-IN	Ammonia	09/14/2016 08:45	09/14/2016 16:26
S16T029872	16-07837-7-BLANK1	Ammonia	09/14/2016 08:45	09/14/2016 16:49
S16T029873	16-07837-7-BLANK1	Ammonia	09/14/2016 08:45	09/14/2016 17:12
S16T029875	16-07837-7-BLANK2	Ammonia	09/14/2016 08:45	09/14/2016 18:45
S16T029876	16-07837-7-BLANK2	Ammonia	09/14/2016 08:45	09/14/2016 19:08
S16T029878	16-07837-7-EFF-A	Ammonia	09/14/2016 08:45	09/14/2016 19:31
S16T029879	16-07837-7-EFF-A	Ammonia	09/14/2016 08:45	09/14/2016 19:54
S16T029881	16-07837-7-EFF-B	Ammonia	09/14/2016 08:45	09/15/2016 13:16
S16T029882	16-07837-7-EFF-B	Ammonia	09/14/2016 08:45	09/14/2016 20:41
S16T029884	16-07837-7-EFF-C	Ammonia	09/14/2016 08:45	09/15/2016 13:39
S16T029885	16-07837-7-EFF-C	Ammonia	09/14/2016 08:45	09/14/2016 21:27
S16T029887	16-07837-7-EFF-D	Ammonia	09/14/2016 08:45	09/15/2016 14:02
S16T029888	16-07837-7-EFF-D	Ammonia	09/14/2016 08:45	09/14/2016 22:13
S16T029890	16-07837-7-EFF-E	Ammonia	09/14/2016 08:45	09/15/2016 14:25
S16T029891	16-07837-7-EFF-E	Ammonia	09/14/2016 08:45	09/15/2016 00:09
S16T029893	16-07837-7-EFF-F	Ammonia	09/14/2016 08:45	09/15/2016 14:49
S16T029894	16-07837-7-EFF-F	Ammonia	09/14/2016 08:45	09/15/2016 00:55
S16T029896	16-07837-7-EFF-G	Ammonia	09/14/2016 08:45	09/15/2016 15:12
S16T029897	16-07837-7-EFF-G	Ammonia	09/14/2016 08:45	09/15/2016 04:24
S16T029899	16-07837-7-EFF-H	Ammonia	09/14/2016 08:45	09/15/2016 15:35
S16T029900	16-07837-7-EFF-H	Ammonia	09/14/2016 08:45	09/15/2016 05:10
S16T029902	16-07837-7-IN-A	Ammonia	09/14/2016 08:45	09/15/2016 15:58
S16T029903	16-07837-7-IN-A	Ammonia	09/14/2016 08:45	09/15/2016 05:56
S16T029905	16-07837-7-IN-B	Ammonia	09/14/2016 08:45	09/15/2016 17:31
S16T029906	16-07837-7-IN-B	Ammonia	09/14/2016 08:45	09/15/2016 07:52
S16T029908	16-07837-7-IN-C	Ammonia	09/14/2016 08:45	09/15/2016 17:54
S16T029909	16-07837-7-IN-C	Ammonia	09/14/2016 08:45	09/15/2016 08:38
S16T029911	16-07837-7-IN-D	Ammonia	09/14/2016 08:45	09/15/2016 18:17
S16T029912	16-07837-7-IN-D	Ammonia	09/14/2016 08:45	09/15/2016 09:25
S16T029914	16-07837-7-IN-E	Ammonia	09/14/2016 08:45	09/15/2016 18:40
S16T029915	16-07837-7-IN-E	Ammonia	09/14/2016 08:45	09/15/2016 10:11
S16T029917	16-07837-7-IN-F	Ammonia	09/14/2016 08:45	09/15/2016 19:03
S16T029918	16-07837-7-IN-F	Ammonia	09/14/2016 08:45	09/15/2016 10:57
S16T029920	16-07837-7-IN-G	Ammonia	09/14/2016 08:45	09/15/2016 19:26
S16T029921	16-07837-7-IN-G	Ammonia	09/14/2016 08:45	09/15/2016 12:53
S16T029923	16-07837-7-IN-H	Ammonia	09/14/2016 17:00	09/15/2016 16:56
S16T029924	16-07837-7-IN-H	Ammonia	09/14/2016 17:00	09/14/2016 22:32
S16T029926	16-08068-7-BASE-EFF	Ammonia	09/14/2016 17:00	09/14/2016 22:50
S16T029927	16-08068-7-BASE-EFF	Ammonia	09/14/2016 17:00	09/14/2016 23:08
S16T029929	16-08068-7-BASE-IN	Ammonia	09/14/2016 17:00	09/14/2016 23:27
S16T029930	16-08068-7-BASE-IN	Ammonia	09/14/2016 17:00	09/14/2016 23:45
S16T029932	16-08068-7-BLANK-EFF	Ammonia	09/14/2016 17:00	09/15/2016 00:57
S16T029933	16-08068-7-BLANK-EFF	Ammonia	09/14/2016 17:00	09/15/2016 01:15

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162724

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T029935	16-08068-7-BLANK-IN	Ammoria	09/14/2016 17:00	09/15/2016 01:33
S16T029936	16-08068-7-BLANK-IN	Ammoria	09/14/2016 17:00	09/15/2016 01:51
S16T029938	16-08068-7-IN-A	Ammoria	09/14/2016 17:00	09/15/2016 17:14
S16T029939	16-08068-7-IN-A	Ammoria	09/14/2016 17:00	09/15/2016 02:27
S16T029941	16-08068-7-IN-B	Ammoria	09/14/2016 17:00	09/15/2016 17:32
S16T029942	16-08068-7-IN-B	Ammoria	09/14/2016 17:00	09/15/2016 03:04
S16T029944	16-08068-7-IN-C	Ammoria	09/14/2016 17:00	09/15/2016 17:50
S16T029945	16-08068-7-IN-C	Ammoria	09/14/2016 17:00	09/15/2016 03:40
S16T029947	16-08068-7-IN-D	Ammoria	09/14/2016 17:00	09/15/2016 18:08
S16T029948	16-08068-7-IN-D	Ammoria	09/14/2016 17:00	09/15/2016 05:10
S16T029950	16-08068-7-IN-E	Ammoria	09/14/2016 17:00	09/15/2016 18:26
S16T029951	16-08068-7-IN-E	Ammoria	09/14/2016 17:00	09/15/2016 05:46
S16T029953	16-08068-7-IN-F	Ammoria	09/14/2016 17:00	09/15/2016 22:39
S16T029954	16-08068-7-IN-F	Ammoria	09/14/2016 17:00	09/15/2016 08:29
S16T029956	16-08068-7-IN-G	Ammoria	09/15/2016 08:45	09/16/2016 19:01
S16T029957	16-08068-7-IN-G	Ammoria	09/15/2016 08:45	09/16/2016 11:29
S16T029959	16-08068-7-IN-H	Ammoria	09/14/2016 17:00	09/15/2016 23:16
S16T029960	16-08068-7-IN-H	Ammoria	09/14/2016 17:00	09/15/2016 09:42
S16T029962	16-08068-7-EFF-A	Ammoria	09/14/2016 17:00	09/15/2016 19:39
S16T029963	16-08068-7-EFF-A	Ammoria	09/14/2016 17:00	09/15/2016 19:57
S16T029965	16-08068-7-EFF-B	Ammoria	09/14/2016 17:00	09/15/2016 23:34
S16T029966	16-08068-7-EFF-B	Ammoria	09/14/2016 17:00	09/15/2016 20:15
S16T029968	16-08068-7-EFF-C	Ammoria	09/14/2016 17:00	09/15/2016 23:52
S16T029969	16-08068-7-EFF-C	Ammoria	09/14/2016 17:00	09/15/2016 20:33
S16T029971	16-08068-7-EFF-D	Ammoria	09/14/2016 17:00	09/16/2016 00:10
S16T029972	16-08068-7-EFF-D	Ammoria	09/14/2016 17:00	09/15/2016 20:51
S16T029974	16-08068-7-EFF-E	Ammoria	09/14/2016 17:00	09/15/2016 21:09
S16T029975	16-08068-7-EFF-E	Ammoria	09/14/2016 17:00	09/15/2016 21:27
S16T029977	16-08068-7-EFF-F	Ammoria	09/14/2016 17:00	09/15/2016 16:20
S16T029978	16-08068-7-EFF-F	Ammoria	09/14/2016 17:00	09/15/2016 16:38
S16T029980	16-08068-7-EFF-G	Ammoria	09/14/2016 17:00	09/15/2016 22:58
S16T029981	16-08068-7-EFF-G	Ammoria	09/14/2016 17:00	09/15/2016 09:05
S16T029983	16-08068-7-EFF-H	Ammoria	09/15/2016 08:45	09/16/2016 19:19
S16T029984	16-08068-7-EFF-H	Ammoria	09/15/2016 08:45	09/16/2016 12:05

20162724 Rev. 0

Attachment 3

RECEIPT PAPERWORK

11 of 18

C.324

Cartridge Testing NH₃

222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST			ATS-LO-090-101 Rev DG-1
Date Samples Received: <u>9-12-16</u> Total Number of Samples: <u>478</u> Group #: <u>20162724</u>				
Sample Custodian: <u>Dianne Turner</u> IH Technician: <u>Christie Mook</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°C</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>dlx</u> Date <u>9-12-16</u>				
If No, comment on communication and resolution:				
<u>WRPS SHIP 280</u> <u>Run 118</u> <u>WHL Run 80 (40NH₃, 40H₂)</u> <u>Acetonitrile 40</u>				
† Broken Furan Tube				
Number of IH Samples Received:				
Aldehyde Screen: <u>40</u>	Amines: <u>40</u>	Ammonia: <u>40</u>	Aromatic HC: _____	Asbestos: _____
Beryllium: _____	Be-Bulk: _____	Be-Filter: _____	Be-Wipe: _____	1,3-Butadiene: <u>80</u>
Formaldehyde: _____	Furans: <u>40</u>	Mercury: <u>40</u>	Methanol: _____	Nitrosamines: <u>40</u>
Nitrous Oxide: _____	Pyridines: <u>40</u>	SVOA: <u>38</u>	VOA: <u>40</u>	Other-IH: _____

A-6005-302 (REV 4)

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			Date Sampled: 9/10/16		
CACN: 202062		COA: CB20		Survey No.: 16-07837 - Cartridge Testing	
Contact Name: Jones, Parker L			Phone: (509)373-4966		Turnaround: N/A
Return Report To: Caldwell, Joyce A			MSIN: R1-06		Phone: (509)376-0737
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
	16-07837-6-IN-E / Hydrar (SKC 226-17-1A)	Hg-Elemental Source			
	16-07837-6-IN-F / Hydrar (SKC 226-17-1A)	Hg-Elemental Source			
	16-07837-6-IN-G / Hydrar (SKC 226-17-1A)	Hg-Elemental Source			
	16-07837-6-IN-H / Hydrar (SKC 226-17-1A) ✗	Hg-Elemental Source			
516T029865	16-07837-7-BASE-EFF / CISA (SKC 226-29) ✓	516T029866 29867	NH3 Source		
516T029868	16-07837-7-BASE-IN / CISA (SKC 226-29) ✓	516T029869 29870	NH3 Source		
516T029871	16-07837-7-BLANK1 / CISA (SKC 226-29) ✓	516T029872 29873	NH3 Source		
516T029874	16-07837-7-BLANK2 / CISA (SKC 226-29) ✓	516T029875 29876	NH3 Source		
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Jason Reno</i>	Jason Reno	2704-HV/4-104	9/10/16	0640
Retrieved from Storage:	<i>Christemoon</i>	Christemoon		9/12/16	1100
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Christemoon</i>	Christemoon	9/12/16	1330	
Received By:	<i>Sharon Wolden</i>	Sharon Wolden	9-12-16	1330	
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: 9/10/16		
CACN: 202062	COA: CB20	Survey No.: 16-07837 - Cartridge Testing			
Contact Name: Jones, Parker L		Phone: (509)373-4966	Turnaround: N/A		
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
S16T029877	16-07837-7-EFF-A / CISA (SKC 226-29) ✓ S16T029878 29879	NH3 Source			
S16T029880	16-07837-7-EFF-B / CISA (SKC 226-29) ✓ S16T029881 29882	NH3 Source			
S16T029883	16-07837-7-EFF-C / CISA (SKC 226-29) ✓ S16T029884 29885	NH3 Source			
S16T029886	16-07837-7-EFF-D / CISA (SKC 226-29) ✓ S16T029887 29888	NH3 Source			
S16T029889	16-07837-7-EFF-E / CISA (SKC 226-29) ✓ S16T029890 29891	NH3 Source			
S16T029892	16-07837-7-EFF-F / CISA (SKC 226-29) ✓ S16T029893 29894	NH3 Source			
S16T029895	16-07837-7-EFF-G / CISA (SKC 226-29) ✓ S16T029896 29897	NH3 Source			
S16T029898	16-07837-7-EFF-H / CISA (SKC 226-29) ✓ S16T029899 29900	NH3 Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Jason Lewis</i>	Jason Lewis	2704-4V/H-104	9/10/16	0640
Retrieved from Storage:	<i>Christy Moon</i>	Christy Moon		9/12/16	1100
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Christy Moon</i>	Christy Moon	9/12/16	1330	
Received By:	<i>Sharon Lilohle</i>	Sharon Lilohle	9-12-16	1330	
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: 9/10/16		
CACN: 202062		COA: CBAO	Survey No.: 15-07837 - Cartridge Testing		
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: N/A	
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
S16T029901	16-07837-7-IN-A / CISA (SKC 226-29) ✓ S16T029902 29903	NH3 Source			
S16T029904	16-07837-7-IN-B / CISA (SKC 226-29) ✓ S16T029905 29906	NH3 Source			
S16T029907	16-07837-7-IN-C / CISA (SKC 226-29) ✓ S16T029908 29909	NH3 Source			
S16T029910	16-07837-7-IN-D / CISA (SKC 226-29) ✓ S16T029911 029912	NH3 Source			
S16T029913	16-07837-7-IN-E / CISA (SKC 226-29) ✓ S16T029914 29915	NH3 Source			
S16T029916	16-07837-7-IN-F / CISA (SKC 226-29) ✓ S16T029917 29918	NH3 Source			
S16T029919	16-07837-7-IN-G / CISA (SKC 226-29) ✓ S16T029920 29921	NH3 Source			
S16T029922	16-07837-7-IN-H / CISA (SKC 226-29) ✓ S16T029923 29924	NH3 Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Jason Reno</i>	JASON RENO	2704-HV/H-104	9/10/16	0640
Retrieved from Storage:	<i>Chastemoon</i>	Chastemoon		9/12/16	1100
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Chastemoon</i>	Chastemoon	9/12/16	1330	
Received By:	<i>Shava L. Lohde</i>	Shava Lohde	9-12-16	1330	
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: 9/10/16		
CACN: 202062		COA: CB20	Survey No.: 16-08068 - Cartridge Testing		
Contact Name: Jones, Parker L		Phone: (509)373-4966		Turnaround: W/A	
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
 	16-08068-6-IN-E / Hydrar (SKC 226-17-1A)	Hg-Elemental Source			
 	16-08068-6-IN-F / Hydrar (SKC 226-17-1A)	Hg-Elemental Source			
 	16-08068-6-IN-G / Hydrar (SKC 226-17-1A)	Hg-Elemental Source			
 	16-08068-6-IN-H / Hydrar (SKC 226-17-1A)	Hg-Elemental Source			
SI6T029925	16-08068-7-BASE-EFF / CISA (SKC 226-29) , SI6T029926 29927	NH3 Source			
SI6T029928	16-08068-7-BASE-IN / CISA (SKC 226-29) , SI6T029929 29930	NH3 Source			
SI6T029931	16-08068-7-BLANK-EFF / CISA (SKC 226-29) , SI6T029932 29933	NH3 Source			
SI6T029934	16-08068-7-BLANK-IN / CISA (SKC 226-29) . SI6T029935 29936	NH3 Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Chasteen</i>	Chasteen	2704HV/H104	9/10/16	0250
Retrieved from Storage:	<i>CMOON</i>	Chasteen		9/12/16	1154
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>CMOON</i>	Chasteen	9/12/16	1330	
Received By:	<i>Dianne Turner</i>	DIANNE TURNER	9-12-16	13:30	
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: 9/10/16	
CACN: 202062	COA: CBAU	Survey No.: 16-08068 - Cartridge Testing			
Contact Name: Jones, Parker L		Phone: (509)373-4966	Turnaround: N/A		
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
S16T029937	16-08068-7-IN-A / CISA (SKC 226-29) , S16T029938 29939	NH3 Source			
S16T029940	16-08068-7-IN-B / CISA (SKC 226-29) , S16T029941 29942	NH3 Source			
S16T029943	16-08068-7-IN-C / CISA (SKC 226-29) , S16T029944 29945	NH3 Source			
S16T029946	16-08068-7-IN-D / CISA (SKC 226-29) , S16T029947 29948	NH3 Source			
S16T029949	16-08068-7-IN-E / CISA (SKC 226-29) , S16T029950 29951	NH3 Source			
S16T029952	16-08068-7-IN-F / CISA (SKC 226-29) , S16T029953 29954	NH3 Source			
S16T029955	16-08068-7-IN-G / CISA (SKC 226-29) , S16T029956 29957	NH3 Source			
S16T029958	16-08068-7-IN-H / CISA (SKC 226-29) , S16T029959 29960	NH3 Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Christie Moon</i>	Christie Moon	2704HU/17104	9/10/16	09:50
Retrieved from Storage:	<i>CMOON</i>	Christie Moon		9/21/16	11:54
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>CMOON</i>	Christie Moon	9/12/16	13:30	
Received By:	<i>Dawn Turner</i>	DAWN TURNER	9-12-16	13:30	
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: 9/10/16		
CACN: 202062	COA: CB20	Survey No.: 16-08068 - Cartridge Testing			
Contact Name: Jones, Parker L		Phone: (509)373-4968	Turnaround: N/A		
Return Report To: Caldwell, Joyce A			MSIN: R1-06	Phone: (509)376-0737	
Laboratory Log No.	Sample ID/Type/Description	Required Analysis			
S16T029961	16-08068-7-EFF-A / CISA (SKC 226-29) • S16T029962 29963	NH3 Source			
S16T029964	16-08068-7-EFF-B / CISA (SKC 226-29) • S16T029965 29966	NH3 Source			
S16T029967	16-08068-7-EFF-C / CISA (SKC 226-29) • S16T029968 29969	NH3 Source			
S16T029970	16-08068-7-EFF-D / CISA (SKC 226-29) • S16T029971 29972	NH3 Source			
S16T029973	16-08068-7-EFF-E / CISA (SKC 226-29) • S16T029974 29975	NH3 Source			
S16T029976	16-08068-7-EFF-F / CISA (SKC 226-29) • S16T029977 29978	NH3 Source			
S16T029979	16-08068-7-EFF-G / CISA (SKC 226-29) • S16T029980 29981	NH3 Source			
S16T029982	16-08068-7-EFF-H / CISA (SKC 226-29) • S16T029983 29984	NH3 Source			
Special Instructions:					
	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	<i>Chastemoor</i>	Chastemoor	2704 HV/H104	9/10/16	0850
Retrieved from Storage:	<i>Cmoor</i>	Chastemoor		9/12/16	1154
	Signature	Printed Name	Date	Time	
Relinquished By:	<i>Cmoor</i>	Chastemoor	9-12-16	1330	
Received By:	<i>Diane Turner</i>	Diane Turner	9-12-16	1330	
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Additional Comments:					



ANALYTICAL REPORT
Amended-20161004

Report Date: October 04, 2016

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
20162739

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029571	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970001				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.91	NA	NA	0.050
Acetaldehyde	4.2	NA	NA	0.050
Acetone	66	NA	NA	0.50
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	2.2	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	0.33	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	0.29	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029572	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970002				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	4.2	NA	NA	0.050

Results Continued on Next Page

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ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029572	Collected: 09/10/2016			
Lab ID: 1625970002	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Acetone	69	NA	NA	0.50
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: S16T029573	Collected: 09/10/2016			
Lab ID: 1625970003	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	4.2	NA	NA	0.050
Acetone	71	NA	NA	0.50
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

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029574	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970004				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.70	NA	NA	0.050
Acetaldehyde	3.3	NA	NA	0.050
Acetone	41	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.8	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	0.054	NA	NA	0.050
Valeraldehyde	0.23	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	0.13	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029575	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970005				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.69	NA	NA	0.050
Acetaldehyde	3.5	NA	NA	0.050
Acetone	35	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.8	NA	NA	0.050
Crotonaldehyde	0.27	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	0.11	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	0.10	NA	NA	0.050

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029575		Collected: 09/10/2016		
Lab ID: 1625970005		Received: 09/15/2016		
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 09/22/2016		Sampling Parameter: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029576		Collected: 09/10/2016		
Lab ID: 1625970006		Received: 09/15/2016		
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 09/22/2016		Sampling Parameter: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.6	NA	NA	0.050
Acetone	43	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: S16T029577		Collected: 09/10/2016		
Lab ID: 1625970007		Received: 09/15/2016		
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 09/22/2016		Sampling Parameter: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.2	NA	NA	0.050
Acetone	39	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050

Results Continued on Next Page



ANALYTICAL REPORT
Amended-20161004

Workorder: **34-1625970**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029577		Collected: 09/10/2016		
Lab ID: 1625970007		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 09/22/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
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: S16T029578		Collected: 09/10/2016		
Lab ID: 1625970008		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
		Analyzed: 09/22/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.5	NA	NA	0.050
Acetone	48	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

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029579		Collected: 09/10/2016		
Lab ID: 1625970009		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Sampling Location: CARTRIDGE EVALUATION		Analyzed: 09/22/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029580		Collected: 09/10/2016		
Lab ID: 1625970010		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Sampling Location: CARTRIDGE EVALUATION		Analyzed: 09/22/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.057	NA	NA	0.050
Acetaldehyde	1.6	NA	NA	0.050
Acetone	0.14	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	0.052	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029580		Collected: 09/10/2016	
Lab ID: 1625970010		Received: 09/15/2016	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm) RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA 0.050

Sample ID: S16T029581		Collected: 09/10/2016	
Lab ID: 1625970011		Received: 09/15/2016	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029582		Collected: 09/10/2016	
Lab ID: 1625970012		Received: 09/15/2016	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029582	Collected: 09/10/2016			
Lab ID: 1625970012	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016		
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 09/22/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
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: S16T029583	Collected: 09/10/2016			
Lab ID: 1625970013	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016		
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	Analyzed: 09/22/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	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

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029584	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970014				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	6.0	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: S16T029585	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970015				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	10	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029585		Collected: 09/10/2016		
Lab ID: 1625970015		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029586		Collected: 09/10/2016		
Lab ID: 1625970016		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	18	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: S16T029587		Collected: 09/10/2016		
Lab ID: 1625970017		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029587	Collected: 09/10/2016			
Lab ID: 1625970017	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
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: S16T029588	Collected: 09/10/2016			
Lab ID: 1625970018	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029589	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970019				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029590	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970020				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029590	Collected: 09/10/2016			
Lab ID: 1625970020	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029591	Collected: 09/10/2016			
Lab ID: 1625970021	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	1.0	NA	NA	0.050
Acetaldehyde	3.9	NA	NA	0.050
Acetone	46	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: S16T029592	Collected: 09/10/2016			
Lab ID: 1625970022	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	1.2	NA	NA	0.050
Acetaldehyde	3.9	NA	NA	0.050
Acetone	59	NA	NA	0.50
Acrolein	0.082	NA	NA	0.050
Propionaldehyde	2.1	NA	NA	0.050

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: 34-1625970

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029592	Collected: 09/10/2016			
Lab ID: 1625970022	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Crotonaldehyde	0.34	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	0.10	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	0.20	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029593	Collected: 09/10/2016			
Lab ID: 1625970023	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	1.2	NA	NA	0.050
Acetaldehyde	4.3	NA	NA	0.050
Acetone	68	NA	NA	0.50
Acrolein	0.10	NA	NA	0.050
Propionaldehyde	2.2	NA	NA	0.050
Crotonaldehyde	0.36	NA	NA	0.050
Butyraldehyde	1.6	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	0.15	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	0.25	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029594	Collected: 09/10/2016			
Lab ID: 1625970024	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.9	NA	NA	0.050
Acetone	67	NA	NA	0.50
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: S16T029595	Collected: 09/10/2016			
Lab ID: 1625970025	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.51	NA	NA	0.050
Acetaldehyde	3.6	NA	NA	0.050
Acetone	60	NA	NA	0.50
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	1.7	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029595		Collected: 09/10/2016	
Lab ID: 1625970025		Received: 09/15/2016	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm) RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA 0.050

Sample ID: S16T029596		Collected: 09/10/2016	
Lab ID: 1625970026		Received: 09/15/2016	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm) RL (ug/sample)
Formaldehyde	<0.050	NA	NA 0.050
Acetaldehyde	3.5	NA	NA 0.050
Acetone	41	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: S16T029597		Collected: 09/10/2016	
Lab ID: 1625970027		Received: 09/15/2016	
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm) RL (ug/sample)
Formaldehyde	<0.050	NA	NA 0.050
Acetaldehyde	2.9	NA	NA 0.050
Acetone	34	NA	NA 0.050
Acrolein	<0.050	NA	NA 0.050
Propionaldehyde	<0.050	NA	NA 0.050

Results Continued on Next Page



ANALYTICAL REPORT
Amended-20161004

Workorder: **34-1625970**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029597	Collected: 09/10/2016			
Lab ID: 1625970027	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
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: S16T029598	Collected: 09/10/2016			
Lab ID: 1625970028	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	2.2	NA	NA	0.050
Acetone	18	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

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029599	Collected: 09/10/2016			
Lab ID: 1625970029	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029600	Collected: 09/10/2016			
Lab ID: 1625970030	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029600		Collected: 09/10/2016		
Lab ID: 1625970030		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029601		Collected: 09/10/2016		
Lab ID: 1625970031		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	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: S16T029602		Collected: 09/10/2016		
Lab ID: 1625970032		Received: 09/15/2016		
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	2.5	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: 34-1625970

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029602	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970032				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
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: S16T029603	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625970033				Received: 09/15/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	2.1	NA	NA	0.050
Acetone	3.5	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



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029604	Collected: 09/10/2016			
Lab ID: 1625970034	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	2.1	NA	NA	0.050
Acetone	3.3	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: S16T029605	Collected: 09/10/2016			
Lab ID: 1625970035	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	2.0	NA	NA	0.050
Acetone	7.4	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029605		Collected: 09/10/2016		
Lab ID: 1625970035		Received: 09/15/2016		
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 09/22/2016		Sampling Parameter: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T029606		Collected: 09/10/2016		
Lab ID: 1625970036		Received: 09/15/2016		
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 09/22/2016		Sampling Parameter: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	3.3	NA	NA	0.050
Acetone	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: S16T029607		Collected: 09/10/2016		
Lab ID: 1625970037		Received: 09/15/2016		
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		
Analyzed: 09/22/2016		Sampling Parameter: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029607	Collected: 09/10/2016			
Lab ID: 1625970037	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
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: S16T029608	Collected: 09/10/2016			
Lab ID: 1625970038	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Analyzed: 09/22/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029609	Collected: 09/10/2016			
Lab ID: 1625970039	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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: S16T029610	Collected: 09/10/2016			
Lab ID: 1625970040	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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

Results Continued on Next Page



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029610	Collected: 09/10/2016			
Lab ID: 1625970040	Received: 09/15/2016			
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)			
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Comments

Quality Control: EPA TO-11A - (HBN: 176736)
LMB 518404 was used to media correct LCS 518405, LCSD 518406 and field samples 001-020 for Acetaldehyde and Acetone. LMB 518407 was used to media correct LCS 518408, LCSD 518409 and field samples 021-040 for Acetaldehyde and Acetone by hand.
LCs/LCSD (518405, 518406, 518408, 518409): All of the analytes recoveries were within 20% of the target. Some analytes are outside of historical limits, but all are within general laboratory limits so no further action was taken.
Samples 001-003 and 022-025 were diluted by a factor of 10X for Acetone only. The reporting limit of 0.05 ug/sample has been adjusted accordingly for these samples to 0.5 ug/sample for Acetone only.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-11A	/S/ Emilie Pratt 09/28/2016 14:07	/S/ Christopher Winter 09/29/2016 15:48

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alst.lab@ALSGlobal.com
Web: www.alssl.com



ANALYTICAL REPORT

Amended-20161004

Workorder: **34-1625970**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

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	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bdwlabservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/insideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Industrial Hygiene	Kansas	E-10416	http://www.kdhehs.gov/lpo/index.html
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	CPSC	ANAB (ISO 17025, CPSC)	ADE-1420
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Dietary Supplements	AClass (ISO 17025)	ADE-1420

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: 1625970	Preparation: NA	Analysis: EPA TO-11A
Limits: Historical Performance	Batch: NA	Batch: ILC/12651 (HBN: 176736)
Basis: ALS Laboratory Group	Prepared By: NA	Analyzed By: Emilio Pratt

Blank

LMB: 518404			
Analyzed: 09/22/2016 00:00			
Units: ug/sample			
Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	0.193	NA	0.0500
Acetone	0.273	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

LMB: 518407			
Analyzed: 09/22/2016 00:00			
Units: ug/sample			
Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	0.172	NA	0.0500
Acetone	0.198	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



Quality Control Sample Batch Report

Analysis Information

Workorder: 1625970

Limits: Historical Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: EPA TO-11A
Batch: ILC/12651 (HBN: 176736)
Analyzed By: Emille Pratt

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 518405					LCS0: 518406				
Analyzed: 09/22/2016 00:00					Analyzed: 09/22/2016 00:00				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Formaldehyde	3.22	3.00	107	87.8 116.8	2.77	92.4	15.0	0.0	20.0
Acetaldehyde	3.16	3.00	105	94.7 110.5	2.74	91.5	14.1	0.0	20.0
Acetone	3.30	3.00	110	89.2 119.9	2.74	91.4	18.6	0.0	20.0
Acrolein	3.11	3.00	104	83.5 120.2	2.71	90.3	13.8	0.0	20.0
Propionaldehyde	3.18	3.00	106	92.2 117.2	2.78	92.5	13.7	0.0	20.0
Crotonaldehyde	3.20	3.00	107	93.1 114.8	2.79	93.0	13.7	0.0	20.0
Butyraldehyde	3.12	3.00	104	86.6 120.8	2.76	91.9	12.3	0.0	20.0
Benzaldehyde	3.16	3.00	106	96.0 112.3	2.77	92.3	13.7	0.0	20.0
Isovaleraldehyde	3.41	3.00	114	95.4 121.6	3.00	100	12.7	0.0	20.0
Valeraldehyde	3.49	3.00	116	85.3 120.4	3.04	101	13.8	0.0	20.0
m-Tolualdehyde	3.29	3.00	110	80.9 118.6	2.89	96.5	12.7	0.0	20.0
p-Tolualdehyde	3.15	3.00	105	83.5 122.2	2.68	89.2	16.2	0.0	20.0
o-Tolualdehyde	3.19	3.00	108	91.8 111.4	2.79	92.8	13.4	0.0	20.0
Hexanal	3.14	3.00	105	85.4 127.6	2.92	97.3	7.33	0.0	20.0
2,5-Dimethylbenzaldehyde	2.85	3.00	95.0	99.6 118.7	2.82	87.2	8.56	0.0	20.0

LCS: 518408					LCS0: 518409				
Analyzed: 09/22/2016 00:00					Analyzed: 09/22/2016 00:00				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Formaldehyde	2.65	3.00	88.5	87.8 116.8	2.70	89.8	1.46	0.0	20.0
Acetaldehyde	2.68	3.00	89.5	94.7 110.5	2.75	91.7	2.50	0.0	20.0
Acetone	2.80	3.00	93.2	89.2 119.9	2.87	95.5	2.47	0.0	20.0
Acrolein	2.64	3.00	88.0	83.5 120.2	2.65	88.4	0.454	0.0	20.0
Propionaldehyde	2.75	3.00	91.7	92.2 117.2	2.76	92.1	0.435	0.0	20.0
Crotonaldehyde	2.74	3.00	91.2	93.1 114.8	2.76	92.7	1.70	0.0	20.0
Butyraldehyde	2.69	3.00	89.7	86.6 120.8	2.77	92.2	2.75	0.0	20.0
Benzaldehyde	2.74	3.00	91.2	96.0 112.3	2.79	92.9	1.81	0.0	20.0
Isovaleraldehyde	2.92	3.00	97.4	95.4 121.6	2.95	98.5	1.09	0.0	20.0
Valeraldehyde	2.99	3.00	99.7	85.3 120.4	3.01	100	0.633	0.0	20.0
m-Tolualdehyde	3.05	3.00	102	80.9 118.6	3.05	102	0.0328	0.0	20.0
p-Tolualdehyde	2.46	3.00	81.9	83.5 122.2	2.43	81.1	0.941	0.0	20.0
o-Tolualdehyde	2.93	3.00	97.5	91.8 111.4	2.81	93.5	4.19	0.0	20.0
Hexanal	2.94	3.00	98.1	85.4 127.6	2.83	94.3	3.99	0.0	20.0
2,5-Dimethylbenzaldehyde	2.70	3.00	90.0	99.6 118.7	2.55	84.9	5.79	0.0	20.0



Quality Control Sample Batch Report

Analysis Information

Workorder: 1625970

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: EPA TO-11A
Batch: ILC/12651 (HBN: 176736)
Analyzed By: Emilie Pratt

Comments

LMB 518404 was used to media correct LCS 518405, LCSD 518406 and field samples 001-020 for Acetaldehyde and Acetone. LMB 518407 was used to media correct LCS 518408, LCSD 518409 and field samples 021-040 for Acetaldehyde and Acetone by hand. LCS/LCSD (518405, 518406, 518408, 518409): All of the analytes recoveries were within 20% of the target. Some analytes are outside of historical limits, but all are within general laboratory limits so no further action was taken. Samples 001-003 and 022-025 were diluted by a factor of 10X for Acetone only. The reporting limit of 0.05 ug/Sample has been adjusted accordingly for these samples to 0.5 ug/Sample for Acetone only.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Emilie Pratt 09/28/2016 14:07	/S/ Christopher Winter 09/29/2016 15:48

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
- 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



10 25 170

Assembly: **1625970** C.O.C. No. 20162739
 Telephone No. 373-0861 MSN 15-05 FAX 373-1878
 Page 1 of 4

Contract/Requestor: **DAVID BOWALD IV**
 Sample Origin: **DAVID BOWALD IV**
 Logbook Work Package No.: **N/A**
 Method of Shipment: **N/A**
 Data Turnaround: **10 days**
 Project Title: **ASBESTOS EVALUATION**
 Shipped To (Lab): **ALS**
 Protocol: **N/A**

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analyte	Preservative
1	316C028571	VA 08/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
2	316C028572	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
3	316C028573	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
4	316C028574	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
5	316C028575	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
6	316C028576	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
7	316C028577	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
8	316C028578	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
9	316C028579	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w
10	316C028580	VA 09/10/16		3112CA GEL	Aldehyde 16-07937-8-2B-A 1	25C or 10w

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known vesical) MSDS Yes No
 Held Time
 SPECIAL INSTRUCTIONS
 Lead Results to Carl Bowald IV and Greg
 Carl's Email: bowald@als.com
 Greg's Email: greg@als.com
 Release of Information Contract # 55502
 STORM 2016 MDD

Requested by: **Sharon Walker** Date/Time: **9/14/16 09:00**
 Received by: **JA Gradisher** Date/Time: **9/14/16 14:00**
 Requisitioned by: **WRPS** Date/Time: **9/14/16 14:00**
 Received by: **DAVID BOWALD IV** Date/Time: **09/14/16 14:20**
 Requisitioned by: **WRPS** Date/Time: **9/14/16 14:00**

Final Sample Disposition: **9/14/16 14:20**
 Disposal Method (w.e., 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.

