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Analysis of Respirator Cartridge Performance Testing on the 702-AZ Primary Exhauster for the Hanford AY/AZ Tank Farms during a Waste-Disturbing Event

July 2020

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U.S. DEPARTMENT OF ENERGY

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Richland, Washington 99352

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[1] for APRs used to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPC) from vapors exiting the 702-AZ Primary Exhauster for the Hanford AY-AZ tank farms. Unlike prior cartridge testing on the 702-AZ Primary Exhauster, the recent tests were performed during a waste-disturbing event. The Occupational Safety and Health Administration (OSHA) identifies cartridge testing as a valid approach for establishing a cartridge change schedules.[2] 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 the cartridge service life, including temperature, humidity, COPC concentration, breathing rate, and cartridge adsorption capacity.

Testing was conducted from February 10–11, 2017, on a slipstream from the 702-AZ exhauster 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) and canisters (e.g., Summa) sampling 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. Key conclusions from the assessment of the 59 COPCs in this study are described below:

- Based on measured cartridge inlet vapor concentrations from the 702-AZ exhauster, four COPCs, ammonia, furan, N-nitrosodimethylamine (NDMA), and N-nitrosodiethylamine (NDEA), exceeded their corresponding Occupational Exposure Limits (OEL).[3] Four COPCs, mercury, 2,3-dihydrofuran, 2-methylfuran, and N-nitrosomethylethylamine (NMEA), had one or more inlet concentration measurements >10% of their OELs but <100%. All other COPC inlet and outlet measurements did not exceed 10% of their OELs.
- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 310% of its OEL (77.6 ppm) during the SCOTT 7422-SD1 cartridge testing, which was lower than maximum historical measurements (676%) but higher than the historical average (90%). The maximum ammonia concentration for this test was approximately 4× higher than the maximum inlet concentration obtained in the 2016 702-AZ cartridge test under non-waste-disturbing conditions.

[1] "Adequate performance" refers to being below the breakthrough criterion used in this analysis, which is having sustained cartridge outlet concentrations above 10% of the compound's OEL. Ultimately, Industrial Hygiene professionals will use these results along with specific hazard assessments to determine service life, change schedules, and cartridge selection needed to provide the necessary performance for specific applications in Hanford tank farms.

[2] OSHA Respirator Change Schedules Mathematical Modeling, and Factors that Influence Cartridge Service Life, https://www.osha.gov/SLTC/etools/respiratory/change_schedule.html

[3] OELs 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 based on the best available science. The OEL for NDMA was established in 2005 based on the MAK (Maximale Arbeitsplatzkonzentration) Commission standard adopted in Europe.

Ammonia appeared to break through the SCOTT 7422-SD1 cartridge, >10% of the OEL, after 6 hours. For the SCOTT 7422-SC1 cartridge breakthrough appeared to occur after 4 hours. These breakthrough times are consistent with those measured in prior respirator cartridge tests for Hanford tanks, based on the inlet concentrations to the cartridges.

- Maximum mercury concentrations at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 47% and 53% of the OEL, respectively. These concentrations were lower than the average (80%) and maximum (468%) historical measurements from the exhauster. Most of the cartridge outlet concentrations for mercury were below the detection limit[4] (DL). However, the single 16-hour cartridge outlet value for the SCOTT 7422-SD1 cartridge was >10% of the OEL, which could indicate breakthrough. There was no breakthrough of mercury observed for the SCOTT 7422-SC1 cartridge.
- Maximum furan concentrations measured using the Carbotrap 300 TDU method at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 2995% and 2533% of the OEL, respectively. These were about 30× times the maximum historical above report (79%) measurement. Furan appeared to break through the SCOTT 7422-SD1 cartridge, above 10% of the OEL and above the DL, after 8 hours. For the SCOTT 7422-SC1 cartridge, breakthrough appeared to occur after 10 hours.
- 2,3-Dihydrofuran concentrations at the inlet to the SCOTT 7422-SD1 cartridge were lower than its DL (1.5% of the OEL) and reporting limit (RL) (19.8% of the OEL). However, the inlet concentrations to the SCOTT 7422-SC1 reached 17% of the OEL, consistent with the maximum above report historical exhauster measurement (23%). The corresponding outlet measurements did not exceed 10% of the OEL for either respirator cartridge, indicating no breakthrough.
- Maximum 2-methylfuran concentrations measured using the Carbotrap 300 TDU method at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 13.8% and 11.5% of the OEL, respectively. Historical concentration measurements were all below the RL, therefore no comparison to historical maximums can be made. The corresponding outlet measurements did not exceed the DL (10% of the OEL) for either respirator cartridge, indicating no breakthrough.
- Maximum NDMA concentrations at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 1487% and 1578% of the OEL, respectively, which were higher than the historical average and maximum of 320% and 820%, respectively. However, all measured outlet concentrations from the cartridges were less than or equal to analytical RL of ~8.9% of the OEL, indicating no breakthrough for either cartridge.
- NDEA concentrations at the inlet to the SCOTT 7422-SD1 respirator cartridge reached a maximum of 398% of its OEL, which is higher than the maximum above report (66%) historical measurement, and approximately 13× higher than maximum NDEA concentrations measured during the 2016 non-waste-disturbing 702-AZ cartridge testing. The inlet concentrations to the SCOTT 7422-SC1 cartridge only reached 45%. All outlet concentrations were less than or equal to analytical RL of approximately 19.4% of the OEL, indicating no breakthrough for either cartridge.

[4] The term "detection limit" is used here to refer either to an analytical reporting limit or a detection limit. The use of either an RL or a DL varied among analytical laboratories. An 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.

- Maximum NMEA concentrations at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 26.1% and 18.8% of the OEL, respectively, which are higher, but generally consistent with the maximum above report historical measurement from the exhauster (10%). However, all outlet concentrations were less than or equal to the analytical RL of ~8.23% of the OEL, indicating no breakthrough for either cartridge.

As with previous cartridge performance studies on Hanford tank vapors, the experimental results in this study support using the breakthrough measurements for ammonia as conservative guidance to inform an appropriate respirator cartridge change-out schedule. The shortest breakthrough time observed with ammonia was at 4 hours with the SCOTT 7422-SC1 cartridge. However, variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact breakthrough time, especially if OEL thresholds are exceeded. In these circumstances, additional respirator cartridge evaluations may be necessary to determine proper respiratory protection requirements.

Cartridge service-life predictions based on ammonia, using Scott's SureLife® Cartridge Calculator, appear to adequately account for environmental changes with reasonable accuracy. Therefore, changes in environmental conditions, corresponding service life predictions for ammonia and the measured breakthrough values, should all be used to inform an Industrial Hygiene determination of an appropriate respirator cartridge change-out schedule for adequate worker protection.

The *Overview of 2016 through 2018 Testing of Air-Purifying Respirator Cartridge Performance on Multiple Hanford Tank Headspaces and Exhausters,* Freeman et.al. [27], provides additional information on the use of the cartridge testing results for the first 28 cartridge tests with the manufacturers service life models.

Revision History

Revision Number	Effective Date	Description of Change
A		Preliminary Draft
0	July 2020	This report has been revised to address external peer review comments on the Rev. A report and related APR test reports and to correct data reporting errors. The principal changes include: 1. Addressing several external peer review comments including: • Referencing the *Overview of 2016 Through 2018 Testing of Air-Purifying Respirator Cartridge Performance on Multiple Hanford Tank Headspaces and Exhausters* PNNL-26821 Rev. 1 [19], which provided additional information on historic Chemical of Potential Concern source concentrations and the significance of any differences between cartridge-testing results and historic maxima. • Adding descriptive information to Appendices A, B, and C to provide additional clarity on the contents and methods applied. • Clarifying terminology regarding breakthrough time vs. service life and change-out schedule. 2. A furans analytical methods review was conducted and reported in the "Assessment of the Use of Alternate Furan Measurements for Respirator Cartridge Performance Determinations," letter report 69802-01). The assessment recommended the use of the Carbotrap 300 TDU tube analytical results for furan, 2,5-dihydrofuran, and 2-methylfuran in lieu of the TDU Tenax TA tube. All furan, 2,5-dihydrofuran, and 2-methylfuran results for the 2016 air purifying respirator cartridge testing have been re-evaluated and documented in Freeman et al.[5] Therefore values for furan, 2, 5-dihydrofuran, and 2-methylfuran have been updated in this revision of the report.

[5] See Appendix F of Freeman CJ, J Liu, C Clayton, SK Nune, LA Mahoney, CL Bottenus, TM Brouns, P Humble, and MJ Minette. 2020. *Overview of 2016 through 2018 Testing of Air-Purifying Respirator Cartridge Performance on Multiple Hanford Tank Headspaces and Exhausters*. PNNL-26821, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington.

Acronyms and Abbreviations

ALS	ALS Environmental Salt Lake City
APR	air-purifying respirator
BBI	Best Basis Inventory
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
NDEA	N-nitrosodiethylamine
NDMA	N-nitrosodimethylamine
NIOSH	National Institute of Occupational Safety and Health
NMEA	N-nitrosomethylethylamine
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
SCBA	Self-Contained Breathing Apparatus
ppm	Parts Per Million
PNNL	Pacific Northwest National Laboratory
RL	Reporting Limit
SWIHD	Site-Wide Industrial Hygiene Database
TIC	Tentatively Identified Compound
TWINS	Tank Waste Information Network System
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound
WC	Water Column
WHL	Wastren Hanford Laboratory (222S)
WRPS	Washington River Protection Solutions

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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 the Hanford site in Washington State. 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 used to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPC) from any vapors exiting headspaces in the tanks. Occupational Safety and Health Administration (OSHA) Standard 29 Code of the Federal Regulations (CFR) 1910.134(d)(3)(iii)(b)(2) specifies that for protection against gases and vapors, employers shall implement a schedule for cartridges to ensure that change-outs occur before the end of service life.[1-4] The change schedule can be based on objective information or data that ensures cartridge change-outs occur before the end of their service life.[2-5] The primary function of the WRPS 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 with Pacific Northwest National Laboratory 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 exhauster on the Hanford 702-AZ tank farm. Unlike prior cartridge testing on the 702-AZ exhauster, the recent tests were performed during a waste-disturbing event in which nearly 397,000 gallons of tank waste from 241-AP-103 were pumped into 241-AY-101. The waste transfer was initiated on the evening of February 9, 2017, approximately 13 hours before SCOTT 7422-SD1 cartridge testing was initiated on February 10, 2017, and the transfer ended on the evening of February 11, 2017, approximately 11 hours before the SCOTT 7422-SC1 cartridge testing was completed on the morning of February 12, 2017.

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 (greater than 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 (approximately 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 the three approaches described below as valid for establishing cartridge service lives.[3]

- *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 also can be used to validate an existing cartridge change-out schedule.
- *Use the manufacture's recommendation* – Once information about airborne contaminants (including concentration, 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 exact objective information they used to project the service life. Using the information obtained, service lives 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 waste 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 of components. 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 products (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 rules of thumb are outlined in the publication:

- If the compound's boiling point is greater than 70°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[6] can help in interpreting the results obtained from experimental testing of respirator cartridges.

[6] The general drivers (a.k.a., rules of thumb) are applicable to certain compounds, but not to all compounds in a mixture, such as those in specific Hanford tank mixtures. However, an Industrial Hygiene professional can use these rules of thumb to support interpretation of results from both experiments and predictions

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 702-AZ exhauster.[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 to 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.

WRPS developed a testing program with the following conservative conditions to support robust cartridge service life estimates:

- 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 or exhauster stack vapors rather than from Hanford Tank Farm atmospheric concentrations (i.e., source sampling vs. the breathing zone).
- 10% of the OEL for each COPC was considered as a threshold concentration.

Using the cartridge-testing setup described 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[7] for Survey 2.[16] These cartridges were chosen because they are suitable for capturing organic vapors, acid gases, ammonia, formaldehyde, and particulates.[16]

[7] SCOTT part numbers 7422-SC1 and 7422-SD1 are multipurpose APR respirator cartridges for use on Xcel Half-Mask and all SCOTT full facepieces with NIOSH approval for OV/AM/MA/CL/HC/SD/CD/HF/FM/HS applications. The -SD1 cartridge has the same multipurpose features as the -SC1, but also includes a P100 particulate filter. https://www.3mscott.com/download/742-series-cartridges-user-instructions-english/

Vapor concentrations upstream and downstream of the APR cartridge were monitored using an array of sorbent tubes (see Appendix B) and canisters (e.g., Summa) for sampling. Influent (upstream) concentrations were measured at the beginning and end of each 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. A canister grab sample also was collected at the end of each 2 hour sorbent tube sample period. The canister samples were included in testing specifically to support methanol quantitation, which was not possible using the sorbent tubes.

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 >10% of the OEL 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

From February 10–11, 2017, respirator cartridge testing on a slip stream from the 702-AZ exhauster was conducted concurrent with a waste-disturbing activity in which approximately 397,000 gallons of tank waste from 241-AP-103 were pumped into 241-AY-101. The 702-AZ exhauster supports ventilation of four tanks within the AZ (241-AZ-101 and -102) and AY (241-AY-101 and -102) tank farms. As shown in Figure 1, the waste transfer was initiated on the evening of February 9, 2017, approximately 13 hours before SCOTT 7422-SD1 cartridge testing was initiated on February 10, 2017, and the transfer ended on the evening of February 11, 2017, approximately 11 hours before the SCOTT 7422-SC1 cartridge testing was completed on the morning of February 12, 2017.

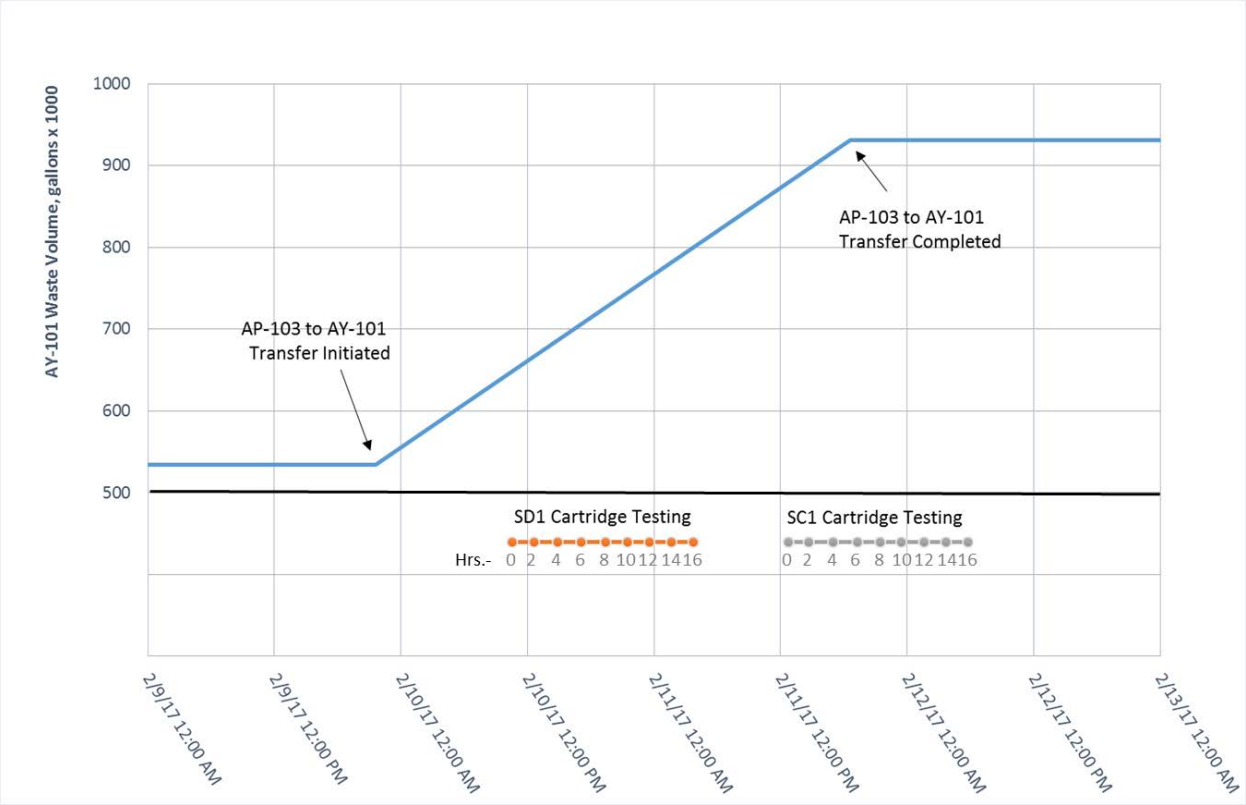

Figure 1. Timeline of Cartridge Testing and Concurrent Waste Transfer into Tank 241-AY-101

Each cartridge was tested for approximately 16 hours of continuous run time. Testing and analyses focused on the 59 COPCs identified in Table 1 and other hazardous airborne contaminants. Sorbent tubes were changed every 2 hours, and a canister sample was collected at the end of each 2 hour period. More than 200 sorbent tubes and 32 canister samples were sent to the 222S Laboratory at Hanford and dispositioned for analyses. Appendix C lists the raw data for all of contaminants analyzed during the tests, and Appendix D lists the corresponding calculated concentrations for the detected COPCs. Appendix C also gives the average temperatures of the sample slipstream during testing, which ranged from 42 to 74°F, and the average relative humidity, which ranged from 45 to 93%. 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. Methanol was analyzed from the canister samples only.

Table 1 shows the measured concentrations in the current study for all of the COPCs tested. This table further provides a summary of the test information. For example, if all of the measurements for a specific compound were less than detection limits (DL),[8] that compound is marked accordingly. Further, if concentrations were detected for a compound, the extent of the detection also is described. Inlet concentrations of four COPCs—ammonia, furan, N-nitrosodimethylamine (NDMA) and N-nitrosodiethylamine (NDEA)—exceeded their corresponding OELs. The inlet (or outlet) concentrations of four additional COPCs were lower than their corresponding OELs but were >10% of the OEL. These COPCs were mercury, 2,3-dihydrofuran, 2-methylfuran, and N-nitrosomethylethylamine (NMEA). One COPC (2,5-dihydrofuran) had a measured concentration that was less than its DL, but the DL was >10% of the OEL. All eight of these COPCs (highlighted in yellow in Table 1) are assessed in more detail in Section 5.0. Appendix E provides similar detailed assessments for an additional eight COPCs with respirator cartridge inlet (or outlet) concentrations or DLs <10% of their OELs but >2%. These COPCs were methanol, formaldehyde, 2,5-dimethylfuran, 2-pentylfuran, 2-heptylfuran, 2-propylfuran, acetonitrile and N-nitrosomorpholine. All of the other COPCs had inlet (or outlet) concentrations <2% of their OELs or their DLs.

[8] The term "detection limit" is used here to refer either to analytical reporting limit (RL) or DL. The use of either an RL or a DL varied among analytical laboratories. An RL (equivalent to a limit of quantification) was used instead of an analytical method DL by several laboratories for specific COPC analyses. See Appendices C and F for additional information on the specific use of the RL or DL 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) <DL or <RL	Highest Detected Value Compared to OEL
Inorganic						
1 Ammonia	7664-41-7	92.2 ppm	25 ppm	2.46%		Up to 310% of OEL for inlet values. All outlets ≤369%.
2 Nitrous Oxide	10024-97-2	Not Measured	50 ppm			
3 Mercury	7439-97-6	13.2 μg/m^3	25 μg/m^3	7.01%		Up to 52.9% of OEL for inlet values. All outlets ≤28.3%.
Hydrocarbons						
4 1,3-Butadiene	106-99-0	0.0196 ppm	1 ppm	1.96%	X	
5 Benzene	71-43-2	0.0090 ppm	0.5 ppm	0.025%		Up to 1.8% of OEL for inlet values. All outlets ≤0.07%.
6 Biphenyl	92-52-4	0.0002 ppm	0.2 ppm	0.107%	X	
Alcohols						
7 1-Butanol	71-36-3	0.070 ppm	20 ppm	0.002%		Up to 0.3% of OEL for inlet values. All outlets ≤0.008%.
8 Methanol	67-56-1	18.7 ppm	200 ppm	0.129%		Up to 9.4% of OEL for inlet values. All outlets ≤5.5 %.
Ketones						
9 2-Hexanone	591-78-6	0.0058 ppm	5 ppm	0.003%		Up to 0.1% of OEL for inlet values. All outlets ≤DL.
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	0.0004 ppm	0.5 ppm	0.030%		Up to 0.09% of OEL for inlet values. All outlets ≤DL.
12 6-Methyl-2-heptanone	928-68-7	0.0023 ppm	8 ppm	TIC	X	
13 3-Buten-2-one	78-94-4	0.0024 ppm	0.2 ppm	0.088%		Up to 0.1% of OEL for inlet values. All outlets ≤1.2%.
Aldehydes						
14 Formaldehyde	50-00-0	0.0062 ppm	0.3 ppm	0.59%		Up to 1.4% of OEL for inlet values. All outlets ≤2.1%.
15 Acetaldehyde	75-07-0	0.1430 ppm	25 ppm	0.005%		Up to 0.6% of OEL for inlet values. All outlets ≤0.3%.
16 Butanal	123-72-8	0.0035 ppm	25 ppm	0.001%		Up to 0.01% of OEL for inlet values. All outlets ≤DL.
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	
New 2-Propenal	107-02-8	0.0010 ppm	0.1 ppm	0.967%	X	

[1] Approximate Detection Limit (DL) is calculated using the reported DLs (or RLs) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube. For the furans, both DL and RL values [27] are reported as "DL/RL."

[2] A TIC (Tentatively Identified Compound) notation indicates 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 greater than 5 ng 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.

Note: 2-Propenal and dimethyl mercury were added to the COPC list in September 2017.

Note: Furan; 2, 5-dihydrofuran,; and 2-methylfuran are quantified using the Carbotrap 300 TDU method. All other substituted furans are quantified using the Furans tube. See Appendix B for more information.