Assembler		Date		Time		Date		Time		Date		Time	
N/A													
Collector		MSIN		Telephone No.		MSIN		Purchase Order/Charge Code		Temp.		Preservative	
Jesse		26-45		373-4441		26-45		373-1878		60 JCS		25C or Low	
SAP No.		Sample Origin		Logbook/Work Package No.		Method of Shipment		Data Turnaround		Date		Time	
N/A		CAUTION		N/A		N/A		19 DAY		9/14/16		0900	
Project Title		Customer/Requestor		Date		Time		Date		Time		Date	
Custodian of Material		Date		Time		Date		Time		Date		Time	
Shipped To (Lab)		Date		Time		Date		Time		Date		Time	
JAF		Date		Time		Date		Time		Date		Time	
Protocol		Date		Time		Date		Time		Date		Time	
N/A		Date		Time		Date		Time		Date		Time	
Sample No.		Lab ID		Date		Time		Date		Time		Date	
11		8167023581		VA		09/19/16		0900		0900		0900	
12		8167023582		VA		09/20/16		0900		0900		0900	
13		8167023583		VA		09/20/16		0900		0900		0900	
14		8167023584		VA		09/20/16		0900		0900		0900	
15		8167023585		VA		09/20/16		0900		0900		0900	
16		8167023586		VA		09/20/16		0900		0900		0900	
17		8167023587		VA		09/20/16		0900		0900		0900	
18		8167023588		VA		09/20/16		0900		0900		0900	
19		8167023589		VA		09/20/16		0900		0900		0900	
20		8167023590		VA		09/20/16		0900		0900		0900	
<p>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>32A 20-11A</p> <p>Special Instructions: Lead results to Carl Kowald IV and Greg Carl, g_kowald@del.gov and Greg_Carl@del.gov see SCR for email. Melissa G. Reference Contract # 55502 02/03/2016 WOD</p>													
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
Sharon Helden		M. L. Helden		9/14/16		0900		9/14/16		0900		0900	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
JA Gradisher		JA Gradisher		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14/16		1400		9/14/16		1400		1400	
Requested by		Print		Date/Time		Date/Time		Date/Time		Date/Time		Date/Time	
WRPS		WRPS		9/14									

Assembler		G.O.C. No. 20162739	
N/A		Page 3 of 4	
Collector		Telephone No. 772-4441	
SAP No.		MSIR # 4-41 FAX 772-4478	
Project Title		Purchase Order/Charge Code	
Contractor		20767-030	
Shipped To (Lab)		Box Chest No. <u>WTS-033</u> Temp. <u>0210C</u>	
Method of Shipment		Bill of Lading/Air Bill No. <u>772 2770 4720</u>	
Data Turnaround		Prints and Return No. <u>41310</u>	
15 DAY			

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
21	8167023592	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-A	25C at 1w
22	8167023592	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-B	25C at 1w
23	8167023593	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-C	25C at 1w
24	8167023594	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-D	25C at 1w
25	8167023595	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-E	25C at 1w
26	8167023596	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-F	25C at 1w
27	8167023597	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-G	25C at 1w
28	8167023598	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-H	25C at 1w
29	8167023599	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-I	25C at 1w
30	8167023600	VA 09/16/16		ST17CA GEL	Aldehyde 16-20069-8-20-J	25C at 1w

POSSIBLE SAMPLE HAZARD/REMARKS (List all known wastes) MSDS Yes No

SPECIAL INSTRUCTIONS
Send Results to Carl Rowald IV and Greg Moore
Carl.W.Rowald@wrps.com and Greg.Moore@wrps.com see SOI for email
Release 3
Reference Contract # 25562
R1028 2015 MSO

Retransmitted By	Print	Sign	Date/Time	Received By	Date/Time	Method
Sherrill Wade	Sherrill Wade	9/16/16	9/16/16	JA Gradisher	9/16/16	FEDEX
WRPS	WRPS	9/16/16	9/16/16	WRPS	9/16/16	FEDEX
WRPS	WRPS	9/16/16	9/16/16	WRPS	9/16/16	FEDEX
WRPS	WRPS	9/16/16	9/16/16	WRPS	9/16/16	FEDEX

Retransmitted By	Print	Sign	Date/Time	Received By	Date/Time	Method
WRPS	WRPS	9/16/16	9/16/16	WRPS	9/16/16	FEDEX
WRPS	WRPS	9/16/16	9/16/16	WRPS	9/16/16	FEDEX
WRPS	WRPS	9/16/16	9/16/16	WRPS	9/16/16	FEDEX
WRPS	WRPS	9/16/16	9/16/16	WRPS	9/16/16	FEDEX

Final Sample Disposition	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Date/Time
WRPS	WRPS	9/16/16

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

Disposed By: Emilie Pratt Date/Time: 9/16/16 14:20

A-6003-962 (03/06)

Assessor		C.O.C. No. 20162739	
S/A		Page 4 of 4	
Collector Code		Telephone No. 313-6841	
Contract/Receptor Code		MISN 1-9-95 FAX 372-1878	
SOP No.		Invoicing Order/Charge Code	
Contract No.		Invoicing Order/Charge Code	
Project Title		For Chart No.	
Project Title		WATS-033	
Project Title		1676. 00 JCS	
Project Title		88 of Laboratory Bill No. 7772 2770 4728	
Shipped To (Lab)		Field and Return No. 41310	
Protocol			
N/A			

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
31	81-670239603	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-C	35C ec 10w
32	81-670239602	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-D	35C ec 10w
33	81-670239603	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-E	35C ec 10w
34	81-670239604	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-F	35C ec 10w
35	81-670239603	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-G	35C ec 10w
36	81-670239606	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-H	35C ec 10w
37	81-670239607	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-I	35C ec 10w
38	81-670239608	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-J	35C ec 10w
39	81-670239609	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-K	35C ec 10w
40	81-670239610	VA 09/10/16		1/12/200 GEL	ALdehyds 16-0805-8-2EF-L	35C ec 10w

POSSIBLE SAMPLE HAZARD-REMARKS (List all known wastes) MSDS Yes No

SPECIAL INSTRUCTIONS

Send Samples to Carl Rowald IV and Greg Moore
 Carl V Rowald@rci.gov and GregMoore@rci.gov see 328 for email
 Release to Reference Contract # 25502
 FEDEX 3216 MOD

Received By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Sharon Wolber	Sharon Wolber	9/14/16	800	WRPS	Julie Goodson	9/14/16	09:00
WRPS	Julie Goodson	9/14/16	1400	WRPS	Julie Goodson	9/14/16	1400
Received By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Received By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Emilie R. Pratt Date/Time: 9/16/16 14:20

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.



ANALYTICAL REPORT

Report Date: September 21, 2016

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

Workorder: **34-1625972**

Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029411	Collected: 09/10/2016			
Lab ID: 1625972001	Received: 09/15/2016			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
	Analyzed: 09/21/2016			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029412	Collected: 09/10/2016			
Lab ID: 1625972002	Received: 09/15/2016			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
	Analyzed: 09/21/2016			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029413	Collected: 09/10/2016			
Lab ID: 1625972003	Received: 09/15/2016			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
	Analyzed: 09/21/2016			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029414	Collected: 09/10/2016			
Lab ID: 1625972004	Received: 09/15/2016			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
	Analyzed: 09/21/2016			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

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

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ANALYTICAL REPORT

Workorder: **34-1625972**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029415		Collected: 09/10/2016	
Lab ID: 1625972005	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029416		Collected: 09/10/2016	
Lab ID: 1625972006	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029417		Collected: 09/10/2016	
Lab ID: 1625972007	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029418		Collected: 09/10/2016	
Lab ID: 1625972008	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029419		Collected: 09/10/2016	
Lab ID: 1625972009	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010



ANALYTICAL REPORT

Workorder: **34-1625972**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029420		Collected: 09/10/2016	
Lab ID: 1625972010		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029421		Collected: 09/10/2016	
Lab ID: 1625972011		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029422		Collected: 09/10/2016	
Lab ID: 1625972012		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029423		Collected: 09/10/2016	
Lab ID: 1625972013		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029424		Collected: 09/10/2016	
Lab ID: 1625972014		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010



ANALYTICAL REPORT

Workorder: **34-1625972**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029425		Collected: 09/10/2016	
Lab ID: 1625972015		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029426		Collected: 09/10/2016	
Lab ID: 1625972016		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029427		Collected: 09/10/2016	
Lab ID: 1625972017		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029428		Collected: 09/10/2016	
Lab ID: 1625972018		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029429		Collected: 09/10/2016	
Lab ID: 1625972019		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010



ANALYTICAL REPORT

Workorder: **34-1625972**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029430	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625972020				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029431	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625972021				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029432	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625972022				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029433	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625972023				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029434	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625972024				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625972**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029435	Collected: 09/10/2016			
Lab ID: 1625972025	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided				
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029436	Collected: 09/10/2016			
Lab ID: 1625972026	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided				
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029437	Collected: 09/10/2016			
Lab ID: 1625972027	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided				
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029438	Collected: 09/10/2016			
Lab ID: 1625972028	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided				
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029439	Collected: 09/10/2016			
Lab ID: 1625972029	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided				
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625972**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029440	Collected: 09/10/2016			
Lab ID: 1625972030	Sampling Location: CARTRIDGE EVALUATION			
Received: 09/15/2016				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided	Analyzed: 09/21/2016			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029441	Collected: 09/10/2016			
Lab ID: 1625972031	Sampling Location: CARTRIDGE EVALUATION			
Received: 09/15/2016				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided	Analyzed: 09/21/2016			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029442	Collected: 09/10/2016			
Lab ID: 1625972032	Sampling Location: CARTRIDGE EVALUATION			
Received: 09/15/2016				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided	Analyzed: 09/21/2016			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029443	Collected: 09/10/2016			
Lab ID: 1625972033	Sampling Location: CARTRIDGE EVALUATION			
Received: 09/15/2016				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided	Analyzed: 09/21/2016			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029444	Collected: 09/10/2016			
Lab ID: 1625972034	Sampling Location: CARTRIDGE EVALUATION			
Received: 09/15/2016				
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
Sampling Parameter: Air Volume Not Provided	Analyzed: 09/21/2016			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: 34-1625972
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: 1,3-Butadiene, <0.0010, NA, NA, 0.0010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: 1,3-Butadiene, <0.0010, NA, NA, 0.0010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: 1,3-Butadiene, <0.0010, NA, NA, 0.0010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: 1,3-Butadiene, <0.0010, NA, NA, 0.0010.

Table with 4 columns: Analyte, Result (mg/sample), Result (mg/m³), Result (ppm), RL (mg/sample). Row 1: 1,3-Butadiene, <0.0010, NA, NA, 0.0010.



ANALYTICAL REPORT

Workorder: **34-1625972**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029450	Collected: 09/10/2016			
Lab ID: 1625972040	Received: 09/15/2016			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
	Analyzed: 09/21/2016			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Report Authorization (iS/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1024	iS/ Fred Rejali 09/21/2016 15:53	iS/ John M. Reynolds 09/21/2016 16:20

Laboratory Contact Information

ALS Environmental
 960 W Levoy Drive
 Salt Lake City, Utah 84123

Phone: (801) 266-7700
 Email: alsit.lab@ALSGlobal.com
 Web: www.alsinc.com



ANALYTICAL REPORT

Workorder: **34-1625972**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 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	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bdwlabservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CS/new/
	Iowa	IA# 376	http://www.iowadnr.gov/insideDNR/Regulatory/Water.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Industrial Hygiene	Kansas	E-10416	http://www.kdhehs.gov/lpo/index.html
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Washington		C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Lead Testing:		
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
	Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aiclasscorp.com

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: 1625972		
Limits: Historical Performance	Preparation: NA	Analysis: NIOSH 1024
Basis: ALS Laboratory Group	Batch: NA	Batch: IFID/7770 (HBN: 176979)
	Prepared By: NA	Analyzed By: Fred Rejali

Blank

MB: 519101 Analyzed: 09/21/2016 00:00 Units: mg/sample			
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Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519104 Analyzed: 09/21/2016 00:00 Units: mg/sample			
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Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519107 Analyzed: 09/21/2016 00:00 Units: mg/sample			
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Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519110 Analyzed: 09/21/2016 00:00 Units: mg/sample			
--	--	--	--

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519113 Analyzed: 09/21/2016 00:00 Units: mg/sample			
--	--	--	--

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 519102 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519103 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0259	0.0274	94.7	76.0 117.6	0.0261	95.4	0.769	0.0 20.0	

LCS: 519105 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519106 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0262	0.0274	95.8	76.0 117.6	0.0254	92.8	3.10	0.0 20.0	



Quality Control Sample Batch Report

Analysis Information

Workorder: 1625972		
Limits: Historical/Performance	Preparation: NA	Analysis: NIOSH 1024
Basis: ALS Laboratory Group	Batch: NA	Batch: IFID/7770 (HBN: 178979)
	Prepared By: NA	Analyzed By: Fred Rejali

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 519108 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519109 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0274	0.0274	100	78.0 117.6	0.0272	99.4	0.733	0.0 20.0	
LCS: 519111 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519112 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0285	0.0274	104	78.0 117.6	0.0296	109	4.46	0.0 20.0	
LCS: 519114 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519115 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0291	0.0274	106	78.0 117.6	0.0285	104	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/ Fred Rejali 09/21/2016 15:58	/S/ John M. Reynolds 09/21/2016 16:20

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
- 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



1625972
C.O.C. No. 20162736
Page 1 of 4

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Assembler S/A	Contact/Requestor GMS MORALE IV			Telephone No. 373-6961	MISN 16-03	FAX 372-1878
Collector S/A	Sample Origin CARTRIDGE EVALUATING			Purchase Order/Charge Code 2025437020		
SAP No.	Logbook/ Work Package No.			100 Chest No.	Temp. 00 IN	
Project Title CARTRIDGE EVALUATION	Shipped to (Lab) ALS			Bill of Lading/IR Bill No.	772 270 4728	
Method of Shipment	Date Turnaround 10 DAYS			Parts and Return No.	41310	
Protocol S/A	No./Type Container			Sample Analysis		

Sample No.	Lab ID	Date	Time	Preservative
	1.3-Butadiene 16-07837-10-BLANK	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-9-BLANK	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-9-BLANK	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-10-BLANK	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-9-EP-A-PRT-A	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-10-EP-A-PRT-B	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-9-EP-B-PRT-A	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-10-EP-B-PRT-B	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-9-EP-C-PRT-A	VA 09/10/16		CRILL -HC
	1.3-Butadiene 16-07837-10-EP-C-PRT-B	VA 09/10/16		CRILL -HC

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS Yes No Hold Time

SPECIAL INSTRUCTIONS
Send Results to Carl M. Revalid, IV, Carl M. Revalid, Sr., and Gene Moore, Gregory_B_Moore@ci.gov see SCR for email
Reference Contract # 55502
MATERIALS
HOUSE 1024 CRILL BELOW -4 C

Relinquished By Dianne Turner WRPS	Print Date/Time 9/14/16 1400	Received By Julie Gradosh WRPS	Print Date/Time 9/14/16 0900	Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids
Relinquished By Dianne Turner	Date/Time 9/14/16 1400	Received By Julie Gradosh	Date/Time 9/14/16 0900	DL = Drum Liquids T = Tissue VI = Vipe L = Liquid V = Vegetation VA = Vapor X = Other
Relinquished By Dianne Turner	Date/Time 9/14/16 1400	Received By Marilyn Edmunds	Date/Time 9/15/16 95	
Relinquished By Dianne Turner	Date/Time 9/14/16 1400	Received By Marilyn Edmunds	Date/Time 9/15/16 95	

Disposal Method (e.g., Return to customer, per lab procedure used in process):
Disposed By: Fred Rejab. Date/Time: 09/21/16 1600

A-6003-662 (03/05)

Assembler		C.D.C. No. 2016273E				
S/A		Page 3 of 4				
Collector JONES		Telephone No. 372-6841	MSIN 76-05			
SAP No.		Purchase Order/Charge Code				
Project Title MULTIUSE EVALUATION		3325/02/0320				
Shipped To (Lab)		Ice Chest No. <u>W45-033</u>	Temp. <u>ON ICE</u>			
Protocol		Bill of Lading/Air B/L No. <u>7772 210 4728</u>				
S/A		Parts and Return No. <u>47310</u>				
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						
Contact/Requestor CML SCENES TV		Sample Origin CRATERE EVALUATION				
Logbook/Work Package No.		Method of Shipment				
S/A		Data Turnaround 10 DAYS				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T028431	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-9-EFF-BASE-A	CHILL -4C
	S16T028432	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-10-EFF-BASE-B	CHILL -4C
	S16T028433	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-9-IN-A-PRC-A	CHILL -4C
	S16T028434	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-10-IN-A-PRC-B	CHILL -4C
	S16T028435	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-9-IN-B-PRC-A	CHILL -4C
	S16T028436	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-10-IN-B-PRC-B	CHILL -4C
	S16T028437	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-9-DE-BASE-A	CHILL -4C
	S16T028438	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-10-DE-BASE-B	CHILL -4C
	S16T028439	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-9-DE-C-PRC-A	CHILL -4C
	S16T028440	VA	09/15/16	CHARCOAL TUBE	1,3-Betadiene 16-07837-10-DE-C-PRC-B	CHILL -4C
POSSIBLE SAMPLE HAZARDOUS/REMARKS (List all known wastes) <input type="radio"/> MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Hold Time						
SPECIAL INSTRUCTIONS Send Results to Carl M. Revaldi, IV, Carl M. Revaldi, Jr., and Greg Moore, Gregory_S_Moore@tri.gov see 20% for email Reference Contract # 55502 MSDS 1024 CHILL BELOW -4 C						
Relinquished By <i>Dianne Turner</i>	Print JA Gradstein	Signature <i>Dianne Turner</i>	Date/Time 9/14/16 0900	Received By WRPS	Print Gulie Gradstein	Signature <i>Gulie Gradstein</i>
Relinquished By WRPS	Print Gulie Gradstein	Signature <i>Gulie Gradstein</i>	Date/Time 9/14/16 1430	Received By WRPS	Print WRPS	Signature <i>WRPS</i>
Relinquished By <i>Robby</i>	Print WRPS	Signature <i>Robby</i>	Date/Time 9/15/16 1600	Received By <i>WRPS</i>	Print WRPS	Signature <i>WRPS</i>
Relinquished By	Print	Signature	Date/Time	Received By	Print	Signature
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)		
				Disposed by <i>Fred Rejab</i> 09/21/16 1600		

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 S/A		C.O.C. No. 20162736				
Collector JONES		Page 4 of 4				
Contract/Requestor CALL KORNELI IV		Telephone No. 373-6611	MSIN 372-1878			
Sample Origin CAROLINA EVALUATION		Purchase Order/Charge Code 325762/CR20				
Project Title CAROLINA EVALUATION		Ice Chest No. WTS-033	Temp. 0NISE			
Shipped To (Lab) JLJ		Bill of Lading/Air Bill No. 7772 27704728				
Method of Shipment		Pails and Return No. 41310				
Data (unmarked to date)						
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T029441	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-9-DR-B-78T-A	CHILL -4C
	S16T029442	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-10-DR-B-78T-B	CHILL -4C
	S16T029443	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-9-DR-B-78T-A	CHILL -4C
	S16T029444	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-10-DR-B-78T-B	CHILL -4C
	S16T029445	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-9-DR-B-78T-A	CHILL -4C
	S16T029446	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-10-DR-B-78T-B	CHILL -4C
	S16T029447	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-9-DR-B-78T-A	CHILL -4C
	S16T029448	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-10-DR-B-78T-B	CHILL -4C
	S16T029449	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-9-DR-B-78T-A	CHILL -4C
	S16T029450	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-07837-10-DR-B-78T-B	CHILL -4C
<p>POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No Hold Time</p> <p>SPECIAL INSTRUCTIONS Send Results to Carl W. Revaldi, IV, Carl W. Revaldi, Inc., and Greg Moore, greg@cw_r_moose@ci.gov see SCR for email Reference Contract # 53502 REGULATORY CODES H202B 1024 CHILL BELOW -4 C</p>						
Relinquished By Dianne Turner WRPS	Signature <i>Dianne Turner</i>	Date/Time 09/16/16	Received By JA Gradisher WRPS	Signature <i>Julie Goodson</i>	Date/Time 09/16/16	Method DL = Drum Liquids SE = Sediment SO = Solids SL = Sludge W = Water O = Oil A = Air CS = Drum Solids
Relinquished By WRPS	Signature <i>Julie Goodson</i>	Date/Time 09/16/16	Received By WRPS	Signature <i>Julie Goodson</i>	Date/Time 09/16/16	Method DL = Drum Liquids SE = Sediment SO = Solids SL = Sludge W = Water O = Oil A = Air CS = Drum Solids
Relinquished By	Signature	Date/Time	Received By	Signature	Date/Time	Method DL = Drum Liquids SE = Sediment SO = Solids SL = Sludge W = Water O = Oil A = Air CS = Drum Solids
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure/used in process)		Disposed By <i>Fred Rejali</i>		Date/Time 09/21/16 1600

A-6003-962 (03/05)



ANALYTICAL REPORT

Report Date: September 21, 2016

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

Workorder: **34-1625957**

Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029451	Collected: 09/10/2016			
Lab ID: 1625957001	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Analyzed: 09/21/2016			
Media: SKC 226-37 Sorbent Tube				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029452	Collected: 09/10/2016			
Lab ID: 1625957002	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Analyzed: 09/21/2016			
Media: SKC 226-37 Sorbent Tube				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029453	Collected: 09/10/2016			
Lab ID: 1625957003	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Analyzed: 09/21/2016			
Media: SKC 226-37 Sorbent Tube				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029454	Collected: 09/10/2016			
Lab ID: 1625957004	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1024	Analyzed: 09/21/2016			
Media: SKC 226-37 Sorbent Tube				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

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: **34-1625957**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029455	Collected: 09/10/2016			
Lab ID: 1625957005	Sampling Location: CARTRIDGE EVALUATION			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029456	Collected: 09/10/2016			
Lab ID: 1625957006	Sampling Location: CARTRIDGE EVALUATION			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029457	Collected: 09/10/2016			
Lab ID: 1625957007	Sampling Location: CARTRIDGE EVALUATION			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029458	Collected: 09/10/2016			
Lab ID: 1625957008	Sampling Location: CARTRIDGE EVALUATION			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029459	Collected: 09/10/2016			
Lab ID: 1625957009	Sampling Location: CARTRIDGE EVALUATION			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
Analyzed: 09/21/2016				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625957**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029460	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957010				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029461	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957011				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029462	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957012				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029463	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957013				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029464	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957014				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625957**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029465	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957015				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029466	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957016				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029467	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957017				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029468	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957018				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029469	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957019				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625957**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029470	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957020				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029471	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957021				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029472	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957022				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029473	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957023				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029474	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957024				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625957**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029475		Collected: 09/10/2016	
Lab ID: 1625957025		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029476		Collected: 09/10/2016	
Lab ID: 1625957026		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029477		Collected: 09/10/2016	
Lab ID: 1625957027		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029478		Collected: 09/10/2016	
Lab ID: 1625957028		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010

Sample ID: S16T029479		Collected: 09/10/2016	
Lab ID: 1625957029		Received: 09/15/2016	
Method: NIOSH 1024		Media: SKC 226-37 Sorbent Tube	
		Sampling Parameter: Air Volume Not Provided	
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm) RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA 0.0010



ANALYTICAL REPORT

Workorder: **34-1625957**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029480	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957030				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029481	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957031				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029482	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957032				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029483	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957033				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029484	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957034				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625957**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029485	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957035				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029486	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957036				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029487	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957037				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029488	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957038				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T029489	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625957039				Received: 09/15/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010



ANALYTICAL REPORT

Workorder: **34-1625957**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029490	Collected: 09/10/2016			
Lab ID: 1625957040	Received: 09/15/2016			
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube			
	Sampling Parameter: Air Volume Not Provided			
	Analyzed: 09/21/2016			
	Sampling Location: CARTRIDGE EVALUATION			
Analyte	Result (mg/sample)	Result (mg/m ³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Report Authorization (iS/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1024	iS/ Fred Rejali 09/21/2016 15:53	iS/ John M. Reynolds 09/21/2016 16:20

Laboratory Contact Information

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 960 W Levoe Drive
 Salt Lake City, Utah 84123

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ANALYTICAL REPORT

Workorder: **34-1625957**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 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	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bdwlabservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/insideDNR/Regulatory/Water.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Industrial Hygiene	Kansas	E-10416	http://www.kdheks.gov/lpo/index.html
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Washington		C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Lead Testing:		
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
	Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574
Dietary Supplements	ACCLASS (ISO 17025)	ADE-1420	http://www.aiclasscorp.com

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: 1625957	Preparation: NA	Analysis: NIOSH 1024
Limits: Historical Performance	Batch: NA	Batch: IFID/7770 (HBN: 176979)
Basis: ALS Laboratory Group	Prepared By: NA	Analyzed By: Fred Rejali

Blank

MB: 519101
Analyzed: 09/21/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519104
Analyzed: 09/21/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519107
Analyzed: 09/21/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519110
Analyzed: 09/21/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 519113
Analyzed: 09/21/2016 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 519102					LCSD: 519103				
Analyzed: 09/21/2016 00:00					Analyzed: 09/21/2016 00:00				
Dilution: 1					Dilution: 1				
Units: mg/sample					Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0259	0.0274	94.7	76.0 117.6	0.0261	95.4	0.769	0.0 20.0	

LCS: 519105					LCSD: 519106				
Analyzed: 09/21/2016 00:00					Analyzed: 09/21/2016 00:00				
Dilution: 1					Dilution: 1				
Units: mg/sample					Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0262	0.0274	95.8	76.0 117.6	0.0254	92.8	3.10	0.0 20.0	



Quality Control Sample Batch Report

Analysis Information

Workorder: 1625957		
Limits: Historical Performance	Preparation: NA	Analysis: NIOSH 1024
Basis: ALS Laboratory Group	Batch: NA	Batch: IFID/7770 (HBN: 176979)
	Prepared By: NA	Analyzed By: Fred Rejali

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 519108 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519109 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0274	0.0274	100	78.0 117.6	0.0272	99.4	0.733	0.0 20.0	
LCS: 519111 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519112 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0285	0.0274	104	78.0 117.6	0.0298	109	4.46	0.0 20.0	
LCS: 519114 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample					LCSD: 519115 Analyzed: 09/21/2016 00:00 Dilution: 1 Units: mg/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0291	0.0274	106	78.0 117.6	0.0285	104	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/ Fred Rejali 09/21/2016 15:58	/S/ John M. Reynolds 09/21/2016 16:20

Symbols and Definitions

- | | |
|---|---|
| <ul style="list-style-type: none"> ■ - 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 | <ul style="list-style-type: none"> 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 |
|---|---|



1625957

102957

Assembler		C.O.C. No.					
S/A		20162745					
Collector		Page 1 of 4					
JONES		Telephone No. 373-6811 MSIN FAX 372-1878					
SAP No.		Purchase Order/Change Code					
S/A		20242/2920					
Project Title		Ice Chest No.					
CHARLIE EVALUATION		033					
Shipped To (Lab)		Bill of Lading/IR Bill No.					
ALS		772 2770 4728					
Protocol		Pails and Return No.					
S/A		41310					
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative	
	S16T029451	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-9-BLANK-EP-A	CHILL -4C	
	S16T029452	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-10-BLANK-EP-B	CHILL -4C	
	S16T029453	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-9-BLANK-19-A	CHILL -4C	
	S16T029454	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-10-BLANK-20-B	CHILL -4C	
	S16T029455	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-9-EP-A-PR2-A	CHILL -4C	
	S16T029456	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-10-EP-A-PR2-B	CHILL -4C	
	S16T029457	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-9-EP-B-PR2-A	CHILL -4C	
	S16T029458	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-10-EP-B-PR2-B	CHILL -4C	
	S16T029459	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-9-EP-C-PR2-A	CHILL -4C	
	S16T029460	VA 09/10/16		CHARCOAL TOBE	1,3-Butadiene 16-08068-10-EP-C-PR2-B	CHILL -4C	
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No							
SPECIAL INSTRUCTIONS Send Results to Carl W. Royal, IV, Carl W. Royal, Jr., gov, and Greg Moore, gregory_5_moore@t.com for email. Refueling Contract # 55502. WASTE CONTRACT # 1024. WDG# 1024 CHILL BELON -4 C							
Requisitioned By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Sharon Walker	Mr. Mel	9/14/16	0900	JA Gradisher	Julie Gradisher	9/14/16	0900
Requisitioned By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
JA Gradisher	JA Gradisher	9/14/16	1300	WRBS	WRBS	9/14/16	0900
Requisitioned By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
WRBS	WRBS	9/14/16	1300	WRBS	WRBS	9/14/16	0900
Requisitioned By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
WRBS	WRBS	9/14/16	1300	WRBS	WRBS	9/14/16	0900
Material							
S	= Soil	DL	= Drum Liquids	SE	= Sediment	T	= Tissue
SO	= Solid	VA	= Vapor	SL	= Sludge	L	= Liquid
WV	= Water	V	= Vegetation	O	= Oil	VA	= Vapor
A	= Air	X	= Other	DS	= Drum Solids		
Disposal Method (e.g., Return to customer, per lab procedures or in process)							
Disposed By Fred Rajabi 09/12/16 1600							

A-6005-862 (03/05)

Assembler S/A		C.O.C. No. 20162745				
Collector JONES		Page 4 of 4				
SAP No. S/A		Telephone No. 373-6161 MSIN 16-05 FAX 372-1678				
Project Title CHARCOAL EVALUATION		Purchase Order/Charge Code 20162745				
Shipped To (Lab) ACS		Line Chart No. MS-033 Temp. ON TOC				
Protocol S/A		Bill of Lading/IRI No. 772 2770 404728				
		Parts and Return No. 41310				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
5167029481	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-9-20-D-PRT-A	CHILL -4C
5167029482	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-10-20-D-PRT-B	CHILL -4C
5167029483	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-9-20-E-PRT-A	CHILL -4C
5167029484	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-10-20-E-PRT-B	CHILL -4C
5167029485	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-9-20-F-PRT-A	CHILL -4C
5167029486	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-10-20-F-PRT-B	CHILL -4C
5167029487	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-9-20-G-PRT-A	CHILL -4C
5167029488	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-10-20-G-PRT-B	CHILL -4C
5167029489	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-9-20-H-PRT-A	CHILL -4C
5167029490	VA	09/10/16		CHARCOAL TUBE	1,3-Butadiene 16-08068-10-20-H-PRT-B	CHILL -4C
POSSIBLE SAMPLE HAZARDS/REMARKS (list all known values) MSDS <input type="radio"/> Yes <input checked="" type="radio"/> No Hold Time						
SPECIAL INSTRUCTIONS Send Results to Carl M. Kowald, IV. Carl M. Kowald@del.gov, and Greg Moore. Gregory_S_Moore@del.gov see SO# for email. Reference Contract # 55592 NIOSH 1024 CHILL BELOW -4 C						
Requisitioned By Stacy Walker	Print JA Gradisher	Sign M. M. M. M.	Date/Time 9/14/16	Received By WRPS	Print Fred Rejab	Sign Fred Rejab
Requisitioned By WRPS	Date/Time 9/14/16	Received By Fred Rejab	Date/Time 9/14/16	Received By Fred Rejab	Date/Time 9/14/16	Date/Time 9/14/16
Requisitioned By Fred	Date/Time 9/14/16	Received By Fred	Date/Time 9/14/16	Received By Fred	Date/Time 9/14/16	Date/Time 9/14/16
Requisitioned By Fred	Date/Time 9/14/16	Received By Fred	Date/Time 9/14/16	Received By Fred	Date/Time 9/14/16	Date/Time 9/14/16
FINAL SAMPLE DISPOSITION: Disposed By Fred Rejab Date/Time 09/21/16 1600						

A-6003-062 (03/05)



ANALYTICAL REPORT

Report Date: September 22, 2016

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

20162737

Workorder: **34-1625971**

Client Project ID: CARTRIDGE EVALUATION

Purchase Order: 55502 Rel9

Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029491	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971001				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg		Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029492	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971002				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg		Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029493	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971003				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg		Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	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 +1 801 266 9992