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) <DL or <RL	Highest Detected Value Compared to OEL
Furans						
19 Furan	110-00-9	29.90 ppb	1 ppb	DL | RL[1] 15.2% | 116%[4]		Up to 2995% of OEL for inlet values. All outlets ≤88%.
20 2,3-Dihydrofuran	1191-99-7	0.17 ppb	1 ppb	1.45% | 19.8%		Up to 17% of OEL for inlet values. All outlets ≤DL.
21 2,5-Dihydrofuran	1708-29-8	0.21 ppb	1 ppb	20.6% | 112%[4]	X	
22 2-Methylfuran	534-22-5	0.14 ppb	1 ppb	10.4% | 95.8%[4]		Up to 14% of OEL for inlet values. All outlets ≤DL
23 2,5-Dimethylfuran	625-86-5	0.04 ppb	1 ppb	3.49% | 14.4%	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	0.07 ppb	1 ppb	2.87% | 10.0%		Up to 6.8% of OEL for inlet values. All outlets ≤DL
28 2-Heptylfuran	3777-71-7	0.02 ppb	1 ppb	2.32% | 8.35%	X	
29 2-Propylfuran	4229-91-8	0.03 ppb	1 ppb	2.52% | 12.6%	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	0.0024 mg/m3	5 mg/m3	0.048%	X	
Nitriles						
34 Acetonitrile	75-05-8	0.551 ppm	20 ppm	0.001%		Up to 0.61% of OEL for all inlet values. All outlet values ≤2.8%.
35 Propanenitrile	107-12-0	0.0019 ppm	6 ppm	0.004%		Up to 0.03% of OEL for inlet values. All outlets ≤0.005%.
36 Butanenitrile	109-74-0	0.0016 ppm	8 ppm	0.002%		Up to 0.02% of OEL for inlet values. All outlets ≤DL.
37 Pentanenitrile	110-59-8	0.0006 ppm	6 ppm	0.003%		Up to 0.01% of OEL for inlet values. All outlets ≤DL.
38 Hexanenitrile	628-73-9	0.0002 ppm	6 ppm	0.003%		Up to 0.004% of OEL for inlet values. All outlets ≤DL.
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	
Amines						
42 Ethylamine	75-04-7	0.0198 ppm	5 ppm	0.095%		Up to 0.4% of OEL for inlet values. All outlets ≤0.14%.

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) <DL or <RL	Highest Detected Value Compared to OEL
Nitrosamines						
43 N-Nitrosodimethylamine	62-75-9	4.73 ppb	0.3 ppb	8.90%		Up to 1578% of OEL for inlet values. All outlets ≤DL.
44 N-Nitrosodiethylamine	55-18-5	0.40 ppb	0.1 ppb	19.40%		Up to 398% of OEL for inlet values. All outlets ≤DL.
45 N-Nitrosomethylethylamine	10595-95-6	0.08 ppb	0.3 ppb	8.23%		Up to 26% of OEL for inlet values. All outlets ≤DL.
46 N-Nitrosomorpholine	59-89-2	0.02 ppb	0.6 ppb	2.84%		Up to 3.7% of OEL for inlet values. All outlets ≤DL.
Organophosphates						
47 Tributyl phosphate	126-73-8	0.17 ppb	200 ppb	0.087%	X	
48 Dibutyl butylphosphonate	78-46-6	0.12 ppb	7 ppb	1.70%	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	1.42 ppb	1000 ppb	0.023%		Up to 0.1% of OEL for inlet values. All outlets ≤DL.
52 2,4-Dimethylpyridine	108-47-4	0.38 ppb	500 ppb	0.050%		Up to 0.08% of OEL for inlet values. All outlets ≤DL.
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	
Organometallic						
New Dimethylmercury	593-74-8	Not Measured	10 $\mu g/m^3$			

5.0 Plots of COPCs with Significant Detected Values

Of the 59 COPCs in Table 1, ammonia, furan, NDMA, and NDEA exceeded their corresponding OELs. In addition, mercury, 2,3-dihydrofuran, 2-methylfuran, and NMEA had measured concentrations or DLs less than their corresponding OELs but >10% (see COPCs highlighted in yellow in Table 1). This section provides more detail on these eight COPCs, along with plots of the corresponding data. Note that Appendix E shows plots and descriptions for other COPCs with measured inlet or outlet concentrations or DLs between 2% and 10% of their corresponding OELs.

Ammonia *(see Figure 2)* – The DL for ammonia corresponds to ~2.5% of its OEL. Inlet concentrations were measured for every 2 hours throughout the testing period. For the SCOTT 7422-SD1 cartridge, the initial inlet ammonia concentrations were relatively constant—between 244% and 310%. For the SCOTT 7422-SC1 cartridge the initial concentrations also were relatively constant, between 284% and 286% of the OEL, but then decreased to 2.1% of the OEL by the end of testing. Outlet concentrations from the SCOTT 7422-SD1 cartridge exceeded 10% of the OEL after 6 hours and after 4 hours for the SCOTT 7422-SC1 cartridge. These breakthrough times align with those from prior respirator cartridge tests on Hanford tanks, with the inlet concentration being the predominant driver of the observed breakthrough times.[27] Service life predictions using Scott's SureLife® calculator were 6.7 and 7.2 hours (at 10% of the OEL at the cartridge outlet) for the SD1 and SC1 test conditions, respectively. These estimates are close to the observed breakthrough times, further validating the use of that tool for ammonia in a multi-component Hanford tank vapor mixtures.[27]

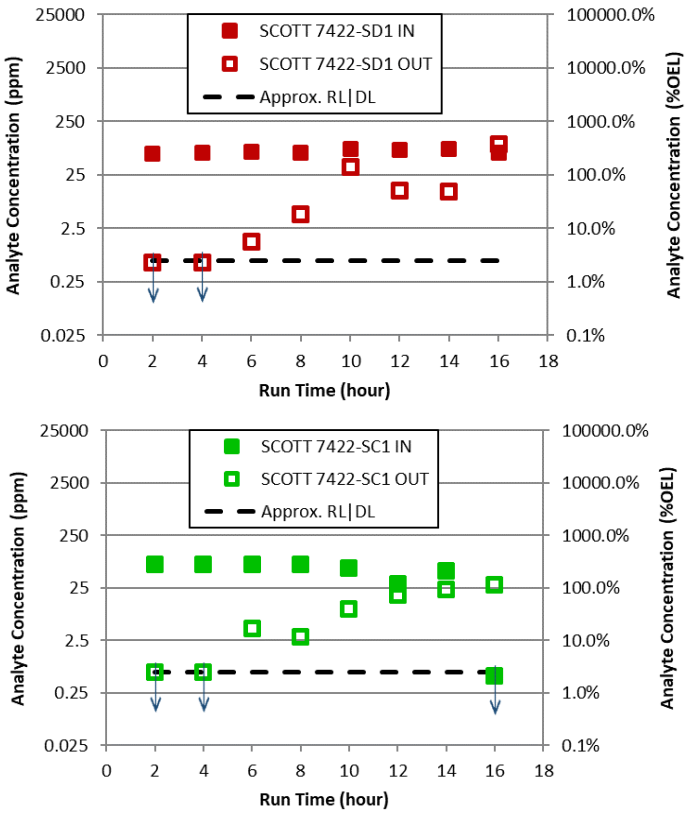

Figure 2. Plot of Measured Ammonia Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

Mercury *(see Figure 3)* – The DL for mercury corresponds to ~7% of the OEL. Inlet concentrations measured throughout the testing period for the SCOTT 7422-SD1 cartridge remained relatively similar, ranging between 39 to 47% of the OEL. For the SCOTT 7422-SC1 cartridge, the inlet mercury concentrations decreased by the end of the testing. The highest inlet mercury concentrations recorded were 53% of the OEL. The lower inlet concentrations after 16 hours for the 7422-SC1 cartridge likely is a result of the end of waste transfer activities. The outlet concentrations for SCOTT 7422-SD1 started out below the DL but exceeded 10% of the OEL after 14 hours. All outlet concentrations for SCOTT 7422-SC1 were below the DL, indicating no evidence of breakthrough over the measured time period.

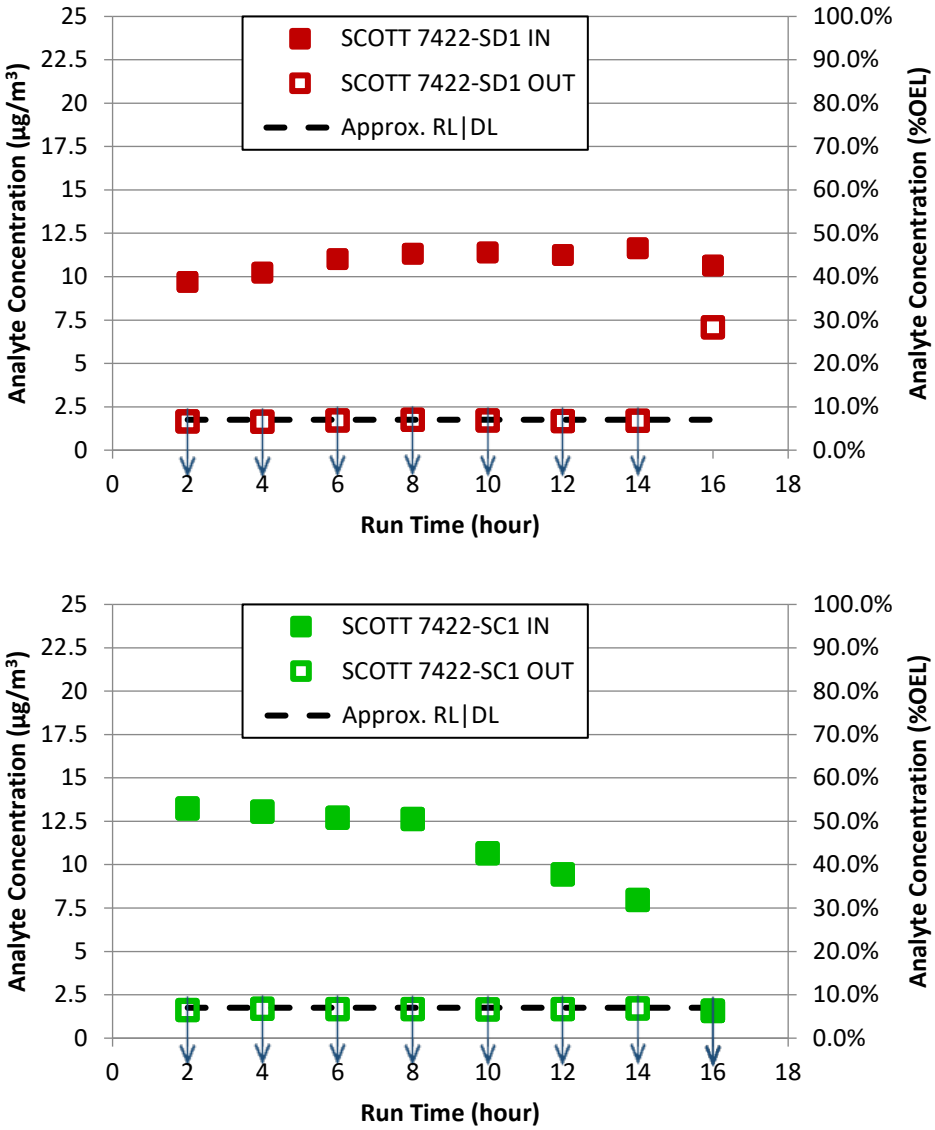

Figure 3. Plot of Measured Mercury Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data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

Furan *(see Figure 4)* – The DL for furan using the Carbotrap 300 TDU method[9] corresponds to ~15.2% of the OEL. Inlet concentrations measured throughout the testing period for both the SCOTT 7422-SD1 and 7422-SC1 cartridges were significantly above DL, ranging from 437 to 2995% of the OEL. The outlet concentrations for SCOTT 7422-SD1 started out below the DL but exceeded the DL after 8 hours and remained above the DL for the remainder of the test. Initial outlet concentrations for SCOTT 7422-SC1 also were below the DL but exceeded 10% of the OEL after 10 hours and remained above the DL through the remainder of the test. These results indicate that furan breakthrough[10] occurred after 8 and 10 hours for the 7422-SD1 and 7422-SC1 cartridges, respectively.

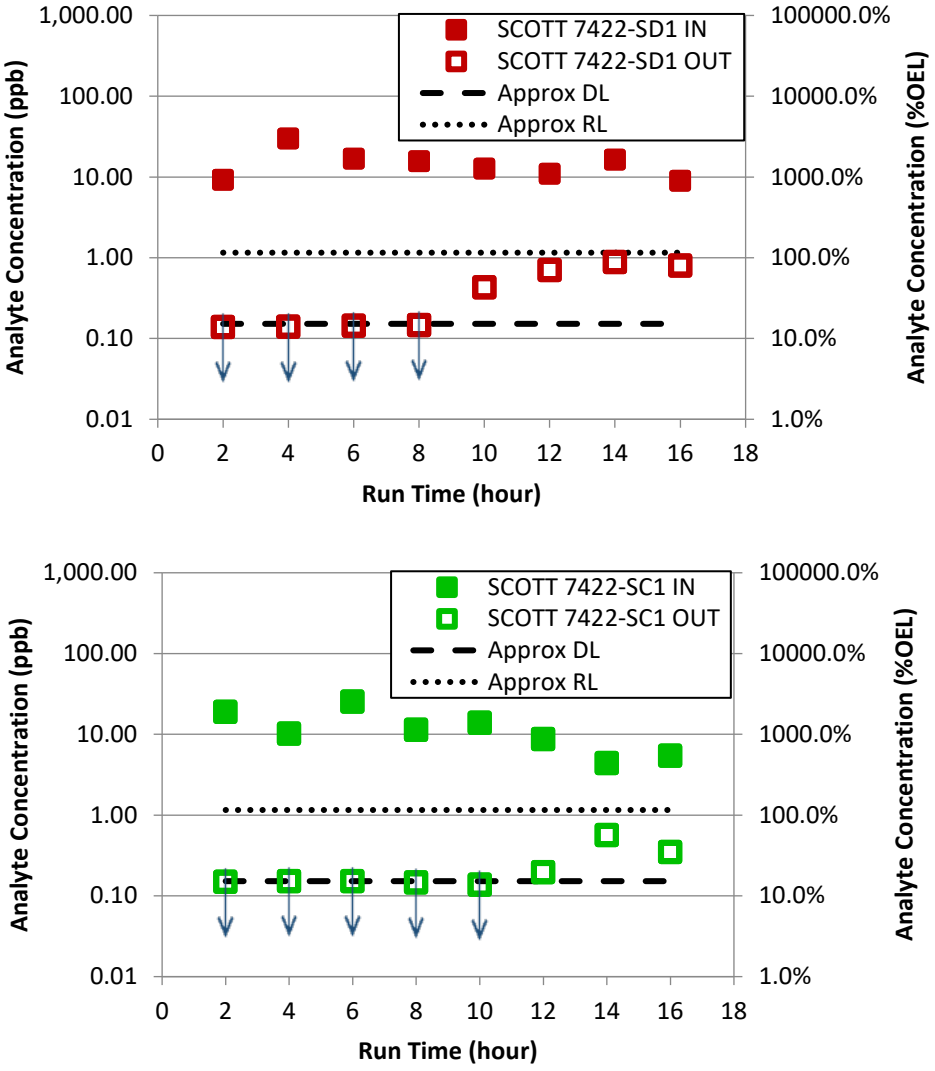

Figure 4. Plot of Measured Furan Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL.

[9] See Freeman et. al. [27] and Appendix B for method selection background.

[10] For COPCs such as furans with DLs greater than the breakthrough criterion used in this study (>10% of OEL), the DL is used as the breakthrough criteria.

2,3-Dihydrofuran *(see Figure 5)* – The DL for 2,3-dihydrofuran corresponds to ~1.5% of the OEL. All measured inlet concentrations were below the DL for the SCOTT 7422-SD1 cartridge. The measured inlet concentrations to the SCOTT 7422-SC1 cartridge were as high at 17% of the OEL, but substantially <100% of the OEL. The maximum concentration during this waste-disturbing test was approximately 2× higher than the previous non-waste-disturbing test of the 702-AZ exhauster. However, this increase was not consistent across the furan and substituted furan COPCs. In addition, although the maximum concentration exceeded the DL, it was still less than the RL of 19.8% of the OEL [27]. All outlet concentrations were below the DL, indicating no evidence of breakthrough over the measured time period for either cartridge tested.

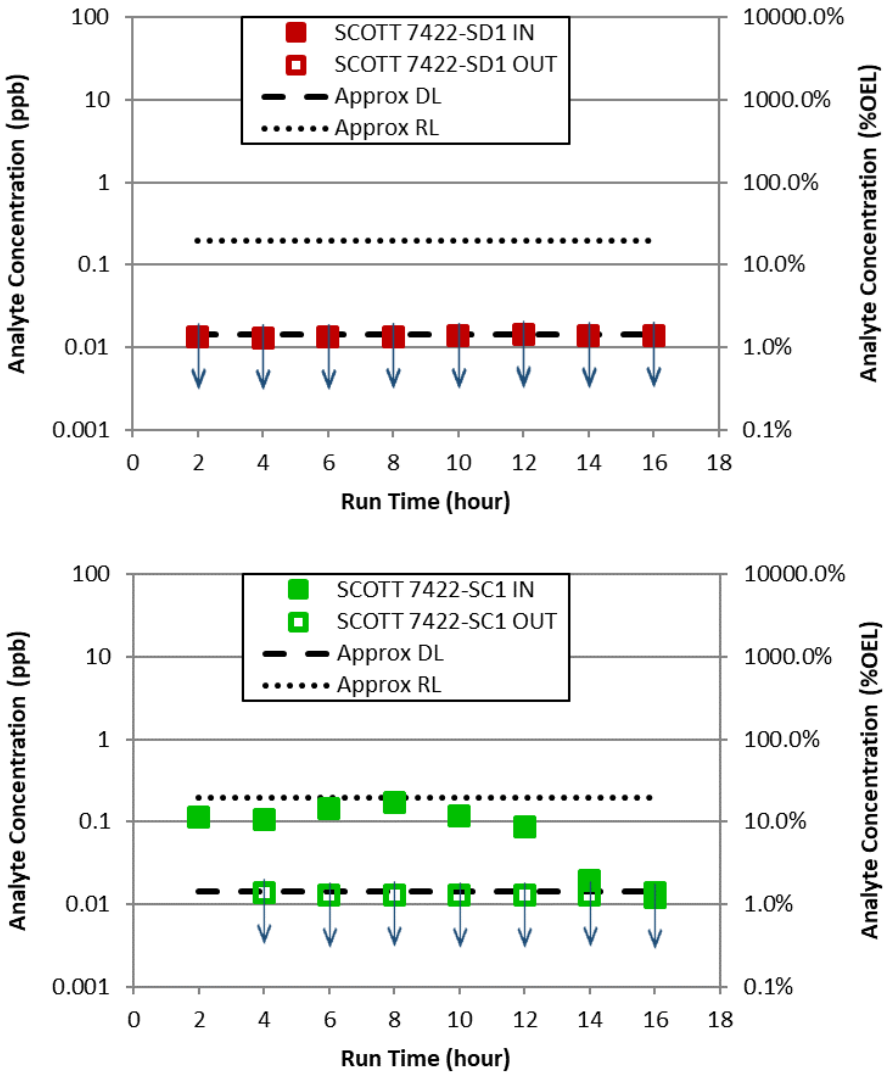

Figure 5. Plot of Measured 2,3-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL. Outlet data points not visible are obscured by the inlet data points.

2-Methylfuran *(see Figure 6)* – The DL for 2-methylfuran using the Carbotrap 300 TDU method[11] corresponds to ~10.4% of the OEL. All of the measured inlet concentrations for the SCOTT 7422-SD1 cartridge were above the DL with the highest concentration at 13.8 % of the OEL. Most of the inlet concentrations to the SCOTT 7422-SC1 cartridge were less than the DL except for a measurement after 4 hours (11.5% of the OEL). All outlet concentrations were less than or equal to DL, indicating no evidence of breakthrough over the measured time period for either cartridge tested.

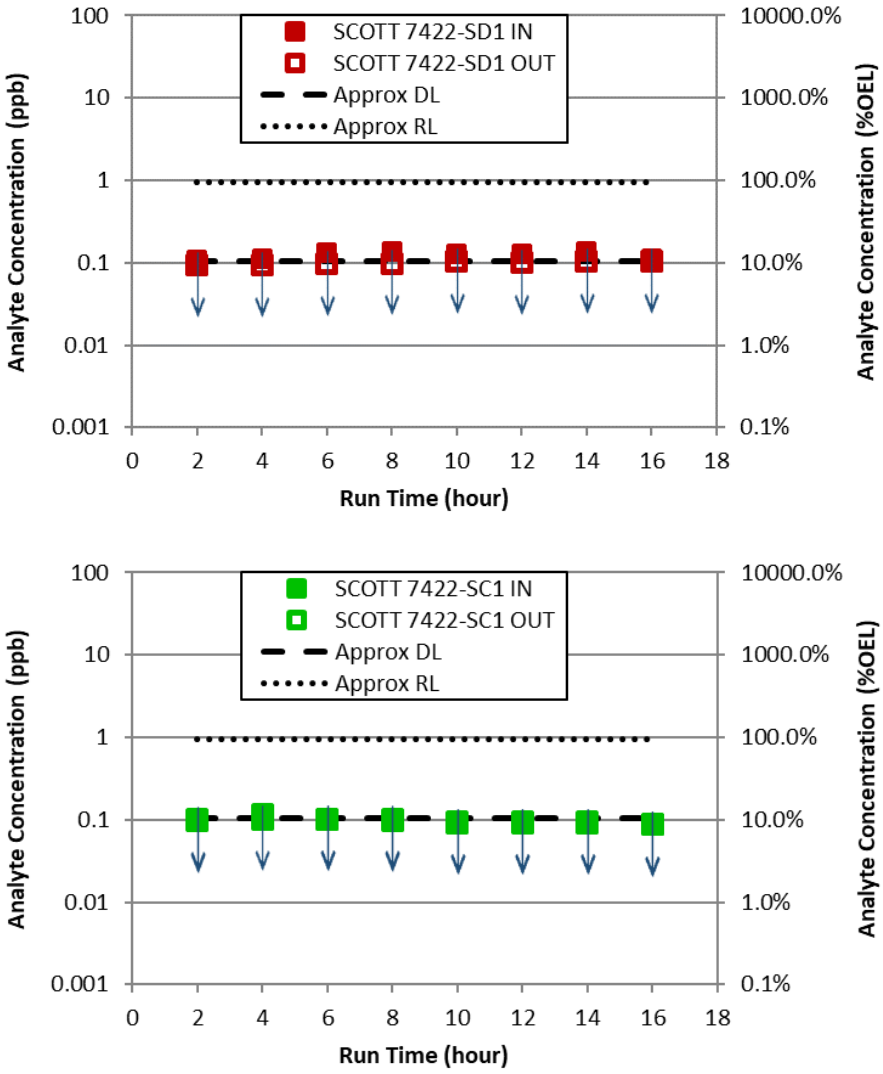

Figure 6. Plot of Measured 2-Methylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL. Outlet data points not visible are obscured by the inlet data points.