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1625971 - Page 1 of 16

Mon, 09/26/16 11:43 AM



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029494	Collected: 09/10/2016			
Lab ID: 1625971004	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029495	Collected: 09/10/2016			
Lab ID: 1625971005	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029496	Collected: 09/10/2016			
Lab ID: 1625971006	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029497	Collected: 09/10/2016			
Lab ID: 1625971007	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029498	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971008				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029499	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971009				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029500	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971010				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029501	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971011				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/20/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029502	Collected: 09/10/2016			
Lab ID: 1625971012	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029503	Collected: 09/10/2016			
Lab ID: 1625971013	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029504	Collected: 09/10/2016			
Lab ID: 1625971014	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029505	Collected: 09/10/2016			
Lab ID: 1625971015	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029506	Collected: 09/10/2016			
Lab ID: 1625971016	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029507	Collected: 09/10/2016			
Lab ID: 1625971017	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029508	Collected: 09/10/2016			
Lab ID: 1625971018	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029509	Collected: 09/10/2016			
Lab ID: 1625971019	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/20/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
Client Project ID: CARTRIDGE EVALUATION
Purchase Order: 55502 Rel9
Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029510	Collected: 09/10/2016			
Lab ID: 1625971020	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			
Analyzed: 09/21/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029511	Collected: 09/10/2016			
Lab ID: 1625971021	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			
Analyzed: 09/21/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	0.61	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029512	Collected: 09/10/2016			
Lab ID: 1625971022	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			
Analyzed: 09/21/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029513	Collected: 09/10/2016			
Lab ID: 1625971023	Received: 09/15/2016			
Sampling Location: CARTRIDGE EVALUATION				
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			
Analyzed: 09/21/2016				
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029514	Collected: 09/10/2016			
Lab ID: 1625971024	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	0.66	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029515	Collected: 09/10/2016			
Lab ID: 1625971025	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029516	Collected: 09/10/2016			
Lab ID: 1625971026	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029517	Collected: 09/10/2016			
Lab ID: 1625971027	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029518		Collected: 09/10/2016		
Lab ID: 1625971028	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016		
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029519		Collected: 09/10/2016		
Lab ID: 1625971029	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016		
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029520		Collected: 09/10/2016		
Lab ID: 1625971030	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016		
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029521		Collected: 09/10/2016		
Lab ID: 1625971031	Sampling Location: CARTRIDGE EVALUATION	Received: 09/15/2016		
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/21/2016		
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029522	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971032				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029523	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971033				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029524	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971034				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/21/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029525	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971035				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029526	Collected: 09/10/2016			
Lab ID: 1625971036	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/22/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	0.56	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029527	Collected: 09/10/2016			
Lab ID: 1625971037	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/22/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029528	Collected: 09/10/2016			
Lab ID: 1625971038	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/22/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: S16T029529	Collected: 09/10/2016			
Lab ID: 1625971039	Received: 09/15/2016			
Method: NIOSH 1613 Mod.		Media: SKC 226-01, Charcoal Tube 100/50mg	Analyzed: 09/22/2016	
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T029530	Sampling Location: CARTRIDGE EVALUATION			Collected: 09/10/2016
Lab ID: 1625971040				Received: 09/15/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube 100/50mg			Analyzed: 09/22/2016
Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m ³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Comments

- Workorder: 1625971
- Report was re-issued 9.26-16 because 2 of the 4 Request Forms did not scan into the combined report.
- Quality Control: NIOSH 1613 Mod. - (HBN: 176816)
 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 LCSD fail slightly low for pyridine.
- Quality Control: NIOSH 1613 Mod. - (HBN: 176950)
 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 LCSD fail slightly low for pyridine.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1613 Mod.	/S/ David Teynor 09/22/2016 12:50	/S/ Thomas J. Masolan 09/22/2016 14:29

Laboratory Contact Information

ALS Environmental
 960 W Levoy Drive
 Salt Lake City, Utah 84123

Phone: (801) 266-7700
 Email: als@lab@ALSGlobal.com
 Web: www.alsinc.com



ANALYTICAL REPORT

Workorder: **34-1625971**
 Client Project ID: CARTRIDGE EVALUATION
 Purchase Order: 55502 Rel9
 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	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bdwl/abservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/insideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.toeq.texas.gov/fieldqa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Industrial Hygiene	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing, CPSC	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	AIHA LAP LLC (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint, Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	ACCLASS (ISO 17025)	ADE-1420	http://www.aiclasscorp.com
Dietary Supplements			

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: 1625971

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: NIOSH 1613 Mod.
Batch: ISVO/3146 (HBN: 176816)
Analyzed By: David Teynor

Blank

LMB: 518626			
Analyzed: 09/20/2016 10:52			
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: 518627					LCSD: 518626				
Analyzed: 09/20/2016 11:11					Analyzed: 09/20/2016 11:31				
Dilution: 1					Dilution: 1				
Units: ug/sample					Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Pyridine	0.562	1.00	* 56.2	61.8 141.1	0.512	* 51.2	9.42	0.0 22.1	
2,4-Dimethylpyridine	0.606	1.00	60.6	51.7 130.6	0.564	56.4	7.18	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 LCSD fall slightly low for pyridine.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ David Teynor 09/22/2016 12:39	/S/ Thomas J. Masolan 09/22/2016 14:17

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
- 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



Quality Control Sample Batch Report

Analysis Information

Workorder: 1625971

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: NIOSH 1613 Mod.
Batch: ISVO/3149 (HBN: 176950)
Analyzed By: David Teynor

Blank

LMB: 518983 Analyzed: 09/21/2016 14:22 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: 518984 Analyzed: 09/21/2016 14:41 Dilution: 1 Units: ug/sample					LCSD: 518985 Analyzed: 09/21/2016 15:01 Dilution: 1 Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Pyridine	0.535	1.00	* 53.5	61.8 141.1	0.586	* 58.6	9.04	0.0 22.1	
2,4-Dimethylpyridine	0.547	1.00	54.7	51.7 130.6	0.537	53.7	1.85	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 LCSD fall slightly low for pyridine.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ David Teynor 09/22/2016 12:50	/S/ Thomas J. Masolan 09/22/2016 14:28

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
- 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



1625971

1085981

Assembler		C.O.C. No. 20162737	
N/A		Page 1 of 4	
Contact/Requester JONES		Telephone No. 373-6861	
Sample Origin N/A		MSRN 16-85 FAX 372-4978	
Project Title N/A		Purchase Order/Charge Code 300027/0300	
Shipped To (Lab) ALS		Ice Chest No. WTS-033 ON ICE	
Protocol N/A		Bill of Lading/Air Bill No. 7772 27704728	
Data Turnaround 10 DAYS		Parts and Return No. 41310	

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	816029491	VA	09/10/16	CHARCOAL TUBE 904-31	Pyridines 16-07837-11-IN-A *	N/A
	816029492	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-IN-B *	N/A
	816029493	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-IN-C *	N/A
	816029494	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-IN-D *	N/A
	816029495	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-IN-E *	N/A
	816029496	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-IN-F *	N/A
	816029497	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-IN-G *	N/A
	816029498	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-IN-H *	N/A
	816029499	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-ETF-A *	N/A
	816029500	VA	09/10/16	CHARCOAL TUBE	Pyridines 16-07837-11-ETF-B *	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS Yes No **HOLD TIME**

SPECIAL INSTRUCTIONS
Send Results to Carl Howard IV and Greg Moore
Carl W. Howard@t1.gov and Gregory S. Moore@t1.gov see SOW for email

RELEASE 9
Reference Contract # 51502

Relinquished By	Date/Time	Received By	Date/Time
DAVIDE TURNER WRPS	09/10/16 0900	JA Gradshter WRPS	09/14/16 0900
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

FEDEX

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By **CONSUMED** Date/Time **9/19/16 12:00**

A-8005-962 (03/06)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. No. 20162737 Page 2 of 4				
Assembler R/A		Telephone No. 373-6861 FAX 372-1878 MISHN 16-05				
Collector Jones		Contact/Requestor Carl Rowald IV				
SAAF No. B/A		Sample Origin CHEMLOGE EVALUATOR				
Project Title CHEMLOGE EVALUATION		Logbook Work Package No. B/A				
Shipped To (Lab) ALS		Ice Chest No. WTS-033 Temp. ON ICE				
Protocol B/A		Bill of Lading/Air Bill No. 7772 27704728				
Data Turnaround 10 DAYS		Parts and Return No. 41310				
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S1FT029501	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BTF-C	B/A
	S1FT029502	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BTF-D	B/A
	S1FT029503	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BTF-E	B/A
	S1FT029504	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BTF-F	B/A
	S1FT029505	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BTF-G	B/A
	S1FT029506	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BTF-H	B/A
	S1FT029507	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BASE-ZFF	B/A
	S1FT029508	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BASE-1B	B/A
	S1FT029509	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BLANK1	B/A
	S1FT029510	VA	09/10/16	CHEMCOAL TUBE	Pyridines 16-07837-11-BLANK2	B/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 Rowald IV and Greg Moore Carl W Rowald@crl.gov and Gregory_S_Moore@crl.gov see 30W for email						
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
<i>Dianne Tucker</i>	<i>Dianne Tucker</i>	<i>Dianne Tucker</i>	9/16/16 0900	<i>Juli Cochran</i>	<i>Juli Cochran</i>	9/16/16 0900
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
<i>WRPS</i>	<i>WRPS</i>	<i>Juli Cochran</i>	9/16/16 1400	<i>ALUMINA, EDWARDS</i>	<i>ALUMINA, EDWARDS</i>	9/16/16 12:00
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign
<i>WRPS</i>	<i>WRPS</i>	<i>Juli Cochran</i>	9/16/16 1400	<i>ALUMINA, EDWARDS</i>	<i>ALUMINA, EDWARDS</i>	9/16/16 12:00
Disposal Method (e.g., Return to customer, per lab procedure, used to recover)						
PT						
Disposed By CONSUMED						
Date/Time 9/19/16 12:00						

A-6003-962 (03/05)

Assembler		C.O.C. No.					
N/A		20162737					
Collector		Page					
JOSS		3 of 4					
SAF No.		Telephone No.					
N/A		313-6861					
Project Title		Purchase Order/Change Code					
CAUTION: EVALUATION		2102/PC10					
Shipped To (Lab)		Ice Chest No.					
ALS		WTS-033					
Protocol		Temp.					
N/A		7772 2770 4729					
Sample No.		Parts and Return No.					
S167023511		41310					
Contact/Requestor CARL HOWARD IV Telephone No. 313-6861 FAX 313-1878 Sample Origin CHARCOAL TUBE Logbook Work Package No. N/A Method of Shipment Data Turnaround 10 DAYS							
Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative	
S167023511	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-A . . .	N/A	
S167023512	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-B . . .	N/A	
S167023513	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-C . . .	N/A	
S167023514	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-D . . .	N/A	
S167023515	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-E . . .	N/A	
S167023516	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-F . . .	N/A	
S167023517	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-G . . .	N/A	
S167023518	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-H . . .	N/A	
S167023519	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-I . . .	N/A	
S167023520	VA	09/10/16		CHARCOAL TUBE	Pyridines 16-28068-11-2B-J . . .	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 IV and Greg Moore Carl W. Howard@tri.gov and Gregory_S_Moore@tri.gov see SW for email RELEASE 9 Reference: CONTACT # 55502							
Retinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dr. J. T. Fisher			0900	JA Gradisher			0900
WRPS			1416	WRPS			1416
Retinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
WRPS			1416	WRPS			1416
Retinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
WRPS			1416	WRPS			1416
Retinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
WRPS			1416	WRPS			1416
Disposal Method (e.g., Return to customer, per lab procedure, used in process) DISPOSED Disposed By CONSUMED Date/Time 9/16/16 12:00							

A-6003-992 (03/05)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162737
Page 4 of 4

Collector JONES S/NF No. R/A	Contact/Requestor CARL HOWARD IV Sample Origin CARTRIDGE EVALUATOR Logbook/Work Package No. R/A Method of Shipment R/A Data Turnaround 10 DAYS	Telephone No. 313-6861 MISDN 16-05 FAX 313-1978 Purchase Order/Change Code 200087/0836 See Chest No. Bill of Lading/air Bill No. 7772 2710 4728 Parts and Return No. 41310	Project Title CARTRIDGE EVALUATION Shipped To (Lab) ALS Protocol R/A	C.O.C. No. 20162737 Page 4 of 4 Temp. ON ICE Bill of Lading/air Bill No. 7772 2710 4728 Parts and Return No. 41310
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Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	S16T029521	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-EFF-C	B/A
	S16T029522	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-EFF-D	B/A
	S16T029523	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-EFF-E	B/A
	S16T029524	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-EFF-F	B/A
	S16T029525	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-EFF-G	B/A
	S16T029526	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-EFF-H	B/A
	S16T029527	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-BLANK-EFF	B/A
	S16T029528	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-BLANK-IR	B/A
	S16T029529	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-BLANK-EFF	B/A
	S16T029530	VA 09/10/16		CHARCOAL TUBE	Pyridines 16-08066-11-BLANK-IR	B/A

POSSIBLE SAMPLE HAZARD/REMARKS (List all known wastes) MSDS Yes No

SPECIAL INSTRUCTIONS

Send Results to Carl Howard IV and Greg Moore
Carl_M_Howard@ci.gov and Gregory_S_Moore@ci.gov see SOW for email

RELEASE 9
Reference CONTACT # 51502

Relinquished By <i>Dianna Turner</i>	Print WRPS	Sign <i>Dianna Turner</i>	Date/Time 9/14/16 0900	Received By WRPS	Sign <i>Julie Gealoch</i>	Date/Time 9/14/16 0900
Relinquished By WRPS	Print WRPS	Sign <i>Julie Gealoch</i>	Date/Time 9/14/16 1400	Received By <i>WRPS</i>	Sign <i>Julie Gealoch</i>	Date/Time 9/14/16 1400
Relinquished By <i>WRPS</i>	Print WRPS	Sign <i>Julie Gealoch</i>	Date/Time 9/14/16 1400	Received By <i>WRPS</i>	Sign <i>Julie Gealoch</i>	Date/Time 9/14/16 1400

FEDEX

Relinquished By
WRPS

Received By
WRPS

Date/Time
9/14/16 1400

Date/Time
9/14/16 1400

MATERIAL

S = Soil DL = Drum Liquids
SE = Sediment T = Tissue
SO = Solid WI = Waste
SL = Sludge L = Liquid
SW = Water V = Vegetation
O = Oil VA = Vapor
A = Air X = Other
DS = Drum Solids

Disposal Method (e.g., Return to outliner, per lab procedure, used in process)

Disposed By
WRPS

Date/Time
9/14/16 12:00

A-6003-962 (03/05)



RJ LeeGroup, Inc. | Columbia Basin Analytical Laboratories
 2710 North 20th Avenue, Pasco WA 99301
 Tel: (509) 545-4989 | Fax: (509) 544-6030

Carl Howald IV

11/18/16

Washington River Protection Solutions, LLC
 P.O. Box 850 MSIN H6-16
 Richland, WA 99352

Contract No.: 55503 R5

Project: Cartridge Evaluation

Subject: Nitrosamines Analysis Report, Group Number 20162738

Enclosed is the final report for group 20162738 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20162738 has been assigned a Columbia Basin Analytical Laboratories login order number of W609056. This report consists of a summary report of the samples, a laboratory report of each nitrosamine, 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 40 samples on 09/14/16 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.

This report is being issued upon request of the client for presentation of data in a newly agreed upon format. The data reported herein supersedes previously reported data for this work order, W609056.

**- 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.

Results

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

SampleName	RJLG ID	Analyzed	Analyte	Results	RL	Units	Flags
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube	
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube	
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube	
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube	
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	
16-07837-12-BASE-EFF	W609056-01	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	
16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	

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16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-BASE-IN	W609056-02	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-BLANK1	W609056-03	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-BLANK2	W609056-04	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-A	W609056-05	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-B	W609056-06	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-C	W609056-07	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube

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16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-D	W609056-08	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-E	W609056-09	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-F	W609056-10	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-G	W609056-11	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube
16-07837-12-EFF-H	W609056-12	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube
16-07837-12-IN-A	W609056-13	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube
16-07837-12-IN-A	W609056-13	10/05/16	N-Nitrosodimethylamine	1.481	0.152	µg/tube D
16-07837-12-IN-A	W609056-13	10/02/16	N-Nitrosodi-n-butylamine	0.088	0.019	µg/tube
16-07837-12-IN-A	W609056-13	10/02/16	N-Nitrosodi-n-propylamine	0.026	0.020	µg/tube X
16-07837-12-IN-A	W609056-13	10/02/16	N-Nitrosomethylethylamine	0.034	0.021	µg/tube
16-07837-12-IN-A	W609056-13	10/02/16	N-Nitrosomorpholine	0.067	0.021	µg/tube
16-07837-12-IN-A	W609056-13	10/02/16	N-Nitrosopiperidine	0.024	0.021	µg/tube
16-07837-12-IN-A	W609056-13	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube *
16-07837-12-IN-B	W609056-14	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube

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16-07837-12-IN-B	W609056-14	10/04/16	N-Nitrosodimethylamine	1.742	0.152	µg/tube	D
16-07837-12-IN-B	W609056-14	10/02/16	N-Nitrosodi-n-butylamine	0.102	0.019	µg/tube	
16-07837-12-IN-B	W609056-14	10/02/16	N-Nitrosodi-n-propylamine	0.022	0.020	µg/tube	X
16-07837-12-IN-B	W609056-14	10/02/16	N-Nitrosomethylethylamine	0.037	0.021	µg/tube	
16-07837-12-IN-B	W609056-14	10/02/16	N-Nitrosomorpholine	0.062	0.021	µg/tube	
16-07837-12-IN-B	W609056-14	10/02/16	N-Nitrosopiperidine	0.030	0.021	µg/tube	
16-07837-12-IN-B	W609056-14	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-C	W609056-15	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-C	W609056-15	10/05/16	N-Nitrosodimethylamine	1.637	0.152	µg/tube	D
16-07837-12-IN-C	W609056-15	10/02/16	N-Nitrosodi-n-butylamine	0.084	0.019	µg/tube	
16-07837-12-IN-C	W609056-15	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-07837-12-IN-C	W609056-15	10/02/16	N-Nitrosomethylethylamine	0.034	0.021	µg/tube	
16-07837-12-IN-C	W609056-15	10/02/16	N-Nitrosomorpholine	0.054	0.021	µg/tube	
16-07837-12-IN-C	W609056-15	10/02/16	N-Nitrosopiperidine	0.023	0.021	µg/tube	
16-07837-12-IN-C	W609056-15	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-D	W609056-16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-D	W609056-16	10/04/16	N-Nitrosodimethylamine	1.417	0.152	µg/tube	D
16-07837-12-IN-D	W609056-16	10/02/16	N-Nitrosodi-n-butylamine	0.067	0.019	µg/tube	
16-07837-12-IN-D	W609056-16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-07837-12-IN-D	W609056-16	10/02/16	N-Nitrosomethylethylamine	0.022	0.021	µg/tube	X
16-07837-12-IN-D	W609056-16	10/02/16	N-Nitrosomorpholine	0.060	0.021	µg/tube	
16-07837-12-IN-D	W609056-16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-D	W609056-16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-E	W609056-17	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-E	W609056-17	10/04/16	N-Nitrosodimethylamine	1.164	0.152	µg/tube	D
16-07837-12-IN-E	W609056-17	10/02/16	N-Nitrosodi-n-butylamine	0.075	0.019	µg/tube	
16-07837-12-IN-E	W609056-17	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-07837-12-IN-E	W609056-17	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-E	W609056-17	10/02/16	N-Nitrosomorpholine	0.052	0.021	µg/tube	
16-07837-12-IN-E	W609056-17	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-E	W609056-17	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-F	W609056-18	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-F	W609056-18	10/04/16	N-Nitrosodimethylamine	1.334	0.152	µg/tube	D
16-07837-12-IN-F	W609056-18	10/02/16	N-Nitrosodi-n-butylamine	0.066	0.019	µg/tube	
16-07837-12-IN-F	W609056-18	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-07837-12-IN-F	W609056-18	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-F	W609056-18	10/02/16	N-Nitrosomorpholine	0.031	0.021	µg/tube	
16-07837-12-IN-F	W609056-18	10/02/16	N-Nitrosopiperidine	0.025	0.021	µg/tube	X
16-07837-12-IN-F	W609056-18	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-G	W609056-19	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-G	W609056-19	10/05/16	N-Nitrosodimethylamine	1.121	0.152	µg/tube	D
16-07837-12-IN-G	W609056-19	10/02/16	N-Nitrosodi-n-butylamine	0.061	0.019	µg/tube	
16-07837-12-IN-G	W609056-19	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-07837-12-IN-G	W609056-19	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-G	W609056-19	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube	*
16-07837-12-IN-G	W609056-19	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-G	W609056-19	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-H	W609056-20	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	µg/tube	

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16-07837-12-IN-H	W609056-20	10/04/16	N-Nitrosodimethylamine	0.900	0.152	µg/tube	D
16-07837-12-IN-H	W609056-20	10/02/16	N-Nitrosodi-n-butylamine	0.043	0.019	µg/tube	X
16-07837-12-IN-H	W609056-20	10/02/16	N-Nitrosodi-n-propylamine	0.025	0.020	µg/tube	X
16-07837-12-IN-H	W609056-20	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube	
16-07837-12-IN-H	W609056-20	10/02/16	N-Nitrosomorpholine	<0.021	0.021	µg/tube	*
16-07837-12-IN-H	W609056-20	10/02/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	*
16-07837-12-IN-H	W609056-20	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	µg/tube	*
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube	
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube	
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube	
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube	
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	
16-08068-12-BASE-EFF	W609056-21	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube	*
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube	*
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosodi-n-propylamine	0.027	0.020	µg/tube	X
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube	
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube	*
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	
16-08068-12-BASE-IN	W609056-22	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-EFF	W609056-23	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	
16-08068-12-BLANK-IN	W609056-24	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	
16-08068-12-EFF-A	W609056-25	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	
16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	

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16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube
16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube
16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube
16-08068-12-EFF-B	W609056-26	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube
16-08068-12-EFF-C	W609056-27	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube
16-08068-12-EFF-D	W609056-28	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube
16-08068-12-EFF-E	W609056-29	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube
16-08068-12-EFF-F	W609056-30	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube
16-08068-12-EFF-G	W609056-31	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube
16-08068-12-EFF-H	W609056-32	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube

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16-08068-12-EFF-H	W609056-32	10/05/16	N-Nitrosodimethylamine	1.333	0.156	µg/tube	D
16-08068-12-EFF-H	W609056-32	10/04/16	N-Nitrosodi-n-butylamine	0.091	0.020	µg/tube	
16-08068-12-EFF-H	W609056-32	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-EFF-H	W609056-32	10/04/16	N-Nitrosomethylethylamine	0.019	0.019	µg/tube	X
16-08068-12-EFF-H	W609056-32	10/04/16	N-Nitrosomorpholine	0.051	0.020	µg/tube	
16-08068-12-EFF-H	W609056-32	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	*
16-08068-12-EFF-H	W609056-32	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosodimethylamine	0.991	0.156	µg/tube	D
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosodi-n-butylamine	0.221	0.020	µg/tube	
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosodi-n-propylamine	0.042	0.020	µg/tube	X
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube	
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosomorpholine	0.090	0.020	µg/tube	
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosopiperidine	0.045	0.020	µg/tube	
16-08068-12-IN-A	W609056-33	10/04/16	N-Nitrosopyrrolidine	0.026	0.020	µg/tube	
16-08068-12-IN-B	W609056-34	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-B	W609056-34	10/05/16	N-Nitrosodimethylamine	1.511	0.156	µg/tube	D
16-08068-12-IN-B	W609056-34	10/04/16	N-Nitrosodi-n-butylamine	0.175	0.020	µg/tube	
16-08068-12-IN-B	W609056-34	10/04/16	N-Nitrosodi-n-propylamine	0.026	0.020	µg/tube	X
16-08068-12-IN-B	W609056-34	10/04/16	N-Nitrosomethylethylamine	0.034	0.019	µg/tube	
16-08068-12-IN-B	W609056-34	10/04/16	N-Nitrosomorpholine	0.058	0.020	µg/tube	
16-08068-12-IN-B	W609056-34	10/04/16	N-Nitrosopiperidine	0.023	0.020	µg/tube	
16-08068-12-IN-B	W609056-34	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosodimethylamine	1.845	0.156	µg/tube	D
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosodi-n-butylamine	0.190	0.020	µg/tube	
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosodi-n-propylamine	0.030	0.020	µg/tube	X
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosomethylethylamine	0.035	0.019	µg/tube	
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosomorpholine	0.055	0.020	µg/tube	
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosopiperidine	0.040	0.020	µg/tube	
16-08068-12-IN-C	W609056-35	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-D	W609056-36	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-D	W609056-36	10/05/16	N-Nitrosodimethylamine	1.767	0.156	µg/tube	D
16-08068-12-IN-D	W609056-36	10/04/16	N-Nitrosodi-n-butylamine	0.131	0.020	µg/tube	
16-08068-12-IN-D	W609056-36	10/04/16	N-Nitrosodi-n-propylamine	0.039	0.020	µg/tube	X
16-08068-12-IN-D	W609056-36	10/04/16	N-Nitrosomethylethylamine	0.035	0.019	µg/tube	
16-08068-12-IN-D	W609056-36	10/04/16	N-Nitrosomorpholine	0.062	0.020	µg/tube	
16-08068-12-IN-D	W609056-36	10/04/16	N-Nitrosopiperidine	0.023	0.020	µg/tube	
16-08068-12-IN-D	W609056-36	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-E	W609056-37	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-E	W609056-37	10/05/16	N-Nitrosodimethylamine	1.593	0.156	µg/tube	D
16-08068-12-IN-E	W609056-37	10/04/16	N-Nitrosodi-n-butylamine	0.098	0.020	µg/tube	
16-08068-12-IN-E	W609056-37	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-E	W609056-37	10/04/16	N-Nitrosomethylethylamine	0.030	0.019	µg/tube	
16-08068-12-IN-E	W609056-37	10/04/16	N-Nitrosomorpholine	0.035	0.020	µg/tube	
16-08068-12-IN-E	W609056-37	10/04/16	N-Nitrosopiperidine	0.021	0.020	µg/tube	
16-08068-12-IN-E	W609056-37	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-F	W609056-38	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	

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16-08068-12-IN-F	W609056-38	10/05/16	N-Nitrosodimethylamine	1.275	0.156	µg/tube	D
16-08068-12-IN-F	W609056-38	10/04/16	N-Nitrosodi-n-butylamine	0.076	0.020	µg/tube	
16-08068-12-IN-F	W609056-38	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-F	W609056-38	10/04/16	N-Nitrosomethylethylamine	0.024	0.019	µg/tube	
16-08068-12-IN-F	W609056-38	10/04/16	N-Nitrosomorpholine	0.036	0.020	µg/tube	
16-08068-12-IN-F	W609056-38	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-F	W609056-38	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-G	W609056-39	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-G	W609056-39	10/05/16	N-Nitrosodimethylamine	1.198	0.156	µg/tube	D
16-08068-12-IN-G	W609056-39	10/04/16	N-Nitrosodi-n-butylamine	0.080	0.020	µg/tube	
16-08068-12-IN-G	W609056-39	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-G	W609056-39	10/04/16	N-Nitrosomethylethylamine	0.019	0.019	µg/tube	X
16-08068-12-IN-G	W609056-39	10/04/16	N-Nitrosomorpholine	0.031	0.020	µg/tube	
16-08068-12-IN-G	W609056-39	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-G	W609056-39	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	*
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	µg/tube	
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	µg/tube	
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosomorpholine	<0.020	0.020	µg/tube	
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosopiperidine	<0.020	0.020	µg/tube	
16-08068-12-IN-H	W609056-40	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	µg/tube	

Recovery Failures in the ICV, CCVs, LCSs, RL and MRL

There were no recovery failures in the CCVs, ICV, LCSs, MRL.

RSD Failures in the LCSs

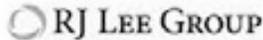
There were no RSD failures between the laboratory control samples.

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.

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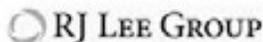
Scientist II DeNomy Dage

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:

 11/18/16

Scientist I Fernanda Pincheira



Carl Howald IV
 Washington River Protection
 Solutions, LLC
 P.O. Box 850 MSIN H6-16
 Richland, WA 99352
 Client Project:
 Cartridge Evaluation

Laboratory Report
 NIOSH 2522
 Air/Emissions on GC/TEA Analyzer
 Summary Table

RJ Lee Group No.: W609056
 Samples Received: 09/14/16
 Report Date: 11/18/16
 COC No.: 20162738
 Extraction Date: 09/21/16

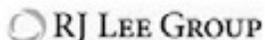
Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-07837-12-BASE-EFF S16T029531	W609056-01	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	
16-07837-12-BASE-IN S16T029532	W609056-02	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	

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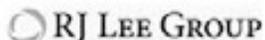
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16-07837-12-BLANK1 S16T029533	W609056-03	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
16-07837-12-BLANK2 S16T029534	W609056-04	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
16-07837-12-EFF-A S16T029535	W609056-05	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	

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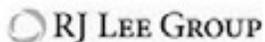
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16-07837-12-EFF-B S16T029536	W609056-06	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	
16-07837-12-EFF-C S16T029537	W609056-07	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	
16-07837-12-EFF-D S16T029538	W609056-08	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	

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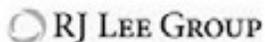
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		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	
16-07837-12-EFF-F S16T029540	W609056-10	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	
16-07837-12-EFF-G S16T029541	W609056-11	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	

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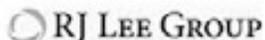
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16-07837-12-EFF-H S16T020642	W609056-12	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	<0.019	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	
16-07837-12-IN-A S16T020643	W609056-13	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.072	0.018	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.409	0.152	D
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.090	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	0.026	0.020	X
		09/10/16	10/02/16	N-Nitrosomethylethylamine	0.034	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	0.067	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	0.024	0.021	
09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*		

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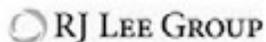
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16-07837-12-IN-B S16T029544	W609056-14	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.641	0.152	D
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.100	0.018	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.102	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	0.022	0.020	X
		09/10/16	10/02/16	N-Nitrosomethylethylamine	0.037	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	0.062	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	0.030	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*
16-07837-12-IN-C S16T029545	W609056-15	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.110	0.018	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.527	0.152	D
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.084	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	0.034	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	0.054	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	0.023	0.021	
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*

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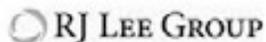
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16-07837-12-IN-D S16T029546	W609056-16	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.302	0.152	D
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.115	0.018	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.067	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	0.022	0.021	X
		09/10/16	10/02/16	N-Nitrosomorpholine	0.060	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	*
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*
16-07837-12-IN-E S16T029547	W609056-17	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.076	0.152	D
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.068	0.018	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.075	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	0.052	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	*
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*

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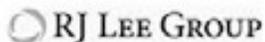
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16-07837-12-IN-F S16T029548	W609056-18	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.217	0.152	D
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.116	0.018	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.066	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	0.031	0.021	
		09/10/16	10/02/16	N-Nitrosopiperidine	0.025	0.021	X
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*
16-07837-12-IN-G S16T029549	W609056-19	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.075	0.018	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.047	0.152	D
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.061	0.019	
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	*
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	*
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*

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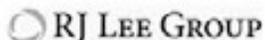
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16-07837-12-IN-H S16T029550	W609056-20	09/10/16	10/02/16	N-Nitrosodiethylamine	<0.021	0.021	
		09/10/16	10/05/16	N-Nitrosodimethylamine	0.835	0.152	D
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.066	0.018	
		09/10/16	10/02/16	N-Nitrosodi-n-butylamine	0.043	0.019	X
		09/10/16	10/02/16	N-Nitrosodi-n-propylamine	0.025	0.020	X
		09/10/16	10/02/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/10/16	10/02/16	N-Nitrosomorpholine	<0.021	0.021	*
		09/10/16	10/02/16	N-Nitrosopiperidine	<0.021	0.021	*
		09/10/16	10/02/16	N-Nitrosopyrrolidine	<0.021	0.021	*
16-08068-12-BASE-EFF S16T029551	W609056-21	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	

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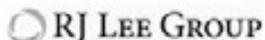
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		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	*
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	0.027	0.020	X
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	*
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
16-08068-12-BLANK-EFF S16T029553	W609056-23	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
16-08068-12-BLANK-IN S16T029554	W609056-24	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020			

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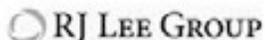
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		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
16-08068-12-EFF-B S16T029556	W609056-26	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
16-08068-12-EFF-C S16T029557	W609056-27	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020			

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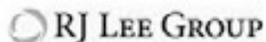
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		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
16-08068-12-EFF-E S16T029559	W609056-29	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
16-08068-12-EFF-F S16T029560	W609056-30	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020			

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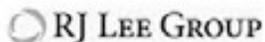
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16-08068-12-EFF-G S16T029561	W609056-31	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	
16-08068-12-EFF-H S16T029562	W609056-32	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.101	0.018	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.232	0.156	D
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.091	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	0.019	0.019	X
		09/10/16	10/04/16	N-Nitrosomorpholine	0.051	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	*
09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	*		

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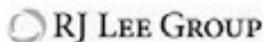
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16-08068-12-IN-A S16T029563	W609056-33	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/05/16	N-Nitrosodimethylamine	0.910	0.156	D
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.091	0.018	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.221	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	0.042	0.020	X
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	0.090	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	0.045	0.020	
		09/10/16	10/04/16	N-Nitrosopyrrolidine	0.026	0.020	
16-08068-12-IN-B S16T029564	W609056-34	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.003	0.018	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.427	0.156	D
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.175	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	0.026	0.020	X
		09/10/16	10/04/16	N-Nitrosomethylethylamine	0.034	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	0.058	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	0.023	0.020	
		09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	*

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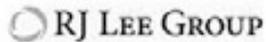
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		09/10/16	10/05/16	N-Nitrosodimethylamine	1.572	0.156	D
		09/10/16	10/04/16	N-Nitrosodimethylamine	0.073	0.018	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.100	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	0.030	0.020	X
		09/10/16	10/04/16	N-Nitrosomethylethylamine	0.035	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	0.055	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	0.040	0.020	
		09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	*
16-08068-12-IN-D 516T029566	W609056-36	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.690	0.156	D
		09/10/16	10/05/16	N-Nitrosodimethylamine	0.076	0.018	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.131	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	0.039	0.020	X
		09/10/16	10/04/16	N-Nitrosomethylethylamine	0.035	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	0.062	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	0.023	0.020	
		09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	*

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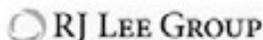
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		09/10/16	10/05/16	N-Nitrosodimethylamine	0.097	0.018	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.496	0.156	D
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.098	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	0.030	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	0.035	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	0.021	0.020	
16-08068-12-IN-F S16T029568	W609056-38	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.161	0.156	D
		09/10/16	10/05/16	N-Nitrosodimethylamine	0.094	0.018	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.076	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	0.024	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	0.036	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	*
09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	*		

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08068-12-IN-G 516T020569	W609056-30	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/05/16	N-Nitrosodimethylamine	1.119	0.156	D
		09/10/16	10/05/16	N-Nitrosodimethylamine	0.079	0.018	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	0.080	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	0.019	0.019	X
		09/10/16	10/04/16	N-Nitrosomorpholine	0.031	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	*
09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	*		
16-08068-12-IN-H 516T020570	W609056-40	09/10/16	10/04/16	N-Nitrosodiethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodimethylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-butylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosodi-n-propylamine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosomethylethylamine	<0.019	0.019	
		09/10/16	10/04/16	N-Nitrosomorpholine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopiperidine	<0.020	0.020	
		09/10/16	10/04/16	N-Nitrosopyrrolidine	<0.020	0.020	

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, not 100% or 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

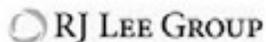
ND = Not Detected

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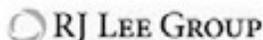
These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitations of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing 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 ORIELAP Lab Code 4262 ABIA LAP, LLC Lab ID 170656 EPA ID W60193 and WA DOE Lab ID C538. 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. Quality control data is available upon request.

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Carl Howald IV
 Washington River Protection
 Solutions, LLC
 P.O. Box 880 MSIN H6-16
 Richland, WA 99352

Quality Control

NIOSH 2522

RJ Lee Group No.: W609056
 Samples Received: 09/14/16
 Report Date: 11/18/16
 COC No.: 20162738
 Extraction Date: 09/21/16

Client Project:
 Cartridge Evaluation

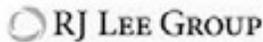
Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	10/01/16	0.200	0.183	0.97	0.188	93.9	5.30	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/04/16	0.200	0.197	1.02	0.194	96.8	2.96	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/04/16	0.200	0.180	0.88	0.204	102	2.12	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/05/16	0.200	0.192	1.00	0.192	95.6	4.91	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/05/16	0.200	0.200	1.02	0.197	98.3	2.63	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/01/16	0.200	0.173	0.92	0.188	94.3	4.96	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/04/16	0.200	0.189	0.99	0.191	95.6	4.18	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/04/16	0.200	0.183	0.89	0.206	103	3.01	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/05/16	0.200	0.184	0.99	0.186	93.2	5.87	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/05/16	0.200	0.196	1.01	0.194	97.1	2.91	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/01/16	0.200	0.195	1.03	0.190	94.7	4.78	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/04/16	0.200	0.198	1.01	0.197	98.4	2.12	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/04/16	0.200	0.172	0.84	0.204	102	2.69	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/05/16	0.200	0.185	0.96	0.192	96.0	3.95	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/05/16	0.200	0.192	0.98	0.196	97.9	1.87	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/01/16	0.200	0.190	1.00	0.190	95.2	4.14	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/04/16	0.200	0.198	1.02	0.195	97.3	2.48	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/04/16	0.200	0.173	0.84	0.205	102	2.69	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/05/16	0.200	0.188	0.98	0.193	96.4	4.11	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/05/16	0.200	0.192	0.98	0.196	98.0	2.49	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/01/16	0.200	0.184	0.97	0.190	94.5	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/04/16	0.200	0.197	1.03	0.192	95.9	3.80	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/04/16	0.200	0.181	0.88	0.206	103	2.65	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/05/16	0.200	0.191	0.99	0.192	95.6	4.23	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/05/16	0.200	0.196	1.02	0.193	96.6	3.64	
N-Nitrosomorpholine	59-89-2	LCS-1	10/01/16	0.200	0.184	0.97	0.190	95.1	4.25	
N-Nitrosomorpholine	59-89-2	LCS-1	10/04/16	0.200	0.199	1.01	0.197	98.2	2.97	
N-Nitrosomorpholine	59-89-2	LCS-1	10/04/16	0.200	0.178	0.86	0.207	103	2.57	
N-Nitrosomorpholine	59-89-2	LCS-1	10/05/16	0.200	0.186	0.98	0.190	94.7	4.64	
N-Nitrosomorpholine	59-89-2	LCS-1	10/05/16	0.200	0.191	0.98	0.196	97.5	2.36	
N-Nitrosopiperidine	100-75-4	LCS-1	10/01/16	0.200	0.183	0.96	0.191	95.4	3.98	
N-Nitrosopiperidine	100-75-4	LCS-1	10/04/16	0.200	0.193	0.99	0.195	97.4	2.40	

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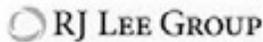
Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosopiperidine	100-75-4	LCS-1	10/04/16	0.200	0.175	0.84	0.207	103	3.45	
N-Nitrosopiperidine	100-75-4	LCS-1	10/05/16	0.200	0.182	0.95	0.192	96.0	4.31	
N-Nitrosopiperidine	100-75-4	LCS-1	10/05/16	0.200	0.190	0.96	0.197	98.4	2.38	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/01/16	0.200	0.173	0.93	0.186	92.5	6.53	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/04/16	0.200	0.188	0.98	0.191	95.7	3.98	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/04/16	0.200	0.171	0.82	0.208	104	3.63	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/05/16	0.200	0.176	0.93	0.189	94.3	5.16	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/05/16	0.200	0.181	0.94	0.193	96.4	3.77	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/01/16	0.200	0.200	0.97	0.206	103	5.30	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/04/16	0.200	0.209	1.02	0.206	103	2.96	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/04/16	0.200	0.177	0.88	0.201	100	2.12	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/05/16	0.200	0.199	1.00	0.199	99.2	4.91	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/05/16	0.200	0.210	1.02	0.207	103	2.63	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/01/16	0.200	0.190	0.92	0.207	104	4.96	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/04/16	0.200	0.206	0.99	0.208	104	4.18	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/04/16	0.200	0.178	0.89	0.200	100	3.01	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/05/16	0.200	0.204	0.99	0.207	103	5.87	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/05/16	0.200	0.208	1.01	0.206	103	2.91	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/01/16	0.200	0.209	1.03	0.203	101	4.78	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/04/16	0.200	0.207	1.01	0.206	102	2.12	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/04/16	0.200	0.170	0.84	0.202	101	2.69	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/05/16	0.200	0.193	0.96	0.201	100	3.95	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/05/16	0.200	0.200	0.98	0.204	102	1.87	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/01/16	0.200	0.204	1.00	0.204	102	4.14	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/04/16	0.200	0.208	1.02	0.205	102	2.48	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/04/16	0.200	0.170	0.84	0.202	101	2.69	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/05/16	0.200	0.194	0.98	0.199	99.2	4.11	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/05/16	0.200	0.201	0.98	0.206	103	2.49	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/01/16	0.200	0.197	0.97	0.203	101	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/04/16	0.200	0.213	1.03	0.207	103	3.80	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/04/16	0.200	0.176	0.88	0.201	100.0	2.65	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/05/16	0.200	0.200	0.99	0.201	100	4.23	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/05/16	0.200	0.211	1.02	0.208	104	3.64	
N-Nitrosomorpholine	59-89-2	LCS-2	10/01/16	0.200	0.199	0.97	0.206	103	4.25	
N-Nitrosomorpholine	59-89-2	LCS-2	10/04/16	0.200	0.210	1.01	0.208	103	2.97	
N-Nitrosomorpholine	59-89-2	LCS-2	10/04/16	0.200	0.171	0.86	0.198	98.9	2.57	
N-Nitrosomorpholine	59-89-2	LCS-2	10/05/16	0.200	0.200	0.98	0.204	102	4.64	
N-Nitrosomorpholine	59-89-2	LCS-2	10/05/16	0.200	0.200	0.98	0.205	102	2.36	
N-Nitrosopiperidine	100-75-4	LCS-2	10/01/16	0.200	0.196	0.96	0.205	102	3.98	

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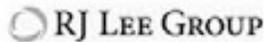
Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosopiperidine	100-75-4	LCS-2	10/04/16	0.200	0.202	0.99	0.204	102	2.40	
N-Nitrosopiperidine	100-75-4	LCS-2	10/04/16	0.200	0.169	0.84	0.200	99.9	3.45	
N-Nitrosopiperidine	100-75-4	LCS-2	10/05/16	0.200	0.189	0.95	0.199	99.5	4.31	
N-Nitrosopiperidine	100-75-4	LCS-2	10/05/16	0.200	0.198	0.96	0.206	103	2.38	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/01/16	0.200	0.192	0.93	0.206	103	6.83	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/04/16	0.200	0.204	0.98	0.207	104	3.98	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/04/16	0.200	0.164	0.82	0.199	99.4	3.63	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/05/16	0.200	0.189	0.93	0.203	101	5.16	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/05/16	0.200	0.195	0.94	0.208	104	3.77	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/02/16	0.200	0.201	0.97	0.207	103	5.30	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/04/16	0.200	0.205	1.02	0.202	101	2.96	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/04/16	0.200	0.172	0.88	0.195	97.7	2.12	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/05/16	0.200	0.211	1.00	0.211	105	4.91	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/05/16	0.200	0.201	1.02	0.198	98.6	2.63	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/02/16	0.200	0.188	0.92	0.205	102	4.96	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/04/16	0.200	0.199	0.99	0.201	100	4.18	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/04/16	0.200	0.172	0.89	0.194	96.9	3.01	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/05/16	0.200	0.205	0.99	0.208	104	5.87	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/05/16	0.200	0.202	1.01	0.200	100.0	2.91	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/02/16	0.200	0.214	1.03	0.208	104	4.78	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/04/16	0.200	0.200	1.01	0.199	99.2	2.12	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/04/16	0.200	0.184	0.84	0.195	97.0	2.69	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/05/16	0.200	0.200	0.96	0.208	104	3.95	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/05/16	0.200	0.198	0.98	0.202	100	1.87	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/02/16	0.200	0.205	1.00	0.205	103	4.14	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/04/16	0.200	0.205	1.02	0.202	101	2.48	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/04/16	0.200	0.164	0.84	0.195	97.1	2.69	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/05/16	0.200	0.204	0.98	0.209	104	4.11	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/05/16	0.200	0.194	0.98	0.198	99.2	2.49	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/02/16	0.200	0.202	0.97	0.208	104	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/04/16	0.200	0.207	1.03	0.202	101	3.80	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/04/16	0.200	0.171	0.88	0.195	97.4	2.65	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/05/16	0.200	0.207	0.99	0.208	104	4.23	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/05/16	0.200	0.203	1.02	0.200	99.6	3.64	
N-Nitrosomorpholine	59-89-2	LCS-3	10/02/16	0.200	0.198	0.97	0.205	102	4.25	
N-Nitrosomorpholine	59-89-2	LCS-3	10/04/16	0.200	0.199	1.01	0.197	98.4	2.97	
N-Nitrosomorpholine	59-89-2	LCS-3	10/04/16	0.200	0.169	0.86	0.198	98.2	2.57	
N-Nitrosomorpholine	59-89-2	LCS-3	10/05/16	0.200	0.203	0.98	0.207	104	4.64	
N-Nitrosomorpholine	59-89-2	LCS-3	10/05/16	0.200	0.196	0.98	0.201	100	2.36	

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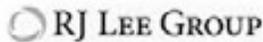
Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosopiperidine	100-75-4	LCS-3	10/02/16	0.200	0.198	0.96	0.205	102	3.98	
N-Nitrosopiperidine	100-75-4	LCS-3	10/04/16	0.200	0.199	0.99	0.201	100	2.40	
N-Nitrosopiperidine	100-75-4	LCS-3	10/04/16	0.200	0.163	0.84	0.193	96.6	3.45	
N-Nitrosopiperidine	100-75-4	LCS-3	10/05/16	0.200	0.199	0.95	0.210	105	4.31	
N-Nitrosopiperidine	100-75-4	LCS-3	10/05/16	0.200	0.191	0.96	0.198	98.9	2.38	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/02/16	0.200	0.195	0.93	0.209	105	6.53	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/04/16	0.200	0.198	0.98	0.201	101	3.98	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/04/16	0.200	0.159	0.82	0.193	96.7	3.63	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/05/16	0.200	0.194	0.93	0.209	104	5.16	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/05/16	0.200	0.187	0.94	0.200	99.7	3.77	
N-Nitrosodiethylamine	55-18-5	MB	10/02/16		0.00	0.97	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/04/16		0.00	1.02	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/04/16		0.00	0.88	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/05/16		0.00	1.00	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/05/16		0.00	1.02	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/02/16		0.00	0.92	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/04/16		0.00	0.99	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/04/16		0.00	0.89	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/05/16		0.00	0.99	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/05/16		0.00	1.01	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/02/16		0.00	1.03	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/04/16		0.00	1.01	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/04/16		0.00	0.84	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/05/16		0.00	0.96	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/05/16		0.00	0.98	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/02/16		0.00	1.00	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/04/16		0.00	1.02	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/04/16		0.00	0.84	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/05/16		0.00	0.98	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/05/16		0.00	0.98	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/02/16		0.00	0.97	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/04/16		0.00	1.03	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/04/16		0.00	0.88	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/05/16		0.00	0.99	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/05/16		0.00	1.02	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/02/16		0.00	0.97	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/04/16		0.00	1.01	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/04/16		0.00	0.86	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/05/16		0.00	0.98	0.00			

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Report Template: WRPS_Nitrosamines 2.0.rpt

Approved: 10/27/16 17:59
Report Time Stamp: 11/18/16 15:27



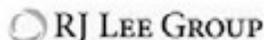
Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosomorpholine	59-89-2	MB	10/05/16		0.00	0.98	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/02/16		0.00	0.96	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/04/16		0.00	0.99	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/04/16		0.00	0.84	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/05/16		0.00	0.95	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/05/16		0.00	0.96	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/02/16		0.00	0.93	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/04/16		0.00	0.98	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/04/16		0.00	0.82	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/05/16		0.00	0.93	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/05/16		0.00	0.94	0.00			
N-Nitrosodiethylamine	55-18-5	MRL	10/02/16	0.020	0.019	0.97	0.020	98.1		
N-Nitrosodiethylamine	55-18-5	MRL	10/04/16	0.020	0.020	1.02	0.020	97.8		
N-Nitrosodiethylamine	55-18-5	MRL	10/04/16	0.020	0.021	0.88	0.024	120		
N-Nitrosodiethylamine	55-18-5	MRL	10/05/16	0.020	0.021	1.00	0.021	106		
N-Nitrosodiethylamine	55-18-5	MRL	10/05/16	0.020	0.020	1.02	0.020	99.8		
N-Nitrosodimethylamine	62-75-9	MRL	10/02/16	0.020	0.021	0.92	0.023	114		
N-Nitrosodimethylamine	62-75-9	MRL	10/04/16	0.020	0.023	0.99	0.023	116		
N-Nitrosodimethylamine	62-75-9	MRL	10/04/16	0.020	0.023	0.89	0.026	131		
N-Nitrosodimethylamine	62-75-9	MRL	10/05/16	0.020	0.022	0.99	0.022	109		
N-Nitrosodimethylamine	62-75-9	MRL	10/05/16	0.020	0.022	1.01	0.022	112		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/02/16	0.020	0.020	1.03	0.019	96.5		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/04/16	0.020	0.021	1.01	0.021	104		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/04/16	0.020	0.022	0.84	0.026	129		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/05/16	0.020	0.020	0.96	0.021	104		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/05/16	0.020	0.022	0.98	0.022	108		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/02/16	0.020	0.020	1.00	0.020	102		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/04/16	0.020	0.018	1.02	0.018	89.1		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/04/16	0.020	0.021	0.84	0.025	124		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/05/16	0.020	0.021	0.98	0.022	108		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/05/16	0.020	0.021	0.98	0.021	105		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/02/16	0.020	0.020	0.97	0.021	103		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/04/16	0.020	0.022	1.03	0.021	103		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/04/16	0.020	0.021	0.88	0.024	121		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/05/16	0.020	0.020	0.99	0.020	99.0		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/05/16	0.020	0.020	1.02	0.020	102		
N-Nitrosomorpholine	59-89-2	MRL	10/02/16	0.020	0.018	0.97	0.019	96.7		
N-Nitrosomorpholine	59-89-2	MRL	10/04/16	0.020	0.020	1.01	0.020	97.8		
N-Nitrosomorpholine	59-89-2	MRL	10/04/16	0.020	0.021	0.86	0.024	122		

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Approved: 10/27/16 17:59
Report Time Stamp: 11/18/16 15:27



Analyte	CAS No.	Sample ID	Analyzed Date	Expected	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosomorpholine	59-89-2	MRL	10/05/16	0.020	0.021	0.98	0.021	104		
N-Nitrosomorpholine	59-89-2	MRL	10/05/16	0.020	0.021	0.98	0.022	109		
N-Nitrosopiperidine	100-75-4	MRL	10/02/16	0.020	0.019	0.96	0.020	98.5		
N-Nitrosopiperidine	100-75-4	MRL	10/04/16	0.020	0.020	0.99	0.020	99.2		
N-Nitrosopiperidine	100-75-4	MRL	10/04/16	0.020	0.022	0.84	0.026	128		
N-Nitrosopiperidine	100-75-4	MRL	10/05/16	0.020	0.021	0.95	0.022	110		
N-Nitrosopiperidine	100-75-4	MRL	10/05/16	0.020	0.020	0.96	0.021	103		
N-Nitrosopyrrolidine	930-55-2	MRL	10/02/16	0.020	0.019	0.93	0.020	97.9		
N-Nitrosopyrrolidine	930-55-2	MRL	10/04/16	0.020	0.018	0.98	0.018	87.5		
N-Nitrosopyrrolidine	930-55-2	MRL	10/04/16	0.020	0.021	0.82	0.026	131		
N-Nitrosopyrrolidine	930-55-2	MRL	10/05/16	0.020	0.022	0.93	0.024	119		
N-Nitrosopyrrolidine	930-55-2	MRL	10/05/16	0.020	0.021	0.94	0.022	111		

Report Qualifiers:

A = Target Analyte media breakthrough report, 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, not 100% = RT match

R = NPD (nitrite present difference) outside accepted recovery limits

U = Analyte analyzed for but not detected

N/A = Not Applicable

B = Analyte detected in the associated blank

= 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 CRIELAP Lab Code 4061 ABNA-LAP, LLC Lab ID 128656 EPA ID WAD1155 and WA DOE Lab ID C558. 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.

W609056

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162738
Page 1 of 4

Collector	Contract/Requestor	Telephone No.	MSIN
JONES	CALL RONALD IV	713-6161	16-95
SWF No.	Sample Origin	Purchase Order/Charge Code	FAX 372-1878
N/A	COASTLIFE EVALUATION	2002470820	
Project Title	Logbook/Work Package No.	Ice Chest No.	Temp 26.3
CARBIDE EVALUATION	N/A	Bill of Lading/IR Bill No.	
Shipped To (Lab)	Method of Shipment	Parts and Return No.	
CMU			
Protocol	Data Turnaround		
N/A	10 DAYS		

Sample No.	Lab ID	Date	Time	No. Type Container	Sample Analysis	Preservative
	3162029531	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BASE-E27	N/A
	3162029532	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BASE-IN	N/A
	3162029533	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BLANK1	N/A
	3162029534	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BLANK2	N/A
	3162029535	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BFF-A	N/A
	3162029536	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BFF-B	N/A
	3162029537	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BFF-C	N/A
	3162029538	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BFF-D	N/A
	3162029539	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BFF-E	N/A
	3162029540	VA 09/10/16		Thermosorb-N	Nitrosamines 16-07837-12-BFF-F	N/A

POSSIBLE SAMPLE HAZARDOUS/REMARKS (List all known wastes) MSDS Yes No
 SPECIAL INSTRUCTIONS
 Send Results to Carl Ronald IV & Greg Moore
 Carl X Ronaldr1.gov and Greg_S_Moore@r1.gov
 see 30W for email
 CONTACT: 55503
 RELEASE 5

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Diane Lerner			9/14/16 0900	RE ROBERT			9-14-16 0900
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
RE ROBERT			9-14-16 1243	LOPE OJEDA			9-14-16 1243
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
	CONSUMED	Lee Miller	10/16/16 13:30

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

W609056

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20162738
Page 2 of 4

Collector	MSR	Contact/Requestor	TELEPHONE NO.	MSR
Sample No.	713-6161	Sample Origin	PURCHASE ORDER/CHANGE CODE	TELEPHONE NO.
Project Title	20162738	Characterization	ICE CREAM NO.	FAX NO.
Shipped To (Lab)	MSR	Method of Shipment	Bill of Lading/air Bill No.	Temp. <i>LD</i>
Protocol	MSR	Data Turnaround	Parts and Return No.	

Sample No.	Lab ID	Date	Time	No./Type Container	Sample Analysis	Preservative
	\$167023541	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-8FF-G	N/A
	\$167023542	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-8FF-H	N/A
	\$167023543	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-A	N/A
	\$167023544	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-B	N/A
	\$167023545	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-C	N/A
	\$167023546	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-D	N/A
	\$167023547	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-E	N/A
	\$167023548	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-F	N/A
	\$167023549	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-G	N/A
	\$167023550	VA 09/10/16		Thermosec-B-N	Microsamplers 16-07837-12-2N-H	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS Yes No
 SPECIAL INSTRUCTIONS
 Send Samples to Carl Rowald IV & Greg Moore
 Carl: 813.904.1171 gmo and Greg: 813.904.1171
 and 306 for email
 CONTRACT 55563
 RELEASE 5

Reinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Mark*
	<i>Dianne Turner</i>	<i>Dianne Turner</i>	<i>9/14/16 09:00</i>	<i>Re Rogers</i>	<i>Re Rogers</i>	<i>9-14-16</i>	<i>09:00</i>	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids
Reinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Mark*
	<i>Re Rogers</i>	<i>Re Rogers</i>	<i>9-14-16 12:43</i>	<i>Re Rogers</i>	<i>Re Rogers</i>	<i>9-14-16</i>	<i>12:43</i>	DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation VA = Vaper X = Other
Final Sample Disposition	Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Consumed		Disposed by		<i>Re Rogers</i>	
All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.								

W609056

Assembly		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. No.		
N/A				20162738		
				Page	3 of 4	
Collector Jones	Contract Requestor	Sample Origin	Telephone No.	MSRN	76-05	
N/A	CAI, RONALD IV	CONDITIONS EVALUATOR	202-617-1810	173-6861	312-1878	
Project Title	Logbook/Work Package No.	Method of Shipment	Ice Chest No.	BB of Lading/Av. Bill No.	Temp.	
UNFILLED SYRINGTONS	N/A	N/A			26.4	
Stripped To (Lab)	Method of Shipment	Data Turnaround	Parts and Return No.			
CAI		10 DAYS				
Protocol						
Sample No.	Lab ID	Date	Time	Net/Type Container	Sample Analysis	Preservative
	8167029558	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-BASE-EFF	N/A
	8167029552	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-BASE-1X	N/A
	8167029553	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-GLASS-EFF	N/A
	8167029554	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-GLASS-1X	N/A
	8167029555	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-EFF-A	N/A
	8167029556	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-EFF-B	N/A
	8167029557	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-EFF-C	N/A
	8167029558	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-EFF-D	N/A
	8167029559	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-EFF-E	N/A
	8167029560	VA 09/10/16		Thermosorb-N	Nitrosamines 16-08068-12-EFF-F	N/A
<p>POSSIBLE SAMPLE HAZARD/REMARKS (List all known wastes) MSOS <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>SPECIAL INSTRUCTIONS</p> <p>Send Results to Cai Ronald IV, Greg Moore, Carl R. Romalinga, and Greg_S_Moore@epl.gov see RCR for email</p> <p>CONTRACT 55503</p> <p>RELEASE 5</p>						
<p>Relinquished By: <i>Print Sign</i> <i>Date/Time</i> Received By: <i>Print Sign</i> <i>Date/Time</i></p> <p>Relinquished By: <i>Dianne Turner Dianne Turner 9/14/16 0900</i> Received By: <i>3333 9-14-16 0900</i></p> <p>Relinquished By: <i>3333 9-14-16 12:13</i> Received By: <i>3333 9-14-16 12:13</i></p> <p>Relinquished By: <i>3333 9-14-16 12:13</i> Received By: <i>3333 9-14-16 12:13</i></p>						
<p>Final Sample Disposition: CONSUMED</p> <p>Disposal Method (e.g. Return to customer, per lab procedure, used in process): <i>As 2/16</i></p> <p>OverTime: <i>10 pmt 13:30</i></p>						

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)

W609056

Assemblies		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. No. 20162738		
k/A				Page 4 of 4		
Collector JOYCE	Contract/Requestor CAL SWELD IV	Telephone No. 773-6815	MISN 16-03	FAX 372-1878		
SAF No. N/A	Sample Origin CONSTRUCTION	Purchase Order/Change Code 201627380	Temp. 25.7			
Project Title CONSTRUCTION	Logbook/Work Package No. N/A	Box Check No.				
Shipped To (Lab) CIVIL	Method of Shipment Data Turnaround 16 DAYS	Bill of Lading/AV Bill No. Pails and Return No.				
Protocol N/A						
Sample No.	Lab ID	Date	Type	No./Type Container	Sample Analysis	Preservative
	3167029551	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-G	N/A
	3167029552	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-F	N/A
	3167029553	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-A	N/A
	3167029554	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-E	N/A
	3167029555	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-C	N/A
	3167029556	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-D	N/A
	3167029557	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-E	N/A
	3167029558	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-F	N/A
	3167029559	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-G	N/A
	3167029570	09/10/16		Thermosep-N	Mitrosamines 16-08068-12-2N-H	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSOS <input type="radio"/> Yes <input checked="" type="radio"/> No						SPECIAL INSTRUCTIONS Send samples to Carl Rowald IV & Greg Moore at 1909 19th St. #11909 and Greg_Moore@11909.com and Carl_Rowald@11909.com CONTRACT 55503 RELEASE 5
Held Time						
Relinquished By <i>Dianne Turner</i>	Print Sign	Date/Time 9/14/16 0900	Received By <i>Re Rogers</i>	Print Sign	Date/Time 9-14-16 0900	
Relinquished By <i>Re Rogers</i>	Print Sign	Date/Time 9-14-16 1218	Received By <i>Re Rogers</i>	Print Sign	Date/Time 9-14-16 1248	
Relinquished By	Date/Time	Received By	Date/Time	Disposed By <i>Joe Hill</i>	Date/Time 10/10/16 13:30	
FINAL SAMPLE DISPOSITION CONSUMED	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.

Appendix D

Data Reduction Steps

Appendix D

Data Reduction Steps

1. Only chemicals in the current Chemicals of Potential Concern (COPC) list were included in the calculated data. Nitrous oxide and methanol were not measured in the study. Any other missing COPCs were analyzed as “Tentatively Identified Compounds.”
2. The COPCs are ranked in the order of their COPC number. Within the data section for each COPC, data are ranked in the order of survey (1 and 2). Within every survey, data are ranked in the order of inlet and outlet and following the time sequence.
3. Except for mercury, COPC concentrations were converted into parts per million (ppm) using their molecular weights and corresponding flow rates after volume correction as shown in the following equation:

$$C = 24.25 \frac{r}{MV}$$

where C is the concentration of COPC in ppmv; r is the analytical result with units of $\mu\text{g}/\text{sample}$ (if the analytical result unit is expressed in mg/sample , the value of C needs to be multiplied by 1000; if the analytical result unit is in ng/sample the value of C needs to be divided by 1000); V is the collected volume in 2 hours expressed in liters; M is the molecular weight of COPC expressed as g/mol . When the ratio between concentration and the corresponding Occupational Exposure Limit (OEL) is larger than 10%, the fraction is shown in red.

4. The reported volume measurements in Appendix C were made via DryCal devices placed downstream of each sample media tube. This allowed for precise volume measurements through each of the tubes. However, to perform the concentration conversion to ppm, the “actual” volumetric values required conversion to standard temperature and pressure conditions.

Ideal gas behavior was assumed for these volume corrections, and standard temperatures and pressures were assumed to be 298 K (T_{standard}) and 760 Torr (P_{standard}), respectively. For temperatures, the reported upstream temperatures for each time period were used (T_{upstream} , in Kelvin), and the temperature correction factor (i.e., the factor multiplied by each reported volume) was simply $T_{\text{standard}}/T_{\text{upstream}}$.

For the pressure corrections, additional pressure drop information was gathered so that the pressure at the point of the DryCal device could be calculated. Each time step had reported upstream pressures (P_{upstream} , or upstream of the respirator cartridges). Therefore, pressure drop measurements across the respirator cartridge and each sample media tube were performed offline to gather the additional information necessary for the correction.

The average reported pressure drop reading for the respirator cartridge ($P_{\text{cartridge}}$) tested was 3.2 inches of water column (WC). The pressure drop measurements across the individual sample tubes are shown in the table below (all expressed as inches of WC).

The average pressure drops were then used in a pressure correction factor for the reported volumes. Note that all pressure values were first converted to units of Torr. For measurements made at the inlet of the respirator cartridge the pressure correction factor is $(P_{\text{upstream}} - P_{\text{tube}}) \div P_{\text{standard}}$. For measurements made at the outlet of the respirator cartridge the pressure correction factor is $(P_{\text{upstream}} - P_{\text{cartridge}} - P_{\text{tube}}) \div P_{\text{standard}}$.

Tube Location	First Measure (inches of WC, tube on cartridge inlet side)	Second Measure (inches of WC, tube on cartridge outlet side)	Average of Both Measurements (P _{tube} , inches of WC)
A	5.0	12.4	8.7
B	6.9	7.2	7.1
C	2.3	2.5	2.4
D	0.8	0.8	0.8
E	1.9	2.1	2.0
F	3.8	6.8	5.3
G	1.6	1.7	1.7
H	7.7	6.5	7.1
I	5.2	4.0	4.6
J	15.9	16.3	16.1
K	10.1	9.7	9.9

An example calculation of the correction factors follows. For a given time period, assume that the reported upstream pressure (P_{upstream}) was 734 Torr and the corresponding temperature (T_{upstream}) was 85.9°F (or 302.9 K). Here, for tube location ‘A’ and upstream of the respirator cartridge, the corresponding temperature correction factor would be 0.984, and the pressure correction factor for the respirator cartridge outlet would be 0.944. When multiplied, these two factors equal 0.929, which would be the overall correction to the reported volume measurement.

5. The analytical detection limit (DL)—or reporting limit in some cases—for every COPC was obtained from the raw analytical data. Here, the average flow rate was used to calculate the approximate analytical DL as the percentage of the OEL for each COPC. Because flow rates vary, the calculated concentrations were different for each point, even though some of the results are less than the DL in the original reading. The last column in the tables below indicate if the original readings were less than the DL or not.
 1. For ammonia and mercury, only the results obtained from using method of total vapor of ammonia and mercury were used.
 2. For furan, results from the furan category instead of volatile organic compound (VOC) (or volatile organic analyte) were used. For acetonitrile, results from the VOC category were used. For butanal, the results from the VOC category instead of the aldehydes category were used. For pyridine and 2,4-dimethylpyridine, the results from the VOC category were used.
 3. For N-Nitrosodimethylamine (NDMA) and other nitrosamines, data values above analytical DLs for the same time and position were added together because the original sample was diluted into three samples for measurements. This same rule applies to 1,3-Butadiene. The results in the plots and tables reflect the sum of results.

The following tables show the calculated concentrations for each of the COPC measurements conducted in this study. Red highlighted values reflect measurements that were above 10% of the respective OEL values. COPCs with these highlights are plotted and shown in Section 5.0. Orange highlighted values reflect measurements in the 2 to 10% of the OEL range. COPCs with these highlights (only) are plotted and shown in Appendix E.