[11] See Freeman et. al. [27] and Appendix B for method selection background.

N-nitrosodimethylamine *(see Figure 7)* – The DL for NDMA corresponds to ~8.9% of its OEL. All inlet measurements for both cartridge tests were significantly greater than the DL and all inlet concentrations for both cartridges were relatively constant throughout testing, ranging from 1006% to 1578% of the OEL. All outlet measurements were less than or equal to the analytical DL for both respirator cartridges. Thus, there is no evidence of breakthrough over the measured time period for either cartridge tested.

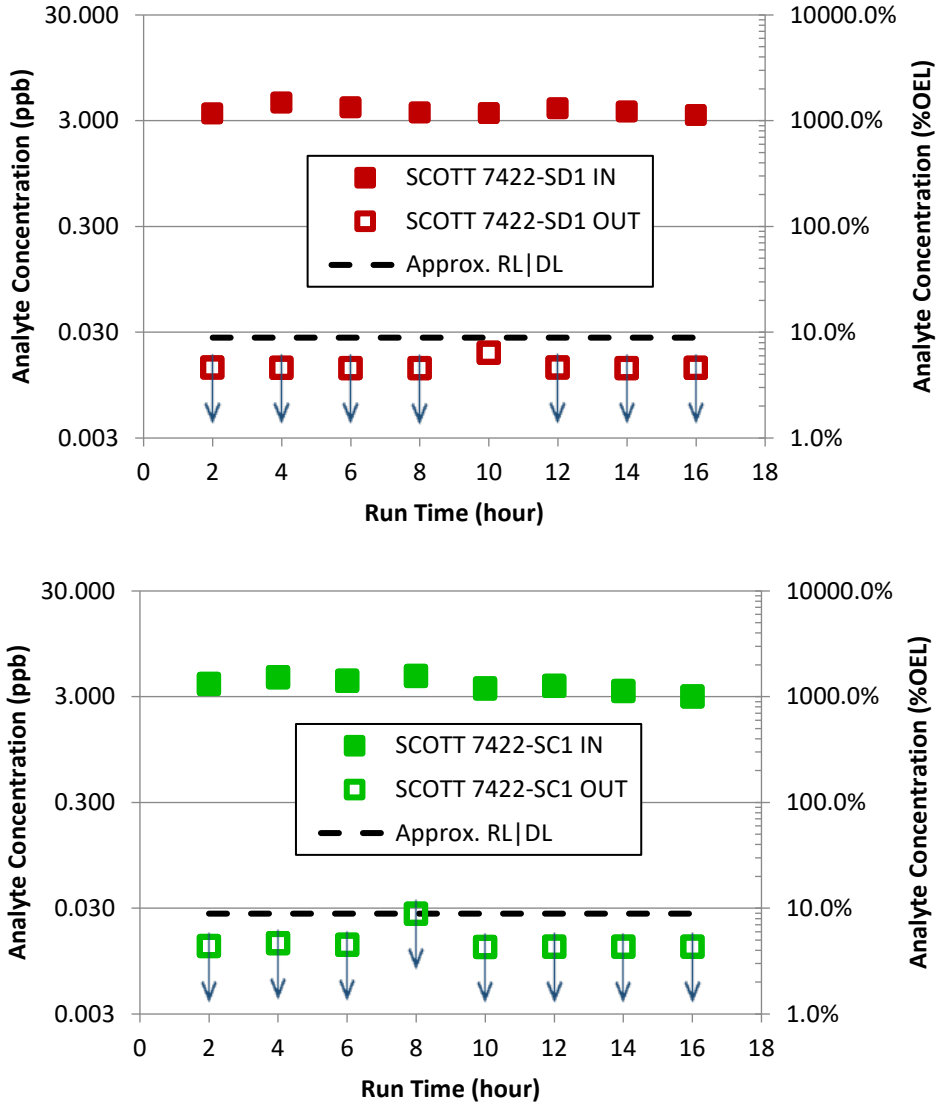

Figure 7. Plot of Measured N-nitrosodimethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

N-nitrosodiethylamine *(see Figure 8)* – The DL for NDEA corresponds to ~19.4% of its OEL. All inlet measurements for SCOTT 7422-SD1 were significantly greater than the DL and the inlet concentrations were initially higher (up to 398%) and decreased gradually towards the end of the testing period. Inlet concentrations for SCOTT 7422-SC1 were around the DL, except for the measurement at 4 hours (45%). All of the outlet measurements were less than or equal to analytical DL for both respirator cartridges. Thus, there is no evidence of breakthrough over the measured time period for either cartridge tested.

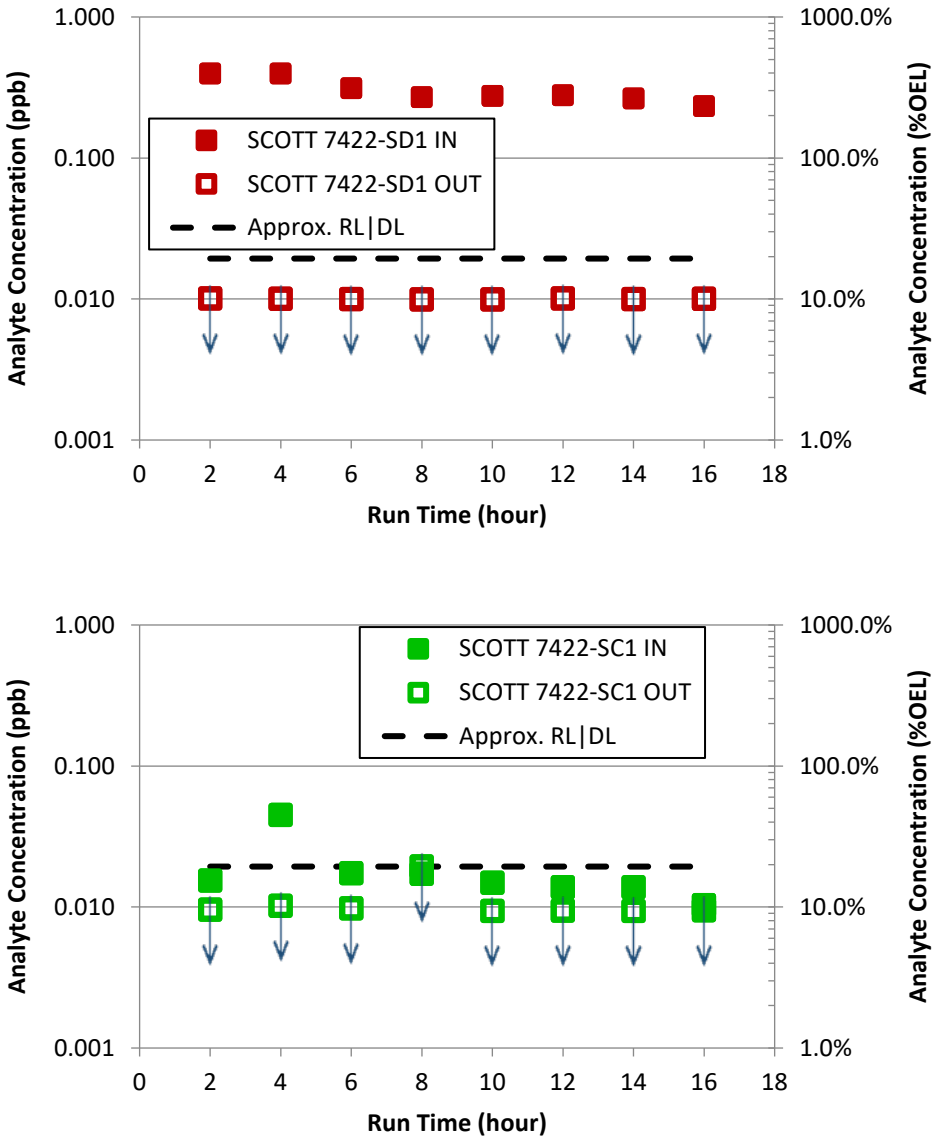

Figure 8. Plot of Measured N-nitrosodiethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the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

N-nitrosomethylethylamine *(see Figure 9)* – The DL for NMEA corresponds to ~8.2% of its OEL. All inlet measurements for both respirator cartridges were higher than the DL, with most measurements exceeding 10% of the OEL but <100% of the OEL. All respirator outlet measurements were below the DL. Therefore, there is no evidence of breakthrough over the measured time period for either cartridge tested.

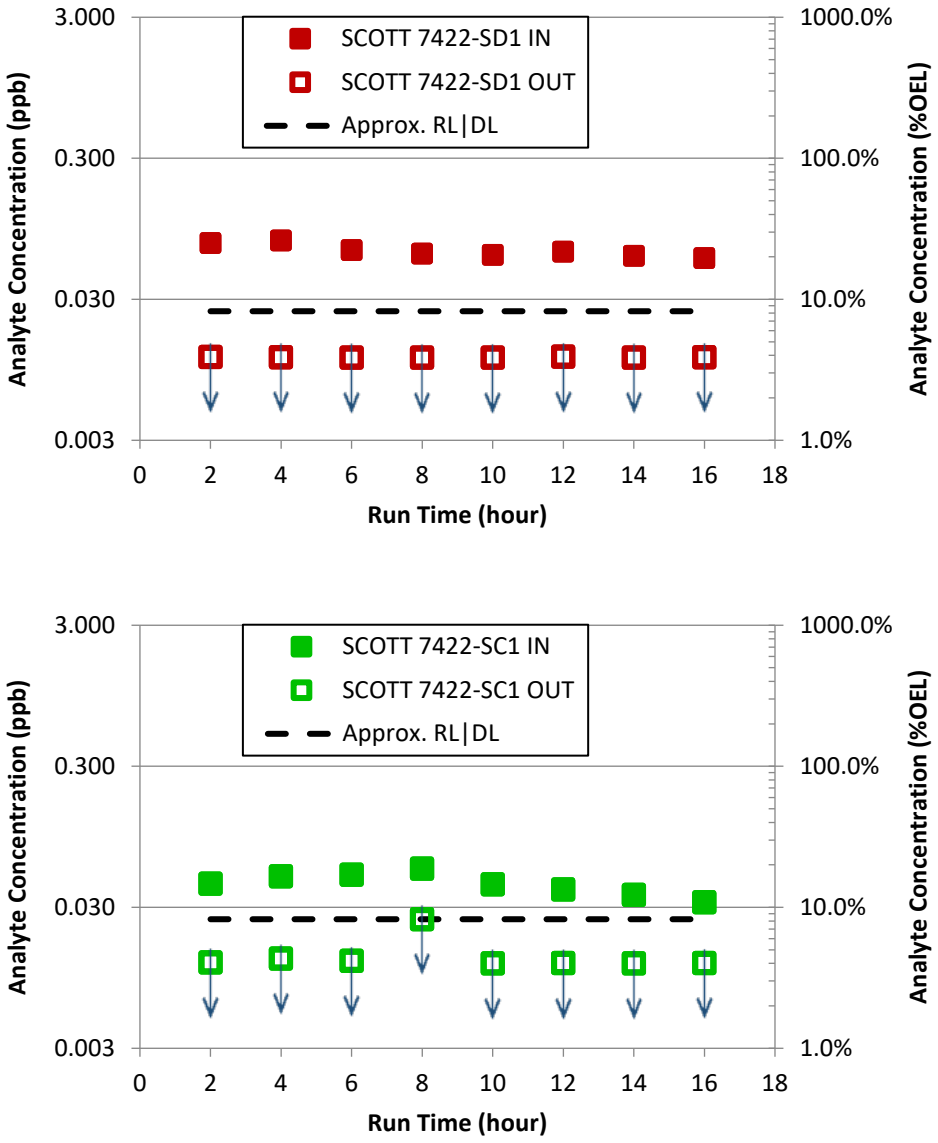

Figure 9. Plot of Measured N-nitrosomethylethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

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 702-AZ exhauster data from TWINS and the Site-Wide Industrial Hygiene Database were used for this assessment. In addition, analysis of 702-AZ exhauster historic maxima resulting from waste-disturbing activities also was reviewed.[27]

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, 10 COPCs have been previously measured in the 702-AZ exhauster stack at concentrations above 10% of their respective OELs and above analytical RLs. These COPCs include ammonia, nitrous oxide, mercury, furan, 2,5-dihydrofuran, ethylamine, NDMA, NDEA, NMEA, and N-nitrosomorpholine. Of these 10 COPCs:

- Ammonia average inlet concentrations measured in this cartridge study were higher than historic averages by a factor of more than 2.5×, which likely is attributed to the waste-disturbing activity during testing. While the maximum cartridge inlet concentration of 392% of OEL was still less than the historic maximum of 676% of the OEL, it was more than 4× the inlet concentration obtained in the 2016 702-AZ cartridge test under non-waste-disturbing conditions. In addition, the historic maximum was obtained during an exhauster restart operation where elevated concentrations can be expected.[27] The cartridge inlet concentrations were higher than the historic maximum from non-waste-disturbing conditions of 275% of OEL[12].
- The maximum mercury inlet concentration measured in this study (53% of the OEL) was generally consistent with maximum levels observed in 2016 cartridge testing in 702-AZ under non-waste-disturbing conditions, but substantially lower than the historic maximum during waste-disturbing conditions of 468% of the OEL. Several other measurements during previous waste-disturbing events resulted in mercury concentrations ranging from 102% to 144% of the OEL, still 2× to 3× higher than the cartridge inlet concentrations observed in this test.[27]
- The maximum furan cartridge inlet concentration measured in this study (2995% of the OEL) was approximately 30× times the only historical above report maximum concentration (79%) and the maximum inlet concentration (58%) obtained in the 2016 702-AZ cartridge test under non-waste-disturbing conditions. Overall, inlet concentrations for these tests were significantly higher than historic concentrations measured under non-waste-disturbing conditions
- The only other furan compounds measured above their DLs in these cartridge tests were 2,3-dihydrofuran, 2-methylfuran, and 2-pentylfuran with maximum inlet concentrations of 17%, 14%, and 6.8% of the OEL, respectively. The maximum inlet concentration of 2,3-dihydrofuran was comparable to the maximum historic concentration above the RL (23% of the OEL). The historic concentration measurements for other furan compounds from the 702-AZ exhauster have typically been less than the RL.[27]

[12] Inlet concentrations were considered generally consistent if they were within ±100% of historic maximum and average headspace concentrations.

- The NDMA maximum cartridge inlet concentration (1578% of the OEL) was approximately 2× higher than the historic maximum of 820% and the maximum concentration from the 2016 non-waste-disturbing cartridge tests (760%).
- The maximum NDEA cartridge inlet concentration (398% of the OEL) was approximately 5× higher than the maximum above-report (66%) historical concentration measurement from the 702-AZ exhauster, and approximately 13× higher than maximum NDEA concentrations measured during the 2016 non-waste-disturbing 702-AZ cartridge testing.
- Maximum NMEA concentrations at the cartridge inlets (19% to 26% of the OEL) were higher but generally consistent with the historical above-report maximum concentration measurements from the exhauster (10%).

Table 2. Historical 702-AZ Exhauster Data for COPCs with Boiling Points less than 70°C (158°F)

					Historical Measurements[1]							Measurements in this Study	
COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point (°C)	Occupational Exposure Limit (OEL)	# of Values	Maximum Value (in OEL units)	Minimum Value (in OEL units)	Average Value (in OEL units)	Standard Deviation (in OEL units)	Max. Value (% OEL)	Average Value (% OEL)	Max Inlet Value (% OEL)	Highest Value from Cartridge Outlet (% OEL)
2 Nitrous Oxide	10024-97-2	-127	-88	50 ppm	1	<RL	<RL	<RL	<RL	<RL	<RL	Not Measured	
					4	<RL	<RL	<RL	<RL	<RL	<RL		
1 Ammonia	7664-41-7	-28	-33	25 ppm	25	169	<RL	22.5	33.8	676%	90%	310%	369%
50 2-Fluoropropene	1184-60-7	-11	-24	0.1 ppm	0	n/a	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC	
14 Formaldehyde	50-00-0	-6	-21	0.3 ppm	27	<RL	<RL	0.0177*	0.0208*	<RL	5.9%*	1.4%	2.1%
53 Methyl nitrite	624-91-9	10	-12	0.1 ppm	0	n/a	n/a	n/a	n/a	n/a	n/a	Not Detected - TIC	
4 1,3-Butadiene	106-99-0	24	-5	1 ppm	34	0.109	<RL	0.0374*	0.0229*	11%	3.7%*	2.0% (RL)	2.0% (RL)[2]
42 Ethylamine	75-04-7	62	17	5 ppm	20	<RL	<RL	<RL	---	<RL	<RL	0.4% (RL)	0.14% (RL)
15 Acetaldehyde	75-07-0	69	21	25 ppm	19	<RL	0.0087	0.078*	0.0615*	<RL	0.31%*	0.57%	0.27%
19 Furan	110-00-9	88	31	1 ppb	27	<RL	<RL	6.31*	27.7*	<RL	631%*	2995%[3]	88.1%
59 Methyl Isocyanate	624-83-9	103	39	0.02 ppm	1	<RL	<RL	<RL	n/a	<RL	<RL	Not Detected - TIC	
New 2-Propenal	107-02-8	127	53	0.1 ppm								0.97% (DL)	0.94% (DL)
20 2,3-Dihydrofuran	1191-99-7	130	55	1 ppb	17	<RL	<RL	0.14	0.0671	<RL	14%	16.8%	1.4% (DL)
22 2-Methylfuran	534-22-5	147	64	1 ppb	26	<RL	<RL	<RL	---	<RL	<RL	13.8%[3]	10.4% (DL)
8 Methanol	67-56-1	148	65	200 ppm	7	<RL	<RL	1.06*	0.843*	<RL	0.53%*	Not Measured	
21 2,5-Dihydrofuran	1708-29-8	152	67	1 ppb	26	<RL	<RL	<RL	---	<RL	<RL	20.2% (DL)[3]	20.6% (DL)

[1] *Historical data from TWINS industrial hygiene vapor database and SWIH database, as applicable; see text for links and dates of queries.*
Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene as applicable) were included. Italics, if present, mean that the pre-2006 TWINS headspace data were also included.
"n/a" indicates no historical data was found in the databases
Values in parenthesis "( )", if present, indicate the maximum or average reported (detected) value >RL or >DL.
"<" indicates that all pertinent measurements of the analyte were less than the reporting or detection level

[2] *"(RL) or (DL)" indicates value represents approximate reporting limit (RL) or 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.*

[3] *Furans measured using VOA (Volatile Organic Analysis) method.*

[4] *Measured using Furan method.*

7.0 Conclusions

Testing was conducted from February 10–11, 2017, on a slipstream from the 702-AZ exhauster fed to a respirator cartridge test stand developed by WRPS in collaboration with HiLine Engineering (Richland, Washington). Unlike prior cartridge testing on the 702-AZ Primary Exhauster, the recent tests were performed during a waste-disturbing event. Multipurpose respirator cartridges, SCOTT 7422-SD1 and SCOTT 7422-SC1 (SCOTT Safety, Monroe, North Carolina), were assessed on separate days. Sample media (sorbent tubes) and canisters 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 the 702-AZ exhauster, four COPCs—ammonia, furan, NDMA, and NDEA—exceeded their corresponding OELs. Four additional COPCs—mercury, 2,3-dihydrofuran, 2-methylfuran, and NMEA—had one or more inlet concentration measurements >10% of their OELs, but <100%. All other COPC inlet and outlet measurements were <10% of their OELs.
- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 310% of its OEL (77.6 ppm) during the SCOTT 7422-SD1 cartridge testing, which was lower than the maximum historical measurement (676%) but higher than the historical average (90%). The maximum ammonia concentration for this test was approximately 4× higher than the maximum inlet concentration obtained in the 2016 702-AZ cartridge test under non-waste-disturbing conditions. Ammonia appeared to break through the SCOTT 7422-SD1 cartridge, >10% of the OEL, after 6 hours. For the SCOTT 7422-SC1 cartridge breakthrough appeared to occur after 4 hours. These breakthrough times are consistent with those measured in prior respirator cartridge tests for Hanford tanks, based on the inlet concentrations to the cartridges.
- Maximum mercury concentrations at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 47% and 53% of the OEL, respectively. These concentrations were lower than the average (80%) and maximum (468%) historical measurements from the exhauster. Most of the cartridge outlet concentrations for mercury were below the DL. However, the single 16-hour cartridge outlet value for the SCOTT 7422-SD1 cartridge was >10% of the OEL, which could indicate breakthrough. There was no breakthrough of mercury observed for the SCOTT 7422-SC1 cartridge.
- Maximum furan concentrations measured using the Carbotrap 300 TDU method at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 2995% and 2533% of the OEL, respectively. These were about 30× times the maximum historical above report (79%) concentration measurement. Furan appeared to break through the SCOTT 7422-SD1 cartridge, above 10% of the OEL and above the DL, after 8 hours. For the SCOTT 7422-SC1 cartridge, breakthrough appeared to occur after 10 hours.
- 2,3-Dihydrofuran concentrations at the inlet to the SCOTT 7422-SD1 cartridge were lower than its DL (1.5% of the OEL) and RL (19.8% of the OEL). However, the inlet concentration to the SCOTT 7422-SC1 reached 17% of the OEL, which is consistent with the maximum above report historical exhauster measurement (23%). The corresponding outlet measurements did not exceed 10% of the OEL for either respirator cartridge, indicating no breakthrough.