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
1	Ammonia	2	7837-A1	175.6	25	702%		2.6%
1	Ammonia	4	7837-B1	196.4	25	786%		2.6%
1	Ammonia	6	7837-C1	200.2	25	801%		2.6%
1	Ammonia	8	7837-D1	182.6	25	730%		2.6%
1	Ammonia	10	7837-E1	186.6	25	746%		2.6%
1	Ammonia	12	7837-F1	186.8	25	747%		2.6%
1	Ammonia	14	7837-G1	184.5	25	738%		2.6%
1	Ammonia	16	7837-H1	150.6	25	602%		2.6%
1	Ammonia	2	7837-A2	0.61	25	2.4%	YES	2.6%
1	Ammonia	4	7837-B2	42.1	25	168%		2.6%
1	Ammonia	6	7837-C2	132.0	25	528%		2.6%
1	Ammonia	8	7837-D2	85.1	25	340%		2.6%
1	Ammonia	10	7837-E2	159.6	25	639%		2.6%
1	Ammonia	12	7837-F2	142.4	25	570%		2.6%
1	Ammonia	14	7837-G2	155.2	25	621%		2.6%
1	Ammonia	16	7837-H2	146.7	25	587%		2.6%
1	Ammonia	2	8068-A1	170.4	25	681%		2.6%
1	Ammonia	4	8068-B1	163.7	25	655%		2.6%
1	Ammonia	6	8068-C1	182.7	25	731%		2.6%
1	Ammonia	8	8068-D1	185.2	25	741%		2.6%
1	Ammonia	10	8068-E1	181.8	25	727%		2.6%
1	Ammonia	12	8068-F1	173.5	25	694%		2.6%
1	Ammonia	14	8068-G1	175.2	25	701%		2.6%
1	Ammonia	16	8068-H1	156.8	25	627%		2.6%
1	Ammonia	2	8068-A2	1.2	25	4.9%		2.6%
1	Ammonia	4	8068-B2	38.1	25	152%		2.6%
1	Ammonia	6	8068-C2	126.3	25	505%		2.6%
1	Ammonia	8	8068-D2	49.7	25	199%		2.6%
1	Ammonia	10	8068-E2	0.64	25	2.6%	YES	2.6%
1	Ammonia	12	8068-F2	134.1	25	536%		2.6%
1	Ammonia	14	8068-G2	158.5	25	634%		2.6%
1	Ammonia	16	8068-H2	191.7	25	767%		2.6%
3	Mercury	2	7837-A1	0.00085	0.003	21.2%		7.3%
3	Mercury	4	7837-B1	0.00074	0.003	24.3%		7.3%
3	Mercury	6	7837-C1	0.00064	0.003	20.9%		7.3%
3	Mercury	8	7837-D1	0.00058	0.003	19.2%		7.3%
3	Mercury	10	7837-E1	0.00058	0.003	19.1%		7.3%
3	Mercury	12	7837-F1	0.00064	0.003	20.9%		7.3%
3	Mercury	14	7837-G1	0.00047	0.003	15.5%		7.3%
3	Mercury	16	7837-H1	0.00042	0.003	13.9%		7.3%
3	Mercury	2	7837-A2	0.00021	0.003	7.0%	YES	7.3%
3	Mercury	4	7837-B2	0.00021	0.003	6.9%	YES	7.3%
3	Mercury	6	7837-C2	0.00021	0.003	6.9%	YES	7.3%
3	Mercury	8	7837-D2	0.00021	0.003	6.9%	YES	7.3%
3	Mercury	10	7837-E2	0.00021	0.003	7.0%	YES	7.3%
3	Mercury	12	7837-F2	0.00021	0.003	6.8%	YES	7.3%
3	Mercury	14	7837-G2	0.00021	0.003	6.9%	YES	7.3%
3	Mercury	16	7837-H2	0.00021	0.003	6.8%	YES	7.3%
3	Mercury	2	8068-A1	0.00064	0.003	21.0%		7.3%
3	Mercury	4	8068-B1	0.00051	0.003	16.8%		7.3%
3	Mercury	6	8068-C1	0.00062	0.003	20.4%		7.3%
3	Mercury	8	8068-D1	0.00069	0.003	22.7%		7.3%
3	Mercury	10	8068-E1	0.00063	0.003	20.8%		7.3%
3	Mercury	12	8068-F1	0.00061	0.003	20.1%		7.3%
3	Mercury	14	8068-G1	0.00047	0.003	15.4%		7.3%
3	Mercury	16	8068-H1	0.00021	0.003	6.9%	YES	7.3%
3	Mercury	2	8068-A2	0.00021	0.003	7.0%	YES	7.3%
3	Mercury	4	8068-B2	0.00022	0.003	7.2%	YES	7.3%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
3	Mercury	6	8068-C2	0.00022	0.003	7.3%	YES	7.3%
3	Mercury	8	8068-D2	0.00022	0.003	7.3%	YES	7.3%
3	Mercury	10	8068-E2	0.00022	0.003	7.2%	YES	7.3%
3	Mercury	12	8068-F2	0.00022	0.003	7.1%	YES	7.3%
3	Mercury	14	8068-G2	0.00021	0.003	6.9%	YES	7.3%
3	Mercury	16	8068-H2	0.00050	0.003	16.3%		7.3%
4	1,3-Butadiene	2	7837-A1	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	4	7837-B1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	6	7837-C1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	8	7837-D1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	10	7837-E1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	12	7837-F1	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	14	7837-G1	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	16	7837-H1	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	2	7837-A2	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	4	7837-B2	0.021	1.0	2.1%	YES	2.1%
4	1,3-Butadiene	6	7837-C2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	8	7837-D2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	10	7837-E2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	12	7837-F2	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	14	7837-G2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	16	7837-H2	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	2	8068-A1	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	4	8068-B1	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	6	8068-C1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	8	8068-D1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	10	8068-E1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	12	8068-F1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	14	8068-G1	0.019	1.0	1.9%	YES	2.1%
4	1,3-Butadiene	16	8068-H1	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	2	8068-A2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	4	8068-B2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	6	8068-C2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	8	8068-D2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	10	8068-E2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	12	8068-F2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	14	8068-G2	0.020	1.0	2.0%	YES	2.1%
4	1,3-Butadiene	16	8068-H2	0.020	1.0	2.0%	YES	2.1%
5	Benzene	2	7837-A1	0.00089	0.5	0.178%		0.021%
5	Benzene	4	7837-B1	0.00094	0.5	0.188%		0.021%
5	Benzene	6	7837-C1	0.00090	0.5	0.179%		0.021%
5	Benzene	8	7837-D1	0.00085	0.5	0.170%		0.021%
5	Benzene	10	7837-E1	0.00087	0.5	0.175%		0.021%
5	Benzene	12	7837-F1	0.00073	0.5	0.146%		0.021%
5	Benzene	14	7837-G1	0.00078	0.5	0.156%		0.021%
5	Benzene	16	7837-H1	0.00072	0.5	0.145%		0.021%
5	Benzene	2	7837-A2	0.00018	0.5	0.036%		0.021%
5	Benzene	4	7837-B2	0.00017	0.5	0.035%		0.021%
5	Benzene	6	7837-C2	0.00016	0.5	0.031%		0.021%
5	Benzene	8	7837-D2	0.00011	0.5	0.022%		0.021%
5	Benzene	10	7837-E2	0.00010	0.5	0.020%	YES	0.021%
5	Benzene	12	7837-F2	0.00010	0.5	0.020%	YES	0.021%
5	Benzene	14	7837-G2	0.00012	0.5	0.024%		0.021%
5	Benzene	16	7837-H2	0.00010	0.5	0.019%	YES	0.021%
5	Benzene	2	8068-A1	0.00075	0.5	0.150%		0.021%
5	Benzene	4	8068-B1	0.00082	0.5	0.165%		0.021%
5	Benzene	6	8068-C1	0.00081	0.5	0.162%		0.021%
5	Benzene	8	8068-D1	0.00079	0.5	0.159%		0.021%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
5	Benzene	10	8068-E1	0.00079	0.5	0.157%		0.021%
5	Benzene	12	8068-F1	0.00058	0.5	0.117%		0.021%
5	Benzene	14	8068-G1	0.00057	0.5	0.114%		0.021%
5	Benzene	16	8068-H1	0.00012	0.5	0.024%		0.021%
5	Benzene	2	8068-A2	0.00014	0.5	0.029%		0.021%
5	Benzene	4	8068-B2	0.00021	0.5	0.041%		0.021%
5	Benzene	6	8068-C2	0.00017	0.5	0.034%		0.021%
5	Benzene	8	8068-D2	0.00013	0.5	0.027%		0.021%
5	Benzene	10	8068-E2	0.00011	0.5	0.021%	YES	0.021%
5	Benzene	12	8068-F2	0.00010	0.5	0.019%	YES	0.021%
5	Benzene	14	8068-G2	0.00010	0.5	0.020%	YES	0.021%
5	Benzene	16	8068-H2	0.00045	0.5	0.090%		0.021%
6	Biphenyl	2	7837-A1	0.00017	0.2	0.083%	YES	0.096%
6	Biphenyl	4	7837-B1	0.00017	0.2	0.084%	YES	0.096%
6	Biphenyl	6	7837-C1	0.00017	0.2	0.084%	YES	0.096%
6	Biphenyl	8	7837-D1	0.00017	0.2	0.087%	YES	0.096%
6	Biphenyl	10	7837-E1	0.00017	0.2	0.085%	YES	0.096%
6	Biphenyl	12	7837-F1	0.00017	0.2	0.086%	YES	0.096%
6	Biphenyl	14	7837-G1	0.00016	0.2	0.081%	YES	0.096%
6	Biphenyl	16	7837-H1	0.00015	0.2	0.077%	YES	0.096%
6	Biphenyl	2	7837-A2	0.00017	0.2	0.083%	YES	0.096%
6	Biphenyl	4	7837-B2	0.00017	0.2	0.084%	YES	0.096%
6	Biphenyl	6	7837-C2	0.00017	0.2	0.084%	YES	0.096%
6	Biphenyl	8	7837-D2	0.00017	0.2	0.085%	YES	0.096%
6	Biphenyl	10	7837-E2	0.00017	0.2	0.086%	YES	0.096%
6	Biphenyl	12	7837-F2	0.00016	0.2	0.082%	YES	0.096%
6	Biphenyl	14	7837-G2	0.00016	0.2	0.082%	YES	0.096%
6	Biphenyl	16	7837-H2	0.00016	0.2	0.081%	YES	0.096%
6	Biphenyl	2						0.096%
6	Biphenyl	4	8068-B1	0.00017	0.2	0.086%	YES	0.096%
6	Biphenyl	6	8068-C1	0.00018	0.2	0.090%	YES	0.096%
6	Biphenyl	8	8068-D1	0.00019	0.2	0.096%	YES	0.096%
6	Biphenyl	10	8068-E1	0.00018	0.2	0.089%	YES	0.096%
6	Biphenyl	12						0.096%
6	Biphenyl	14						0.096%
6	Biphenyl	16	8068-H1	0.00017	0.2	0.085%	YES	0.096%
6	Biphenyl	2	8068-A2	0.00017	0.2	0.086%	YES	0.096%
6	Biphenyl	4	8068-B2	0.00017	0.2	0.086%	YES	0.096%
6	Biphenyl	6	8068-C2	0.00018	0.2	0.089%	YES	0.096%
6	Biphenyl	8	8068-D2	0.00018	0.2	0.088%	YES	0.096%
6	Biphenyl	10	8068-E2	0.00017	0.2	0.087%	YES	0.096%
6	Biphenyl	12	8068-F2	0.00017	0.2	0.086%	YES	0.096%
6	Biphenyl	14	8068-G2	0.00017	0.2	0.086%	YES	0.096%
6	Biphenyl	16	8068-H2	0.00017	0.2	0.086%	YES	0.096%
7	1-Butanol	2	7837-A1	0.05198	20	0.260%		0.004%
7	1-Butanol	4	7837-B1	0.06107	20	0.305%		0.004%
7	1-Butanol	6	7837-C1	0.05951	20	0.298%		0.004%
7	1-Butanol	8	7837-D1	0.03410	20	0.171%		0.004%
7	1-Butanol	10	7837-E1	0.02763	20	0.138%		0.004%
7	1-Butanol	12	7837-F1	0.03181	20	0.159%		0.004%
7	1-Butanol	14	7837-G1	0.02876	20	0.144%		0.004%
7	1-Butanol	16	7837-H1	0.03441	20	0.172%		0.004%
7	1-Butanol	2	7837-A2	0.00081	20	0.004%	YES	0.004%
7	1-Butanol	4	7837-B2	0.00526	20	0.026%		0.004%
7	1-Butanol	6	7837-C2	0.00081	20	0.004%	YES	0.004%
7	1-Butanol	8	7837-D2	0.00080	20	0.004%	YES	0.004%
7	1-Butanol	10	7837-E2	0.00079	20	0.004%	YES	0.004%
7	1-Butanol	12	7837-F2	0.00079	20	0.004%	YES	0.004%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
7	1-Butanol	14	7837-G2	0.00076	20	0.004%	YES	0.004%
7	1-Butanol	16	7837-H2	0.00075	20	0.004%	YES	0.004%
7	1-Butanol	2	8068-A1	0.04797	20	0.240%		0.004%
7	1-Butanol	4	8068-B1	0.05552	20	0.278%		0.004%
7	1-Butanol	6	8068-C1	0.06328	20	0.316%		0.004%
7	1-Butanol	8	8068-D1	0.05063	20	0.253%		0.004%
7	1-Butanol	10	8068-E1	0.05280	20	0.264%		0.004%
7	1-Butanol	12	8068-F1	0.04044	20	0.202%		0.004%
7	1-Butanol	14	8068-G1	0.04142	20	0.207%		0.004%
7	1-Butanol	16	8068-H1	0.00763	20	0.038%		0.004%
7	1-Butanol	2	8068-A2	0.00455	20	0.023%		0.004%
7	1-Butanol	4	8068-B2	0.00712	20	0.036%		0.004%
7	1-Butanol	6	8068-C2	0.00417	20	0.021%		0.004%
7	1-Butanol	8	8068-D2	0.00760	20	0.038%		0.004%
7	1-Butanol	10	8068-E2	0.00362	20	0.018%		0.004%
7	1-Butanol	12	8068-F2	0.00470	20	0.024%		0.004%
7	1-Butanol	14	8068-G2	0.00689	20	0.034%		0.004%
7	1-Butanol	16	8068-H2	0.02925	20	0.146%		0.004%
9	2-Hexanone	2	7837-A1	0.00189	5.0	0.038%		0.002%
9	2-Hexanone	4	7837-B1	0.00238	5.0	0.048%		0.002%
9	2-Hexanone	6	7837-C1	0.00252	5.0	0.050%		0.002%
9	2-Hexanone	8	7837-D1	0.00219	5.0	0.044%		0.002%
9	2-Hexanone	10	7837-E1	0.00223	5.0	0.045%		0.002%
9	2-Hexanone	12	7837-F1	0.00204	5.0	0.041%		0.002%
9	2-Hexanone	14	7837-G1	0.00195	5.0	0.039%		0.002%
9	2-Hexanone	16	7837-H1	0.00217	5.0	0.043%		0.002%
9	2-Hexanone	2	7837-A2	0.00009	5.0	0.002%		0.002%
9	2-Hexanone	4	7837-B2	0.00010	5.0	0.002%		0.002%
9	2-Hexanone	6	7837-C2	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	8	7837-D2	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	10	7837-E2	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	12	7837-F2	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	14	7837-G2	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	16	7837-H2	0.00007	5.0	0.001%	YES	0.002%
9	2-Hexanone	2	8068-A1	0.00158	5.0	0.032%		0.002%
9	2-Hexanone	4	8068-B1	0.00308	5.0	0.062%		0.002%
9	2-Hexanone	6	8068-C1	0.00196	5.0	0.039%		0.002%
9	2-Hexanone	8	8068-D1	0.00286	5.0	0.057%		0.002%
9	2-Hexanone	10	8068-E1	0.00209	5.0	0.042%		0.002%
9	2-Hexanone	12	8068-F1	0.00169	5.0	0.034%		0.002%
9	2-Hexanone	14	8068-G1	0.00196	5.0	0.039%		0.002%
9	2-Hexanone	16	8068-H1	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	2	8068-A2	0.00009	5.0	0.002%		0.002%
9	2-Hexanone	4	8068-B2	0.00013	5.0	0.003%		0.002%
9	2-Hexanone	6	8068-C2	0.00013	5.0	0.003%		0.002%
9	2-Hexanone	8	8068-D2	0.00009	5.0	0.002%	YES	0.002%
9	2-Hexanone	10	8068-E2	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	12	8068-F2	0.00007	5.0	0.001%	YES	0.002%
9	2-Hexanone	14	8068-G2	0.00008	5.0	0.002%	YES	0.002%
9	2-Hexanone	16	8068-H2	0.00139	5.0	0.028%		0.002%
11	4-Methyl-2-hexanone	2	7837-A1	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	4	7837-B1	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	6	7837-C1	0.00008	0.5	0.016%	YES	0.017%
11	4-Methyl-2-hexanone	8	7837-D1	0.00008	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	10	7837-E1	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	12	7837-F1	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	14	7837-G1	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	16	7837-H1	0.00007	0.5	0.014%	YES	0.017%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
11	4-Methyl-2-hexanone	2	7837-A2	0.00008	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	4	7837-B2	0.00008	0.5	0.016%	YES	0.017%
11	4-Methyl-2-hexanone	6	7837-C2	0.00008	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	8	7837-D2	0.00008	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	10	7837-E2	0.00007	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	12	7837-F2	0.00007	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	14	7837-G2	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	16	7837-H2	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	2	8068-A1	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	4	8068-B1	0.00007	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	6	8068-C1	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	8	8068-D1	0.00008	0.5	0.016%	YES	0.017%
11	4-Methyl-2-hexanone	10	8068-E1	0.00008	0.5	0.016%	YES	0.017%
11	4-Methyl-2-hexanone	12	8068-F1	0.00007	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	14	8068-G1	0.00007	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	16	8068-H1	0.00010	0.5	0.021%		0.017%
11	4-Methyl-2-hexanone	2	8068-A2	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	4	8068-B2	0.00008	0.5	0.017%	YES	0.017%
11	4-Methyl-2-hexanone	6	8068-C2	0.00008	0.5	0.016%	YES	0.017%
11	4-Methyl-2-hexanone	8	8068-D2	0.00008	0.5	0.017%	YES	0.017%
11	4-Methyl-2-hexanone	10	8068-E2	0.00008	0.5	0.016%	YES	0.017%
11	4-Methyl-2-hexanone	12	8068-F2	0.00007	0.5	0.014%	YES	0.017%
11	4-Methyl-2-hexanone	14	8068-G2	0.00007	0.5	0.015%	YES	0.017%
11	4-Methyl-2-hexanone	16	8068-H2	0.00006	0.5	0.012%	YES	0.017%
13	3-Buten-2-one	2	7837-A1	0.00261	0.2	1.31%		0.08%
13	3-Buten-2-one	4	7837-B1	0.00253	0.2	1.27%		0.08%
13	3-Buten-2-one	6	7837-C1	0.00210	0.2	1.05%		0.08%
13	3-Buten-2-one	8	7837-D1	0.00190	0.2	0.95%		0.08%
13	3-Buten-2-one	10	7837-E1	0.00159	0.2	0.80%		0.08%
13	3-Buten-2-one	12	7837-F1	0.00142	0.2	0.71%		0.08%
13	3-Buten-2-one	14	7837-G1	0.00113	0.2	0.56%		0.08%
13	3-Buten-2-one	16	7837-H1	0.00160	0.2	0.80%		0.08%
13	3-Buten-2-one	2	7837-A2	0.00034	0.2	0.17%		0.08%
13	3-Buten-2-one	4	7837-B2	0.00038	0.2	0.19%		0.08%
13	3-Buten-2-one	6	7837-C2	0.00029	0.2	0.14%		0.08%
13	3-Buten-2-one	8	7837-D2	0.00016	0.2	0.08%	YES	0.08%
13	3-Buten-2-one	10	7837-E2	0.00016	0.2	0.08%	YES	0.08%
13	3-Buten-2-one	12	7837-F2	0.00016	0.2	0.08%	YES	0.08%
13	3-Buten-2-one	14	7837-G2	0.00015	0.2	0.08%	YES	0.08%
13	3-Buten-2-one	16	7837-H2	0.00019	0.2	0.09%		0.08%
13	3-Buten-2-one	2	8068-A1	0.00148	0.2	0.72%		0.08%
13	3-Buten-2-one	4	8068-B1	0.00339	0.2	1.70%		0.08%
13	3-Buten-2-one	6	8068-C1	0.00317	0.2	1.58%		0.08%
13	3-Buten-2-one	8	8068-D1	0.00292	0.2	1.46%		0.08%
13	3-Buten-2-one	10	8068-E1	0.00160	0.2	0.80%		0.08%
13	3-Buten-2-one	12	8068-F1	0.00112	0.2	0.56%		0.08%
13	3-Buten-2-one	14	8068-G1	0.00205	0.2	1.03%		0.08%
13	3-Buten-2-one	16	8068-H1	0.00142	0.2	0.71%		0.08%
13	3-Buten-2-one	2	8068-A2	0.00036	0.2	0.18%		0.08%
13	3-Buten-2-one	4	8068-B2	0.00044	0.2	0.22%		0.08%
13	3-Buten-2-one	6	8068-C2	0.00040	0.2	0.20%		0.08%
13	3-Buten-2-one	8	8068-D2	0.00021	0.2	0.11%		0.08%
13	3-Buten-2-one	10	8068-E2	0.00017	0.2	0.08%	YES	0.08%
13	3-Buten-2-one	12	8068-F2	0.00015	0.2	0.08%	YES	0.08%
13	3-Buten-2-one	14	8068-G2	0.00015	0.2	0.08%	YES	0.08%
13	3-Buten-2-one	16	8068-H2	0.00096	0.2	0.48%		0.08%
14	Formaldehyde	2	7837-A1	0.0312	0.3	10.4%		0.63%
14	Formaldehyde	4	7837-B1	0.0017	0.3	0.58%	YES	0.63%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
14	Formaldehyde	6	7837-C1	0.0018	0.3	0.59%	YES	0.63%
14	Formaldehyde	8	7837-D1	0.0248	0.3	8.3%		0.63%
14	Formaldehyde	10	7837-E1	0.0242	0.3	8.1%		0.63%
14	Formaldehyde	12	7837-F1	0.0018	0.3	0.58%	YES	0.63%
14	Formaldehyde	14	7837-G1	0.0017	0.3	0.58%	YES	0.63%
14	Formaldehyde	16	7837-H1	0.0017	0.3	0.58%	YES	0.63%
14	Formaldehyde	2	7837-A2	0.0018	0.3	0.58%	YES	0.63%
14	Formaldehyde	4	7837-B2	0.0020	0.3	0.67%		0.63%
14	Formaldehyde	6	7837-C2	0.0018	0.3	0.60%	YES	0.63%
14	Formaldehyde	8	7837-D2	0.0018	0.3	0.61%	YES	0.63%
14	Formaldehyde	10	7837-E2	0.0018	0.3	0.60%	YES	0.63%
14	Formaldehyde	12	7837-F2	0.0018	0.3	0.59%	YES	0.63%
14	Formaldehyde	14	7837-G2	0.0018	0.3	0.59%	YES	0.63%
14	Formaldehyde	16	7837-H2	0.0017	0.3	0.58%	YES	0.63%
14	Formaldehyde	2	8068-A1	0.0352	0.3	11.7%		0.63%
14	Formaldehyde	4	8068-B1	0.0428	0.3	14.3%		0.63%
14	Formaldehyde	6	8068-C1	0.0431	0.3	14.4%		0.63%
14	Formaldehyde	8	8068-D1	0.0018	0.3	0.61%	YES	0.63%
14	Formaldehyde	10	8068-E1	0.0188	0.3	6.3%		0.63%
14	Formaldehyde	12	8068-F1	0.0018	0.3	0.60%	YES	0.63%
14	Formaldehyde	14	8068-G1	0.0018	0.3	0.59%	YES	0.63%
14	Formaldehyde	16	8068-H1	0.0018	0.3	0.60%	YES	0.63%
14	Formaldehyde	2	8068-A2	0.0018	0.3	0.59%	YES	0.63%
14	Formaldehyde	4	8068-B2	0.0018	0.3	0.58%	YES	0.63%
14	Formaldehyde	6	8068-C2	0.0019	0.3	0.62%	YES	0.63%
14	Formaldehyde	8	8068-D2	0.0019	0.3	0.63%	YES	0.63%
14	Formaldehyde	10	8068-E2	0.0019	0.3	0.62%	YES	0.63%
14	Formaldehyde	12	8068-F2	0.0018	0.3	0.60%	YES	0.63%
14	Formaldehyde	14	8068-G2	0.0018	0.3	0.60%	YES	0.63%
14	Formaldehyde	16	8068-H2	0.0018	0.3	0.59%	YES	0.63%
15	Acetaldehyde	2	7837-A1	0.0981	25	0.392%		0.005%
15	Acetaldehyde	4	7837-B1	0.0988	25	0.395%		0.005%
15	Acetaldehyde	6	7837-C1	0.1007	25	0.403%		0.005%
15	Acetaldehyde	8	7837-D1	0.0796	25	0.318%		0.005%
15	Acetaldehyde	10	7837-E1	0.0836	25	0.335%		0.005%
15	Acetaldehyde	12	7837-F1	0.0861	25	0.344%		0.005%
15	Acetaldehyde	14	7837-G1	0.0754	25	0.301%		0.005%
15	Acetaldehyde	16	7837-H1	0.0824	25	0.330%		0.005%
15	Acetaldehyde	2	7837-A2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	4	7837-B2	0.0384	25	0.154%		0.005%
15	Acetaldehyde	6	7837-C2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	8	7837-D2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	10	7837-E2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	12	7837-F2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	14	7837-G2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	16	7837-H2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	2	8068-A1	0.0935	25	0.374%		0.005%
15	Acetaldehyde	4	8068-B1	0.0948	25	0.379%		0.005%
15	Acetaldehyde	6	8068-C1	0.1054	25	0.422%		0.005%
15	Acetaldehyde	8	8068-D1	0.0977	25	0.391%		0.005%
15	Acetaldehyde	10	8068-E1	0.0905	25	0.362%		0.005%
15	Acetaldehyde	12	8068-F1	0.0853	25	0.341%		0.005%
15	Acetaldehyde	14	8068-G1	0.0701	25	0.280%		0.005%
15	Acetaldehyde	16	8068-H1	0.0537	25	0.215%		0.005%
15	Acetaldehyde	2	8068-A2	0.0481	25	0.192%		0.005%
15	Acetaldehyde	4	8068-B2	0.0012	25	0.005%	YES	0.005%
15	Acetaldehyde	6	8068-C2	0.0013	25	0.005%	YES	0.005%
15	Acetaldehyde	8	8068-D2	0.0013	25	0.005%	YES	0.005%
15	Acetaldehyde	10	8068-E2	0.0532	25	0.213%		0.005%
15	Acetaldehyde	12	8068-F2	0.0519	25	0.208%		0.005%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
15	Acetaldehyde	14	8068-G2	0.0491	25	0.196%		0.005%
15	Acetaldehyde	16	8068-H2	0.0802	25	0.321%		0.005%
16	Butanal	2	7837-A1	0.0020	25	0.008%		0.001%
16	Butanal	4	7837-B1	0.0020	25	0.008%		0.001%
16	Butanal	6	7837-C1	0.0019	25	0.008%		0.001%
16	Butanal	8	7837-D1	0.0036	25	0.014%		0.001%
16	Butanal	10	7837-E1	0.0028	25	0.011%		0.001%
16	Butanal	12	7837-F1	0.0027	25	0.011%		0.001%
16	Butanal	14	7837-G1	0.0029	25	0.011%		0.001%
16	Butanal	16	7837-H1	0.0041	25	0.017%		0.001%
16	Butanal	2	7837-A2	0.0003	25	0.001%		0.001%
16	Butanal	4	7837-B2	0.0003	25	0.001%		0.001%
16	Butanal	6	7837-C2	0.0003	25	0.001%		0.001%
16	Butanal	8	7837-D2	0.0002	25	0.001%	YES	0.001%
16	Butanal	10	7837-E2	0.0002	25	0.001%	YES	0.001%
16	Butanal	12	7837-F2	0.0002	25	0.001%	YES	0.001%
16	Butanal	14	7837-G2	0.0002	25	0.001%	YES	0.001%
16	Butanal	16	7837-H2	0.0002	25	0.001%	YES	0.001%
16	Butanal	2	8068-A1	0.0014	25	0.006%		0.001%
16	Butanal	4	8068-B1	0.0042	25	0.017%		0.001%
16	Butanal	6	8068-C1	0.0034	25	0.014%		0.001%
16	Butanal	8	8068-D1	0.0028	25	0.011%		0.001%
16	Butanal	10	8068-E1	0.0016	25	0.007%		0.001%
16	Butanal	12	8068-F1	0.0014	25	0.005%		0.001%
16	Butanal	14	8068-G1	0.0025	25	0.010%		0.001%
16	Butanal	16	8068-H1	0.0002	25	0.001%	YES	0.001%
16	Butanal	2	8068-A2	0.0003	25	0.001%		0.001%
16	Butanal	4	8068-B2	0.0002	25	0.001%	YES	0.001%
16	Butanal	6	8068-C2	0.0002	25	0.001%	YES	0.001%
16	Butanal	8	8068-D2	0.0002	25	0.001%	YES	0.001%
16	Butanal	10	8068-E2	0.0002	25	0.001%	YES	0.001%
16	Butanal	12	8068-F2	0.0002	25	0.001%	YES	0.001%
16	Butanal	14	8068-G2	0.0002	25	0.001%	YES	0.001%
16	Butanal	16	8068-H2	0.0014	25	0.005%		0.001%
19	Furan	2	7837-A1	0.00004	0.001	3.5%	YES	3.6%
19	Furan	4	7837-B1	0.00004	0.001	3.6%	YES	3.6%
19	Furan	6	7837-C1	0.00004	0.001	3.6%	YES	3.6%
19	Furan	8	7837-D1	0.00004	0.001	3.6%	YES	3.6%
19	Furan	10	7837-E1	0.00004	0.001	3.6%	YES	3.6%
19	Furan	12	7837-F1	0.00003	0.001	3.4%	YES	3.6%
19	Furan	14	7837-G1	0.00003	0.001	3.5%	YES	3.6%
19	Furan	16	7837-H1	0.00003	0.001	3.4%	YES	3.6%
19	Furan	2	7837-A2	0.00002	0.001	2.3%	YES	3.6%
19	Furan	4	7837-B2	0.00002	0.001	2.4%	YES	3.6%
19	Furan	6	7837-C2	0.00002	0.001	2.5%	YES	3.6%
19	Furan	8	7837-D2	0.00002	0.001	2.4%	YES	3.6%
19	Furan	10	7837-E2	0.00002	0.001	2.2%	YES	3.6%
19	Furan	12	7837-F2	0.00002	0.001	2.3%	YES	3.6%
19	Furan	14						3.6%
19	Furan	16	7837-H2	0.00002	0.001	2.3%	YES	3.6%
19	Furan	2	8068-A1	0.00014	0.001	14.0%		3.6%
19	Furan	4	8068-B1	0.00015	0.001	14.7%		3.6%
19	Furan	6						3.6%
19	Furan	8	8068-D1	0.00003	0.001	3.4%	YES	3.6%
19	Furan	10	8068-E1	0.00004	0.001	3.6%	YES	3.6%
19	Furan	12	8068-F1	0.00004	0.001	3.5%	YES	3.6%
19	Furan	14	8068-G1	0.00004	0.001	3.5%	YES	3.6%
19	Furan	16	8068-H1	0.00004	0.001	3.5%	YES	3.6%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
19	Furan	2	8068-A2	0.00002	0.001	2.2%	YES	3.6%
19	Furan	4	8068-B2	0.00002	0.001	2.3%	YES	3.6%
19	Furan	6	8068-C2	0.00002	0.001	2.2%	YES	3.6%
19	Furan	8	8068-D2	0.00002	0.001	2.2%	YES	3.6%
19	Furan	10	8068-E2	0.00002	0.001	2.4%	YES	3.6%
19	Furan	12	8068-F2	0.00002	0.001	2.3%	YES	3.6%
19	Furan	14	8068-G2	0.00002	0.001	2.3%	YES	3.6%
19	Furan	16	8068-H2	0.00006	0.001	6.2%		3.6%
20	2,3-Dihydrofuran	2	7837-A1	0.00019	0.001	19.4%		2.1%
20	2,3-Dihydrofuran	4	7837-B1	0.00022	0.001	21.5%		2.1%
20	2,3-Dihydrofuran	6	7837-C1	0.00020	0.001	19.9%		2.1%
20	2,3-Dihydrofuran	8	7837-D1	0.00015	0.001	15.1%		2.1%
20	2,3-Dihydrofuran	10	7837-E1	0.00016	0.001	16.0%		2.1%
20	2,3-Dihydrofuran	12	7837-F1	0.00008	0.001	8.5%		2.1%
20	2,3-Dihydrofuran	14	7837-G1	0.00005	0.001	5.5%		2.1%
20	2,3-Dihydrofuran	16	7837-H1	0.00004	0.001	3.7%		2.1%
20	2,3-Dihydrofuran	2	7837-A2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	4	7837-B2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	6	7837-C2	0.00001	0.001	1.5%	YES	2.1%
20	2,3-Dihydrofuran	8	7837-D2	0.00001	0.001	1.5%	YES	2.1%
20	2,3-Dihydrofuran	10	7837-E2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	12	7837-F2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	14						2.1%
20	2,3-Dihydrofuran	16	7837-H2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	2	8068-A1	0.00029	0.001	29.1%		2.1%
20	2,3-Dihydrofuran	4	8068-B1	0.00044	0.001	43.6%		2.1%
20	2,3-Dihydrofuran	6						2.1%
20	2,3-Dihydrofuran	8	8068-D1	0.00011	0.001	10.6%		2.1%
20	2,3-Dihydrofuran	10	8068-E1	0.00018	0.001	17.9%		2.1%
20	2,3-Dihydrofuran	12	8068-F1	0.00017	0.001	16.6%		2.1%
20	2,3-Dihydrofuran	14	8068-G1	0.00017	0.001	16.6%		2.1%
20	2,3-Dihydrofuran	16	8068-H1	0.00002	0.001	2.1%	YES	2.1%
20	2,3-Dihydrofuran	2	8068-A2	0.00001	0.001	1.3%	YES	2.1%
20	2,3-Dihydrofuran	4	8068-B2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	6	8068-C2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	8	8068-D2	0.00003	0.001	3.2%		2.1%
20	2,3-Dihydrofuran	10	8068-E2	0.00001	0.001	1.5%	YES	2.1%
20	2,3-Dihydrofuran	12	8068-F2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	14	8068-G2	0.00001	0.001	1.4%	YES	2.1%
20	2,3-Dihydrofuran	16	8068-H2	0.00010	0.001	10.4%		2.1%
21	2,5-Dihydrofuran	2	7837-A1	0.00003	0.001	3.0%	YES	3.1%
21	2,5-Dihydrofuran	4	7837-B1	0.00003	0.001	3.1%	YES	3.1%
21	2,5-Dihydrofuran	6	7837-C1	0.00003	0.001	3.1%	YES	3.1%
21	2,5-Dihydrofuran	8	7837-D1	0.00003	0.001	3.1%	YES	3.1%
21	2,5-Dihydrofuran	10	7837-E1	0.00003	0.001	3.1%	YES	3.1%
21	2,5-Dihydrofuran	12	7837-F1	0.00003	0.001	3.0%	YES	3.1%
21	2,5-Dihydrofuran	14	7837-G1	0.00003	0.001	3.0%	YES	3.1%
21	2,5-Dihydrofuran	16	7837-H1	0.00003	0.001	3.0%	YES	3.1%
21	2,5-Dihydrofuran	2	7837-A2	0.00002	0.001	2.0%	YES	3.1%
21	2,5-Dihydrofuran	4	7837-B2	0.00003	0.001	2.6%		3.1%
21	2,5-Dihydrofuran	6	7837-C2	0.00003	0.001	2.8%		3.1%
21	2,5-Dihydrofuran	8	7837-D2	0.00002	0.001	2.4%		3.1%
21	2,5-Dihydrofuran	10	7837-E2	0.00002	0.001	1.9%	YES	3.1%
21	2,5-Dihydrofuran	12	7837-F2	0.00002	0.001	2.0%	YES	3.1%
21	2,5-Dihydrofuran	14						3.1%
21	2,5-Dihydrofuran	16	7837-H2	0.00002	0.001	1.9%	YES	3.1%
21	2,5-Dihydrofuran	2	8068-A1	0.00003	0.001	3.0%	YES	3.1%
21	2,5-Dihydrofuran	4	8068-B1	0.00003	0.001	2.9%	YES	3.1%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
21	2,5-Dihydrofuran	6		0.00003	0.001			3.1%
21	2,5-Dihydrofuran	8	8068-D1	0.00003	0.001	2.9%	YES	3.1%
21	2,5-Dihydrofuran	10	8068-E1	0.00003	0.001	3.1%	YES	3.1%
21	2,5-Dihydrofuran	12	8068-F1	0.00003	0.001	3.0%	YES	3.1%
21	2,5-Dihydrofuran	14	8068-G1	0.00003	0.001	3.1%	YES	3.1%
21	2,5-Dihydrofuran	16	8068-H1	0.00003	0.001	3.1%	YES	3.1%
21	2,5-Dihydrofuran	2	8068-A2	0.00002	0.001	1.9%	YES	3.1%
21	2,5-Dihydrofuran	4	8068-B2	0.00002	0.001	2.0%	YES	3.1%
21	2,5-Dihydrofuran	6	8068-C2	0.00004	0.001	3.9%		3.1%
21	2,5-Dihydrofuran	8	8068-D2	0.00004	0.001	4.0%		3.1%
21	2,5-Dihydrofuran	10	8068-E2	0.00002	0.001	2.1%	YES	3.1%
21	2,5-Dihydrofuran	12	8068-F2	0.00002	0.001	2.0%	YES	3.1%
21	2,5-Dihydrofuran	14	8068-G2	0.00002	0.001	2.0%	YES	3.1%
21	2,5-Dihydrofuran	16	8068-H2	0.00002	0.001	1.8%	YES	3.1%
22	2-Methylfuran	2	7837-A1	0.00004	0.001	3.6%	YES	3.7%
22	2-Methylfuran	4	7837-B1	0.00004	0.001	3.7%	YES	3.7%
22	2-Methylfuran	6	7837-C1	0.00004	0.001	3.7%	YES	3.7%
22	2-Methylfuran	8	7837-D1	0.00004	0.001	3.7%	YES	3.7%
22	2-Methylfuran	10	7837-E1	0.00004	0.001	3.7%	YES	3.7%
22	2-Methylfuran	12	7837-F1	0.00004	0.001	3.5%	YES	3.7%
22	2-Methylfuran	14	7837-G1	0.00004	0.001	3.6%	YES	3.7%
22	2-Methylfuran	16	7837-H1	0.00004	0.001	3.5%	YES	3.7%
22	2-Methylfuran	2	7837-A2	0.00002	0.001	2.4%	YES	3.7%
22	2-Methylfuran	4	7837-B2	0.00002	0.001	2.5%	YES	3.7%
22	2-Methylfuran	6	7837-C2	0.00003	0.001	2.5%	YES	3.7%
22	2-Methylfuran	8	7837-D2	0.00003	0.001	2.5%	YES	3.7%
22	2-Methylfuran	10	7837-E2	0.00002	0.001	2.3%	YES	3.7%
22	2-Methylfuran	12	7837-F2	0.00002	0.001	2.3%	YES	3.7%
22	2-Methylfuran	14						3.7%
22	2-Methylfuran	16	7837-H2	0.00002	0.001	2.3%	YES	3.7%
22	2-Methylfuran	2	8068-A1	0.00004	0.001	3.6%	YES	3.7%
22	2-Methylfuran	4	8068-B1	0.00003	0.001	3.5%	YES	3.7%
22	2-Methylfuran	6						3.7%
22	2-Methylfuran	8	8068-D1	0.00003	0.001	3.5%	YES	3.7%
22	2-Methylfuran	10	8068-E1	0.00004	0.001	3.7%	YES	3.7%
22	2-Methylfuran	12	8068-F1	0.00004	0.001	3.6%	YES	3.7%
22	2-Methylfuran	14	8068-G1	0.00004	0.001	3.6%	YES	3.7%
22	2-Methylfuran	16	8068-H1	0.00004	0.001	3.6%	YES	3.7%
22	2-Methylfuran	2	8068-A2	0.00002	0.001	2.2%	YES	3.7%
22	2-Methylfuran	4	8068-B2	0.00002	0.001	2.4%	YES	3.7%
22	2-Methylfuran	6	8068-C2	0.00002	0.001	2.3%	YES	3.7%
22	2-Methylfuran	8	8068-D2	0.00002	0.001	2.3%	YES	3.7%
22	2-Methylfuran	10	8068-E2	0.00002	0.001	2.5%	YES	3.7%
22	2-Methylfuran	12	8068-F2	0.00002	0.001	2.3%	YES	3.7%
22	2-Methylfuran	14	8068-G2	0.00002	0.001	2.4%	YES	3.7%
22	2-Methylfuran	16	8068-H2	0.00002	0.001	2.1%	YES	3.7%
23	2,5-Dimethylfuran	2	7837-A1	0.00005	0.001	5.0%	YES	5.2%
23	2,5-Dimethylfuran	4	7837-B1	0.00005	0.001	5.1%	YES	5.2%
23	2,5-Dimethylfuran	6	7837-C1	0.00005	0.001	5.2%	YES	5.2%
23	2,5-Dimethylfuran	8	7837-D1	0.00005	0.001	5.2%	YES	5.2%
23	2,5-Dimethylfuran	10	7837-E1	0.00005	0.001	5.1%	YES	5.2%
23	2,5-Dimethylfuran	12	7837-F1	0.00005	0.001	4.9%	YES	5.2%
23	2,5-Dimethylfuran	14	7837-G1	0.00005	0.001	5.0%	YES	5.2%
23	2,5-Dimethylfuran	16	7837-H1	0.00005	0.001	4.9%	YES	5.2%
23	2,5-Dimethylfuran	2	7837-A2	0.00003	0.001	3.3%	YES	5.2%
23	2,5-Dimethylfuran	4	7837-B2	0.00003	0.001	3.4%	YES	5.2%
23	2,5-Dimethylfuran	6	7837-C2	0.00004	0.001	3.5%	YES	5.2%
23	2,5-Dimethylfuran	8	7837-D2	0.00003	0.001	3.5%	YES	5.2%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
23	2,5-Dimethylfuran	10	7837-E2	0.00003	0.001	3.2%	YES	5.2%
23	2,5-Dimethylfuran	12	7837-F2	0.00003	0.001	3.3%	YES	5.2%
23	2,5-Dimethylfuran	14						5.2%
23	2,5-Dimethylfuran	16	7837-H2	0.00003	0.001	3.2%	YES	5.2%
23	2,5-Dimethylfuran	2	8068-A1	0.00005	0.001	5.0%	YES	5.2%
23	2,5-Dimethylfuran	4	8068-B1	0.00005	0.001	4.9%	YES	5.2%
23	2,5-Dimethylfuran	6						5.2%
23	2,5-Dimethylfuran	8	8068-D1	0.00005	0.001	4.8%	YES	5.2%
23	2,5-Dimethylfuran	10	8068-E1	0.00005	0.001	5.2%	YES	5.2%
23	2,5-Dimethylfuran	12	8068-F1	0.00005	0.001	5.0%	YES	5.2%
23	2,5-Dimethylfuran	14	8068-G1	0.00005	0.001	5.1%	YES	5.2%
23	2,5-Dimethylfuran	16	8068-H1	0.00005	0.001	5.1%	YES	5.2%
23	2,5-Dimethylfuran	2	8068-A2	0.00003	0.001	3.1%	YES	5.2%
23	2,5-Dimethylfuran	4	8068-B2	0.00003	0.001	3.4%	YES	5.2%
23	2,5-Dimethylfuran	6	8068-C2	0.00003	0.001	3.2%	YES	5.2%
23	2,5-Dimethylfuran	8	8068-D2	0.00003	0.001	3.2%	YES	5.2%
23	2,5-Dimethylfuran	10	8068-E2	0.00003	0.001	3.5%	YES	5.2%
23	2,5-Dimethylfuran	12	8068-F2	0.00003	0.001	3.3%	YES	5.2%
23	2,5-Dimethylfuran	14	8068-G2	0.00003	0.001	3.3%	YES	5.2%
23	2,5-Dimethylfuran	16	8068-H2	0.00003	0.001	3.0%	YES	5.2%
27	2-Pentylfuran	2	7837-A1	0.00004	0.001	4.2%	YES	4.3%
27	2-Pentylfuran	4	7837-B1	0.00004	0.001	4.3%	YES	4.3%
27	2-Pentylfuran	6	7837-C1	0.00004	0.001	4.3%	YES	4.3%
27	2-Pentylfuran	8	7837-D1	0.00004	0.001	4.3%	YES	4.3%
27	2-Pentylfuran	10	7837-E1	0.00004	0.001	4.3%	YES	4.3%
27	2-Pentylfuran	12	7837-F1	0.00004	0.001	4.1%	YES	4.3%
27	2-Pentylfuran	14	7837-G1	0.00004	0.001	4.2%	YES	4.3%
27	2-Pentylfuran	16	7837-H1	0.00004	0.001	4.1%	YES	4.3%
27	2-Pentylfuran	2	7837-A2	0.00003	0.001	2.7%	YES	4.3%
27	2-Pentylfuran	4	7837-B2	0.00003	0.001	3.1%	YES	4.3%
27	2-Pentylfuran	6	7837-C2	0.00003	0.001	3.0%	YES	4.3%
27	2-Pentylfuran	8	7837-D2	0.00003	0.001	2.9%	YES	4.3%
27	2-Pentylfuran	10	7837-E2	0.00003	0.001	2.7%	YES	4.3%
27	2-Pentylfuran	12	7837-F2	0.00003	0.001	2.7%	YES	4.3%
27	2-Pentylfuran	14						4.3%
27	2-Pentylfuran	16	7837-H2	0.00003	0.001	2.7%	YES	4.3%
27	2-Pentylfuran	2	8068-A1	0.00006	0.001	5.5%	YES	4.3%
27	2-Pentylfuran	4	8068-B1	0.00006	0.001	6.3%	YES	4.3%
27	2-Pentylfuran	6						4.3%
27	2-Pentylfuran	8	8068-D1	0.00004	0.001	4.0%	YES	4.3%
27	2-Pentylfuran	10	8068-E1	0.00004	0.001	4.3%	YES	4.3%
27	2-Pentylfuran	12	8068-F1	0.00004	0.001	4.2%	YES	4.3%
27	2-Pentylfuran	14	8068-G1	0.00004	0.001	4.2%	YES	4.3%
27	2-Pentylfuran	16	8068-H1	0.00004	0.001	4.2%	YES	4.3%
27	2-Pentylfuran	2	8068-A2	0.00003	0.001	2.9%	YES	4.3%
27	2-Pentylfuran	4	8068-B2	0.00003	0.001	2.8%	YES	4.3%
27	2-Pentylfuran	6	8068-C2	0.00004	0.001	4.5%	YES	4.3%
27	2-Pentylfuran	8	8068-D2	0.00004	0.001	3.9%	YES	4.3%
27	2-Pentylfuran	10	8068-E2	0.00003	0.001	2.9%	YES	4.3%
27	2-Pentylfuran	12	8068-F2	0.00003	0.001	2.7%	YES	4.3%
27	2-Pentylfuran	14	8068-G2	0.00004	0.001	3.7%	YES	4.3%
27	2-Pentylfuran	16	8068-H2	0.00002	0.001	2.5%	YES	4.3%
28	2-Heptylfuran	2	7837-A1	0.00003	0.001	3.3%	YES	3.4%
28	2-Heptylfuran	4	7837-B1	0.00003	0.001	3.4%	YES	3.4%
28	2-Heptylfuran	6	7837-C1	0.00003	0.001	3.4%	YES	3.4%
28	2-Heptylfuran	8	7837-D1	0.00003	0.001	3.4%	YES	3.4%
28	2-Heptylfuran	10	7837-E1	0.00003	0.001	3.4%	YES	3.4%
28	2-Heptylfuran	12	7837-F1	0.00003	0.001	3.3%	YES	3.4%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
28	2-Heptylfuran	14	7837-G1	0.00003	0.001	3.3%	YES	3.4%
28	2-Heptylfuran	16	7837-H1	0.00003	0.001	3.3%	YES	3.4%
28	2-Heptylfuran	2	7837-A2	0.00002	0.001	2.2%	YES	3.4%
28	2-Heptylfuran	4	7837-B2	0.00002	0.001	2.3%	YES	3.4%
28	2-Heptylfuran	6	7837-C2	0.00002	0.001	2.4%	YES	3.4%
28	2-Heptylfuran	8	7837-D2	0.00002	0.001	2.3%	YES	3.4%
28	2-Heptylfuran	10	7837-E2	0.00002	0.001	2.1%	YES	3.4%
28	2-Heptylfuran	12	7837-F2	0.00002	0.001	2.2%	YES	3.4%