- Maximum 2-methylfuran concentrations measured using the Carbotrap 300 TDU method at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 13.8% and 11.5% of the OEL, respectively. Historical concentration measurements were all less than the RL; therefore, no comparison to historical maximums can be made. The corresponding outlet measurements did not exceed the DL (10% of the OEL) for either respirator cartridge, indicating no breakthrough.
- Maximum NDMA concentrations at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 1487% and 1578% of the OEL, respectively, which were higher than the historical average and maximum of 320% and 820%, respectively. However, all measured outlet concentrations from the cartridges were less than or equal to analytical RL of ~8.9% of the OEL, indicating no breakthrough for either cartridge.
- NDEA concentrations at the inlet to the SCOTT 7422-SD1 respirator cartridge reached a maximum of 398% of its OEL, which is higher than the maximum above report (66%) historical measurements, and approximately 13× higher than maximum NDEA concentrations measured during the 2016 non-waste-disturbing 702-AZ cartridge testing. The inlet concentrations to the SCOTT 7422-SC1 cartridge only reached 45%. All outlet concentrations were less than or equal to analytical RL of ~19.4% of the OEL, indicating no breakthrough for either cartridge.
- Maximum NMEA concentrations at the inlets to the SCOTT 7422-SD1 and SCOTT 7422-SC1 cartridges were 26.1% and 18.8% of the OEL, respectively, which are higher, but generally consistent with the maximum above report historical measurement from the exhauster (10%). However, all outlet concentrations were less than or equal to analytical RL of ~8.23% of the OEL, indicating no breakthrough for either cartridge.
- Only ammonia and furan showed clear evidence of breakthrough during the test period, and ammonia preceded furan breakthrough for both cartridges tested.

The experimental results in this study support using the breakthrough measurements for ammonia as conservative guidance to inform an appropriate respirator cartridge change-out schedule. The shortest breakthrough time observed with ammonia was with the SCOTT 7422-SC1 cartridge and equated to 4 hours. However, variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact the breakthrough, especially if OEL thresholds are exceeded. Cartridge service life predictions, based on ammonia only, using Scott's SureLife® calculator, were consistent with the observed breakthrough times in the current study, as with previous cartridge tests on Hanford tank vapors.

8.0 Recommendations

Based on the measurements taken for this study, ammonia breakthrough, above 10% of its OEL, occurred earlier than any other COPC—after 4 hours for the SCOTT 7422-SC1 cartridge and after 6 hours for the SCOTT 7422-SD1 cartridge. The average inlet concentration of ammonia for the SCOTT 7422-SD1 cartridge was 261% of the OEL, which correlates to the observed breakthrough times in a way consistent with past respirator cartridge results. Therefore, the current experimental result supports a 4-hour service life for the use of SCOTT 7422-SC1 and 7422-SD1 cartridges in APRs employed to protect workers at the Hanford 702-AZ tank farm, under the same conditions as those tested. Variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact the breakthrough time, especially if OEL thresholds are exceeded. Service life predictions, based on ammonia, from Scott's SureLife® calculator are recommended as one means of accounting for environmental changes. These factors and predictions, along with the measured breakthrough, should be used to inform an Industrial Hygiene determination of an appropriate respirator cartridge change-out schedule for adequate worker protection.

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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 (Richland, Washington) as a means to comprehensively test respirator cartridge performance with actual Hanford tank headspace or exhauster slip stream gases. Tank headspace or exhauster slip stream vapors are pulled directly from the source through a flexible hose that connects the tank or exhauster sampling port within the tank farm/exhauster fence line to the respirator cartridge-testing system outside the farm.[13-14, 19-26] Multiple in-line particulate filters are installed in the line between the tank/exhauster and test system to remove potential radioactive particulates. Each filter unit contains a hydrophobic Fluoropore™ polytetrafluoroethylene filter (Millipore Sigma, Billerica, Massachusetts) that is required pursuant to the radiological work permit. This polytetrafluoroethylene filter medium is the same material used for routine tank vapor area monitoring as well as sampling and analysis of sources (headspace and exhausters) and was selected because of its broad chemical compatibility that minimizes sorption of, or reactions with, chemical compounds. The filter medium is not expected to adversely impact the test objectives because all tank farm vapor sampling uses this type of filter medium.

The test equipment allows the vapor stream to be sampled both before and after the cartridge so 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. Vapor-sampling canisters are also used to augment the sorbent tubes for specific COPCs.

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 uses vacuum to draw tank gases/vapors into the unit so the potential for leakage to the atmosphere is minimized until the gases/vapors are under positive pressure downstream of the vacuum pumps. By the time gases reach the vacuum pump, COPCs are essentially captured or removed by either the sorbent tubes or the respirator cartridge. [19-26] The 702-AZ testing represented the first cartridge test conducted during winter months. Therefore, heat trace was used on the line from the slip stream sampling point on the exhauster to the cartridge test stand, to maintain line and slip stream temperatures near exhauster conditions.

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. DryCal flow meters also were used downstream of the sorbent tubes to measure the flow through each sorbent tube. 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 are used 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.

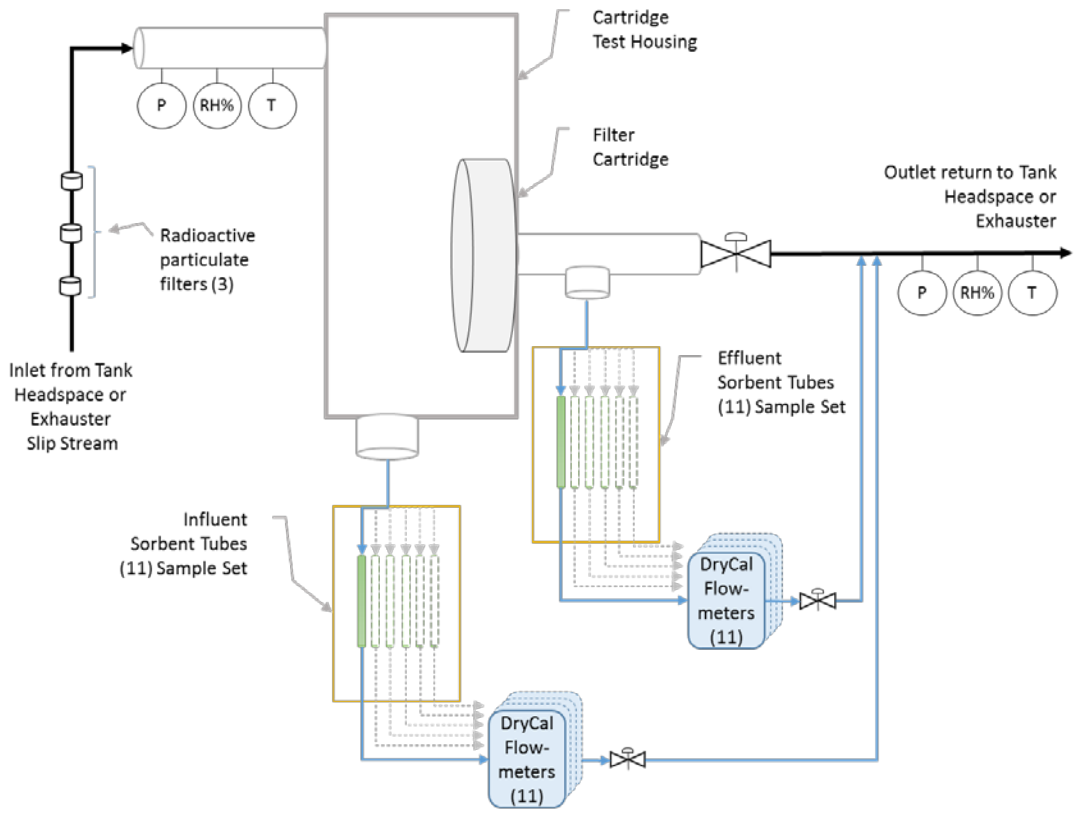

Figure A.1. General Schematic of Respirator Cartridge Test Apparatus

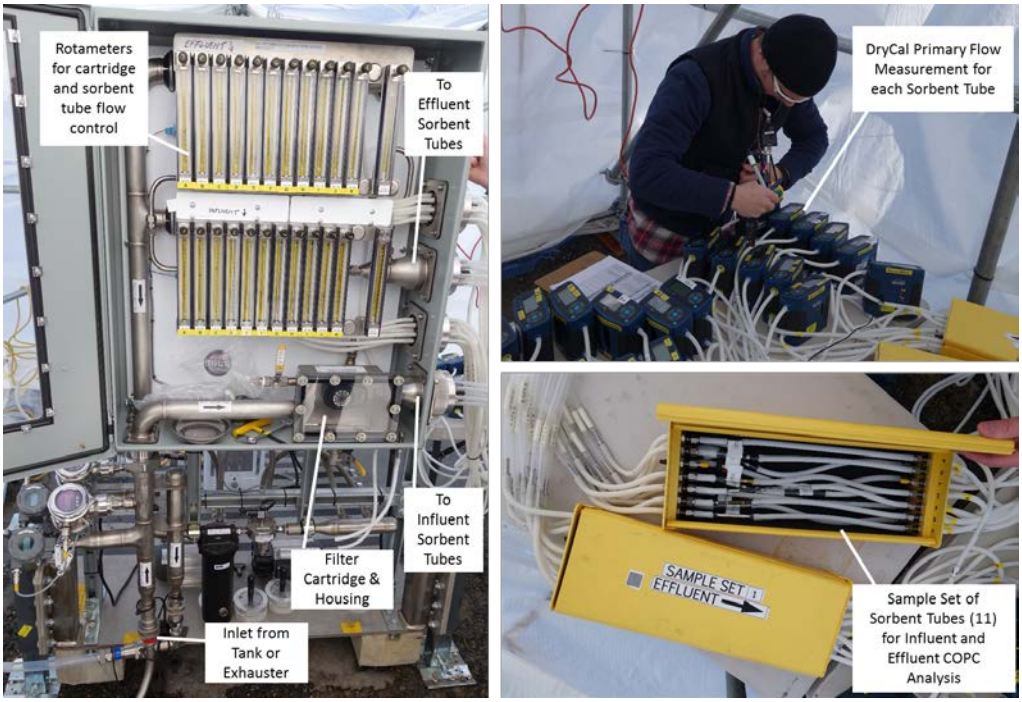

Figure A.2. Photographs of the Respirator Cartridge Test Equipment

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-226-01offsite	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

C.1 Description of Raw Data

This appendix includes raw flow rate, temperature, pressure, and humidity, and analytical data for the 702-AZ 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 measurement results 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 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 (TIC) as these reported values are just estimates and not associated with a specific calibration curve.

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, sample line number, cartridge ID, and tube bundle ID. These nomenclatures are described below.

- 'BL', short for BLANK, means measurements obtained from sorbent tubes that have not had any vapor stream passed through them. 'BA', short for BASE, means measurements obtained for ambient air (fresh air vs. tank vapor) running through the test system before initiation of tank vapor testing.
- '17-00252' designation corresponds to the first test survey which used the SCOTT 7422-SD1 respirator cartridge, whereas '17-00253' designation corresponds to the second test survey which tested the SCOTT 7422-SC1 respirator cartridge.
- Position designations 'IN-1' and 'EF-1' correspond to the respirator cartridge inlet and outlet measurements, respectively, at the 0- to 2-hour time intervals. Position designations '2' through '8' correspond to the subsequent 2-hour measurements for inlet (IN) and outlet (EFF): IN-2/EF-2 (2 to 4 hours), IN-3/ EF-3 (4 to 6 hours), IN-4/ EF-4 (6 to 8 hours), IN-5/EF-5E (8 to 10 hours), IN-6/EF-6 (10 to 12 hours), IN-7/EF-7 (12 to 14 hours), and IN-8/EF-8 (14 to 16 hours).
- The sample IDs embed the information given above. For example, sample ID 17-00252-8-SD1-IN-1 corresponds to the first cartridge survey (17-00252), sample line 8, and the first (0 to 2 hours) influent sample bundle (IN-1).

The flow rate passing through the respirator cartridge was approximately 27–29 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 'AY-AZ Transfer Flow Rates Feb 10.xlsx' for the first survey with SCOTT 7422-SD1 and 'AY-AZ Transfer Flow Rates Feb 11 (updated 7_24_17).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 'AY-AZ Transfer DRI Feb 10.xlsx' and 'AY-AZ Transfer DRI Feb 11.xlsx.' The information is shown in the tables provided in this appendix. Several terms used in the DRI files are described below.

- 'Pre' and 'Post' indicate the general time signature when the direct read instrument measurements were taken. 'Pre' refers to the beginning of the 2-hour sample duration, and 'Post' refers to the end of the 2-hour sample duration.
- 'Influent' and 'Effluent' indicate the location of the measurement within the test system. 'Influent' measurements are taken at the inlet of the system upstream of the respirator cartridge. 'Effluent' measurements are taken downstream of the respirator cartridge. The pressure, temperature, and humidity effluent sensors are located at the end of the test system near the vacuum pump, whereas the DRI measurements for ammonia and volatile organic compounds are from a sampling location between the respirator cartridge and the effluent sorbent tube samples.
- The DRI measurements for ammonia and volatile organic compounds 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).

Raw analytical data for chemicals in each analyte category are provided in tables in Appendix C, Section C.3. Some analytes are measured using more than one method (i.e., primary and secondary methods). A crosswalk of COPC to analyte category, media, and analytical method for both primary and secondary methods is provided in Table C.1. In general, the primary method was used for cartridge performance analysis except in cases for which the secondary method provides improved quantitation for the specific COPC and its concentration range during a specific test.

Table C.1. Crosswalk of COPCs with Primary and Secondary Analyte Category, Media, and Analytical Method

COPC#	Analyte Name	Primary Analysis Method (Analyte Category ǀ Media ǀ Method)	Secondary Analysis Method (Analyte Category ǀ Media ǀ Method)
1	Ammonia	Ammonia ǀ Anasorb 747 ǀ OSHA-ID-188	
2	Nitrous Oxide	Not Measured	
3	Mercury	Mercury ǀ Anasorb C300 ǀ NIOSH-6009	
4	1,3-Butadiene	1,3-butadiene ǀ Charcoal ǀ NIOSH 1024	
5	Benzene	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
6	Biphenyl	SVOC ǀ Carbotrap 150 ǀ EPA TO-17 Mod	
7	1-Butanol	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
8	Methanol	Methanol ǀ Silica Gel ǀ NIOSH 2000	
9	2-Hexanone	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
10	3-Methyl-3-butene-2-one	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
11	4-Methyl-2-hexanone	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
12	6-Methyl-2-heptanone	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
13	3-Buten-2-one	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
14	Formaldehyde	Aldehyde ǀ DNPH Treated Silica Gel ǀ EPA TO-11A	
15	Acetaldehyde	Aldehyde ǀ DNPH Treated Silica Gel ǀ EPA TO-11A	
16	Butanal/Butyraldehyde	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	Aldehyde ǀ DNPH Treated Silica Gel ǀ EPA TO-11A
17	2-Methyl-2-butenal	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
18	2-Ethyl-hex-2-enal	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
New	2-Propenal/Acrolein	Aldehyde ǀ DNPH Treated Silica Gel ǀ EPA TO-11A	
19	Furan[b]	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	VOC ǀ Carbotrap 300ǀ EPA TO-17 Mod
20	2,3-Dihydrofuran	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	
21	2,5-Dihydrofuran[b]	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod
22	2-Methylfuran[b]	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod
23	2,5-Dimethylfuran	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	
24	2-Ethyl-5-methylfuran	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
25	4-(1-Methylpropyl)-2,3-dihydrofuran	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
26	3-(1,1-Dimethylethyl)-2,3-dihydrofuran	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
27	2-Pentylfuran	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	
28	2-Heptylfuran	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	
29	2-Propylfuran	Furans ǀ Tenax TA ǀ EPA TO-17 Mod	
30	2-Octylfuran	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
31	2-(3-Oxo-3-phenylprop-1-enyl)furan	VOCTI[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
32	2-(2-Methyl-6-oxoheptyl) furan	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
33	Diethylphthalate	SVOC ǀ Carbotrap 150 ǀ EPA TO-17 Mod	
34	Acetonitrile	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	Acetonitrile ǀ Charcoal ǀ NIOSH 1606
35	Propanenitrile	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
36	Butanenitrile	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
37	Pentanenitrile	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
38	Hexanenitrile	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
39	Heptanenitrile	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
40	2-Methylene butanenitrile	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
41	2,4-Pentadienenitrile	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	

COPC#	Analyte Name	Primary Analysis Method (Analyte Category ǀ Media ǀ Method)	Secondary Analysis Method (Analyte Category ǀ Media ǀ Method)
42	Ethylamine	Ethylamine ǀ XAD-7 ǀ OSHA-ID-34,36,40,41	
43	N-nitrosodimethylamine	Nitrosamines ǀ Thermasorb/N ǀ NIOSH-2522 Mod	
44	N-nitrosodiethylamine	Nitrosamines ǀ Thermasorb/N ǀ NIOSH-2522 Mod	
45	N-nitrosomethylethyl-amine	Nitrosamines ǀ Thermasorb/N ǀ NIOSH-2522 Mod	
46	N-nitrosomorpholine	Nitrosamines ǀ Thermasorb/N ǀ NIOSH-2522 Mod	
47	Tributyl phosphate	SVOC ǀ Carbotrap 150 ǀ EPA TO-17 Mod	
48	Dibutyl butylphosphonate	SVOC ǀ Carbotrap 150 ǀ EPA TO-17 Mod	
49	Chlorinated Biphenyls	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
50	2-Fluoropropene	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
51	Pyridine	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	Pyridines ǀ Coconut Shell Charcoal ǀ NIOSH-1613
52	2,4-Dimethylpyridine	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	Pyridines ǀ Coconut Shell Charcoal ǀ NIOSH-1613
53	Methyl nitrite	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
54	Butyl nitrite	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
55	Butyl nitrate	VOC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
56	1,4-Butanediol, dinitrate	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
57	2-Nitro-2-methylpropane	VOCTIC ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
58	1,2,3-Propanetriol, 1,3-dinitrate	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
59	Methyl Isocyanate	VOCTIC[a] ǀ Carbotrap 300 ǀ EPA TO-17 Mod	
New	Dimethyl Mercury	Not Measured	

[a] 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 greater than or equal to 5 ng of TIC mass, and other analytical criteria are met. For respirator cartridge testing, this mass of TIC represents an approximate concentration of less than 1.0 ppb, based on the average of all TICs in the COPC list. TICs are measured using both the Carbotrap 300: EPA TO-17 and Carbotrap 150: EPA TO-17 modified methods. A few compounds are measured in the TIC analysis and another analytical technique. In these cases, the TIC analysis results were not retained because they are qualitative only and inferior to the other calibrated method.

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

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

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

C.2 Experimental Parameters

C.2.1 Flow Rates

SCOTT 7422-SD1 Cartridge (2/10/17) AY/AZ Transfer

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	4.11	4.32	3.87	4.46	3.86	4.12	4.07	3.77	3.93	3.96	3.77	3.79	3.78	3.61	3.76	3.54	3.91	3.63
VOC	B	3.88	4.11	3.78	4.08	3.91	4.07	3.78	3.95	3.83	3.87	3.71	3.91	3.81	3.88	3.70	3.91	3.68	3.96
Furans	C	5.97	6.10	5.91	6.03	5.96	6.07	5.95	5.93	5.85	5.84	5.79	5.77	5.48	5.81	5.75	5.70	5.72	5.69
Ethylamine	D	12.1	12.3	12.5	12.0	12.4	12.0	11.7	11.8	11.9	11.7	11.6	11.7	11.4	11.7	11.3	11.6	11.4	11.6
Acetonitrile	E	12.2	12.4	12.1	13.0	12.6	11.6	11.7	12.0	12.0	12.1	12.2	12.0	11.9	11.5	11.8	11.3	11.7	11.2
Mercury	F	30.6	30.8	31.1	30.4	30.8	30.4	29.1	29.1	29.7	28.5	29.4	29.7	29.8	29.7	29.6	29.6	29.6	29.5
Ammonia	G	24.5	24.3	25.5	24.8	25.1	24.3	22.5	23.4	23.6	23.4	23.4	23.4	23.5	23.8	23.6	23.2	23.2	23.0
Aldehyde	H	24.8	25.2	24.9	25.6	25.2	24.2	23.3	23.1	23.8	24.0	24.2	22.9	23.6	24.8	23.5	24.3	23.4	24.1
1,3-Butadiene	I	23.8	23.8	24.7	25.2	24.8	23.4	22.9	22.7	23.5	23.3	23.2	23.2	23.3	23.6	23.5	24.5	24.0	24.3
Pyridine	J	125	124	124	119	125	117	123	119	122	122	121	123	119	123	119	120	119	120
Nitrosamines	K	240	239	230	235	235	236	226	237	239	238	238	235	234	236	237	235	236	233

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	34.3	36.0	32.2	37.2	32.1	34.4	33.9	31.5	32.8	33.0	31.5	31.6	31.5	30.1	31.4	29.5	32.6	30.3
VOC	B	32.3	34.3	31.5	34.0	32.6	33.9	31.5	32.9	32.0	32.2	30.9	32.6	31.8	32.3	30.9	32.6	30.7	33.0
Furans	C	49.7	50.8	49.3	50.2	49.6	50.6	49.6	49.4	48.8	48.6	48.3	48.1	45.6	48.4	47.9	47.5	47.6	47.4
Ethylamine	D	101	102	104	100	103	100	97.7	98.1	99.0	97.7	96.7	97.6	94.8	97.1	94.1	96.9	95.1	96.4
Acetonitrile	E	102	103	101	108	105	97.0	97.5	100	100	101	102	100	99.3	96.2	98.6	94.0	97.3	93.3
Mercury	F	255	257	259	253	257	254	242	243	247	238	245	247	249	247	247	247	247	246
Ammonia	G	204	203	213	207	209	202	188	195	196	195	195	195	196	198	196	193	194	191
Aldehyde	H	207	210	208	214	210	202	194	193	198	200	201	191	197	207	196	202	195	201
1, 3-Butadiene	I	198	198	206	210	207	195	191	189	195	194	194	193	194	197	196	204	200	203
Pyridine	J	1038	1035	1030	995	1045	976	1025	995	1015	1015	1005	1022	995	1024	993	1002	995	1004
Nitrosamines	K	1996	1990	1920	1955	1955	1965	1880	1975	1990	1980	1980	1961	1947	1964	1975	1955	1965	1943

Data points highlighted in yellow were identified by the test operator as being low/ suspect due to media tube issues.