28	2-Heptylfuran	14						3.4%
28	2-Heptylfuran	16	7837-H2	0.00002	0.001	2.1%	YES	3.4%
28	2-Heptylfuran	2	8068-A1	0.00003	0.001	3.3%	YES	3.4%
28	2-Heptylfuran	4	8068-B1	0.00003	0.001	3.2%	YES	3.4%
28	2-Heptylfuran	6						3.4%
28	2-Heptylfuran	8	8068-D1	0.00003	0.001	3.2%	YES	3.4%
28	2-Heptylfuran	10	8068-E1	0.00003	0.001	3.4%	YES	3.4%
28	2-Heptylfuran	12	8068-F1	0.00003	0.001	3.3%	YES	3.4%
28	2-Heptylfuran	14	8068-G1	0.00003	0.001	3.4%	YES	3.4%
28	2-Heptylfuran	16	8068-H1	0.00003	0.001	3.4%	YES	3.4%
28	2-Heptylfuran	2	8068-A2	0.00003	0.001	2.6%		3.4%
28	2-Heptylfuran	4	8068-B2	0.00002	0.001	2.3%		3.4%
28	2-Heptylfuran	6	8068-C2	0.00003	0.001	2.7%		3.4%
28	2-Heptylfuran	8	8068-D2	0.00003	0.001	2.7%		3.4%
28	2-Heptylfuran	10	8068-E2	0.00002	0.001	2.3%	YES	3.4%
28	2-Heptylfuran	12	8068-F2	0.00002	0.001	2.2%	YES	3.4%
28	2-Heptylfuran	14	8068-G2	0.00002	0.001	2.2%		3.4%
28	2-Heptylfuran	16	8068-H2	0.00002	0.001	2.0%	YES	3.4%
29	2-Propylfuran	2	7837-A1	0.00004	0.001	3.6%	YES	3.7%
29	2-Propylfuran	4	7837-B1	0.00004	0.001	3.7%	YES	3.7%
29	2-Propylfuran	6	7837-C1	0.00004	0.001	3.7%	YES	3.7%
29	2-Propylfuran	8	7837-D1	0.00004	0.001	3.7%	YES	3.7%
29	2-Propylfuran	10	7837-E1	0.00004	0.001	3.7%	YES	3.7%
29	2-Propylfuran	12	7837-F1	0.00004	0.001	3.6%	YES	3.7%
29	2-Propylfuran	14	7837-G1	0.00004	0.001	3.6%	YES	3.7%
29	2-Propylfuran	16	7837-H1	0.00004	0.001	3.5%	YES	3.7%
29	2-Propylfuran	2	7837-A2	0.00002	0.001	2.4%	YES	3.7%
29	2-Propylfuran	4	7837-B2	0.00002	0.001	2.5%	YES	3.7%
29	2-Propylfuran	6	7837-C2	0.00003	0.001	2.6%	YES	3.7%
29	2-Propylfuran	8	7837-D2	0.00003	0.001	2.5%	YES	3.7%
29	2-Propylfuran	10	7837-E2	0.00002	0.001	2.3%	YES	3.7%
29	2-Propylfuran	12	7837-F2	0.00002	0.001	2.4%	YES	3.7%
29	2-Propylfuran	14						3.7%
29	2-Propylfuran	16	7837-H2	0.00002	0.001	2.3%	YES	3.7%
29	2-Propylfuran	2	8068-A1	0.00004	0.001	3.6%	YES	3.7%
29	2-Propylfuran	4	8068-B1	0.00004	0.001	3.5%	YES	3.7%
29	2-Propylfuran	6						3.7%
29	2-Propylfuran	8	8068-D1	0.00003	0.001	3.5%	YES	3.7%
29	2-Propylfuran	10	8068-E1	0.00004	0.001	3.7%	YES	3.7%
29	2-Propylfuran	12	8068-F1	0.00004	0.001	3.6%	YES	3.7%
29	2-Propylfuran	14	8068-G1	0.00004	0.001	3.6%	YES	3.7%
29	2-Propylfuran	16	8068-H1	0.00004	0.001	3.7%	YES	3.7%
29	2-Propylfuran	2	8068-A2	0.00002	0.001	2.2%	YES	3.7%
29	2-Propylfuran	4	8068-B2	0.00002	0.001	2.4%	YES	3.7%
29	2-Propylfuran	6	8068-C2	0.00002	0.001	2.3%	YES	3.7%
29	2-Propylfuran	8	8068-D2	0.00002	0.001	2.3%	YES	3.7%
29	2-Propylfuran	10	8068-E2	0.00003	0.001	2.5%	YES	3.7%
29	2-Propylfuran	12	8068-F2	0.00002	0.001	2.4%	YES	3.7%
29	2-Propylfuran	14	8068-G2	0.00002	0.001	2.4%	YES	3.7%
29	2-Propylfuran	16	8068-H2	0.00002	0.001	2.2%	YES	3.7%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
33	Diethylphthalate	2	7837-A1	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	4	7837-B1	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	6	7837-C1	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	8	7837-D1	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	10	7837-E1	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	12	7837-F1	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	14	7837-G1	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	16	7837-H1	0.00019	0.55	0.03%	YES	0.04%
33	Diethylphthalate	2	7837-A2	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	4	7837-B2	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	6	7837-C2	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	8	7837-D2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	10	7837-E2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	12	7837-F2	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	14	7837-G2	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	16	7837-H2	0.00020	0.55	0.04%	YES	0.04%
33	Diethylphthalate	2						0.04%
33	Diethylphthalate	4	8068-B1	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	6	8068-C1	0.00022	0.55	0.04%	YES	0.04%
33	Diethylphthalate	8	8068-D1	0.00023	0.55	0.04%	YES	0.04%
33	Diethylphthalate	10	8068-E1	0.00022	0.55	0.04%	YES	0.04%
33	Diethylphthalate	12						0.04%
33	Diethylphthalate	14						0.04%
33	Diethylphthalate	16	8068-H1	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	2	8068-A2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	4	8068-B2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	6	8068-C2	0.00022	0.55	0.04%	YES	0.04%
33	Diethylphthalate	8	8068-D2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	10	8068-E2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	12	8068-F2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	14	8068-G2	0.00021	0.55	0.04%	YES	0.04%
33	Diethylphthalate	16	8068-H2	0.00021	0.55	0.04%	YES	0.04%
34	Acetonitrile	2	7837-A1	0.052	20	0.26%		0.002%
34	Acetonitrile	4	7837-B1	0.075	20	0.37%		0.002%
34	Acetonitrile	6	7837-C1	0.078	20	0.39%		0.002%
34	Acetonitrile	8	7837-D1	0.068	20	0.34%		0.002%
34	Acetonitrile	10	7837-E1	0.018	20	0.09%		0.002%
34	Acetonitrile	12	7837-F1	0.063	20	0.32%		0.002%
34	Acetonitrile	14	7837-G1	0.089	20	0.45%		0.002%
34	Acetonitrile	16	7837-H1	0.071	20	0.36%		0.002%
34	Acetonitrile	2	7837-A2	0.010	20	0.05%		0.002%
34	Acetonitrile	4	7837-B2	0.035	20	0.17%		0.002%
34	Acetonitrile	6	7837-C2	0.044	20	0.22%		0.002%
34	Acetonitrile	8	7837-D2	0.196	20	0.98%		0.002%
34	Acetonitrile	10	7837-E2	0.059	20	0.30%		0.002%
34	Acetonitrile	12	7837-F2	0.053	20	0.26%		0.002%
34	Acetonitrile	14	7837-G2	0.075	20	0.38%		0.002%
34	Acetonitrile	16	7837-H2	0.099	20	0.49%		0.002%
34	Acetonitrile	2	8068-A1	0.138	20	0.69%		0.002%
34	Acetonitrile	4	8068-B1	0.150	20	0.75%		0.002%
34	Acetonitrile	6	8068-C1	0.154	20	0.77%		0.002%
34	Acetonitrile	8	8068-D1	0.161	20	0.81%		0.002%
34	Acetonitrile	10	8068-E1	0.170	20	0.85%		0.002%
34	Acetonitrile	12	8068-F1	0.114	20	0.57%		0.002%
34	Acetonitrile	14	8068-G1	0.509	20	2.5%		0.002%
34	Acetonitrile	16	8068-H1	0.340	20	1.7%		0.002%
34	Acetonitrile	2	8068-A2	0.078	20	0.39%		0.002%
34	Acetonitrile	4	8068-B2	0.098	20	0.49%		0.002%
34	Acetonitrile	6	8068-C2	0.156	20	0.78%		0.002%
34	Acetonitrile	8	8068-D2	4.154	20	20.8%		0.002%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
34	Acetonitrile	10	8068-E2	0.166	20	0.83%		0.002%
34	Acetonitrile	12	8068-F2	0.167	20	0.83%		0.002%
34	Acetonitrile	14	8068-G2	0.187	20	0.93%		0.002%
34	Acetonitrile	16	8068-H2	0.106	20	0.53%		0.002%
35	Propanenitrile	2	7837-A1	0.00803	6.0	0.134%		0.003%
35	Propanenitrile	4	7837-B1	0.00955	6.0	0.159%		0.003%
35	Propanenitrile	6	7837-C1	0.00890	6.0	0.148%		0.003%
35	Propanenitrile	8	7837-D1	0.00797	6.0	0.133%		0.003%
35	Propanenitrile	10	7837-E1	0.00732	6.0	0.122%		0.003%
35	Propanenitrile	12	7837-F1	0.00687	6.0	0.115%		0.003%
35	Propanenitrile	14	7837-G1	0.00641	6.0	0.107%		0.003%
35	Propanenitrile	16	7837-H1	0.00791	6.0	0.132%		0.003%
35	Propanenitrile	2	7837-A2	0.00017	6.0	0.003%	YES	0.003%
35	Propanenitrile	4	7837-B2	0.00017	6.0	0.003%	YES	0.003%
35	Propanenitrile	6	7837-C2	0.00017	6.0	0.003%	YES	0.003%
35	Propanenitrile	8	7837-D2	0.00017	6.0	0.003%	YES	0.003%
35	Propanenitrile	10	7837-E2	0.00027	6.0	0.005%		0.003%
35	Propanenitrile	12	7837-F2	0.00032	6.0	0.005%		0.003%
35	Propanenitrile	14	7837-G2	0.00149	6.0	0.025%		0.003%
35	Propanenitrile	16	7837-H2	0.00328	6.0	0.055%		0.003%
35	Propanenitrile	2	8068-A1	0.00669	6.0	0.111%		0.003%
35	Propanenitrile	4	8068-B1	0.00712	6.0	0.119%		0.003%
35	Propanenitrile	6	8068-C1	0.00806	6.0	0.134%		0.003%
35	Propanenitrile	8	8068-D1	0.00768	6.0	0.128%		0.003%
35	Propanenitrile	10	8068-E1	0.00825	6.0	0.137%		0.003%
35	Propanenitrile	12	8068-F1	0.00592	6.0	0.099%		0.003%
35	Propanenitrile	14	8068-G1	0.00557	6.0	0.093%		0.003%
35	Propanenitrile	16	8068-H1	0.00447	6.0	0.074%		0.003%
35	Propanenitrile	2	8068-A2	0.00016	6.0	0.003%	YES	0.003%
35	Propanenitrile	4	8068-B2	0.00019	6.0	0.003%	YES	0.003%
35	Propanenitrile	6	8068-C2	0.00018	6.0	0.003%	YES	0.003%
35	Propanenitrile	8	8068-D2	0.00074	6.0	0.012%		0.003%
35	Propanenitrile	10	8068-E2	0.00032	6.0	0.005%		0.003%
35	Propanenitrile	12	8068-F2	0.00045	6.0	0.008%		0.003%
35	Propanenitrile	14	8068-G2	0.00128	6.0	0.021%		0.003%
35	Propanenitrile	16	8068-H2	0.00459	6.0	0.077%		0.003%
36	Butanenitrile	2	7837-A1	0.00448	8.0	0.056%		0.002%
36	Butanenitrile	4	7837-B1	0.00478	8.0	0.060%		0.002%
36	Butanenitrile	6	7837-C1	0.00466	8.0	0.058%		0.002%
36	Butanenitrile	8	7837-D1	0.00385	8.0	0.048%		0.002%
36	Butanenitrile	10	7837-E1	0.00341	8.0	0.043%		0.002%
36	Butanenitrile	12	7837-F1	0.00323	8.0	0.040%		0.002%
36	Butanenitrile	14	7837-G1	0.00317	8.0	0.040%		0.002%
36	Butanenitrile	16	7837-H1	0.00342	8.0	0.043%		0.002%
36	Butanenitrile	2	7837-A2	0.00012	8.0	0.001%	YES	0.002%
36	Butanenitrile	4	7837-B2	0.00012	8.0	0.001%	YES	0.002%
36	Butanenitrile	6	7837-C2	0.00012	8.0	0.001%	YES	0.002%
36	Butanenitrile	8	7837-D2	0.00012	8.0	0.001%	YES	0.002%
36	Butanenitrile	10	7837-E2	0.00011	8.0	0.001%	YES	0.002%
36	Butanenitrile	12	7837-F2	0.00011	8.0	0.001%	YES	0.002%
36	Butanenitrile	14	7837-G2	0.00011	8.0	0.001%	YES	0.002%
36	Butanenitrile	16	7837-H2	0.00011	8.0	0.001%	YES	0.002%
36	Butanenitrile	2	8068-A1	0.00377	8.0	0.047%		0.002%
36	Butanenitrile	4	8068-B1	0.00475	8.0	0.059%		0.002%
36	Butanenitrile	6	8068-C1	0.00514	8.0	0.064%		0.002%
36	Butanenitrile	8	8068-D1	0.00415	8.0	0.052%		0.002%
36	Butanenitrile	10	8068-E1	0.00415	8.0	0.052%		0.002%
36	Butanenitrile	12	8068-F1	0.00292	8.0	0.037%		0.002%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
36	Butanenitrile	14	8068-G1	0.00284	8.0	0.035%		0.002%
36	Butanenitrile	16	8068-H1	0.00012	8.0	0.001%	YES	0.002%
36	Butanenitrile	2	8068-A2	0.00011	8.0	0.001%	YES	0.002%
36	Butanenitrile	4	8068-B2	0.00013	8.0	0.002%	YES	0.002%
36	Butanenitrile	6	8068-C2	0.00012	8.0	0.002%	YES	0.002%
36	Butanenitrile	8	8068-D2	0.00013	8.0	0.002%	YES	0.002%
36	Butanenitrile	10	8068-E2	0.00012	8.0	0.001%	YES	0.002%
36	Butanenitrile	12	8068-F2	0.00011	8.0	0.001%	YES	0.002%
36	Butanenitrile	14	8068-G2	0.00011	8.0	0.001%	YES	0.002%
36	Butanenitrile	16	8068-H2	0.00202	8.0	0.025%		0.002%
37	Pentanenitrile	2	7837-A1	0.00091	6.0	0.015%		0.002%
37	Pentanenitrile	4	7837-B1	0.00125	6.0	0.021%		0.002%
37	Pentanenitrile	6	7837-C1	0.00118	6.0	0.020%		0.002%
37	Pentanenitrile	8	7837-D1	0.00088	6.0	0.015%		0.002%
37	Pentanenitrile	10	7837-E1	0.00112	6.0	0.019%		0.002%
37	Pentanenitrile	12	7837-F1	0.00082	6.0	0.014%		0.002%
37	Pentanenitrile	14	7837-G1	0.00070	6.0	0.012%		0.002%
37	Pentanenitrile	16	7837-H1	0.00097	6.0	0.016%		0.002%
37	Pentanenitrile	2	7837-A2	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	4	7837-B2	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	6	7837-C2	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	8	7837-D2	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	10	7837-E2	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	12	7837-F2	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	14	7837-G2	0.00012	6.0	0.002%	YES	0.002%
37	Pentanenitrile	16	7837-H2	0.00012	6.0	0.002%	YES	0.002%
37	Pentanenitrile	2	8068-A1	0.00092	6.0	0.015%		0.002%
37	Pentanenitrile	4	8068-B1	0.00124	6.0	0.021%		0.002%
37	Pentanenitrile	6	8068-C1	0.00137	6.0	0.023%		0.002%
37	Pentanenitrile	8	8068-D1	0.00115	6.0	0.019%		0.002%
37	Pentanenitrile	10	8068-E1	0.00084	6.0	0.014%		0.002%
37	Pentanenitrile	12	8068-F1	0.00067	6.0	0.011%		0.002%
37	Pentanenitrile	14	8068-G1	0.00086	6.0	0.014%		0.002%
37	Pentanenitrile	16	8068-H1	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	2	8068-A2	0.00012	6.0	0.002%	YES	0.002%
37	Pentanenitrile	4	8068-B2	0.00014	6.0	0.002%	YES	0.002%
37	Pentanenitrile	6	8068-C2	0.00014	6.0	0.002%	YES	0.002%
37	Pentanenitrile	8	8068-D2	0.00014	6.0	0.002%	YES	0.002%
37	Pentanenitrile	10	8068-E2	0.00013	6.0	0.002%	YES	0.002%
37	Pentanenitrile	12	8068-F2	0.00012	6.0	0.002%	YES	0.002%
37	Pentanenitrile	14	8068-G2	0.00012	6.0	0.002%	YES	0.002%
37	Pentanenitrile	16	8068-H2	0.00043	6.0	0.007%		0.002%
38	Hexanenitrile	2	7837-A1	0.00605	6.0	0.101%		0.002%
38	Hexanenitrile	4	7837-B1	0.01007	6.0	0.168%		0.002%
38	Hexanenitrile	6	7837-C1	0.00011	6.0	0.002%	YES	0.002%
38	Hexanenitrile	8	7837-D1	0.00822	6.0	0.137%		0.002%
38	Hexanenitrile	10	7837-E1	0.01022	6.0	0.170%		0.002%
38	Hexanenitrile	12	7837-F1	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	14	7837-G1	0.00015	6.0	0.003%		0.002%
38	Hexanenitrile	16	7837-H1	0.00019	6.0	0.003%		0.002%
38	Hexanenitrile	2	7837-A2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	4	7837-B2	0.00011	6.0	0.002%	YES	0.002%
38	Hexanenitrile	6	7837-C2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	8	7837-D2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	10	7837-E2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	12	7837-F2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	14	7837-G2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	16	7837-H2	0.00010	6.0	0.002%	YES	0.002%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
38	Hexanenitrile	2	8068-A1	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	4	8068-B1	0.00043	6.0	0.007%		0.002%
38	Hexanenitrile	6	8068-C1	0.00034	6.0	0.006%		0.002%
38	Hexanenitrile	8	8068-D1	0.00039	6.0	0.007%		0.002%
38	Hexanenitrile	10	8068-E1	0.00026	6.0	0.004%		0.002%
38	Hexanenitrile	12	8068-F1	0.00017	6.0	0.003%		0.002%
38	Hexanenitrile	14	8068-G1	0.00015	6.0	0.003%		0.002%
38	Hexanenitrile	16	8068-H1	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	2	8068-A2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	4	8068-B2	0.00011	6.0	0.002%	YES	0.002%
38	Hexanenitrile	6	8068-C2	0.00011	6.0	0.002%	YES	0.002%
38	Hexanenitrile	8	8068-D2	0.00011	6.0	0.002%	YES	0.002%
38	Hexanenitrile	10	8068-E2	0.00011	6.0	0.002%	YES	0.002%
38	Hexanenitrile	12	8068-F2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	14	8068-G2	0.00010	6.0	0.002%	YES	0.002%
38	Hexanenitrile	16	8068-H2	0.00012	6.0	0.002%		0.002%
42	Ethylamine	2	7837-A1	0.0044	5	0.09%	YES	0.10%
42	Ethylamine	4	7837-B1	0.0046	5	0.09%	YES	0.10%
42	Ethylamine	6	7837-C1	0.0047	5	0.09%	YES	0.10%
42	Ethylamine	8	7837-D1	0.0047	5	0.09%	YES	0.10%
42	Ethylamine	10	7837-E1	0.0046	5	0.09%	YES	0.10%
42	Ethylamine	12	7837-F1	0.0046	5	0.09%	YES	0.10%
42	Ethylamine	14	7837-G1	0.0046	5	0.09%	YES	0.10%
42	Ethylamine	16	7837-H1	0.0045	5	0.09%	YES	0.10%
42	Ethylamine	2	7837-A2	0.0046	5	0.09%	YES	0.10%
42	Ethylamine	4	7837-B2	0.0048	5	0.10%	YES	0.10%
42	Ethylamine	6	7837-C2	0.0049	5	0.10%	YES	0.10%
42	Ethylamine	8	7837-D2	0.0046	5	0.09%	YES	0.10%
42	Ethylamine	10	7837-E2	0.0045	5	0.09%	YES	0.10%
42	Ethylamine	12	7837-F2	0.0048	5	0.10%	YES	0.10%
42	Ethylamine	14	7837-G2	0.0044	5	0.09%	YES	0.10%
42	Ethylamine	16	7837-H2	0.0044	5	0.09%	YES	0.10%
42	Ethylamine	2	8068-A1	0.0043	5	0.09%	YES	0.10%
42	Ethylamine	4	8068-B1	0.0048	5	0.10%	YES	0.10%
42	Ethylamine	6	8068-C1	0.0049	5	0.10%	YES	0.10%
42	Ethylamine	8	8068-D1	0.0049	5	0.10%	YES	0.10%
42	Ethylamine	10	8068-E1	0.0048	5	0.10%	YES	0.10%
42	Ethylamine	12	8068-F1	0.0048	5	0.10%	YES	0.10%
42	Ethylamine	14	8068-G1	0.0047	5	0.09%	YES	0.10%
42	Ethylamine	16	8068-H1	0.0047	5	0.09%	YES	0.10%
42	Ethylamine	2	8068-A2	0.0048	5	0.09%	YES	0.10%
42	Ethylamine	4	8068-B2	0.0049	5	0.10%	YES	0.10%
42	Ethylamine	6	8068-C2	0.0049	5	0.10%	YES	0.10%
42	Ethylamine	8	8068-D2	0.0049	5	0.10%	YES	0.10%
42	Ethylamine	10	8068-E2	0.0049	5	0.10%	YES	0.10%
42	Ethylamine	12	8068-F2	0.0048	5	0.10%	YES	0.10%
42	Ethylamine	14	8068-G2	0.0048	5	0.10%	YES	0.10%
42	Ethylamine	16	8068-H2	0.0048	5	0.10%	YES	0.10%
43	N-Nitrosodimethylamine	2	7837-A1	0.00211	0.0003	703%		11.2%
43	N-Nitrosodimethylamine	4	7837-B1	0.00251	0.0003	838%		11.2%
43	N-Nitrosodimethylamine	6	7837-C1	0.00241	0.0003	804%		11.2%
43	N-Nitrosodimethylamine	8	7837-D1	0.00207	0.0003	689%		11.2%
43	N-Nitrosodimethylamine	10	7837-E1	0.00167	0.0003	558%		11.2%
43	N-Nitrosodimethylamine	12	7837-F1	0.00190	0.0003	634%		11.2%
43	N-Nitrosodimethylamine	14	7837-G1	0.00159	0.0003	529%		11.2%
43	N-Nitrosodimethylamine	16	7837-H1	0.00126	0.0003	420%		11.2%
43	N-Nitrosodimethylamine	2	7837-A2	0.00003	0.0003	10.8%	YES	11.2%
43	N-Nitrosodimethylamine	4	7837-B2	0.00003	0.0003	11.0%	YES	11.2%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
43	N-Nitrosodimethylamine	6	7837-C2	0.00003	0.0003	11.2%	YES	11.2%
43	N-Nitrosodimethylamine	8	7837-D2	0.00003	0.0003	10.8%	YES	11.2%
43	N-Nitrosodimethylamine	10	7837-E2	0.00003	0.0003	10.6%	YES	11.2%
43	N-Nitrosodimethylamine	12	7837-F2	0.00003	0.0003	10.6%	YES	11.2%
43	N-Nitrosodimethylamine	14	7837-G2	0.00003	0.0003	10.3%	YES	11.2%
43	N-Nitrosodimethylamine	16	7837-H2	0.00003	0.0003	10.1%	YES	11.2%
43	N-Nitrosodimethylamine	2	8068-A1	0.00149	0.0003	496%		11.2%
43	N-Nitrosodimethylamine	4	8068-B1	0.00233	0.0003	776%		11.2%
43	N-Nitrosodimethylamine	6	8068-C1	0.00260	0.0003	868%		11.2%
43	N-Nitrosodimethylamine	8	8068-D1	0.00280	0.0003	932%		11.2%
43	N-Nitrosodimethylamine	10	8068-E1	0.00240	0.0003	802%		11.2%
43	N-Nitrosodimethylamine	12	8068-F1	0.00188	0.0003	625%		11.2%
43	N-Nitrosodimethylamine	14	8068-G1	0.00176	0.0003	588%		11.2%
43	N-Nitrosodimethylamine	16	8068-H1	0.00003	0.0003	9.8%	YES	11.2%
43	N-Nitrosodimethylamine	2	8068-A2	0.00003	0.0003	10.2%	YES	11.2%
43	N-Nitrosodimethylamine	4	8068-B2	0.00003	0.0003	10.4%	YES	11.2%
43	N-Nitrosodimethylamine	6	8068-C2	0.00003	0.0003	10.5%	YES	11.2%
43	N-Nitrosodimethylamine	8	8068-D2	0.00003	0.0003	10.5%	YES	11.2%
43	N-Nitrosodimethylamine	10	8068-E2	0.00003	0.0003	10.2%	YES	11.2%
43	N-Nitrosodimethylamine	12	8068-F2	0.00003	0.0003	9.8%	YES	11.2%
43	N-Nitrosodimethylamine	14	8068-G2	0.00003	0.0003	9.6%	YES	11.2%
43	N-Nitrosodimethylamine	16	8068-H2	0.00193	0.0003	644%		11.2%
44	N-Nitrosodiethylamine	2	7837-A1	0.00002	0.0001	21.7%	YES	23.2%
44	N-Nitrosodiethylamine	4	7837-B1	0.00002	0.0001	22.0%	YES	23.2%
44	N-Nitrosodiethylamine	6	7837-C1	0.00002	0.0001	22.5%	YES	23.2%
44	N-Nitrosodiethylamine	8	7837-D1	0.00002	0.0001	22.2%	YES	23.2%
44	N-Nitrosodiethylamine	10	7837-E1	0.00002	0.0001	21.9%	YES	23.2%
44	N-Nitrosodiethylamine	12	7837-F1	0.00002	0.0001	21.7%	YES	23.2%
44	N-Nitrosodiethylamine	14	7837-G1	0.00002	0.0001	21.6%	YES	23.2%
44	N-Nitrosodiethylamine	16	7837-H1	0.00002	0.0001	21.3%	YES	23.2%
44	N-Nitrosodiethylamine	2	7837-A2	0.00002	0.0001	22.5%	YES	23.2%
44	N-Nitrosodiethylamine	4	7837-B2	0.00002	0.0001	22.8%	YES	23.2%
44	N-Nitrosodiethylamine	6	7837-C2	0.00002	0.0001	23.2%	YES	23.2%
44	N-Nitrosodiethylamine	8	7837-D2	0.00002	0.0001	22.3%	YES	23.2%
44	N-Nitrosodiethylamine	10	7837-E2	0.00002	0.0001	22.1%	YES	23.2%
44	N-Nitrosodiethylamine	12	7837-F2	0.00002	0.0001	22.0%	YES	23.2%
44	N-Nitrosodiethylamine	14	7837-G2	0.00002	0.0001	21.3%	YES	23.2%
44	N-Nitrosodiethylamine	16	7837-H2	0.00002	0.0001	20.9%	YES	23.2%
44	N-Nitrosodiethylamine	2	8068-A1	0.00002	0.0001	21.8%	YES	23.2%
44	N-Nitrosodiethylamine	4	8068-B1	0.00002	0.0001	22.3%	YES	23.2%
44	N-Nitrosodiethylamine	6	8068-C1	0.00002	0.0001	23.0%	YES	23.2%
44	N-Nitrosodiethylamine	8	8068-D1	0.00002	0.0001	22.9%	YES	23.2%
44	N-Nitrosodiethylamine	10	8068-E1	0.00002	0.0001	21.9%	YES	23.2%
44	N-Nitrosodiethylamine	12	8068-F1	0.00002	0.0001	21.3%	YES	23.2%
44	N-Nitrosodiethylamine	14	8068-G1	0.00002	0.0001	21.4%	YES	23.2%
44	N-Nitrosodiethylamine	16	8068-H1	0.00002	0.0001	21.4%	YES	23.2%
44	N-Nitrosodiethylamine	2	8068-A2	0.00002	0.0001	22.3%	YES	23.2%
44	N-Nitrosodiethylamine	4	8068-B2	0.00002	0.0001	22.6%	YES	23.2%
44	N-Nitrosodiethylamine	6	8068-C2	0.00002	0.0001	22.9%	YES	23.2%
44	N-Nitrosodiethylamine	8	8068-D2	0.00002	0.0001	22.8%	YES	23.2%
44	N-Nitrosodiethylamine	10	8068-E2	0.00002	0.0001	22.1%	YES	23.2%
44	N-Nitrosodiethylamine	12	8068-F2	0.00002	0.0001	21.4%	YES	23.2%
44	N-Nitrosodiethylamine	14	8068-G2	0.00002	0.0001	21.0%	YES	23.2%
44	N-Nitrosodiethylamine	16	8068-H2	0.00002	0.0001	21.0%	YES	23.2%
45	N-Nitrosomethylethylamine	2	7837-A1	0.00004	0.0003	13.6%		8.9%
45	N-Nitrosomethylethylamine	4	7837-B1	0.00004	0.0003	15.0%		8.9%
45	N-Nitrosomethylethylamine	6	7837-C1	0.00004	0.0003	14.0%		8.9%
45	N-Nitrosomethylethylamine	8	7837-D1	0.00003	0.0003	9.0%		8.9%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
45	N-Nitrosomethylethylamine	10	7837-E1	0.00003	0.0003	8.5%	YES	8.9%
45	N-Nitrosomethylethylamine	12	7837-F1	0.00003	0.0003	8.4%	YES	8.9%
45	N-Nitrosomethylethylamine	14	7837-G1	0.00002	0.0003	8.3%	YES	8.9%
45	N-Nitrosomethylethylamine	16	7837-H1	0.00002	0.0003	8.2%	YES	8.9%
45	N-Nitrosomethylethylamine	2	7837-A2	0.00003	0.0003	8.7%	YES	8.9%
45	N-Nitrosomethylethylamine	4	7837-B2	0.00003	0.0003	8.8%	YES	8.9%
45	N-Nitrosomethylethylamine	6	7837-C2	0.00003	0.0003	8.9%	YES	8.9%
45	N-Nitrosomethylethylamine	8	7837-D2	0.00003	0.0003	8.6%	YES	8.9%
45	N-Nitrosomethylethylamine	10	7837-E2	0.00003	0.0003	8.5%	YES	8.9%
45	N-Nitrosomethylethylamine	12	7837-F2	0.00003	0.0003	8.5%	YES	8.9%
45	N-Nitrosomethylethylamine	14	7837-G2	0.00002	0.0003	8.2%	YES	8.9%
45	N-Nitrosomethylethylamine	16	7837-H2	0.00002	0.0003	8.1%	YES	8.9%
45	N-Nitrosomethylethylamine	2	8068-A1	0.00002	0.0003	8.0%	YES	8.9%
45	N-Nitrosomethylethylamine	4	8068-B1	0.00004	0.0003	14.7%		8.9%
45	N-Nitrosomethylethylamine	6	8068-C1	0.00005	0.0003	15.5%		8.9%
45	N-Nitrosomethylethylamine	8	8068-D1	0.00005	0.0003	15.5%		8.9%
45	N-Nitrosomethylethylamine	10	8068-E1	0.00004	0.0003	12.7%		8.9%
45	N-Nitrosomethylethylamine	12	8068-F1	0.00003	0.0003	9.9%		8.9%
45	N-Nitrosomethylethylamine	14	8068-G1	0.00002	0.0003	7.8%	YES	8.9%
45	N-Nitrosomethylethylamine	16	8068-H1	0.00002	0.0003	7.9%	YES	8.9%
45	N-Nitrosomethylethylamine	2	8068-A2	0.00002	0.0003	8.2%	YES	8.9%
45	N-Nitrosomethylethylamine	4	8068-B2	0.00002	0.0003	8.3%	YES	8.9%
45	N-Nitrosomethylethylamine	6	8068-C2	0.00003	0.0003	8.4%	YES	8.9%
45	N-Nitrosomethylethylamine	8	8068-D2	0.00003	0.0003	8.4%	YES	8.9%
45	N-Nitrosomethylethylamine	10	8068-E2	0.00002	0.0003	8.1%	YES	8.9%
45	N-Nitrosomethylethylamine	12	8068-F2	0.00002	0.0003	7.9%	YES	8.9%
45	N-Nitrosomethylethylamine	14	8068-G2	0.00002	0.0003	7.7%	YES	8.9%
45	N-Nitrosomethylethylamine	16	8068-H2	0.00002	0.0003	7.7%		8.9%
46	N-Nitrosomorpholine	2	7837-A1	0.00006	0.0006	10.1%		3.4%
46	N-Nitrosomorpholine	4	7837-B1	0.00006	0.0006	9.5%		3.4%
46	N-Nitrosomorpholine	6	7837-C1	0.00005	0.0006	8.5%		3.4%
46	N-Nitrosomorpholine	8	7837-D1	0.00006	0.0006	9.3%		3.4%
46	N-Nitrosomorpholine	10	7837-E1	0.00005	0.0006	8.0%		3.4%
46	N-Nitrosomorpholine	12	7837-F1	0.00003	0.0006	4.7%		3.4%
46	N-Nitrosomorpholine	14	7837-G1	0.00002	0.0006	3.2%	YES	3.4%
46	N-Nitrosomorpholine	16	7837-H1	0.00002	0.0006	3.1%	YES	3.4%
46	N-Nitrosomorpholine	2	7837-A2	0.00002	0.0006	3.3%	YES	3.4%
46	N-Nitrosomorpholine	4	7837-B2	0.00002	0.0006	3.3%	YES	3.4%
46	N-Nitrosomorpholine	6	7837-C2	0.00002	0.0006	3.4%	YES	3.4%
46	N-Nitrosomorpholine	8	7837-D2	0.00002	0.0006	3.3%	YES	3.4%
46	N-Nitrosomorpholine	10	7837-E2	0.00002	0.0006	3.2%	YES	3.4%
46	N-Nitrosomorpholine	12	7837-F2	0.00002	0.0006	3.2%	YES	3.4%
46	N-Nitrosomorpholine	14	7837-G2	0.00002	0.0006	3.1%	YES	3.4%
46	N-Nitrosomorpholine	16	7837-H2	0.00002	0.0006	3.1%	YES	3.4%
46	N-Nitrosomorpholine	2	8068-A1	0.00009	0.0006	14.4%		3.4%
46	N-Nitrosomorpholine	4	8068-B1	0.00006	0.0006	9.5%		3.4%
46	N-Nitrosomorpholine	6	8068-C1	0.00006	0.0006	9.3%		3.4%
46	N-Nitrosomorpholine	8	8068-D1	0.00006	0.0006	10.4%		3.4%
46	N-Nitrosomorpholine	10	8068-E1	0.00003	0.0006	5.6%		3.4%
46	N-Nitrosomorpholine	12	8068-F1	0.00003	0.0006	5.6%		3.4%
46	N-Nitrosomorpholine	14	8068-G1	0.00003	0.0006	4.9%		3.4%
46	N-Nitrosomorpholine	16	8068-H1	0.00002	0.0006	3.1%	YES	3.4%
46	N-Nitrosomorpholine	2	8068-A2	0.00002	0.0006	3.3%	YES	3.4%
46	N-Nitrosomorpholine	4	8068-B2	0.00002	0.0006	3.3%	YES	3.4%
46	N-Nitrosomorpholine	6	8068-C2	0.00002	0.0006	3.4%	YES	3.4%
46	N-Nitrosomorpholine	8	8068-D2	0.00002	0.0006	3.3%	YES	3.4%
46	N-Nitrosomorpholine	10	8068-E2	0.00002	0.0006	3.2%	YES	3.4%
46	N-Nitrosomorpholine	12	8068-F2	0.00002	0.0006	3.1%	YES	3.4%
46	N-Nitrosomorpholine	14	8068-G2	0.00002	0.0006	3.1%	YES	3.4%
46	N-Nitrosomorpholine	16	8068-H2	0.00005	0.0006	7.9%		3.4%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
47	Tributyl phosphate	2	7837-A1	0.00013	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	4	7837-B1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	6	7837-C1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	8	7837-D1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	10	7837-E1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	12	7837-F1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	14	7837-G1	0.00013	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	16	7837-H1	0.00012	0.20	0.06%	YES	0.078%
47	Tributyl phosphate	2	7837-A2	0.00013	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	4	7837-B2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	6	7837-C2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	8	7837-D2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	10	7837-E2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	12	7837-F2	0.00013	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	14	7837-G2	0.00013	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	16	7837-H2	0.00013	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	2	8068-A1					0.078%
47	Tributyl phosphate	4	8068-B1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	6	8068-C1	0.00015	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	8	8068-D1	0.00016	0.20	0.08%	YES	0.078%
47	Tributyl phosphate	10	8068-E1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	12						0.078%
47	Tributyl phosphate	14						0.078%
47	Tributyl phosphate	16	8068-H1	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	2	8068-A2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	4	8068-B2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	6	8068-C2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	8	8068-D2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	10	8068-E2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	12	8068-F2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	14	8068-G2	0.00014	0.20	0.07%	YES	0.078%
47	Tributyl phosphate	16	8068-H2	0.00014	0.20	0.07%	YES	0.078%
48	Dibutyl butylphosphonate	2	7837-A1	0.00009	0.007	1.31%	YES	1.51%
48	Dibutyl butylphosphonate	4	7837-B1	0.00009	0.007	1.32%	YES	1.51%
48	Dibutyl butylphosphonate	6	7837-C1	0.00009	0.007	1.34%	YES	1.51%
48	Dibutyl butylphosphonate	8	7837-D1	0.00010	0.007	1.38%	YES	1.51%
48	Dibutyl butylphosphonate	10	7837-E1	0.00009	0.007	1.35%	YES	1.51%
48	Dibutyl butylphosphonate	12	7837-F1	0.00009	0.007	1.35%	YES	1.51%
48	Dibutyl butylphosphonate	14	7837-G1	0.00009	0.007	1.28%	YES	1.51%
48	Dibutyl butylphosphonate	16	7837-H1	0.00008	0.007	1.21%	YES	1.51%
48	Dibutyl butylphosphonate	2	7837-A2	0.00009	0.007	1.32%	YES	1.51%
48	Dibutyl butylphosphonate	4	7837-B2	0.00009	0.007	1.32%	YES	1.51%
48	Dibutyl butylphosphonate	6	7837-C2	0.00009	0.007	1.33%	YES	1.51%
48	Dibutyl butylphosphonate	8	7837-D2	0.00009	0.007	1.35%	YES	1.51%
48	Dibutyl butylphosphonate	10	7837-E2	0.00010	0.007	1.37%	YES	1.51%
48	Dibutyl butylphosphonate	12	7837-F2	0.00009	0.007	1.30%	YES	1.51%
48	Dibutyl butylphosphonate	14	7837-G2	0.00009	0.007	1.30%	YES	1.51%
48	Dibutyl butylphosphonate	16	7837-H2	0.00009	0.007	1.29%	YES	1.51%
48	Dibutyl butylphosphonate	2	8068-A1					1.51%
48	Dibutyl butylphosphonate	4	8068-B1	0.00010	0.007	1.36%	YES	1.51%
48	Dibutyl butylphosphonate	6	8068-C1	0.00010	0.007	1.43%	YES	1.51%
48	Dibutyl butylphosphonate	8	8068-D1	0.00011	0.007	1.51%	YES	1.51%
48	Dibutyl butylphosphonate	10	8068-E1	0.00010	0.007	1.41%	YES	1.51%
48	Dibutyl butylphosphonate	12						1.51%
48	Dibutyl butylphosphonate	14						1.51%
48	Dibutyl butylphosphonate	16	8068-H1	0.00009	0.007	1.35%	YES	1.51%
48	Dibutyl butylphosphonate	2	8068-A2	0.00010	0.007	1.36%	YES	1.51%
48	Dibutyl butylphosphonate	4	8068-B2	0.00009	0.007	1.36%	YES	1.51%
48	Dibutyl butylphosphonate	6	8068-C2	0.00010	0.007	1.41%	YES	1.51%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
48	Dibutyl butylphosphonate	8	8068-D2	0.00010	0.007	1.40%	YES	1.51%
48	Dibutyl butylphosphonate	10	8068-E2	0.00010	0.007	1.38%	YES	1.51%
48	Dibutyl butylphosphonate	12	8068-F2	0.00010	0.007	1.36%	YES	1.51%
48	Dibutyl butylphosphonate	14	8068-G2	0.00010	0.007	1.36%	YES	1.51%
48	Dibutyl butylphosphonate	16	8068-H2	0.00010	0.007	1.36%	YES	1.51%
51	Pyridine	2	7837-A1	0.00152	1.0	0.152%		0.036%
51	Pyridine	4	7837-B1	0.00217	1.0	0.217%		0.036%
51	Pyridine	6	7837-C1	0.00204	1.0	0.204%		0.036%
51	Pyridine	8	7837-D1	0.00109	1.0	0.109%		0.036%
51	Pyridine	10	7837-E1	0.00173	1.0	0.173%		0.036%
51	Pyridine	12	7837-F1	0.00102	1.0	0.102%		0.036%
51	Pyridine	14	7837-G1	0.00115	1.0	0.115%		0.036%
51	Pyridine	16	7837-H1	0.00126	1.0	0.126%		0.036%
51	Pyridine	2	7837-A2	0.00032	1.0	0.032%	YES	0.036%
51	Pyridine	4	7837-B2	0.00033	1.0	0.033%	YES	0.036%
51	Pyridine	6	7837-C2	0.00032	1.0	0.032%	YES	0.036%
51	Pyridine	8	7837-D2	0.00032	1.0	0.032%	YES	0.036%
51	Pyridine	10	7837-E2	0.00031	1.0	0.031%	YES	0.036%
51	Pyridine	12	7837-F2	0.00031	1.0	0.031%	YES	0.036%
51	Pyridine	14	7837-G2	0.00030	1.0	0.030%	YES	0.036%
51	Pyridine	16	7837-H2	0.00030	1.0	0.030%	YES	0.036%
51	Pyridine	2	8068-A1	0.00177	1.0	0.177%		0.036%
51	Pyridine	4	8068-B1	0.00236	1.0	0.236%		0.036%
51	Pyridine	6	8068-C1	0.00240	1.0	0.240%		0.036%
51	Pyridine	8	8068-D1	0.00224	1.0	0.224%		0.036%
51	Pyridine	10	8068-E1	0.00159	1.0	0.159%		0.036%
51	Pyridine	12	8068-F1	0.00124	1.0	0.124%		0.036%
51	Pyridine	14	8068-G1	0.00165	1.0	0.165%		0.036%
51	Pyridine	16	8068-H1	0.00032	1.0	0.032%	YES	0.036%
51	Pyridine	2	8068-A2	0.00030	1.0	0.030%	YES	0.036%
51	Pyridine	4	8068-B2	0.00035	1.0	0.035%	YES	0.036%
51	Pyridine	6	8068-C2	0.00034	1.0	0.034%	YES	0.036%
51	Pyridine	8	8068-D2	0.00036	1.0	0.036%	YES	0.036%
51	Pyridine	10	8068-E2	0.00033	1.0	0.033%	YES	0.036%
51	Pyridine	12	8068-F2	0.00030	1.0	0.030%	YES	0.036%
51	Pyridine	14	8068-G2	0.00031	1.0	0.031%	YES	0.036%
51	Pyridine	16	8068-H2	0.00085	1.0	0.085%		0.036%
52	2,4-Dimethylpyridine	2	7837-A1	0.00019	0.5	0.039%	YES	0.046%
52	2,4-Dimethylpyridine	4	7837-B1	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	6	7837-C1	0.00022	0.5	0.043%	YES	0.046%
52	2,4-Dimethylpyridine	8	7837-D1	0.00020	0.5	0.041%	YES	0.046%
52	2,4-Dimethylpyridine	10	7837-E1	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	12	7837-F1	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	14	7837-G1	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	16	7837-H1	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	2	7837-A2	0.00021	0.5	0.041%	YES	0.046%
52	2,4-Dimethylpyridine	4	7837-B2	0.00021	0.5	0.042%	YES	0.046%
52	2,4-Dimethylpyridine	6	7837-C2	0.00021	0.5	0.042%	YES	0.046%
52	2,4-Dimethylpyridine	8	7837-D2	0.00021	0.5	0.041%	YES	0.046%
52	2,4-Dimethylpyridine	10	7837-E2	0.00020	0.5	0.040%	YES	0.046%
52	2,4-Dimethylpyridine	12	7837-F2	0.00020	0.5	0.040%	YES	0.046%
52	2,4-Dimethylpyridine	14	7837-G2	0.00019	0.5	0.039%	YES	0.046%
52	2,4-Dimethylpyridine	16	7837-H2	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	2	8068-A1	0.00020	0.5	0.039%	YES	0.046%
52	2,4-Dimethylpyridine	4	8068-B1	0.00020	0.5	0.040%	YES	0.046%
52	2,4-Dimethylpyridine	6	8068-C1	0.00020	0.5	0.039%	YES	0.046%
52	2,4-Dimethylpyridine	8	8068-D1	0.00021	0.5	0.042%	YES	0.046%
52	2,4-Dimethylpyridine	10	8068-E1	0.00022	0.5	0.043%	YES	0.046%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL?	Approx. DL (%OEL)
52	2,4-Dimethylpyridine	12	8068-F1	0.00020	0.5	0.040%	YES	0.046%
52	2,4-Dimethylpyridine	14	8068-G1	0.00020	0.5	0.040%	YES	0.046%
52	2,4-Dimethylpyridine	16	8068-H1	0.00020	0.5	0.041%	YES	0.046%
52	2,4-Dimethylpyridine	2	8068-A2	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	4	8068-B2	0.00023	0.5	0.045%	YES	0.046%
52	2,4-Dimethylpyridine	6	8068-C2	0.00022	0.5	0.043%	YES	0.046%
52	2,4-Dimethylpyridine	8	8068-D2	0.00023	0.5	0.046%	YES	0.046%
52	2,4-Dimethylpyridine	10	8068-E2	0.00021	0.5	0.042%	YES	0.046%
52	2,4-Dimethylpyridine	12	8068-F2	0.00019	0.5	0.038%	YES	0.046%
52	2,4-Dimethylpyridine	14	8068-G2	0.00020	0.5	0.039%	YES	0.046%
52	2,4-Dimethylpyridine	16	8068-H2	0.00016	0.5	0.032%	YES	0.046%

Appendix E

**Plots of Other COPCs with Significant (2–10% of the OEL)
Detected Values**

Appendix E

Plots of Other COPCs with Significant (2–10% of the OEL) Detected Values

1,3-Butadiene (see Figure E.1) – The detection limit (DL) for 1,3-butadiene corresponds to approximately 2.1% of its OEL. All of the measured inlet and outlet concentrations for both cartridges were below the DL. Based on the information collected there is no evidence of breakthrough over the measured time period for either cartridge tested.

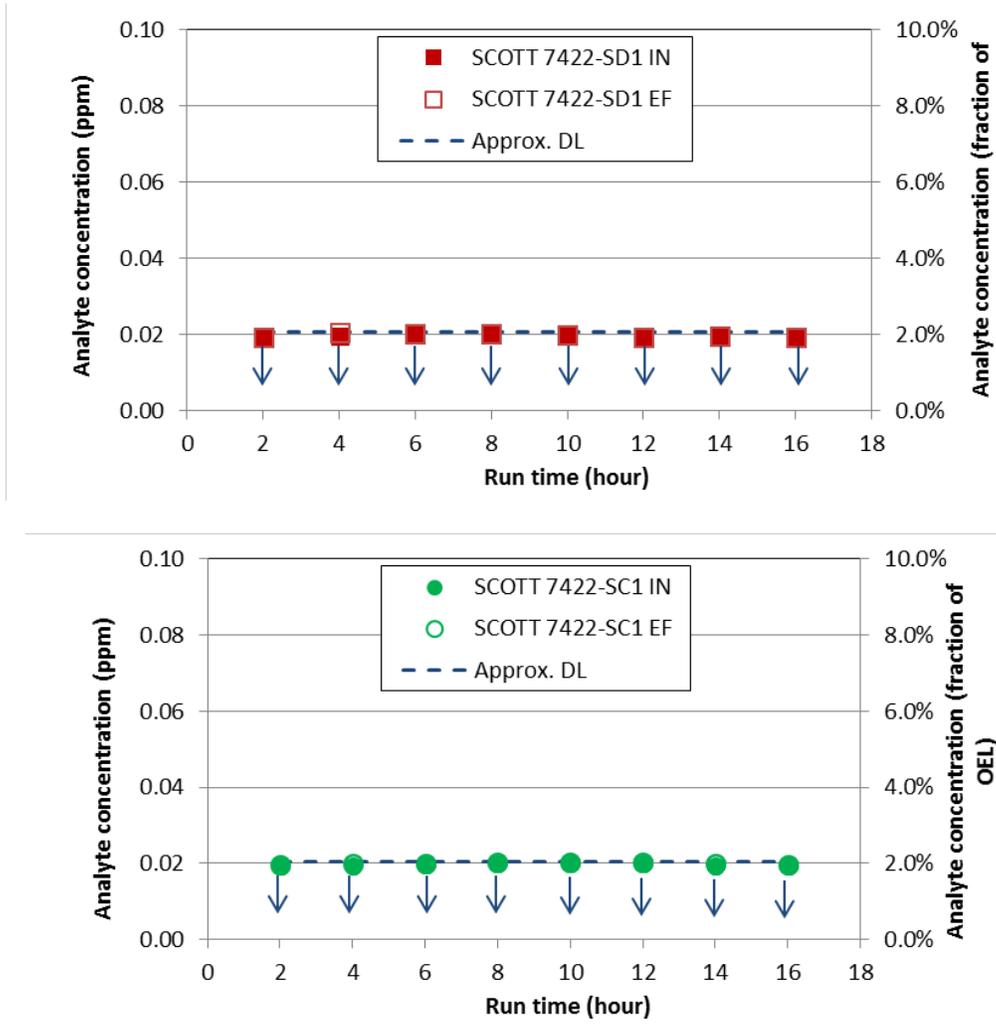


Figure E.1. Plot of Measured 1,3-Butadiene Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2,5-Dihydrofuran (see Figure E.2) – The DL for 2,5-dihydrofuran corresponds to approximately 3.1% of its OEL.¹ All of the measured inlet concentrations for both cartridges were below the DL.² Two of the measured outlet concentrations for the SCOTT 7422-SD1 cartridge were slightly higher than the DL (approximately 4% of the OEL), however, these measurements were inconsistent with the lower concentrations at the corresponding inlets. Based on the information collected there is no evidence of breakthrough over the measured time period for either cartridge tested.

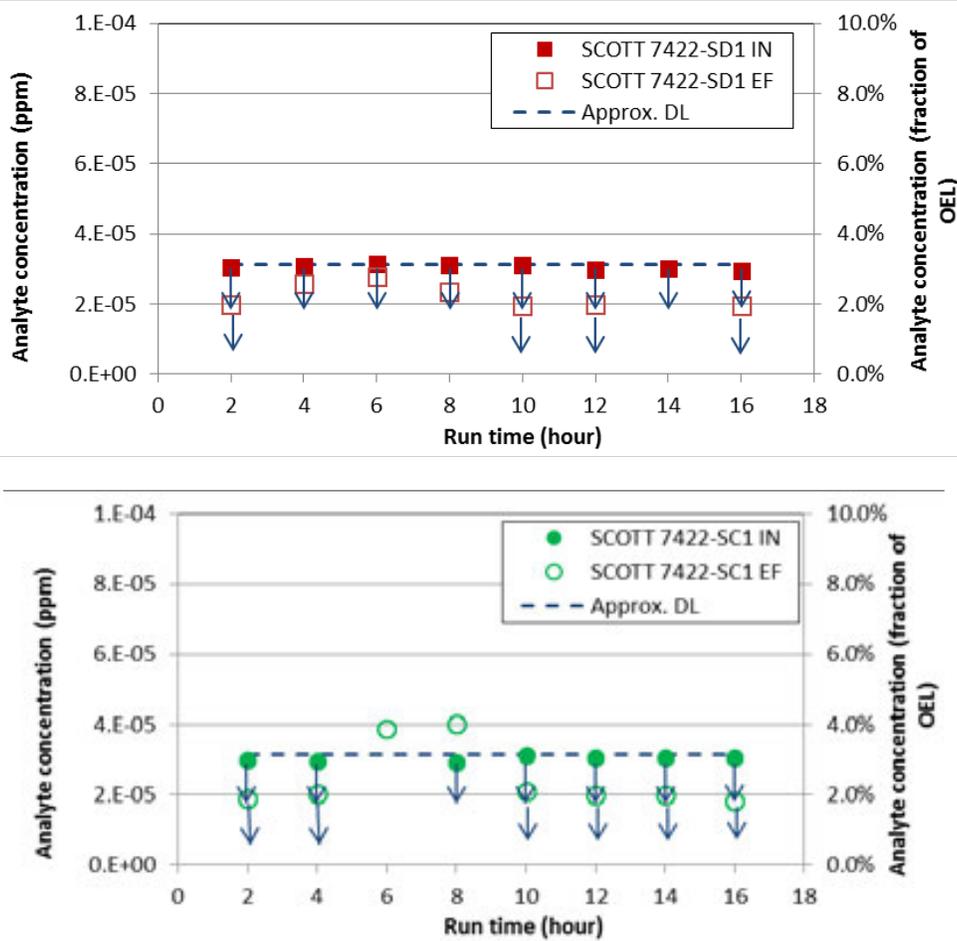


Figure E.2. Plot of Measured 2,5-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

¹ A higher flowrate and corresponding volume of sample was passed through the effluent furan sorbent sample tubes for the AX-101 test to help improve the DL for measurements downstream of the cartridge. The approximate DL reported here and shown on the figures represents the influent sample DL, which is higher than the DL for effluent samples by approximately 1 to 2% of OEL.

² Outlet concentration results for all furans for the 14-hour period (SCOTT 7422-SD1) and inlet results for the 6-hour period (SCOTT 7422-SC1) were not recorded because of either a broken sorbent tube or analytical laboratory malfunction.

2-Methylfuran (see Figure E.3) – The DL for 2-methylfuran corresponds to approximately 3.7% of its OEL. All of the measured inlet and outlet concentrations of 2-methylfuran for both the cartridges tested were below the DL, thus there is no evidence of breakthrough over the measured time period for either cartridge tested.

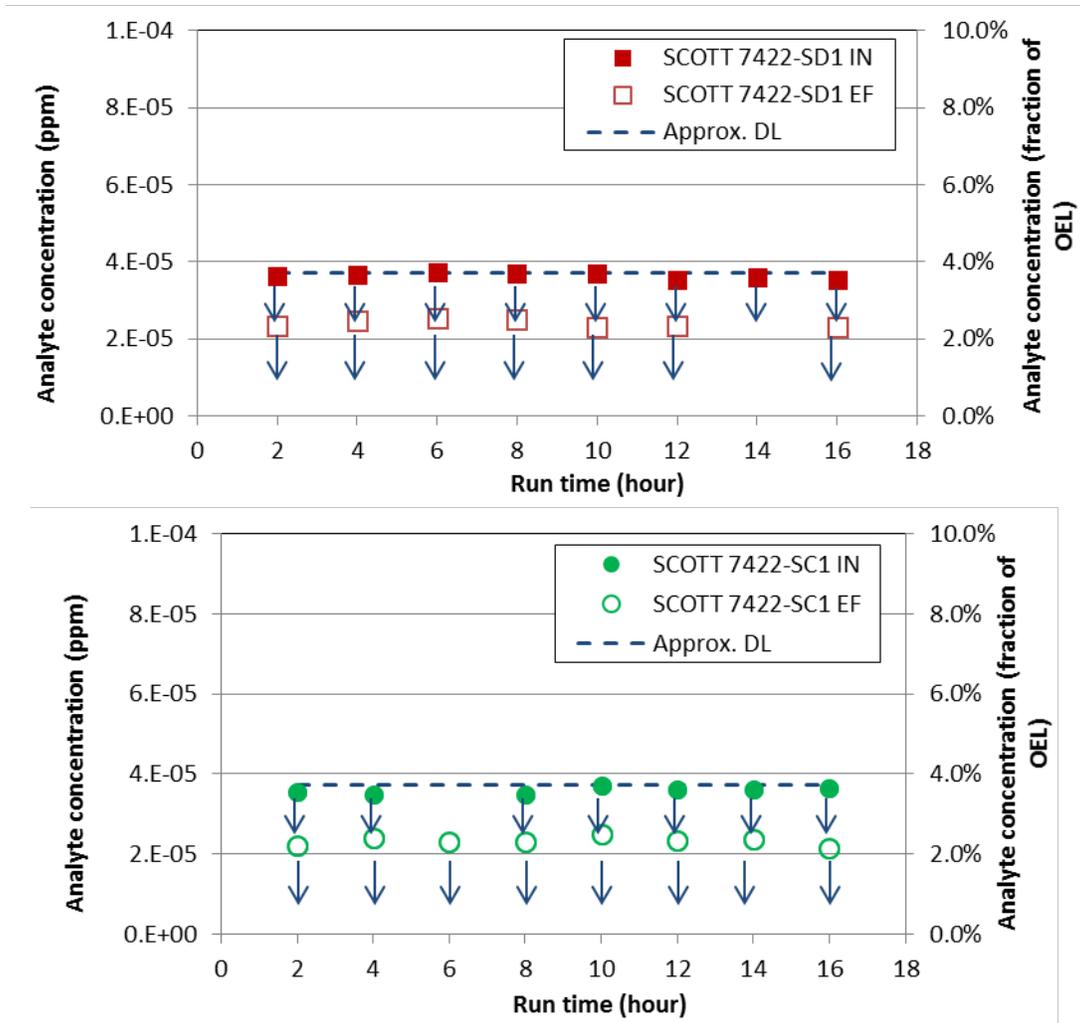


Figure E.3. Plot of Measured 2-Methylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2,5-Dimethylfuran (see Figure E.4) – The DL for 2,5-dimethylfuran corresponds to approximately 5.2% of its OEL. All of the measured inlet and outlet concentrations of 2,5-dimethylfuran for both the cartridges tested were below the DL, thus there is no evidence of breakthrough over the measured time period for either cartridge tested.