SCOTT 7422-SC1 Cartridge (2/11/17) AY/AZ Transfer

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	4.51	4.07	3.94	2.92	3.80	2.96	3.92	4.16	3.96	4.02	3.95	4.16	4.16	4.16	4.15	3.94	4.41	4.19
VOC	B	4.00	4.04	3.96	3.83	3.85	3.73	3.78	3.73	3.75	3.87	4.09	4.13	4.07	4.17	4.06	4.14	4.38	4.38
Furans	C	5.95	5.70	5.39	5.75	5.88	5.69	5.77	6.13	5.74	6.05	6.06	6.16	6.03	6.15	6.05	6.09	6.51	7.73
Ethylamine	D	11.9	11.8	11.4	11.4	14.9	11.7	11.9	11.5	11.5	11.9	12.4	12.7	12.2	12.7	12.1	12.7	13.6	13.0
Acetonitrile	E	12.3	11.4	11.1	12.0	11.7	11.9	11.5	11.6	11.8	12.2	11.9	12.3	11.5	12.2	11.7	12.1	13.5	13.1
Mercury	F	30.8	30.3	29.9	31.0	30.0	29.9	29.6	30.0	29.3	30.2	29.5	30.4	29.1	30.1	28.8	29.5	31.7	32.2
Ammonia	G	24.1	23.9	24.5	23.2	24.2	23.0	22.9	24.1	23.0	24.0	23.8	24.3	23.3	23.9	23.4	25.0	26.8	25.6
Aldehyde	H	24.9	23.7	22.3	25.5	24.3	24.8	23.2	22.9	23.3	24.6	23.9	24.4	23.7	23.9	23.7	23.8	26.3	25.6
1,3-Butadiene	I	24.0	24.2	23.9	23.8	23.2	23.9	23.8	23.3	23.5	24.5	23.8	24.0	23.7	23.9	23.4	23.7	26.2	25.2
Pyridine	J	128	130	128	123	125	119	121	122	125	63	120	124	119	122	119	122	130	125
Nitrosamines	K	241	232	230	247	232	232	231	241	233	122	238	252	239	251	239	251	253	250

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	37.6	33.9	32.9	24.3	31.6	24.7	32.7	34.7	33.0	33.5	32.9	34.6	34.6	34.7	34.6	32.8	36.8	34.9
VOC	B	33.3	33.7	33.0	31.9	32.1	31.1	31.5	31.1	31.3	32.2	34.1	34.4	33.9	34.7	33.8	34.5	36.5	36.5
Furans	C	49.6	47.5	44.9	47.9	49.0	47.5	48.1	51.1	47.8	50.4	50.5	51.3	50.2	51.2	50.5	50.7	54.3	64.4
Ethylamine	D	99.4	98.6	95.2	95.1	124	97.6	99.2	95.5	96.2	99	103	106	102	106	101	106	113	108
Acetonitrile	E	102	95.3	92.3	100	97.7	98.9	96.1	96.4	98.2	102	98.9	102	96.1	102	97.2	101	112	109
Mercury	F	257	253	250	259	250	249	246	250	244	252	246	253	242	251	240	246	264	268
Ammonia	G	201	199	205	193	202	192	191	201	192	200	199	202	194	199	195	208	223	213
Aldehyde	H	208	197	185	212	203	207	194	191	194	205	199	204	198	200	198	198	219	213
1, 3-Butadiene	I	200	201	199	198	193	199	199	194	196	204	198	200	197	199	195	197	218	210
Pyridine	J	1065	1080	1065	1025	1040	993	1010	1020	1040	526	999	1032	992	1020	995	1020	1079	1040
Nitrosamines	K	2005	1935	1920	2060	1930	1935	1925	2010	1946	1018	1987	2101	1992	2088	1994	2094	2107	2082

Data points highlighted in yellow were identified by the test operator as being low/ suspect due to media tube issues.

C.2.2 Temperature, Pressure, and Relative Humidity

SCOTT 7422-SD1 Cartridge (2/10/17) AY/AZ Transfer (27 L/min through main respirator)

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	74.2	75.6	65.4	54.3	72	84.6	88.4	90.1	93.3
Temperature	F	41.6	52.1	60.2	71.1	54.2	45.5	44.7	43.7	41.5
Pressure	Torr	746	741	741	741	742	747	743	743	742
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	65.6	66.7	59.6	71.2	82.5	88.5	89.1	92.5	92.7
Temperature	F	51.4	59.2	65.6	55.1	48	44.8	44.5	42.3	42.7
Pressure	Torr	754	741	741	742	742	743	743	743	742
NH3	ppm		71.0	64.0	48.0					
VOC	ppm		6.80	7.00	6.00					

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	55.0	54.1		51.5	54.5	61.4	65.4	68.0	70.8
Temperature	F	46.0	56.0		73.9	59.3	51.1	47.1	45.7	43.7
Pressure	Torr	482	481		483	482	493	489	487	488
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	61.8	52.6	45.4	51.9	60.9	65.4	68.6	71.2	74.3
Temperature	F	57.1	71.4	82.5	64.7	52.2	47.1	46.3	44.4	43.7
Pressure	Torr	754	490	491	490	490	490	491	491	491
NH3	ppm		6.00	22.0	11.0					
VOC	ppm		0.60	0.78	0.40					

SCOTT 7422-SC1 Cartridge (2/11/17) AY/AZ Transfer (29 L/min through main respirator)

Influent- Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	56.6	66.9	65.2	71.6	80.3	83.0	82.8	86.0	87.3
Temperature	F	53.3	52.9	60.0	54.8	49.2	47.6	47.7	45.9	43.1
Pressure	Torr	714	724	725	725	726	728	730	732	739
NH3	ppm									
VOC	ppm									

Influent - Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	58.2	70.1	69.8	80.2	83.0	81.6	84.4	90.5	91.2
Temperature	F	53.9	56.3	56.2	49.3	47.8	48.5	46.9	43.4	43.5
Pressure	Torr	732	724	725	726	728	729	731	732	739
NH3	ppm		75.0	72.0						
VOC	ppm		6.50	6.00						

Effluent - Pre		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	51.5	53.8	59.0	54.1	60.6	64.1	66.6	70.1	69.1
Temperature	F	56.5	53.7	62.7	62.3	51.9	49.9	48.4	45.1	42.7
Pressure	Torr	462	458	463	472	469	474	477	480	542
NH3	ppm									
VOC	ppm									

Effluent- Post		After Sample Taken								
Reading	UOM	Baseline	A	B	C	D	E	F	G	H
Relative Humidity	%	53.0	53.8	51.0	61.3	65.5	68.3	71.6	75.5	85.6
Temperature	F	58.3	67.8	69.7	52.7	49.7	48.1	45.4	41.7	43.8
Pressure	Torr	470	474	476	477	479	472	483	484	542
NH3	ppm		0.00	10.0						
VOC	ppm		0.38	0.24						

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DSR.Jar v. 3.0.12

3/23/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BA-EF
Customer Sample ID: 17-00252-1-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003967			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	7.2	n/a	n/a	n/a	n/a	3.9	n/a	
S17T003967			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003967			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003967			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003967			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003967			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003967			112-40-3	Dodecane	NGS	110	<0.60	11	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003967			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003967			629-59-4	Tetradecane	NGS	110	<3.9	5.1	n/a	n/a	n/a	n/a	3.9	n/a	
S17T003967			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003967			629-50-5	Tridecane	NGS	110	<1.6	8.7	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003967			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003967			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003974			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003974			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003974			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003974			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003974			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003974			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003974			112-40-3	Dodecane	NGS	110	<0.60	14	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003974			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003974			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003974			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003974			629-50-5	Tridecane	NGS	110	<1.6	7.7	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003974			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003974			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

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BA-IN
Customer Sample ID: 17-00252-1-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003968			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003968			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003968			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003968			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003968			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003968			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003968			112-40-3	Dodecane	NGS	110	<0.60	19	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003968			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003968			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003968			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003968			629-50-5	Tridecane	NGS	110	<1.6	2.9	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003968			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003968			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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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BL-EF
Customer Sample ID: 17-00252-1-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003969			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003969			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003969			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003969			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003969			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003969			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003969			112-40-3	Dodecane	NGS	110	<0.60	0.70	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003969			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003969			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003969			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003969			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003969			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003969			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
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BL-IN
Customer Sample ID: 17-00252-1-SD1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003970			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003970			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003970			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003970			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003970			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003970			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003970			112-40-3	Dodecane	NGS	110	<0.60	2.5	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003970			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003970			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003970			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003970			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003970			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003970			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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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-2
Customer Sample ID: 17-00252-1-SD1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003971			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003971			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003971			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003971			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003971			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003971			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003971			112-40-3	Dodecane	NGS	110	<0.60	13	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003971			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003971			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003971			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003971			629-50-5	Tridecane	NGS	110	<1.6	2.8	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003971			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003971			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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T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-3
Customer Sample ID: 17-00252-1-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003972			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003972			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003972			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003972			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003972			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003972			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003972			112-40-3	Dodecane	NGS	110	<0.60	6.5	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003972			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003972			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003972			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003972			629-50-5	Tridecane	NGS	110	<1.6	5.3	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003972			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003972			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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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-6
Customer Sample ID: 17-00252-1-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003975			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003975			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003975			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003975			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003975			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003975			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003975			112-40-3	Dodecane	NGS	110	<0.60	12	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003975			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003975			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003975			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003975			629-50-5	Tridecane	NGS	110	<1.6	5.6	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003975			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003975			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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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-7
Customer Sample ID: 17-00252-1-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003976			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	UY
S17T003976			95-48-7	2-Methylphenol	NGS	110	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	UY
S17T003976			108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	UY
S17T003976			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	UY
S17T003976			78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	UY
S17T003976			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	UY
S17T003976			112-40-3	Dodecane	NGS	110	<0.60	9.5	n/a	n/a	n/a	n/a	0.55	n/a	Y
S17T003976			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	UY
S17T003976			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	UY
S17T003976			126-73-8	Tributyl phosphate	NGS	130	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	UY
S17T003976			629-50-5	Tridecane	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	UY
S17T003976			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	UY
S17T003976			629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	UY

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T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-BA-EF
Customer Sample ID: 17-00253-1-SC1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003977			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	10	n/a	n/a	n/a	n/a	3.9	n/a	
S17T003977			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003977			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003977			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003977			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003977			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003977			112-40-3	Dodecane	NGS	97	<0.60	10	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003977			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003977			629-59-4	Tetradecane	NGS	110	<3.9	6.6	n/a	n/a	n/a	n/a	3.9	n/a	
S17T003977			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003977			629-50-5	Tridecane	NGS	98	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003977			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003977			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-BA-IN
Customer Sample ID: 17-00253-1-SC1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003978			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003978			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003978			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003978			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003978			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003978			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003978			112-40-3	Dodecane	NGS	97	<0.60	19	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003978			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003978			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003978			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003978			629-50-5	Tridecane	NGS	98	<1.6	2.9	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003978			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003978			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-BL-EF
Customer Sample ID: 17-00253-1-SC1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003979			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003979			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003979			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003979			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003979			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003979			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003979			112-40-3	Dodecane	NGS	97	<0.60	<0.60	n/a	n/a	n/a	n/a	0.60	n/a	U
S17T003979			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003979			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003979			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003979			629-50-5	Tridecane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003979			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003979			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-BL-IN
Customer Sample ID: 17-00253-1-SC1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003980			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003980			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003980			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003980			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003980			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003980			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003980			112-40-3	Dodecane	NGS	97	<0.60	<0.60	n/a	n/a	n/a	n/a	0.60	n/a	U
S17T003980			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003980			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003980			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003980			629-50-5	Tridecane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003980			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003980			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-2
Customer Sample ID: 17-00253-1-SC1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003981			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003981			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003981			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003981			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003981			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003981			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003981			112-40-3	Dodecane	NGS	97	<0.60	20	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003981			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003981			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003981			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003981			629-50-5	Tridecane	NGS	98	<1.6	4.6	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003981			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003981			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-3
Customer Sample ID: 17-00253-1-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003982			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003982			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003982			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003982			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003982			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003982			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003982			112-40-3	Dodecane	NGS	97	<0.60	8.9	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003982			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003982			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003982			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003982			629-50-5	Tridecane	NGS	98	<1.6	7.7	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003982			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003982			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-4
Customer Sample ID: 17-00253-1-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003983			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003983			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003983			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003983			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003983			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003983			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003983			112-40-3	Dodecane	NGS	97	<0.60	4.4	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003983			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003983			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003983			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003983			629-50-5	Tridecane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003983			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003983			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-5
Customer Sample ID: 17-00253-1-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003984			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003984			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003984			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003984			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003984			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003984			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003984			112-40-3	Dodecane	NGS	97	<0.60	6.7	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003984			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003984			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003984			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003984			629-50-5	Tridecane	NGS	98	<1.6	5.3	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003984			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003984			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-6
Customer Sample ID: 17-00253-1-SC1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003985			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003985			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003985			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003985			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003985			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003985			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003985			112-40-3	Dodecane	NGS	97	<0.60	11	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003985			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003985			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003985			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003985			629-50-5	Tridecane	NGS	98	<1.6	6.4	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003985			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003985			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-7
Customer Sample ID: 17-00253-1-SC1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003986			3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003986			95-48-7	2-Methylphenol	NGS	100	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003986			108-39-4M	Cresol (m & p)	NGS	88	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003986			92-52-4	Biphenyl	NGS	110	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003986			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003986			84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003986			112-40-3	Dodecane	NGS	97	<0.60	7.1	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003986			544-76-3	Hexadecane-	NGS	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003986			629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003986			126-73-8	Tributyl phosphate	NGS	99	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003986			629-50-5	Tridecane	NGS	98	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003986			629-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003986			629-62-9	Pentadecane	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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N - Named TIC

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BA-EF
Customer Sample ID: 17-00252-1-SD1-BA-EF

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003967			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003967			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT
S17T003974			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003974			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BA-IN
Customer Sample ID: 17-00252-1-SD1-BA-IN

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003968			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003968			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

NA = Not Analyzed, ND = Not Detected

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BL-EF
Customer Sample ID: 17-00252-1-SD1-BL-EF

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003969			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003969			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-BL-IN
Customer Sample ID: 17-00252-1-SD1-BL-IN

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003970			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003970			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

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N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345

SDG Number:

Customer Sample ID: 17-00252-1-SD1-IN-2

Customer Sample ID: 17-00252-1-SD1-IN-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003971			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003971			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

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T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-3
Customer Sample ID: 17-00252-1-SD1-IN-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003972			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003972			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

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N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-6
Customer Sample ID: 17-00252-1-SD1-IN-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003975			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003975			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-7
Customer Sample ID: 17-00252-1-SD1-IN-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003976			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	26	JNT
S17T003976			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.2	JNT

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345

SDG Number:

Customer Sample ID: 17-00253-1-SC1-BA-EF

Customer Sample ID: 17-00253-1-SC1-BA-EF

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003977			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003977			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-BA-IN
Customer Sample ID: 17-00253-1-SC1-BA-IN

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003978			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003978			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-BL-EF
Customer Sample ID: 17-00253-1-SC1-BL-EF

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003979			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003979			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345

SDG Number:

Customer Sample ID: 17-00253-1-SC1-BL-IN

Customer Sample ID: 17-00253-1-SC1-BL-IN

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003980			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003980			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-2
Customer Sample ID: 17-00253-1-SC1-IN-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003981			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003981			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-3
Customer Sample ID: 17-00253-1-SC1-IN-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003982			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003982			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-4
Customer Sample ID: 17-00253-1-SC1-IN-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003983			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003983			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-5
Customer Sample ID: 17-00253-1-SC1-IN-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003984			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003984			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

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T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345

SDG Number:

Customer Sample ID: 17-00253-1-SC1-IN-6

Customer Sample ID: 17-00253-1-SC1-IN-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003985			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003985			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit
J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170345
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-7
Customer Sample ID: 17-00253-1-SC1-IN-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003986			BLNK	Chrysene-D12	1719-03-5	14.03	NGS	25	JNT
S17T003986			BLNK	Perylene-D12	1520-96-3	15.79	NGS	9.1	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit
J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC

3/28/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-2
Customer Sample ID: 17-00252-1-SD1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003948			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003948			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003948			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003948			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003948			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003948			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003948			112-40-3	Dodecane	NGS	110	<0.60	6.4	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003948			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003948			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003948			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003948			629-50-5	Tridecane	NGS	100	<1.6	3.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003948			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003948			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-3
Customer Sample ID: 17-00252-1-SD1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003949			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003949			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003949			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003949			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003949			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003949			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003949			112-40-3	Dodecane	NGS	110	<0.60	4.7	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003949			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003949			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003949			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003949			629-50-5	Tridecane	NGS	100	<1.6	3.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003949			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003949			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-4
Customer Sample ID: 17-00252-1-SD1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003950			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003950			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003950			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003950			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003950			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003950			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003950			112-40-3	Dodecane	NGS	110	<0.60	4.1	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003950			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003950			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003950			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003950			629-50-5	Tridecane	NGS	100	<1.6	2.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003950			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003950			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-5
Customer Sample ID: 17-00252-1-SD1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003951			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003951			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003951			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003951			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003951			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003951			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003951			112-40-3	Dodecane	NGS	110	<0.60	5.5	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003951			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003951			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003951			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003951			629-50-5	Tridecane	NGS	100	<1.6	3.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003951			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003951			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-6
Customer Sample ID: 17-00252-1-SD1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003952			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003952			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003952			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003952			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003952			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003952			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003952			112-40-3	Dodecane	NGS	110	<0.60	6.9	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003952			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003952			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003952			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003952			629-50-5	Tridecane	NGS	100	<1.6	2.9	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003952			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003952			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-7
Customer Sample ID: 17-00252-1-SD1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003953			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003953			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003953			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003953			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003953			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003953			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003953			112-40-3	Dodecane	NGS	110	<0.60	8.5	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003953			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003953			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003953			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003953			629-50-5	Tridecane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003953			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003953			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-8
Customer Sample ID: 17-00252-1-SD1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003954			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003954			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003954			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003954			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003954			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003954			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003954			112-40-3	Dodecane	NGS	110	<0.60	5.2	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003954			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003954			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003954			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003954			629-50-5	Tridecane	NGS	100	<1.6	2.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003954			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003954			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-1
Customer Sample ID: 17-00252-1-SD1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003955			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003955			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003955			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003955			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003955			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003955			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003955			112-40-3	Dodecane	NGS	110	<0.60	19	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003955			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003955			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003955			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003955			629-50-5	Tridecane	NGS	100	<1.6	4.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003955			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003955			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-8
Customer Sample ID: 17-00252-1-SD1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003956			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003956			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003956			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003956			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003956			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003956			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003956			112-40-3	Dodecane	NGS	110	<0.60	8.5	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003956			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003956			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003956			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003956			629-50-5	Tridecane	NGS	100	<1.6	7.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003956			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003956			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-1
Customer Sample ID: 17-00253-1-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003957			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003957			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003957			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003957			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003957			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003957			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003957			112-40-3	Dodecane	NGS	110	<0.60	8.6	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003957			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003957			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003957			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003957			629-50-5	Tridecane	NGS	100	<1.6	5.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003957			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003957			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-2
Customer Sample ID: 17-00253-1-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003958			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003958			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003958			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003958			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003958			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003958			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003958			112-40-3	Dodecane	NGS	110	<0.60	17	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003958			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003958			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003958			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003958			629-50-5	Tridecane	NGS	100	<1.6	9.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003958			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003958			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-3
Customer Sample ID: 17-00253-1-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003959			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003959			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003959			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003959			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003959			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003959			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003959			112-40-3	Dodecane	NGS	110	<0.60	7.4	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003959			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003959			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003959			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003959			629-50-5	Tridecane	NGS	100	<1.6	5.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003959			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003959			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-4
Customer Sample ID: 17-00253-1-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003960			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003960			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003960			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003960			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003960			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003960			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003960			112-40-3	Dodecane	NGS	110	<0.60	4.1	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003960			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003960			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003960			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003960			629-50-5	Tridecane	NGS	100	<1.6	2.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003960			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003960			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-5
Customer Sample ID: 17-00253-1-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003961			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003961			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003961			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003961			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003961			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003961			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003961			112-40-3	Dodecane	NGS	110	<0.60	3.8	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003961			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003961			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003961			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003961			629-50-5	Tridecane	NGS	100	<1.6	2.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003961			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003961			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-6
Customer Sample ID: 17-00253-1-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003962			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003962			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003962			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003962			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003962			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003962			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003962			112-40-3	Dodecane	NGS	110	<0.60	5.2	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003962			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003962			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003962			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003962			629-50-5	Tridecane	NGS	100	<1.6	2.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003962			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003962			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-7
Customer Sample ID: 17-00253-1-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003963			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003963			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003963			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003963			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003963			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003963			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003963			112-40-3	Dodecane	NGS	110	<0.60	6.1	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003963			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003963			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003963			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003963			629-50-5	Tridecane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003963			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003963			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-8
Customer Sample ID: 17-00253-1-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003964			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003964			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003964			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003964			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003964			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003964			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003964			112-40-3	Dodecane	NGS	110	<0.60	3.8	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003964			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003964			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003964			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003964			629-50-5	Tridecane	NGS	100	<1.6	2.0	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003964			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003964			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-1
Customer Sample ID: 17-00253-1-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003965			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003965			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003965			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003965			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003965			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003965			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003965			112-40-3	Dodecane	NGS	110	<0.60	23	n/a	n/a	n/a	n/a	0.55	n/a	
S17T003965			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003965			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003965			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003965			629-50-5	Tridecane	NGS	100	<1.6	5.4	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003965			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003965			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-8
Customer Sample ID: 17-00253-1-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU SVOA #2															
S17T003966			3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003966			95-48-7	2-Methylphenol	NGS	120	<4.9	<4.9	n/a	n/a	n/a	n/a	4.9	n/a	U
S17T003966			108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003966			92-52-4	Biphenyl	NGS	99	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	n/a	U
S17T003966			78-46-6	Dibutyl butylphosphonate	NGS	110	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a	U
S17T003966			84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	n/a	U
S17T003966			112-40-3	Dodecane	NGS	110	<0.60	8.2	n/a	n/a	n/a	n/a	0.55	n/a	J
S17T003966			544-76-3	Hexadecane-	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003966			629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a	U
S17T003966			126-73-8	Tributyl phosphate	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n/a	U
S17T003966			629-50-5	Tridecane	NGS	100	<1.6	7.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003966			629-78-7	Heptadecane	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003966			629-62-9	Pentadecane	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

3/28/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-2
Customer Sample ID: 17-00252-1-SD1-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003948				Tetrachloroethene	127-18-4	2.86	NGS	24	JNT
S17T003948				Ethylbenzene	100-41-4	3.36	NGS	18	JNT
S17T003948				Undecane	1120-21-4	5.43	NGS	8.3	JNT
S17T003948				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	6.3	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-3
Customer Sample ID: 17-00252-1-SD1-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003949				Tetrachloroethene	127-18-4	2.87	NGS	39	JNT
S17T003949				Ethylbenzene	100-41-4	3.37	NGS	19	JNT
S17T003949				Undecane	1120-21-4	5.43	NGS	5.7	JNT
S17T003949				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	5.1	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344

SDG Number:

Customer Sample ID: 17-00252-1-SD1-EF-4

Customer Sample ID: 17-00252-1-SD1-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003950				Tetrachloroethene	127-18-4	2.87	NGS	26	JNT
S17T003950				Ethylbenzene	100-41-4	3.37	NGS	17	JNT
S17T003950				Undecane	1120-21-4	5.43	NGS	6.2	JNT
S17T003950				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	5.4	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-5
Customer Sample ID: 17-00252-1-SD1-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003951				2-Hexanone, 3-hydroxy-3,5-dime	6321-14-8	3.28	NGS	33	JNT
S17T003951				1-Hexanol	111-27-3	3.38	NGS	77	JNT
S17T003951				2-Hexanone, 4-methyl-	105-42-0	3.55	NGS	120	JNT
S17T003951				3-Hexanol, 5-methyl-	623-55-2	3.63	NGS	110	JNT
S17T003951				1-Hydroxycyclohexanecarboxylic	1123-28-0	3.99	NGS	130	JNT
S17T003951				3-Heptanol, 3-methyl-	5582-82-1	4.02	NGS	71	JNT
S17T003951				2-Heptanone, 6-methyl-	928-68-7	4.12	NGS	43	JNT
S17T003951				Unknown-1	--	4.24	NGS	50	JT
S17T003951				1-Octene, 3,7-dimethyl-	4984-01-4	4.30	NGS	60	JNT
S17T003951				Z-4-Dodecenol	40642-37-3	4.61	NGS	110	JNT
S17T003951				1-Hexanol, 2-ethyl-	104-76-7	4.83	NGS	200	JNT
S17T003951				Undecane, 2,6-dimethyl-	17301-23-4	5.13	NGS	14	JNT
S17T003951				Acetophenone	98-86-2	5.18	NGS	9.1	JNT
S17T003951				Decane	124-18-5	5.19	NGS	21	JNT
S17T003951				Decane, 3-methyl-	13151-34-3	5.44	NGS	35	JNT
S17T003951				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	5.5	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-6
Customer Sample ID: 17-00252-1-SD1-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003952				2-Hexanone, 3-hydroxy-3,5-dime	6321-14-8	3.28	NGS	25	JNT
S17T003952				1-Hexanol	111-27-3	3.38	NGS	57	JNT
S17T003952				2-Hexanone, 4-methyl-	105-42-0	3.55	NGS	98	JNT
S17T003952				3-Hexanol, 5-methyl-	623-55-2	3.63	NGS	73	JNT
S17T003952				1-Hydroxycyclohexanecarboxylic	1123-28-0	3.98	NGS	85	JNT
S17T003952				3-Heptanol, 3-methyl-	5582-82-1	4.02	NGS	55	JNT
S17T003952				2-Heptanone, 6-methyl-	928-68-7	4.12	NGS	31	JNT
S17T003952				1-Octene, 3,7-dimethyl-	4984-01-4	4.30	NGS	49	JNT
S17T003952				Unknown-1	--	4.35	NGS	33	JT
S17T003952				Z-4-Dodecenol	40642-37-3	4.62	NGS	120	JNT
S17T003952				1-Hexanol, 2-ethyl-	104-76-7	4.85	NGS	170	JNT
S17T003952				Decane, 2-methyl-	6975-98-0	5.04	NGS	26	JNT
S17T003952				Undecane, 2,6-dimethyl-	17301-23-4	5.13	NGS	11	JNT
S17T003952				Undecane	1120-21-4	5.44	NGS	27	JNT
S17T003952				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	6.6	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-EF-7
Customer Sample ID: 17-00252-1-SD1-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003953				2-Hexanone, 3-hydroxy-3,5-dime	6321-14-8	3.29	NGS	32	JNT
S17T003953				1-Hexanol	111-27-3	3.38	NGS	62	JNT
S17T003953				2-Hexanone, 4-methyl-	105-42-0	3.53	NGS	120	JNT
S17T003953				3-Hexanol, 5-methyl-	623-55-2	3.63	NGS	56	JNT
S17T003953				1-Hydroxycyclohexanecarboxylic	1123-28-0	3.98	NGS	86	JNT
S17T003953				3-Heptanol, 3-methyl-	5582-82-1	4.02	NGS	41	JNT
S17T003953				Unknown-1	--	4.35	NGS	25	JT
S17T003953				Z-4-Dodecenol	40642-37-3	4.61	NGS	64	JNT
S17T003953				1-Hexanol, 2-ethyl-	104-76-7	4.82	NGS	74	JNT
S17T003953				Decane, 2-methyl-	6975-98-0	5.04	NGS	29	JNT
S17T003953				Undecane	1120-21-4	5.44	NGS	36	JNT
S17T003953				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	9.9	JNT

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U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344

SDG Number:

Customer Sample ID: 17-00252-1-SD1-EF-8

Customer Sample ID: 17-00252-1-SD1-EF-8

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S17T003954			2-Hexanone, 3-hydroxy-3,5-dime	6321-14-8	3.28	NGS	27	JNT
S17T003954			(Z)-Hex-2-ene, 5-methyl-	13151-17-2	3.38	NGS	54	JNT
S17T003954			2-Hexanone, 4-methyl-	105-42-0	3.55	NGS	100	JNT
S17T003954			3-Hexanol, 5-methyl-	623-55-2	3.63	NGS	70	JNT
S17T003954			1-Hydroxycyclohexanecarboxylic	1123-28-0	3.98	NGS	82	JNT
S17T003954			3-Heptanol, 3-methyl-	5582-82-1	4.02	NGS	57	JNT
S17T003954			2-Heptanone, 6-methyl-	928-68-7	4.12	NGS	34	JNT
S17T003954			1-Octene, 3,7-dimethyl-	4984-01-4	4.30	NGS	50	JNT
S17T003954			Unknown-1	--	4.35	NGS	40	JT
S17T003954			Z-4-Dodecenol	40642-37-3	4.62	NGS	110	JNT
S17T003954			1-Hexanol, 2-ethyl-	104-76-7	4.84	NGS	150	JNT
S17T003954			Decane, 2,4,6-trimethyl-	62108-27-4	5.09	NGS	9.8	JNT
S17T003954			Decane	124-18-5	5.43	NGS	16	JNT
S17T003954			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	5.0	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-1
Customer Sample ID: 17-00252-1-SD1-IN-1

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2								
S17T003955			2-Hexanone, 3-hydroxy-3,5-dime	6321-14-8	3.28	NGS	25	JNT
S17T003955			1-Pentanol, 2-methyl-	105-30-6	3.37	NGS	53	JNT
S17T003955			2-Hexanone, 4-methyl-	105-42-0	3.53	NGS	95	JNT
S17T003955			3-Hexanol, 5-methyl-	623-55-2	3.62	NGS	31	JNT
S17T003955			1-Hydroxycyclohexanecarboxylic	1123-28-0	3.97	NGS	32	JNT
S17T003955			Unknown-1	--	4.35	NGS	190	JT
S17T003955			Limonene	138-86-3	4.84	NGS	26	JNT
S17T003955			Undecane, 4,7-dimethyl-	17301-32-5	5.04	NGS	82	JNT
S17T003955			Decane, 3,7-dimethyl-	17312-54-8	5.09	NGS	37	JNT
S17T003955			Undecane, 2,6-dimethyl-	17301-23-4	5.12	NGS	5.8	JNT
S17T003955			Undecane	1120-21-4	5.44	NGS	91	JNT
S17T003955			Decamethlycyclopentasiloxane	541-02-6	5.73	NGS	74	JNT
S17T003955			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	22	JNT
S17T003955			Dodecamethylcyclohexasiloxane	540-97-6	7.06	NGS	27	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00252-1-SD1-IN-8
Customer Sample ID: 17-00252-1-SD1-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003956				Undecane	1120-21-4	5.44	NGS	9.4	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344

SDG Number:

Customer Sample ID: 17-00253-1-SC1-EF-1

Customer Sample ID: 17-00253-1-SC1-EF-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003957				Tetrachloroethene	127-18-4	2.86	NGS	56	JNT
S17T003957				Decane	124-18-5	4.54	NGS	5.0	JNT
S17T003957				Limonene	138-86-3	4.84	NGS	42	JNT
S17T003957				Acetophenone	98-86-2	5.18	NGS	5.8	JNT
S17T003957				Undecane	1120-21-4	5.43	NGS	8.1	JNT
S17T003957				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	11	JNT
S17T003957				Heptadecane, 2,6,10,14-tetrame	18344-37-1	7.24	NGS	6.4	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344

SDG Number:

Customer Sample ID: 17-00253-1-SC1-EF-2

Customer Sample ID: 17-00253-1-SC1-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003958				Tetrachloroethene	127-18-4	2.86	NGS	34	JNT
S17T003958				Decane	124-18-5	4.54	NGS	5.7	JNT
S17T003958				Limonene	138-86-3	4.84	NGS	48	JNT
S17T003958				Acetophenone	98-86-2	5.18	NGS	6.2	JNT
S17T003958				Undecane	1120-21-4	5.44	NGS	13	JNT
S17T003958				Decamethlycyclopentasiloxane	541-02-6	5.70	NGS	26	JNT
S17T003958				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	17	JNT
S17T003958				Heptadecane, 2,6,10,14-tetrame	18344-37-1	7.24	NGS	10	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-3
Customer Sample ID: 17-00253-1-SC1-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003959				Tetrachloroethene	127-18-4	2.86	NGS	62	JNT
S17T003959				Limonene	138-86-3	4.84	NGS	30	JNT
S17T003959				Undecane	1120-21-4	5.43	NGS	12	JNT
S17T003959				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	6.8	JNT
S17T003959				Heptadecane, 2,6,10,14-tetrame	18344-37-1	7.24	NGS	7.0	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344

SDG Number:

Customer Sample ID: 17-00253-1-SC1-EF-4

Customer Sample ID: 17-00253-1-SC1-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003960				Tetrachloroethene	127-18-4	2.86	NGS	31	JNT
S17T003960				Undecane	1120-21-4	5.44	NGS	6.6	JNT
S17T003960				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	5.4	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-5
Customer Sample ID: 17-00253-1-SC1-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003961				Undecane, 2,6-dimethyl-	17301-23-4	5.57	NGS	14	JNT
S17T003961				2,6-Dimethyldecane	13150-81-7	5.66	NGS	9.2	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344

SDG Number:

Customer Sample ID: 17-00253-1-SC1-EF-6

Customer Sample ID: 17-00253-1-SC1-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003962				Tetrachloroethene	127-18-4	2.85	NGS	8.7	JNT
S17T003962				Undecane	1120-21-4	5.43	NGS	10	JNT
S17T003962				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	5.8	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-7
Customer Sample ID: 17-00253-1-SC1-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003963				Styrene	100-42-5	3.57	NGS	11	JNT
S17T003963				Undecane	1120-21-4	5.43	NGS	19	JNT
S17T003963				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.88	NGS	7.3	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-EF-8
Customer Sample ID: 17-00253-1-SC1-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003964				Undecane	1120-21-4	5.43	NGS	5.5	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-1
Customer Sample ID: 17-00253-1-SC1-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003965				Cyclopropane, propyl-	2415-72-7	3.38	NGS	140	JNT
S17T003965				2-Heptanone	110-43-0	3.55	NGS	120	JNT
S17T003965				3-Hexanol, 5-methyl-	623-55-2	3.63	NGS	260	JNT
S17T003965				3-Heptanol	589-82-2	3.65	NGS	61	JNT
S17T003965				tert-Butylpropanedial	55740-28-8	3.84	NGS	27	JNT
S17T003965				1-Hydroxycyclohexanecarboxylic	1123-28-0	4.00	NGS	150	JNT
S17T003965				3-Heptanol, 3-methyl-	5582-82-1	4.02	NGS	70	JNT
S17T003965				2-Heptanone, 6-methyl-	928-68-7	4.12	NGS	44	JNT
S17T003965				1-Hexene, 3,5-dimethyl-	7423-69-0	4.31	NGS	82	JNT
S17T003965				Unknown-1	--	4.35	NGS	270	JT
S17T003965				2-Heptanone, 4-methyl-	6137-06-0	4.46	NGS	49	JNT
S17T003965				1-Octanol, 2-butyl-	3913-02-8	4.50	NGS	47	JNT
S17T003965				Z-4-Dodecenol	40642-37-3	4.62	NGS	180	JNT
S17T003965				1-Hexanol, 2-ethyl-	104-76-7	4.86	NGS	550	JNT
S17T003965				Decane, 2-methyl-	6975-98-0	5.04	NGS	110	JNT
S17T003965				Decane, 2,4,6-trimethyl-	62108-27-4	5.09	NGS	52	JNT
S17T003965				Acetophenone	98-86-2	5.18	NGS	10	JNT
S17T003965				1-Octene, 3,7-dimethyl-	4984-01-4	5.20	NGS	41	JNT
S17T003965				Hydroxylamine, O-decyl-	29812-79-1	5.37	NGS	67	JNT
S17T003965				Undecane	1120-21-4	5.44	NGS	150	JNT
S17T003965				Decamethlycyclopentasiloxane	541-02-6	5.73	NGS	78	JNT
S17T003965				Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	27	JNT
S17T003965				Dodecamethylcyclohexasiloxane	540-97-6	7.06	NGS	32	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170344
SDG Number:
Customer Sample ID: 17-00253-1-SC1-IN-8
Customer Sample ID: 17-00253-1-SC1-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2									
S17T003966				1-Hexanol	111-27-3	3.37	NGS	32	JNT
S17T003966				2-Heptanone	110-43-0	3.53	NGS	84	JNT
S17T003966				3-Hexanol, 5-methyl-	623-55-2	3.62	NGS	35	JNT
S17T003966				Furan, tetrahydro-2,2-dimethyl	33978-70-0	3.96	NGS	75	JNT
S17T003966				1-Octene, 3,7-dimethyl-	4984-01-4	4.29	NGS	29	JNT
S17T003966				Unknown-1	--	4.61	NGS	63	JT
S17T003966				1-Hexanol, 2-ethyl-	104-76-7	4.82	NGS	90	JNT
S17T003966				Undecane	1120-21-4	5.44	NGS	11	JNT

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated T - Tentatively Identified Compound N - Named TIC

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-1
Customer Sample ID: 17-00252-2-SD1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003987			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003987			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003987			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003987			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003987			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003987			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003987			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003987			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003987			71-36-3	1-Butanol	NGS	99	<4.3	20	n/a	n/a	n/a	n/a	4.3	n/a	JL
S17T003987			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003987			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003987			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003987			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003987			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003987			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003987			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003987			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003987			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003987			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003987			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003987			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003987			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003987			67-64-1	Acetone	NGS	88	4.5	32	n/a	n/a	n/a	n/a	2.8	n/a	
S17T003987			75-05-8	Acetonitrile	NGS	98	<1.6	34	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003987			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003987			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003987			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003987			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-1
Customer Sample ID: 17-00252-2-SD1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003987			71-43-2	Benzene	NGS	99	<1.5	2.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T003987			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003987			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003987			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003987			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003987			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003987			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003987			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003987			110-82-7	Cyclohexane	NGS	96	<1.4	1.7	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003987			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003987			64-17-5	Ethanol	NGS	100	<3.7	12	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T003987			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003987			100-41-4	Ethylbenzene	NGS	99	<2.4	3.9	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003987			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003987			110-54-3	Hexane	NGS	95	<1.3	3.5	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003987			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003987			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003987			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003987			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003987			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003987			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003987			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003987			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003987			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003987			127-18-4	Tetrachloroethene	NGS	97	<1.8	240	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003987			108-88-3	Toluene	NGS	98	<2.2	19	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003987			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003987			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-1
Customer Sample ID: 17-00252-2-SD1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003987			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003987			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003987			142-82-5	n-Heptane	NGS	97	<1.6	3.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003987			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-2
Customer Sample ID: 17-00252-2-SD1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003988			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003988			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003988			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003988			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003988			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003988			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003988			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003988			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003988			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T003988			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003988			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003988			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003988			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003988			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003988			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003988			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003988			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003988			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003988			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003988			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003988			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003988			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003988			67-64-1	Acetone	NGS	88	4.5	29	n/a	n/a	n/a	n/a	2.8	n/a	
S17T003988			75-05-8	Acetonitrile	NGS	98	<1.6	80	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003988			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003988			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003988			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003988			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-2
Customer Sample ID: 17-00252-2-SD1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003988			71-43-2	Benzene	NGS	99	<1.5	2.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T003988			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003988			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003988			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003988			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003988			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003988			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003988			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003988			110-82-7	Cyclohexane	NGS	96	<1.4	1.7	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003988			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003988			64-17-5	Ethanol	NGS	100	<3.7	14	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T003988			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003988			100-41-4	Ethylbenzene	NGS	99	<2.4	3.4	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003988			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003988			110-54-3	Hexane	NGS	95	<1.3	3.6	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003988			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003988			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003988			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003988			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003988			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003988			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003988			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003988			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003988			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003988			127-18-4	Tetrachloroethene	NGS	97	<1.8	160	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003988			108-88-3	Toluene	NGS	98	<2.2	19	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003988			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003988			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-2
Customer Sample ID: 17-00252-2-SD1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003988			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003988			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003988			142-82-5	n-Heptane	NGS	97	<1.6	3.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003988			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-3
Customer Sample ID: 17-00252-2-SD1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003989			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003989			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003989			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003989			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003989			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003989			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003989			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003989			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003989			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T003989			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003989			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003989			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003989			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003989			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003989			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003989			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003989			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003989			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003989			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003989			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003989			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003989			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003989			67-64-1	Acetone	NGS	88	4.5	19	n/a	n/a	n/a	n/a	2.8	n/a	
S17T003989			75-05-8	Acetonitrile	NGS	98	<1.6	21	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003989			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003989			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003989			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003989			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-3
Customer Sample ID: 17-00252-2-SD1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003989			71-43-2	Benzene	NGS	99	<1.5	2.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T003989			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003989			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003989			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003989			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003989			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003989			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003989			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003989			110-82-7	Cyclohexane	NGS	96	<1.4	1.7	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003989			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003989			64-17-5	Ethanol	NGS	100	<3.7	11	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T003989			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003989			100-41-4	Ethylbenzene	NGS	99	<2.4	3.7	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003989			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003989			110-54-3	Hexane	NGS	95	<1.3	3.7	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003989			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003989			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003989			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003989			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003989			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003989			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003989			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003989			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003989			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003989			127-18-4	Tetrachloroethene	NGS	97	<1.8	90	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003989			108-88-3	Toluene	NGS	98	<2.2	19	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003989			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003989			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-3
Customer Sample ID: 17-00252-2-SD1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003989			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003989			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003989			142-82-5	n-Heptane	NGS	97	<1.6	3.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003989			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-4
Customer Sample ID: 17-00252-2-SD1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003990			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003990			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003990			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003990			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003990			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003990			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003990			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003990			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003990			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T003990			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003990			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003990			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003990			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003990			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003990			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003990			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003990			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003990			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003990			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003990			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003990			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003990			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003990			67-64-1	Acetone	NGS	88	4.5	16	n/a	n/a	n/a	n/a	2.8	n/a	
S17T003990			75-05-8	Acetonitrile	NGS	98	<1.6	50	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003990			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003990			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003990			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003990			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-4
Customer Sample ID: 17-00252-2-SD1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003990			71-43-2	Benzene	NGS	99	<1.5	2.0	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T003990			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003990			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003990			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003990			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003990			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003990			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003990			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003990			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T003990			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003990			64-17-5	Ethanol	NGS	100	<3.7	21	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T003990			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003990			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003990			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003990			110-54-3	Hexane	NGS	95	<1.3	2.4	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003990			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003990			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003990			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003990			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003990			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003990			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003990			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003990			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003990			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003990			127-18-4	Tetrachloroethene	NGS	97	<1.8	60	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003990			108-88-3	Toluene	NGS	98	<2.2	12	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003990			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003990			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	7.1	n/a	n/a	n/a	n/a	1.9	n/a	J