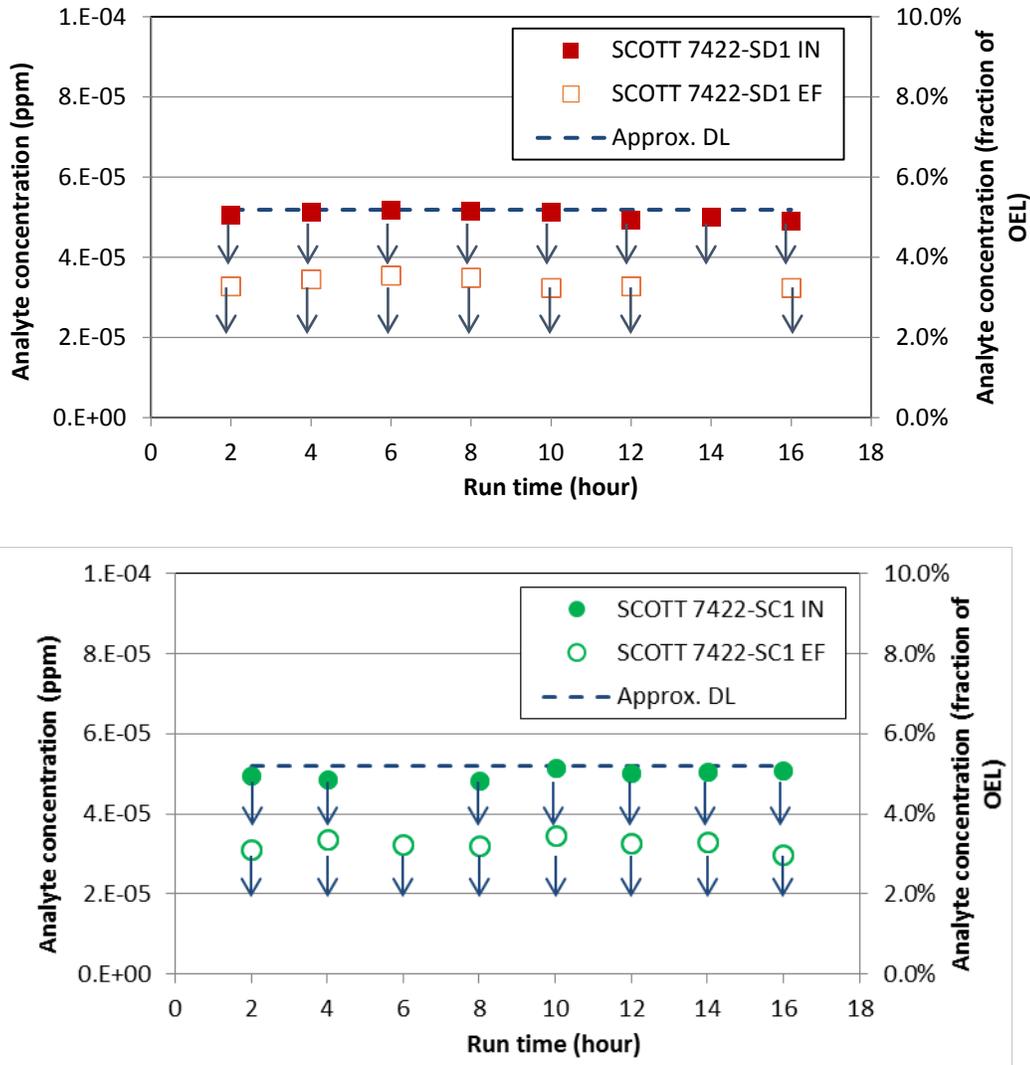


Figure E.4. Plot of Measured 2,5-Dimethylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Pentylfuran (see Figure E.5) – The DL for 2-pentylfuran corresponds to approximately 4.3% of its OEL. All of the measured inlet concentrations for the SCOTT 7422-SD1 respirator test were below the analytical DL. In contrast, the first two measured inlet concentrations for the SCOTT 7422-SC1 were higher than the DL but decreased to the DL by the end of testing. Most of the measured outlet concentrations for both cartridges were less than the analytical DL with a few exceptions. The highest measured outlet concentration was 4.5% of the OEL for the SCOTT 7422-SC1 cartridge test for the 6-hour time period. Nevertheless, all subsequent outlet concentrations for that cartridge were at the DL. Based on these data collected, there is no evidence of breakthrough over the measured time period for either cartridge tested.

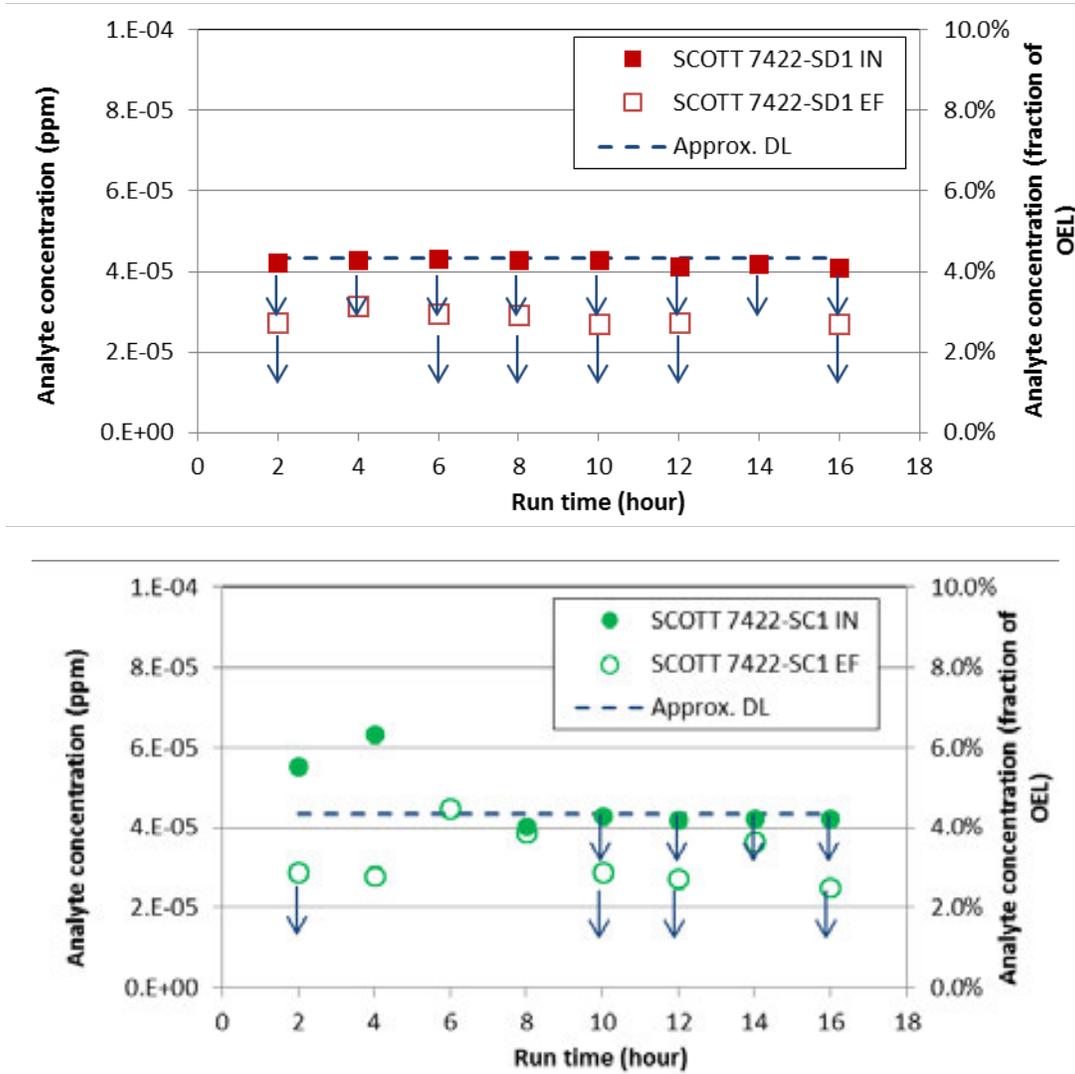


Figure E.5. Plot of Measured 2-Pentylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Heptylfuran (see Figure E.6) – The DL for 2-heptylfuran corresponds to approximately 3.4% of its OEL. All of the measured inlet and outlet concentrations for SCOTT 7422-SD1 were below the analytical DL. All of the measured inlet concentrations for SCOTT 7422-SC1 were below the analytical DL. Several outlet concentrations from this cartridge were greater than, but very near the DL (2.2 to 2.7% of the OEL). Thus, there is no evidence of breakthrough over the measured time period for either cartridge tested.

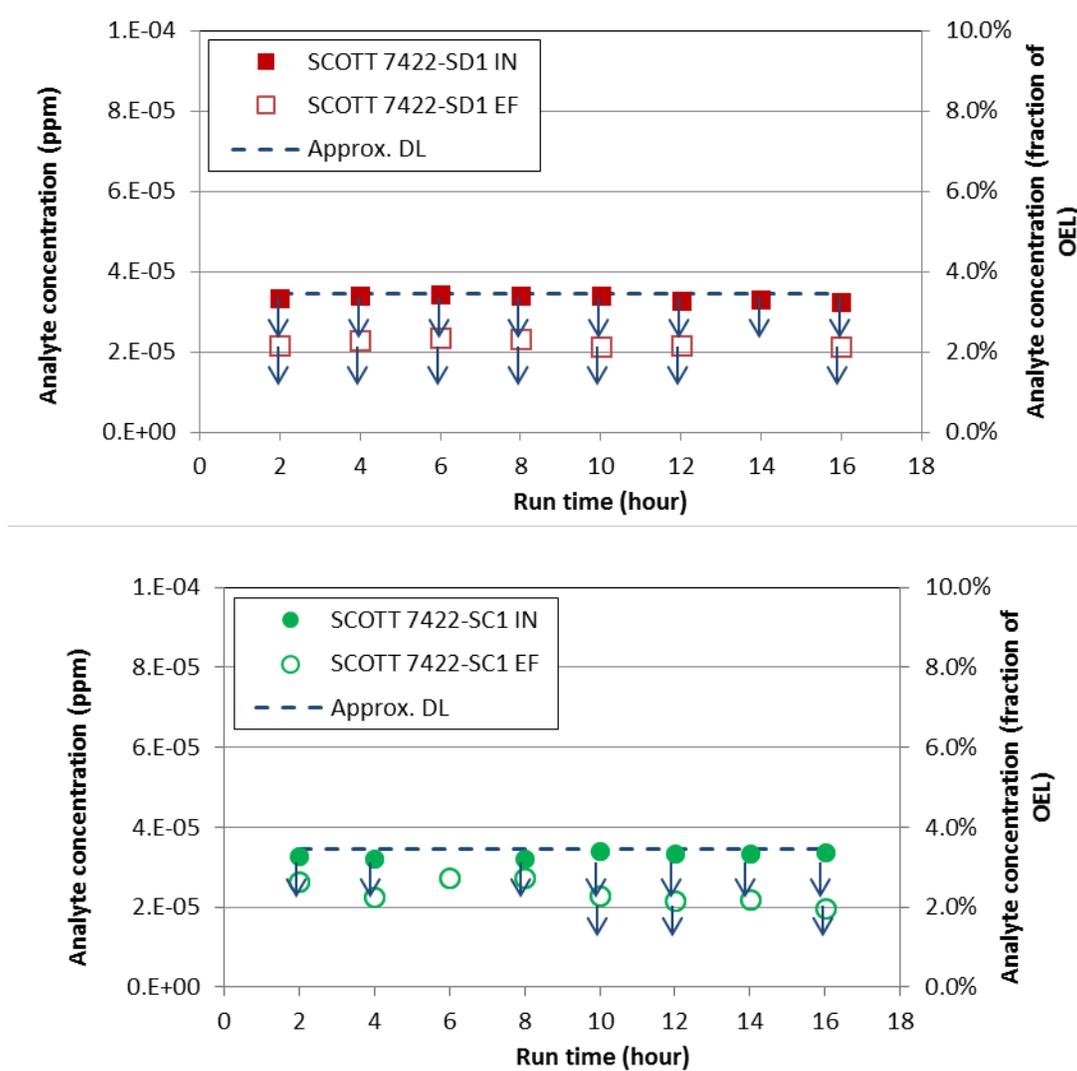


Figure E.6. Plot of Measured 2-Heptylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Propylfuran (see Figure E.7) – The DL for 2-propylfuran corresponds to approximately 3.7% of its OEL. All of the measured inlet and outlet concentrations for both the cartridges tested were below the DL, indicating no evidence of breakthrough over the measured time period for either cartridge tested.

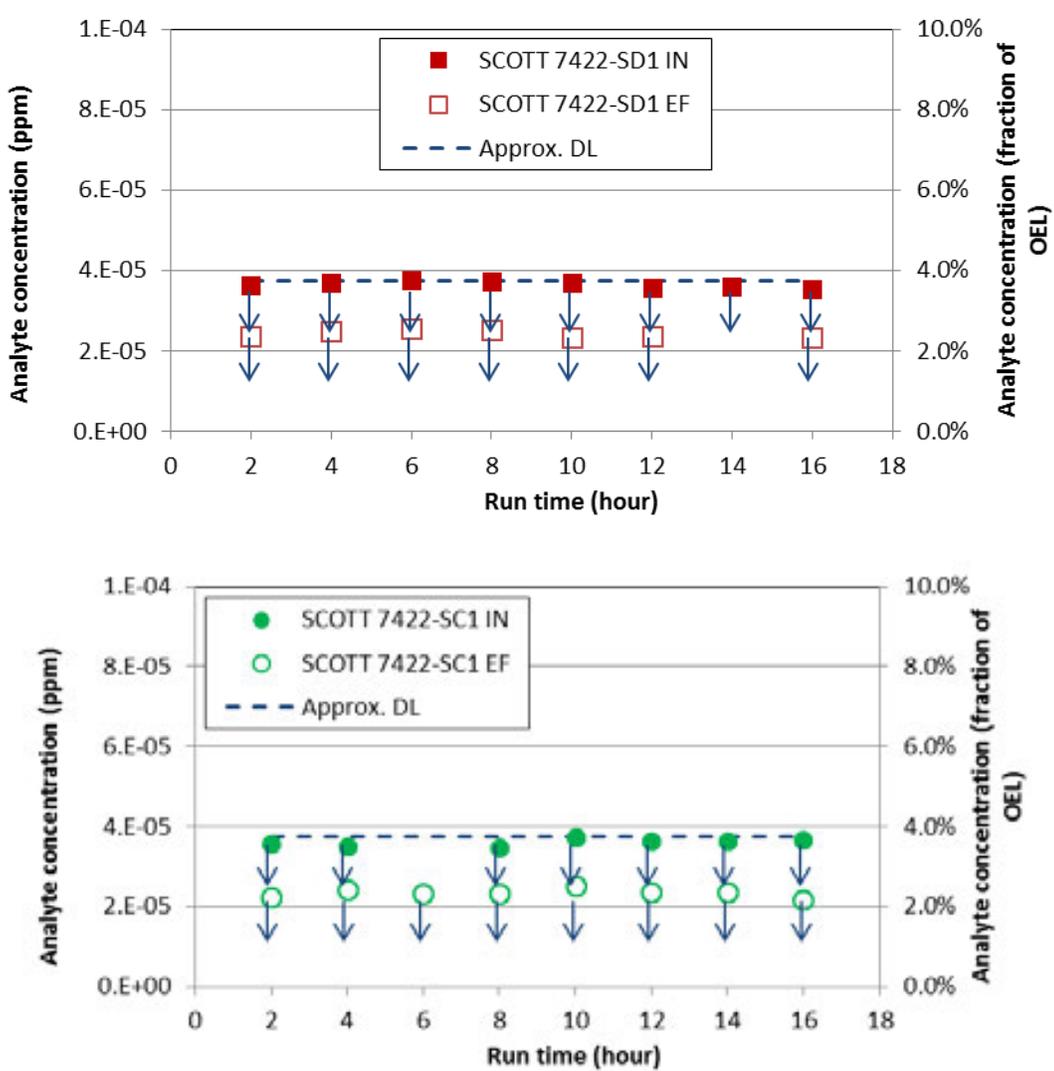


Figure E.7. Plot of Measured 2-Propylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

Appendix F

Historical Data Comparison

Appendix F

Historical Data Comparison

Headspace-characterization data and industrial hygiene (IH) data—hereafter referred to as “TWINS HS” and “TWINS IH”—were obtained from the Tank Characterization Database via the Tank Waste Information Network System (TWINS). All vapor analysis results for tank 241-AX-101 were obtained via a TWINS query on June 20, 2016, for TWINS HS,¹ and another query on October 7, 2016, for TWINS IH. More recent headspace data were also obtained from the Site-Wide Industrial Hygiene Database (SWIHD) by two queries. The first, on July 12, 2016, contained all data loaded as of that date. The second query contained all data with survey dates between May 1, 2016, and October 7, 2016. This latter data set was used to update and supplement the former, producing a set referred to as “SWIHD HS.”

TWINS HS and TWINS IH data were eliminated from consideration if they were

- Quality Assurance samples (blanks, laboratory control samples, or spikes)
- Marked as suspect (Data Qualifier flag S)
- Associated with a contaminant in a blank, trip blank, or field blank (Data Qualifier flags B, T, or F)
- A laboratory control sample that was out of range (Data Qualifier flag a)
- An excessive relative percent difference (Data Qualifier flag c)
- Marked with a laboratory-defined flag whose meaning was not generically defined and might indicate a serious data-quality issue (Data Qualifier flags L or Y).

Flags a, c, and L were found only in the TWINS IH database, not in TWINS HS.

The exclusions for the SWIHD HS data set were similar:

- Having a laboratory control sample that was out of range (flag a)
- Associated with a contaminant in a blank (flags b or B)
- Having an excessive relative percent difference or relative standard deviation (flags c or d)
- Having an excessive difference between the sample result and its serial dilution (flag e)
- Having a failed mass spectrometer reading on the sample but not on its serial dilution (flag f)
- Marked with a laboratory-defined flag whose meaning was not generically defined and might indicate a serious data-quality issue (flags L or Y).

TWINS HS results associated with chemicals that were ambiguously identified (e.g., “alkane,” “unknown,” “C6 ketone”) were deleted unless the molecular weight of one of the chemicals could be unambiguously specified (e.g., “octanenitrile and others” was kept). In these mixture cases, where the Chemical ID consisted of a Chemical Abstracts Service (CAS) number followed by M, the molecular weight of the identified chemical was added to the data record, the CAS number was used for the

¹ No data have been added to TWINS HS since April 2005, so the June 2016 download does not require updating.

Chemical ID, and the concentration expressed in parts per million (absent from the downloaded database) was calculated from the concentration in milligrams per cubic meter at 25°C and the molecular weight.

A number of chemicals in the TWINS IH data set had “needs conversion” notes in the concentration (mg/m³ and ppm) columns, rather than numbers, and required calculations to supply these concentrations. The calculations made use of values already in the database: the molecular weight, the Reported Value and its units, and the Sample Volume and its units. A temperature of 25°C and a pressure of 1 atm were assumed.

The method described above was consistent with that used in PNNL-25880,¹ except that measurements that were non-reports—less than the reporting limit (RL) for the analyte—were excluded in PNNL-25880 and were not excluded in this study.

For comparison to cartridge tests that were made using a gas stream from the AX-101 headspace, only headspace measurements were appropriate. This required no scrutiny for the TWINS HS or SWIHD HS databases because they were headspace only for AX Farm tanks, but the TWINS IH database required sorting so that only headspace data were used. The AX Farm data in the TWINS IH database were all attributed to individual tank locations; that is, there were no Location designations such as “Inside Farm,” “Outside Farm,” etc. Of the data that had AX-101 as a Location, all had Survey Titles that included phrases such as “AX-101 BF COPC Sampling,” “AX-101 COPC Sampling,” or “AX-101 BF COPC Make-up.” Because the Location was specified as AX-101, and many of the surveys contained “BF” (Breather Filter) in the title, all TWINS IH AX-101 data were considered to be from tank headspace.

Maximum and average² headspace concentrations were found for each analyte for the combined TWINS IH and SWIHD HS databases.⁽³⁾ These maxima and averages are given in Table F.1, together with Occupational Exposure Limits (OELs) and counts of the number of samples. The notation “n/a” is used where there were no measurements of the analyte.

Because the TWINS HS data were older, they were considered less representative of the vapors present during cartridge testing, and the default was to omit them from calculations. However, in some cases, the maximum and average for an analyte were considerably different if they were determined from a combination of all three databases. In these cases, results for the three-database combination are tabulated along with those for the default two-database combination. That is, Table F.1 contains two rows for the chemical instead of one, with the upper row (the default two-database combination) in normal font and the lower row (the two-database combination) in italic font. The criterion for tabulating this extra information was that there was difference of a factor of three or more, in either direction, between the value obtained from the two-database combination and that from the three-database combination.

¹ Hoppe, EW, LA Mahoney, J Cole, and KS Rohlifing. 2016. *Hanford Tank Vapors COPCs Update*. PNNL-25880, Pacific Northwest National Laboratory, Richland, Washington.

² Arithmetic average.

³ Because the SWIHD HS database contained no AX-101 data, the TWINS IH data were the only concentrations present in the two-database combination.

Because the RLs on concentrations in the historical database were generally higher than the RLs or detection limits in the cartridge tests, it was necessary to analyze data in a way that would let the effect of less than RL historical data be recognized. To do this, it was assumed that all of the non-reports in the databases had concentrations equal to the measurements' RLs. Then the following rules were applied:

1. If a maximum value was a non-report, it was marked as "<RL" in the table.
2. If all the data contributing to an average were non-reports, the average was marked as "<RL."
3. If the presence of non-reports in an average caused it to be more than a factor of two different, in either direction, from the value it would have had if only the reported concentrations were averaged, the average was marked with an asterisk ("*").

Table F.1. COPC Comparison to Historical AX-101 Measurements

COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Number of Values	Historical Measurements ¹				Measurements in this study				
						Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL ^{1,2} (%OEL)	
Inorganic														
1	Ammonia	7664-41-7	-28	Poling et al., 2007 ²	25 ppm	3	93.9	31.6*	376%	126%*	801%	713%	767%	2.56% (RL)
2	Nitrous Oxide	10024-97-2	-127	Poling et al., 2007	50 ppm	1	<RL	<RL	<RL	<RL	Not Measured	Not Measured	Not Measured	
3	Mercury	7439-97-6	674	Poling et al., 2007	0.025 mg/m ³	3	0.006	0.00311	24%	12%	24.3%	18.7%	16.3%	7.33% (RL)
Hydrocarbons														
4	1,3-Butadiene	106-99-0	24	Poling et al., 2007	1 ppm	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	2.05% (RL)
5	Benzene	71-43-2	176	Poling et al., 2007	0.5 ppm	3	<RL	<RL	<RL	<RL	0.19%	0.15%	0.090%	0.021%
6	Biphenyl	92-52-4	491	Poling et al., 2007	0.2 ppm	2	<RL	<RL	<RL	<RL	<DL	<DL	<DL	0.096%
Alcohols														
7	1-Butanol	71-36-3	243	NIOSH	20 ppm	2	0.035	0.0205	0.18%	0.10%	0.32%	0.22%	0.15%	0.004%
8	Methanol	67-56-1	148	Poling et al., 2007	200 ppm	0	n/a	n/a	n/a	n/a	Not Measured	Not Measured	Not Measured	
Ketones														
9	2-Hexanone	591-78-6	262	NIOSH	5 ppm	3	<RL	0.00373*	<RL	0.07%*	0.062%	0.041%	0.028%	0.002%
10	3-Methyl-3-butene-2-one	814-78-8	208	CRC Handbook 1989 ⁴	0.02 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC ¹²	Not Detected - TIC	Not Detected - TIC	
11	4-Methyl-2-hexanone	105-42-0	282	Predicted ACD/Labs ⁵	0.5 ppm	1	<RL	<RL	<RL	<RL	0.021%	0.015%	<DL	0.017%
12	6-Methyl-2-heptanone	928-68-7	333	Predicted ACD/Labs	8 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	
13	3-Buten-2-one	78-94-4	179	CRC Handbook 1989	0.2 ppm	1	0.005	0.005	2.5%	2.5%	1.70%	1.00%	0.48%	0.083%
Aldehydes														
14	Formaldehyde	50-00-0	-6	NIOSH	0.3 ppm	5	<RL	0.0353*	<RL	12%*	14.4%	4.91%	0.67%	0.63% (RL)
15	Acetaldehyde	75-07-0	69	NIOSH	25 ppm	2	<RL	<RL	<RL	<RL	0.42%	0.35%	0.32%	0.005% (RL)
16	Butanal	123-72-8	167	Oxford safety data ⁶	25 ppm	4	<RL	0.0555*	<RL	0.22%*	0.017%	0.010%	0.005%	0.001%
17	2-Methyl-2-butenal	1115-11-3	244	United Nations ⁷	0.03 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	
18	2-Ethyl-hex-2-enal	645-62-5	347	Predicted ACD/Labs	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	

Table F.1. (continued)

COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements ¹						Measurements in this study						
					Number of Values	Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL ¹³ (%OEL)				
Furans																	
19	Furan	88	Poling et al., 2007	1 ppb	5	<RL	<RL	<RL	<RL	<RL	14.7%	4.96%	6.20%	3.61%			
20	2,3-Dihydrofuran	130	Alfa Aesar ⁸	1 ppb	2	<RL	<RL	<RL	<RL	<RL	43.6%	16.4%	10.4%	2.14%			
21	2,5-Dihydrofuran	152	Aldrich ⁹	1 ppb	5	<RL	<RL	<RL	<RL	<RL	<DL	<DL	4.00%	3.13%			
22	2-Methylfuran	147	Oxford safety data	1 ppb	4	<RL	<RL	<RL	<RL	<RL	<DL	<DL	<DL	3.72%			
23	2,5-Dimethylfuran	199	Alfa Aesar	1 ppb	2	<RL	<RL	<RL	<RL	<RL	<DL	<DL	<DL	5.19%			
24	2-Ethyl-5-methylfuran	246	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC						
25	4-(1-Methylpropyl)-2,3-dihydrofuran	328	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC						
26	3-(1,1-Dimethylethyl)-2,3-dihydrofuran	306	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC						
27	2-Pentylfuran	333	Alfa Aesar	1 ppb	2	<RL	<RL	<RL	<RL	<RL	6.32%	4.44%	4.49%	4.33%			
28	2-Heptylfuran	410	Alfa Aesar	1 ppb	2	<RL	<RL	<RL	<RL	<RL	<DL	<DL	2.73%	3.44%			
29	2-Propylfuran	231	Alfa Aesar	1 ppb	2	<RL	<RL	<RL	<RL	<RL	<DL	<DL	<DL	3.74%			
30	2-Octylfuran	452	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC						
31	2-(3-Oxo-3-phenylprop-1-enyl)furan	605	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC						
32	2-(2-Methyl-6-oxoheptyl)furan	Not available	Not available	1 ppb	0	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC						
Phthalates																	
33	Diethylphthalate	563	NIOSH	5 mg/m ³	2	<RL	<RL	<RL	<RL	<RL	<DL	<DL	<DL	0.042%			

Table F.1. (continued)

COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Number of Values	Historical Measurements ¹				Measurements in this study				
						Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL ¹³ (%OEL)	
Nitriles														
34	Acetonitrile	75-05-8	179	NIOSH	20 ppm	3	<RL	0.261*	<RL	1.3%*	2.55%	0.70%	20.8%	0.002%
35	Propanenitrile	107-12-0	207	NIOSH	6 ppm	3	0.004	0.00269	0.07%	0.04%	0.16%	0.12%	0.077%	0.003%
36	Butanenitrile	109-74-0	244	NIOSH	8 ppm	1	0.004	0.004	0.05%	0.05%	0.064%	0.046%	0.025%	0.002%
37	Pentanenitrile	110-59-8	284	Alfa Aesar	6 ppm	3	<RL	<RL	<RL	<RL	0.023%	0.016%	0.007%	0.002%
38	Hexanenitrile	628-73-9	328	Predicted ACD/Labs	6 ppm	3	<RL	<RL	<RL	<RL	0.17%	0.039%	0.002%	0.002%
39	Heptanenitrile	629-08-3	368	Alfa Aesar	6 ppm	0	n/a	n/a	n/a	n/a				
40	2-Methylene butanenitrile	1647-11-6	Not available	Not available	0.3 ppm	0	n/a	n/a	n/a	n/a				
41	2,4-Pentadienenitrile	1615-70-9	278	Predicted ACD/Labs	0.3 ppm	0	n/a	n/a	n/a	n/a				
Amines														
42	Ethylamine	75-04-7	62	Poling et al., 2007	5 ppm	2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	0.098% (RL)
Nitrosamines														
43	N-Nitrosodimethylamine	62-75-9	306	NIOSH	0.3 ppb	3	1.6	0.567*	533%	189%*	932%	642%	644%	11.2% (RL)
44	N-Nitrosodiethylamine	55-18-5	351	Oxford safety data	0.1 ppb	3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	23.2% (RL)
45	N-Nitrosomethylethylamine	10595-95-6	310	Predicted ACD/Labs	0.3 ppb	3	<RL	<RL	<RL	<RL	15.5%	11.1%	8.95%	8.95% (RL)
46	N-Nitrosomorpholine	59-89-2	435	Oxford safety data	0.6 ppb	3	<RL	<RL	<RL	<RL	14.4%	7.45%	7.85%	3.40% (RL)
Organophosphates														
47	Tributyl phosphate	126-73-8	552	NIOSH	0.2 ppm	2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	0.078%
48	Dibutyl butylphosphonate	78-46-6	602	Predicted ACD/Labs	0.007 ppm	2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	1.51%
Halogenated														
49	Chlorinated Biphenyls	Varies	Varies	Varies	1 mg/m ³	0	n/a	n/a	n/a	n/a				
50	2-Fluoropropene	1184-60-7	-11	SynQuest ¹¹	0.1 ppm	1	<RL	<RL	<RL	<RL				

Table F.1. (continued)

COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Number of Values	Historical Measurements ¹					Measurements in this study			
						Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL ¹³ (%OEL)	
Pyridines														
51	Pyridine	110-86-1	240	NIOSH	1 ppm	5	<RL	<RL	<RL	<RL	0.24%	0.16%	0.085%	0.036% (RL)
52	2,4-Dimethylpyridine	108-47-4	318	Alfa Aesar	0.5 ppm	4	<RL	<RL	<RL	<RL	<RL	<RL	<RL	0.046% (RL)
Organonitriles														
53	Methyl nitrite	624-91-9	10	Oxford safety data	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC
54	Butyl nitrite	544-16-1	172	Alfa Aesar	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC
Isocyanates														
55	Butyl nitrate	928-45-0	276	Predicted ACD/Labs	2.5 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC
56	1,4-Butanediol, dinitrate	3457-91-8	499	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC
57	2-Nitro-2-methylpropane	594-70-7	260	Alfa Aesar	0.3 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC
58	1,2,3-Propanetriol, 1,3-dinitrate	623-87-0	338	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC
59	Methyl isocyanate	624-83-9	103	NIOSH	0.02 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC	Not Detected - TIC

¹ Historical data from TWINS industrial hygiene vapor database and SWIH database; see text for links and dates of queries. Values in italics include those data plus data from the TWINS headspace database, all samples earlier than May 2005.

* indicates that the value of the average would differ by a factor of 2 or more (in either direction) if non-reports were excluded.

"< RL" indicates that all pertinent measurements of the analyte were less than the reporting limit

"n/a" indicates no historical data was found in the databases

Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene) were included. Italics mean that the pre-2006 TWINS headspace data were also included.

² Poling, B. E.; Prausnitz, J. M.; O'Connell, J. P. *The Properties of Gases and Liquids*. McGraw Hill, 2007.

³ NIOSH: National Institute of Occupational Safety and Health

⁴ CRC Handbook of Chemistry and Physics, CRC Press, 1989.

⁵ ACD/Labs software <http://www.acdlabs.com/products/percepta/predictors.php>

⁶ Oxford safety data from *The Physical and Theoretical Chemistry Laboratory at Oxford University*

⁷ Food and Agriculture Organization of the United Nations

⁸ Alfa Aesar: <https://www.alfa.com/>

⁹ Aldrich: <https://www.sigmaaldrich.com/>

¹⁰ OSHA: Occupational Safety and Health Administration

¹¹ SynQuest: <http://synquestlabs.com/product/id/8330.html>

¹² TIC: Tentatively Identified Compounds that were not observed in this study using the specified analytical methods.

¹³ Approximate Detection Limit (DL) is calculated using the reported detection limit (or reporting limit -RL, where noted) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube.



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