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-4
Customer Sample ID: 17-00252-2-SD1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003990			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003990			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003990			142-82-5	n-Heptane	NGS	97	<1.6	2.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003990			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-5
Customer Sample ID: 17-00252-2-SD1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003991			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003991			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003991			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003991			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003991			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003991			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003991			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003991			123-91-1	1,4-Dioxane	NGS	100	<2.0	4.3	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T003991			71-36-3	1-Butanol	NGS	99	<4.3	740	n/a	n/a	n/a	n/a	4.3	n/a	L
S17T003991			111-70-6	1-Heptanol	NGS	89	<9.1	30	n/a	n/a	n/a	n/a	9.1	n/a	
S17T003991			71-23-8	1-Propanol	NGS	94	<8.9	190	n/a	n/a	n/a	n/a	8.9	n/a	
S17T003991			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003991			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003991			78-93-3	2-Butanone	NGS	92	<3.1	160	n/a	n/a	n/a	n/a	3.1	n/a	
S17T003991			110-43-0	2-Heptanone	NGS	94	<2.6	230	n/a	n/a	n/a	n/a	2.6	n/a	
S17T003991			591-78-6	2-Hexanone	NGS	95	<2.5	85	n/a	n/a	n/a	n/a	2.5	n/a	
S17T003991			534-22-5	2-Methylfuran	NGS	94	<1.3	1.7	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003991			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003991			106-35-4	3-Heptanone	NGS	96	<2.7	170	n/a	n/a	n/a	n/a	2.7	n/a	
S17T003991			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003991			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	7.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003991			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	18	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003991			67-64-1	Acetone	NGS	88	4.5	5.2E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T003991			75-05-8	Acetonitrile	NGS	98	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003991			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003991			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003991			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003991			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-5
Customer Sample ID: 17-00252-2-SD1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003991			71-43-2	Benzene	NGS	99	<1.5	110	n/a	n/a	n/a	n/a	1.5	n/a	
S17T003991			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003991			123-72-8	Butanal	NGS	100	<3.0	41	n/a	n/a	n/a	n/a	3.0	n/a	
S17T003991			109-74-0	Butanenitrile	NGS	100	<2.1	13	n/a	n/a	n/a	n/a	2.1	n/a	
S17T003991			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003991			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003991			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003991			67-66-3	Chloroform	NGS	99	<1.8	2.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003991			110-82-7	Cyclohexane	NGS	96	<1.4	3.9	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003991			124-18-5	Decane	NGS	100	<3.3	5.0	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T003991			64-17-5	Ethanol	NGS	100	<3.7	440	n/a	n/a	n/a	n/a	3.7	n/a	
S17T003991			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003991			100-41-4	Ethylbenzene	NGS	99	<2.4	6.2	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003991			110-00-9	Furan	NGS	93	<1.6	140	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003991			110-54-3	Hexane	NGS	95	<1.3	31	n/a	n/a	n/a	n/a	1.3	n/a	
S17T003991			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003991			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003991			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003991			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003991			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003991			110-59-8	Pentanenitrile	NGS	100	<2.6	4.3	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003991			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003991			110-86-1	Pyridine	NGS	100	<2.8	8.5	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T003991			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003991			127-18-4	Tetrachloroethene	NGS	97	<1.8	13	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003991			108-88-3	Toluene	NGS	98	<2.2	55	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003991			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003991			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	150	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-5
Customer Sample ID: 17-00252-2-SD1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003991			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003991			123-86-4	n-Butyl acetate	NGS	80	<2.4	2.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003991			142-82-5	n-Heptane	NGS	97	<1.6	67	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003991			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-6
Customer Sample ID: 17-00252-2-SD1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003992			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003992			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003992			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003992			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003992			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003992			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003992			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003992			123-91-1	1,4-Dioxane	NGS	100	<2.0	4.6	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T003992			71-36-3	1-Butanol	NGS	99	<4.3	750	n/a	n/a	n/a	n/a	4.3	n/a	L
S17T003992			111-70-6	1-Heptanol	NGS	89	<9.1	21	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T003992			71-23-8	1-Propanol	NGS	94	<8.9	180	n/a	n/a	n/a	n/a	8.9	n/a	
S17T003992			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003992			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003992			78-93-3	2-Butanone	NGS	92	<3.1	160	n/a	n/a	n/a	n/a	3.1	n/a	
S17T003992			110-43-0	2-Heptanone	NGS	94	<2.6	200	n/a	n/a	n/a	n/a	2.6	n/a	
S17T003992			591-78-6	2-Hexanone	NGS	95	<2.5	81	n/a	n/a	n/a	n/a	2.5	n/a	
S17T003992			534-22-5	2-Methylfuran	NGS	94	<1.3	1.7	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003992			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003992			106-35-4	3-Heptanone	NGS	96	<2.7	150	n/a	n/a	n/a	n/a	2.7	n/a	
S17T003992			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003992			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	6.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003992			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	19	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003992			67-64-1	Acetone	NGS	88	4.5	5.0E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T003992			75-05-8	Acetonitrile	NGS	98	<1.6	130	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003992			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003992			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003992			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003992			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-6
Customer Sample ID: 17-00252-2-SD1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003992			71-43-2	Benzene	NGS	99	<1.5	100	n/a	n/a	n/a	n/a	1.5	n/a	
S17T003992			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003992			123-72-8	Butanal	NGS	100	<3.0	30	n/a	n/a	n/a	n/a	3.0	n/a	
S17T003992			109-74-0	Butanenitrile	NGS	100	<2.1	13	n/a	n/a	n/a	n/a	2.1	n/a	
S17T003992			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003992			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003992			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003992			67-66-3	Chloroform	NGS	99	<1.8	2.5	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003992			110-82-7	Cyclohexane	NGS	96	<1.4	3.8	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003992			124-18-5	Decane	NGS	100	<3.3	4.2	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T003992			64-17-5	Ethanol	NGS	100	<3.7	440	n/a	n/a	n/a	n/a	3.7	n/a	
S17T003992			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003992			100-41-4	Ethylbenzene	NGS	99	<2.4	4.9	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003992			110-00-9	Furan	NGS	93	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003992			110-54-3	Hexane	NGS	95	<1.3	26	n/a	n/a	n/a	n/a	1.3	n/a	
S17T003992			628-73-9	Hexanenitrile	NGS	100	<2.6	2.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003992			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003992			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003992			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003992			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003992			110-59-8	Pentanenitrile	NGS	100	<2.6	7.3	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003992			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003992			110-86-1	Pyridine	NGS	100	<2.8	9.9	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T003992			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003992			127-18-4	Tetrachloroethene	NGS	97	<1.8	10	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003992			108-88-3	Toluene	NGS	98	<2.2	49	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003992			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003992			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	130	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-6
Customer Sample ID: 17-00252-2-SD1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003992			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003992			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003992			142-82-5	n-Heptane	NGS	97	<1.6	53	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003992			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-7
Customer Sample ID: 17-00252-2-SD1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003993			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003993			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003993			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003993			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003993			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003993			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003993			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003993			123-91-1	1,4-Dioxane	NGS	100	<2.0	4.7	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T003993			71-36-3	1-Butanol	NGS	99	<4.3	740	n/a	n/a	n/a	n/a	4.3	n/a	L
S17T003993			111-70-6	1-Heptanol	NGS	89	<9.1	15	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T003993			71-23-8	1-Propanol	NGS	94	<8.9	160	n/a	n/a	n/a	n/a	8.9	n/a	
S17T003993			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003993			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003993			78-93-3	2-Butanone	NGS	92	<3.1	170	n/a	n/a	n/a	n/a	3.1	n/a	
S17T003993			110-43-0	2-Heptanone	NGS	94	<2.6	170	n/a	n/a	n/a	n/a	2.6	n/a	
S17T003993			591-78-6	2-Hexanone	NGS	95	<2.5	82	n/a	n/a	n/a	n/a	2.5	n/a	
S17T003993			534-22-5	2-Methylfuran	NGS	94	<1.3	1.8	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003993			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003993			106-35-4	3-Heptanone	NGS	96	<2.7	120	n/a	n/a	n/a	n/a	2.7	n/a	
S17T003993			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003993			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	6.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003993			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	18	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003993			67-64-1	Acetone	NGS	88	4.5	5.5E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T003993			75-05-8	Acetonitrile	NGS	98	<1.6	180	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003993			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003993			107-13-1	Acrylonitrile	NGS	98	<2.1	2.2	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T003993			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003993			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-7
Customer Sample ID: 17-00252-2-SD1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003993			71-43-2	Benzene	NGS	99	<1.5	100	n/a	n/a	n/a	n/a	1.5	n/a	
S17T003993			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003993			123-72-8	Butanal	NGS	100	<3.0	32	n/a	n/a	n/a	n/a	3.0	n/a	
S17T003993			109-74-0	Butanenitrile	NGS	100	<2.1	13	n/a	n/a	n/a	n/a	2.1	n/a	
S17T003993			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003993			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003993			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003993			67-66-3	Chloroform	NGS	99	<1.8	2.4	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003993			110-82-7	Cyclohexane	NGS	96	<1.4	4.7	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003993			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003993			64-17-5	Ethanol	NGS	100	<3.7	430	n/a	n/a	n/a	n/a	3.7	n/a	
S17T003993			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003993			100-41-4	Ethylbenzene	NGS	99	<2.4	6.2	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003993			110-00-9	Furan	NGS	93	<1.6	180	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003993			110-54-3	Hexane	NGS	95	<1.3	22	n/a	n/a	n/a	n/a	1.3	n/a	
S17T003993			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003993			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003993			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003993			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003993			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003993			110-59-8	Pentanenitrile	NGS	100	<2.6	3.9	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003993			107-12-0	Propanenitrile	NGS	99	<1.8	17	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003993			110-86-1	Pyridine	NGS	100	<2.8	9.5	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T003993			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003993			127-18-4	Tetrachloroethene	NGS	97	<1.8	9.0	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003993			108-88-3	Toluene	NGS	98	<2.2	54	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003993			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003993			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	130	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-7
Customer Sample ID: 17-00252-2-SD1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003993			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003993			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003993			142-82-5	n-Heptane	NGS	97	<1.6	45	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003993			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-8
Customer Sample ID: 17-00252-2-SD1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003994			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003994			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003994			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003994			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003994			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003994			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003994			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003994			123-91-1	1,4-Dioxane	NGS	100	<2.0	4.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T003994			71-36-3	1-Butanol	NGS	99	<4.3	620	n/a	n/a	n/a	n/a	4.3	n/a	L
S17T003994			111-70-6	1-Heptanol	NGS	89	<9.1	26	n/a	n/a	n/a	n/a	9.1	n/a	
S17T003994			71-23-8	1-Propanol	NGS	94	<8.9	130	n/a	n/a	n/a	n/a	8.9	n/a	
S17T003994			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003994			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003994			78-93-3	2-Butanone	NGS	92	<3.1	130	n/a	n/a	n/a	n/a	3.1	n/a	
S17T003994			110-43-0	2-Heptanone	NGS	94	<2.6	220	n/a	n/a	n/a	n/a	2.6	n/a	
S17T003994			591-78-6	2-Hexanone	NGS	95	<2.5	70	n/a	n/a	n/a	n/a	2.5	n/a	
S17T003994			534-22-5	2-Methylfuran	NGS	94	<1.3	1.5	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003994			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003994			106-35-4	3-Heptanone	NGS	96	<2.7	150	n/a	n/a	n/a	n/a	2.7	n/a	
S17T003994			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003994			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	7.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003994			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	15	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003994			67-64-1	Acetone	NGS	88	4.5	4.2E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T003994			75-05-8	Acetonitrile	NGS	98	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003994			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003994			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003994			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003994			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-8
Customer Sample ID: 17-00252-2-SD1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003994			71-43-2	Benzene	NGS	99	<1.5	84	n/a	n/a	n/a	n/a	1.5	n/a	
S17T003994			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003994			123-72-8	Butanal	NGS	100	<3.0	28	n/a	n/a	n/a	n/a	3.0	n/a	
S17T003994			109-74-0	Butanenitrile	NGS	100	<2.1	11	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T003994			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003994			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003994			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003994			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003994			110-82-7	Cyclohexane	NGS	96	<1.4	3.2	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003994			124-18-5	Decane	NGS	100	<3.3	4.6	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T003994			64-17-5	Ethanol	NGS	100	<3.7	370	n/a	n/a	n/a	n/a	3.7	n/a	
S17T003994			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003994			100-41-4	Ethylbenzene	NGS	99	<2.4	6.4	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003994			110-00-9	Furan	NGS	93	<1.6	100	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003994			110-54-3	Hexane	NGS	95	<1.3	34	n/a	n/a	n/a	n/a	1.3	n/a	
S17T003994			628-73-9	Hexanenitrile	NGS	100	<2.6	2.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003994			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003994			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003994			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003994			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003994			110-59-8	Pentanenitrile	NGS	100	<2.6	3.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003994			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003994			110-86-1	Pyridine	NGS	100	<2.8	9.5	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T003994			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003994			127-18-4	Tetrachloroethene	NGS	97	<1.8	8.8	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003994			108-88-3	Toluene	NGS	98	<2.2	43	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003994			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003994			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	100	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-8
Customer Sample ID: 17-00252-2-SD1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003994			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003994			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003994			142-82-5	n-Heptane	NGS	97	<1.6	39	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003994			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-1
Customer Sample ID: 17-00252-2-SD1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003995			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003995			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003995			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003995			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003995			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003995			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003995			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003995			123-91-1	1,4-Dioxane	NGS	100	<2.0	3.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T003995			71-36-3	1-Butanol	NGS	99	<4.3	610	n/a	n/a	n/a	n/a	4.3	n/a	L
S17T003995			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003995			71-23-8	1-Propanol	NGS	94	<8.9	130	n/a	n/a	n/a	n/a	8.9	n/a	
S17T003995			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003995			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003995			78-93-3	2-Butanone	NGS	92	<3.1	130	n/a	n/a	n/a	n/a	3.1	n/a	
S17T003995			110-43-0	2-Heptanone	NGS	94	<2.6	68	n/a	n/a	n/a	n/a	2.6	n/a	
S17T003995			591-78-6	2-Hexanone	NGS	95	<2.5	58	n/a	n/a	n/a	n/a	2.5	n/a	
S17T003995			534-22-5	2-Methylfuran	NGS	94	<1.3	1.4	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003995			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003995			106-35-4	3-Heptanone	NGS	96	<2.7	54	n/a	n/a	n/a	n/a	2.7	n/a	
S17T003995			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003995			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	4.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T003995			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	14	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003995			67-64-1	Acetone	NGS	88	4.5	5.0E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T003995			75-05-8	Acetonitrile	NGS	98	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003995			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003995			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003995			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003995			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-1
Customer Sample ID: 17-00252-2-SD1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003995			71-43-2	Benzene	NGS	99	<1.5	93	n/a	n/a	n/a	n/a	1.5	n/a	
S17T003995			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003995			123-72-8	Butanal	NGS	100	<3.0	23	n/a	n/a	n/a	n/a	3.0	n/a	
S17T003995			109-74-0	Butanenitrile	NGS	100	<2.1	16	n/a	n/a	n/a	n/a	2.1	n/a	
S17T003995			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003995			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003995			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003995			67-66-3	Chloroform	NGS	99	<1.8	3.1	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003995			110-82-7	Cyclohexane	NGS	96	<1.4	4.8	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003995			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003995			64-17-5	Ethanol	NGS	100	<3.7	340	n/a	n/a	n/a	n/a	3.7	n/a	
S17T003995			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003995			100-41-4	Ethylbenzene	NGS	99	<2.4	3.9	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003995			110-00-9	Furan	NGS	93	<1.6	98	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003995			110-54-3	Hexane	NGS	95	<1.3	100	n/a	n/a	n/a	n/a	1.3	n/a	
S17T003995			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003995			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003995			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003995			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003995			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003995			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003995			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003995			110-86-1	Pyridine	NGS	100	<2.8	8.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T003995			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003995			127-18-4	Tetrachloroethene	NGS	97	<1.8	46	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003995			108-88-3	Toluene	NGS	98	<2.2	440	n/a	n/a	n/a	n/a	2.2	n/a	E
S17T003995			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003995			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	110	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-1
Customer Sample ID: 17-00252-2-SD1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003995			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003995			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003995			142-82-5	n-Heptane	NGS	97	<1.6	140	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003995			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-8
Customer Sample ID: 17-00252-2-SD1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003996			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003996			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003996			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003996			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003996			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003996			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003996			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003996			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003996			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T003996			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003996			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003996			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003996			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003996			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003996			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003996			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003996			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003996			78-94-4	3-Buten-2-one	NGS	89	<1.9	5.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T003996			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003996			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003996			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003996			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003996			67-64-1	Acetone	NGS	88	4.5	620	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T003996			75-05-8	Acetonitrile	NGS	98	<1.6	87	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003996			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003996			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003996			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003996			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
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Customer Sample ID: 17-00252-2-SD1-IN-8
Customer Sample ID: 17-00252-2-SD1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003996			71-43-2	Benzene	NGS	99	<1.5	4.0	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T003996			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003996			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003996			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003996			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003996			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003996			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003996			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003996			110-82-7	Cyclohexane	NGS	96	<1.4	2.9	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T003996			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003996			64-17-5	Ethanol	NGS	100	<3.7	270	n/a	n/a	n/a	n/a	3.7	n/a	
S17T003996			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003996			100-41-4	Ethylbenzene	NGS	99	<2.4	3.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T003996			110-00-9	Furan	NGS	93	<1.6	8.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003996			110-54-3	Hexane	NGS	95	<1.3	4.4	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T003996			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003996			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003996			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003996			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003996			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003996			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003996			107-12-0	Propanenitrile	NGS	99	<1.8	2.5	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T003996			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003996			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003996			127-18-4	Tetrachloroethene	NGS	97	<1.8	22	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003996			108-88-3	Toluene	NGS	98	<2.2	21	n/a	n/a	n/a	n/a	2.2	n/a	
S17T003996			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003996			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	180	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-8
Customer Sample ID: 17-00252-2-SD1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003996			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003996			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003996			142-82-5	n-Heptane	NGS	97	<1.6	3.8	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T003996			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-1
Customer Sample ID: 17-00253-2-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003997			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003997			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003997			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003997			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003997			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003997			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003997			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003997			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003997			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T003997			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003997			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003997			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003997			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003997			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003997			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003997			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003997			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003997			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003997			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003997			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003997			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003997			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003997			67-64-1	Acetone	NGS	88	4.5	51	n/a	n/a	n/a	n/a	2.8	n/a	
S17T003997			75-05-8	Acetonitrile	NGS	98	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003997			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003997			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003997			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003997			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-1
Customer Sample ID: 17-00253-2-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003997			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003997			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003997			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003997			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003997			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003997			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003997			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003997			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003997			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T003997			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003997			64-17-5	Ethanol	NGS	100	<3.7	7.8	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T003997			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003997			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003997			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003997			110-54-3	Hexane	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003997			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003997			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003997			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003997			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003997			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003997			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003997			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003997			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003997			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003997			127-18-4	Tetrachloroethene	NGS	97	<1.8	95	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003997			108-88-3	Toluene	NGS	98	<2.2	2.7	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T003997			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003997			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-1
Customer Sample ID: 17-00253-2-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003997			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003997			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003997			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003997			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-2
Customer Sample ID: 17-00253-2-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003998			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003998			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003998			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003998			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003998			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003998			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003998			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003998			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003998			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T003998			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003998			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003998			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003998			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003998			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003998			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003998			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003998			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003998			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003998			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003998			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003998			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003998			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003998			67-64-1	Acetone	NGS	88	4.5	68	n/a	n/a	n/a	n/a	2.8	n/a	
S17T003998			75-05-8	Acetonitrile	NGS	98	<1.6	31	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003998			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003998			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003998			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003998			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

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

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-2
Customer Sample ID: 17-00253-2-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003998			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003998			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003998			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003998			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003998			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003998			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003998			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003998			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003998			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T003998			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003998			64-17-5	Ethanol	NGS	100	<3.7	9.4	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T003998			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003998			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003998			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003998			110-54-3	Hexane	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003998			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003998			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003998			75-09-2	Methylene Chloride	NGS	98	<4.1	4.5	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T003998			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003998			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003998			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003998			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003998			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003998			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003998			127-18-4	Tetrachloroethene	NGS	97	<1.8	130	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003998			108-88-3	Toluene	NGS	98	<2.2	3.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T003998			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003998			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-2
Customer Sample ID: 17-00253-2-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003998			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003998			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003998			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003998			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-3
Customer Sample ID: 17-00253-2-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003999			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003999			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003999			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003999			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003999			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T003999			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003999			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003999			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T003999			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T003999			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T003999			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T003999			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003999			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003999			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T003999			110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003999			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003999			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003999			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T003999			106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003999			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003999			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003999			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T003999			67-64-1	Acetone	NGS	88	4.5	43	n/a	n/a	n/a	n/a	2.8	n/a	
S17T003999			75-05-8	Acetonitrile	NGS	98	<1.6	39	n/a	n/a	n/a	n/a	1.6	n/a	
S17T003999			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T003999			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003999			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T003999			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-3
Customer Sample ID: 17-00253-2-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003999			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003999			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T003999			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T003999			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T003999			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T003999			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T003999			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003999			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003999			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T003999			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T003999			64-17-5	Ethanol	NGS	100	<3.7	15	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T003999			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003999			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003999			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003999			110-54-3	Hexane	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T003999			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003999			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003999			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T003999			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T003999			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T003999			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T003999			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003999			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T003999			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T003999			127-18-4	Tetrachloroethene	NGS	97	<1.8	93	n/a	n/a	n/a	n/a	1.8	n/a	
S17T003999			108-88-3	Toluene	NGS	98	<2.2	2.9	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T003999			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003999			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-3
Customer Sample ID: 17-00253-2-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T003999			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T003999			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T003999			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T003999			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-4
Customer Sample ID: 17-00253-2-SC1-EF-4

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2														
S17T004000		79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004000		79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004000		75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004000		75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004000		107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004000		542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004000		106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004000		123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004000		71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T004000		111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004000		71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004000		108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004000		1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004000		78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004000		110-43-0	2-Heptanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004000		591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004000		534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004000		78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004000		106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004000		106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004000		105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004000		108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004000		67-64-1	Acetone	NGS	88	4.5	15	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004000		75-05-8	Acetonitrile	NGS	98	<1.6	36	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004000		98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004000		107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004000		107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004000		107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-4
Customer Sample ID: 17-00253-2-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004000			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004000			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004000			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004000			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004000			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004000			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004000			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004000			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004000			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004000			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004000			64-17-5	Ethanol	NGS	100	<3.7	28	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004000			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004000			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004000			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004000			110-54-3	Hexane	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004000			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004000			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004000			75-09-2	Methylene Chloride	NGS	98	<4.1	5.2	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004000			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004000			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004000			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004000			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004000			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004000			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004000			127-18-4	Tetrachloroethene	NGS	97	<1.8	48	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004000			108-88-3	Toluene	NGS	98	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004000			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004000			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-4
Customer Sample ID: 17-00253-2-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004000			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004000			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004000			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004000			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-5
Customer Sample ID: 17-00253-2-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004001			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004001			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004001			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004001			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004001			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004001			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004001			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004001			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004001			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T004001			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004001			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004001			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004001			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004001			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004001			110-43-0	2-Heptanone	NGS	94	<2.6	4.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004001			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004001			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004001			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004001			106-35-4	3-Heptanone	NGS	96	<2.7	3.6	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T004001			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004001			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004001			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004001			67-64-1	Acetone	NGS	88	4.5	11	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004001			75-05-8	Acetonitrile	NGS	98	<1.6	37	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004001			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004001			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004001			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004001			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-5
Customer Sample ID: 17-00253-2-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004001			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U*
S17T004001			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004001			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004001			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004001			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004001			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004001			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004001			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004001			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004001			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004001			64-17-5	Ethanol	NGS	100	<3.7	19	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T004001			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004001			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004001			110-00-9	Furan	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004001			110-54-3	Hexane	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004001			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004001			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004001			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004001			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004001			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004001			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004001			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004001			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004001			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004001			127-18-4	Tetrachloroethene	NGS	97	<1.8	10	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004001			108-88-3	Toluene	NGS	98	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004001			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004001			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	2.7	n/a	n/a	n/a	n/a	1.9	n/a	J

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-5
Customer Sample ID: 17-00253-2-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004001			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004001			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004001			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004001			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-6
Customer Sample ID: 17-00253-2-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004002			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004002			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004002			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004002			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004002			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004002			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004002			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004002			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004002			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T004002			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004002			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004002			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004002			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004002			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004002			110-43-0	2-Heptanone	NGS	94	<2.6	7.5	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004002			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004002			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004002			78-94-4	3-Buten-2-one	NGS	89	<1.9	2.8	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T004002			106-35-4	3-Heptanone	NGS	96	<2.7	5.6	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T004002			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004002			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004002			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004002			67-64-1	Acetone	NGS	88	4.5	29	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004002			75-05-8	Acetonitrile	NGS	98	<1.6	3.9E+03	n/a	n/a	n/a	n/a	1.6	n/a	E
S17T004002			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004002			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004002			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004002			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-6
Customer Sample ID: 17-00253-2-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004002			71-43-2	Benzene	NGS	99	<1.5	1.6	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T004002			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004002			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004002			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004002			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004002			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004002			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004002			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004002			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004002			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004002			64-17-5	Ethanol	NGS	100	<3.7	41	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004002			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004002			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004002			110-00-9	Furan	NGS	93	<1.6	2.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004002			110-54-3	Hexane	NGS	95	<1.3	1.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004002			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004002			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004002			75-09-2	Methylene Chloride	NGS	98	<4.1	5.4	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004002			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004002			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004002			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004002			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004002			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004002			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004002			127-18-4	Tetrachloroethene	NGS	97	<1.8	22	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004002			108-88-3	Toluene	NGS	98	<2.2	2.6	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004002			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004002			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	64	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-6
Customer Sample ID: 17-00253-2-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004002			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004002			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004002			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004002			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-7
Customer Sample ID: 17-00253-2-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004003			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004003			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004003			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004003			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004003			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004003			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004003			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004003			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004003			71-36-3	1-Butanol	NGS	99	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	LU
S17T004003			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004003			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004003			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004003			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004003			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004003			110-43-0	2-Heptanone	NGS	94	<2.6	9.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004003			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004003			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004003			78-94-4	3-Buten-2-one	NGS	89	<1.9	3.0	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T004003			106-35-4	3-Heptanone	NGS	96	<2.7	7.0	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T004003			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004003			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004003			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004003			67-64-1	Acetone	NGS	88	4.5	56	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004003			75-05-8	Acetonitrile	NGS	98	<1.6	51	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004003			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004003			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004003			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004003			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-7
Customer Sample ID: 17-00253-2-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004003			71-43-2	Benzene	NGS	99	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T004003			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004003			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004003			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004003			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004003			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004003			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004003			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004003			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004003			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004003			64-17-5	Ethanol	NGS	100	<3.7	78	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004003			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004003			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004003			110-00-9	Furan	NGS	93	<1.6	6.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004003			110-54-3	Hexane	NGS	95	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004003			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004003			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004003			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004003			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004003			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004003			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004003			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004003			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004003			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004003			127-18-4	Tetrachloroethene	NGS	97	<1.8	15	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004003			108-88-3	Toluene	NGS	98	<2.2	4.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004003			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004003			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	130	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-7
Customer Sample ID: 17-00253-2-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004003			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004003			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004003			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004003			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-8
Customer Sample ID: 17-00253-2-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004004			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004004			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004004			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004004			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004004			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004004			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004004			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004004			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004004			71-36-3	1-Butanol	NGS	99	<4.3	5.4	n/a	n/a	n/a	n/a	4.3	n/a	JL
S17T004004			111-70-6	1-Heptanol	NGS	89	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004004			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004004			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004004			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004004			78-93-3	2-Butanone	NGS	92	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004004			110-43-0	2-Heptanone	NGS	94	<2.6	5.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004004			591-78-6	2-Hexanone	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004004			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004004			78-94-4	3-Buten-2-one	NGS	89	<1.9	2.2	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T004004			106-35-4	3-Heptanone	NGS	96	<2.7	4.0	n/a	n/a	n/a	n/a	2.7	n/a	J
S17T004004			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004004			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004004			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004004			67-64-1	Acetone	NGS	88	4.5	280	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004004			75-05-8	Acetonitrile	NGS	98	<1.6	100	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004004			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004004			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004004			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004004			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-8
Customer Sample ID: 17-00253-2-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004004			71-43-2	Benzene	NGS	99	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004004			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004004			123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004004			109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004004			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004004			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004004			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004004			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004004			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004004			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004004			64-17-5	Ethanol	NGS	100	<3.7	170	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004004			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004004			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004004			110-00-9	Furan	NGS	93	<1.6	4.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004004			110-54-3	Hexane	NGS	95	<1.3	1.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004004			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004004			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004004			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004004			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004004			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004004			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004004			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004004			110-86-1	Pyridine	NGS	100	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004004			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004004			127-18-4	Tetrachloroethene	NGS	97	<1.8	16	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004004			108-88-3	Toluene	NGS	98	<2.2	2.5	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004004			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004004			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	230	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-8
Customer Sample ID: 17-00253-2-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004004			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004004			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004004			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004004			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-1
Customer Sample ID: 17-00253-2-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004005			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004005			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004005			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004005			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004005			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004005			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004005			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004005			123-91-1	1,4-Dioxane	NGS	100	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004005			71-36-3	1-Butanol	NGS	99	<4.3	470	n/a	n/a	n/a	n/a	4.3	n/a	L
S17T004005			111-70-6	1-Heptanol	NGS	89	<9.1	60	n/a	n/a	n/a	n/a	9.1	n/a	
S17T004005			71-23-8	1-Propanol	NGS	94	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004005			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	6.6	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004005			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004005			78-93-3	2-Butanone	NGS	92	<3.1	74	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004005			110-43-0	2-Heptanone	NGS	94	<2.6	290	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004005			591-78-6	2-Hexanone	NGS	95	<2.5	64	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004005			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004005			78-94-4	3-Buten-2-one	NGS	89	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004005			106-35-4	3-Heptanone	NGS	96	<2.7	190	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004005			106-68-3	3-Octanone	NGS	96	<3.3	4.7	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004005			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	7.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004005			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	23	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004005			67-64-1	Acetone	NGS	88	4.5	1.6E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004005			75-05-8	Acetonitrile	NGS	98	<1.6	79	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004005			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004005			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004005			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004005			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-1
Customer Sample ID: 17-00253-2-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004005			71-43-2	Benzene	NGS	99	<1.5	75	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004005			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004005			123-72-8	Butanal	NGS	100	<3.0	7.3	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T004005			109-74-0	Butanenitrile	NGS	100	<2.1	8.3	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004005			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004005			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004005			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004005			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004005			110-82-7	Cyclohexane	NGS	96	<1.4	3.2	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004005			124-18-5	Decane	NGS	100	<3.3	7.3	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004005			64-17-5	Ethanol	NGS	100	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a	U
S17T004005			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004005			100-41-4	Ethylbenzene	NGS	99	<2.4	4.4	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004005			110-00-9	Furan	NGS	93	<1.6	210	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004005			110-54-3	Hexane	NGS	95	<1.3	71	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004005			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004005			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004005			75-09-2	Methylene Chloride	NGS	98	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004005			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004005			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004005			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004005			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004005			110-86-1	Pyridine	NGS	100	<2.8	9.5	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004005			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004005			127-18-4	Tetrachloroethene	NGS	97	<1.8	25	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004005			108-88-3	Toluene	NGS	98	<2.2	220	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004005			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004005			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	68	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-1
Customer Sample ID: 17-00253-2-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004005			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004005			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004005			142-82-5	n-Heptane	NGS	97	<1.6	30	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004005			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-8
Customer Sample ID: 17-00253-2-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004006			79-34-5	1,1,2,2-Tetrachloroethane	NGS	99	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004006			79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004006			75-34-3	1,1-Dichloroethane	NGS	95	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004006			75-35-4	1,1-Dichloroethene	NGS	90	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004006			107-06-2	1,2-Dichloroethane	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004006			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004006			106-46-7	1,4-Dichlorobenzene	NGS	97	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004006			123-91-1	1,4-Dioxane	NGS	100	<2.0	3.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004006			71-36-3	1-Butanol	NGS	99	<4.3	240	n/a	n/a	n/a	n/a	4.3	n/a	L
S17T004006			111-70-6	1-Heptanol	NGS	89	<9.1	9.8	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T004006			71-23-8	1-Propanol	NGS	94	<8.9	53	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004006			108-47-4	2,4-Dimethylpyridine	NGS	99	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004006			1708-29-8	2,5-Dihydrofuran	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004006			78-93-3	2-Butanone	NGS	92	<3.1	50	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004006			110-43-0	2-Heptanone	NGS	94	<2.6	75	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004006			591-78-6	2-Hexanone	NGS	95	<2.5	23	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004006			534-22-5	2-Methylfuran	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004006			78-94-4	3-Buten-2-one	NGS	89	<1.9	2.6	n/a	n/a	n/a	n/a	1.9	n/a	J
S17T004006			106-35-4	3-Heptanone	NGS	96	<2.7	47	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004006			106-68-3	3-Octanone	NGS	96	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004006			105-42-0	4-Methyl-2-hexanone	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004006			108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	4.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004006			67-64-1	Acetone	NGS	88	4.5	1.8E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004006			75-05-8	Acetonitrile	NGS	98	<1.6	100	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004006			98-86-2	Acetophenone	NGS	98	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004006			107-13-1	Acrylonitrile	NGS	98	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004006			107-18-6	Allyl Alcohol	NGS	90	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004006			107-05-1	Allyl Chloride	NGS	90	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-8
Customer Sample ID: 17-00253-2-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004006			71-43-2	Benzene	NGS	99	<1.5	14	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004006			100-47-0	Benzonitrile	NGS	98	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004006			123-72-8	Butanal	NGS	100	<3.0	14	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004006			109-74-0	Butanenitrile	NGS	100	<2.1	3.7	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004006			56-23-5	Carbon tetrachloride	NGS	95	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004006			108-90-7	Chlorobenzene	NGS	99	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004006			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004006			67-66-3	Chloroform	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004006			110-82-7	Cyclohexane	NGS	96	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004006			124-18-5	Decane	NGS	100	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004006			64-17-5	Ethanol	NGS	100	<3.7	230	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004006			141-78-6	Ethyl acetate	NGS	80	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004006			100-41-4	Ethylbenzene	NGS	99	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004006			110-00-9	Furan	NGS	93	<1.6	67	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004006			110-54-3	Hexane	NGS	95	<1.3	28	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004006			628-73-9	Hexanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004006			126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004006			75-09-2	Methylene Chloride	NGS	98	<4.1	4.7	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004006			91-20-3	Naphthalene	NGS	94	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004006			98-95-3	Nitrobenzene	NGS	97	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004006			110-59-8	Pentanenitrile	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004006			107-12-0	Propanenitrile	NGS	99	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004006			110-86-1	Pyridine	NGS	100	<2.8	5.6	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004006			100-42-5	Styrene	NGS	98	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004006			127-18-4	Tetrachloroethene	NGS	97	<1.8	9.2	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004006			108-88-3	Toluene	NGS	98	<2.2	50	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004006			79-01-6	Trichloroethene	NGS	96	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004006			75-69-4	Trichlorofluoromethane	NGS	90	<1.9	110	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-8
Customer Sample ID: 17-00253-2-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004006			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004006			123-86-4	n-Butyl acetate	NGS	80	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004006			142-82-5	n-Heptane	NGS	97	<1.6	9.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004006			10061-02-6	trans-1,3-Dichloropropene	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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4/11/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-1
Customer Sample ID: 17-00252-2-SD1-EF-1

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003987			Silane	7803-62-5	8.15	NGS	150	JNT
S17T003987			D-Limonene	5989-27-5	22.40	NGS	28	JNT
S17T003987			Nonanal	124-19-6	23.78	NGS	35	JNT
S17T003987			Decane, 2,4,6-trimethyl-	62108-27-4	24.20	NGS	14	JNT
S17T003987			Dodecane	112-40-3	25.08	NGS	7.0	JNT
S17T003987			Benzothiazole	95-16-9	26.13	NGS	30	JNT
S17T003987			Dodecane, 2,6,11-trimethyl-	31295564	26.23	NGS	7.3	JNT
S17T003987			Dodecane, 2,6,10-trimethyl-	3891983	26.79	NGS	5.7	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-2
Customer Sample ID: 17-00252-2-SD1-EF-2

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003988			Unknown-1	--	8.18	NGS	200	JT
S17T003988			D-Limonene	5989-27-5	22.40	NGS	26	JNT
S17T003988			Undecane	1120214	23.54	NGS	9.9	JNT
S17T003988			Undecane, 2,6-dimethyl-	17301-23-4	23.89	NGS	7.7	JNT
S17T003988			Decane, 2,4,6-trimethyl-	62108-27-4	24.20	NGS	9.2	JNT
S17T003988			Dodecane	112-40-3	25.08	NGS	7.9	JNT
S17T003988			Methenamine	100-97-0	26.02	NGS	87	JNT
S17T003988			Benzothiazole	95-16-9	26.13	NGS	39	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-3
Customer Sample ID: 17-00252-2-SD1-EF-3

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003989			Methyl formate	107-31-3	4.67	NGS	50	JNT
S17T003989			Unknown-1	--	8.16	NGS	260	JT
S17T003989			Undecane	1120214	23.54	NGS	11	JNT
S17T003989			Nonanal	124-19-6	23.78	NGS	31	JNT
S17T003989			Undecane, 2,6-dimethyl-	17301-23-4	23.89	NGS	18	JNT
S17T003989			Decane, 2,4,6-trimethyl-	62108-27-4	24.20	NGS	35	JNT
S17T003989			Dodecane	112-40-3	25.08	NGS	6.9	JNT
S17T003989			Methenamine	100-97-0	26.02	NGS	43	JNT
S17T003989			Benzothiazole	95-16-9	26.14	NGS	32	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346

SDG Number:

Customer Sample ID: 17-00252-2-SD1-EF-4

Customer Sample ID: 17-00252-2-SD1-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003990				2-Butene	107-01-7	4.61	NGS	230	JNT
S17T003990				Unknown-1	--	8.17	NGS	200	JT
S17T003990				Undecane	1120214	23.53	NGS	14	JNT
S17T003990				Undecane, 2,6-dimethyl-	17301-23-4	23.89	NGS	13	JNT
S17T003990				Decane, 2,4,6-trimethyl-	62108-27-4	24.20	NGS	21	JNT
S17T003990				Methenamine	100-97-0	26.02	NGS	270	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-5
Customer Sample ID: 17-00252-2-SD1-EF-5

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003991			2-Butene	107-01-7	4.62	NGS	920	JNT
S17T003991			Cyclobutane, methyl-	598-61-8	6.00	NGS	210	JNT
S17T003991			Unknown-1	--	7.00	NGS	27	JT
S17T003991			4-Methoxy-1-pentene	98386-09-5	7.16	NGS	32	JNT
S17T003991			Ethyl(dimethyl)methoxysilane	52686-75-6	8.70	NGS	41	JNT
S17T003991			Trimethylsilanol	1066-40-6	8.76	NGS	170	JNT
S17T003991			2,3-Dihydrofuran	1191-99-7	9.41	NGS	71	JNT
S17T003991			1-Hexene	592-41-6	9.92	NGS	130	JNT
S17T003991			2-Hexene	592-43-8	10.66	NGS	48	JNT
S17T003991			Tetrahydrofuran	109-99-9	11.99	NGS	2.5E+03	JNT
S17T003991			1-Hexene, 2-methyl-	6094-02-6	14.07	NGS	29	JNT
S17T003991			2-Pentanone	107-87-9	14.14	NGS	190	JNT
S17T003991			Formamide	75-12-7	14.77	NGS	55	JNT
S17T003991			2-Butanone, 3,3-dimethyl-	75-97-8	14.86	NGS	72	JNT
S17T003991			Propane, 2-methyl-1-nitro-	625-74-1	15.69	NGS	110	JNT
S17T003991			Hexane, 2,4-dimethyl-	589-43-5	16.15	NGS	66	JNT
S17T003991			Heptane, 3-methylene-	1632-16-2	16.45	NGS	100	JNT
S17T003991			2-Hexene, 3,5-dimethyl-	3404-79-3	16.68	NGS	59	JNT
S17T003991			Furan, tetrahydro-3,4-dimethyl	27953-97-5	16.86	NGS	36	JNT
S17T003991			Carbamic acid, (cyanomethyl)-,	85363-04-8	17.96	NGS	35	JNT
S17T003991			4-Heptanone	123-19-3	18.17	NGS	180	JNT
S17T003991			3-Heptanol	589-82-2	18.52	NGS	63	JNT
S17T003991			Unknown-2	--	19.36	NGS	220	JT
S17T003991			Furan, tetrahydro-2,2-dimethyl	97265-00-4	19.56	NGS	210	JNT
S17T003991			Furan, 2,5-diethyltetrahydro-	41239-48-9	19.67	NGS	240	JNT
S17T003991			2-Heptanone, 6-methyl-	928-68-7	20.05	NGS	48	JNT
S17T003991			Oxonane	6573-50-8	21.58	NGS	220	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-5
Customer Sample ID: 17-00252-2-SD1-EF-5

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003991				1-Hexanol, 2-ethyl-	104-76-7	21.74	NGS	200	JNT
S17T003991				Dodecane	112403	25.07	NGS	5.1	JNT
S17T003991				Benzothiazole	95-16-9	26.13	NGS	28	JNT
S17T003991				Unknown-3	--	26.19	NGS	67	JT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-6
Customer Sample ID: 17-00252-2-SD1-EF-6

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003992			2-Butene	107-01-7	4.62	NGS	970	JNT
S17T003992			Cyclobutane, methyl-	598-61-8	6.00	NGS	220	JNT
S17T003992			2-Pentene	109-68-2	6.99	NGS	26	JNT
S17T003992			4-Methoxy-1-pentene	98386-09-5	7.15	NGS	33	JNT
S17T003992			Trimethylsilanol	1066-40-6	8.74	NGS	220	JNT
S17T003992			2,3-Dihydrofuran	1191-99-7	9.40	NGS	72	JNT
S17T003992			1-Hexene	592-41-6	9.92	NGS	120	JNT
S17T003992			2-Hexene	592-43-8	10.66	NGS	48	JNT
S17T003992			Tetrahydrofuran	109-99-9	11.98	NGS	2.7E+03	JNT
S17T003992			1-Hexene, 2-methyl-	6094-02-6	14.07	NGS	30	JNT
S17T003992			2-Pentanone	107-87-9	14.14	NGS	200	JNT
S17T003992			Formamide	75-12-7	14.65	NGS	47	JNT
S17T003992			2-Butanone, 3,3-dimethyl-	75-97-8	14.86	NGS	60	JNT
S17T003992			Propane, 2-methyl-1-nitro-	625-74-1	15.69	NGS	140	JNT
S17T003992			Hexane, 2,4-dimethyl-	589-43-5	16.15	NGS	49	JNT
S17T003992			Heptane, 3-methylene-	1632-16-2	16.45	NGS	120	JNT
S17T003992			2-Heptene, 3-methyl-	3404-75-9	16.68	NGS	49	JNT
S17T003992			Furan, tetrahydro-3,4-dimethyl	27953-97-5	16.86	NGS	31	JNT
S17T003992			Cyclotrisiloxane, hexamethyl-	541-05-9	16.91	NGS	30	JNT
S17T003992			Formic acid, 1,1-dimethylethyl	762-75-4	17.96	NGS	31	JNT
S17T003992			4-Heptanone	123-19-3	18.17	NGS	160	JNT
S17T003992			3-Heptanol	589-82-2	18.52	NGS	70	JNT
S17T003992			Unknown-1	--	19.37	NGS	170	JT
S17T003992			Furan, tetrahydro-2,2-dimethyl	97265-00-4	19.56	NGS	170	JNT
S17T003992			Furan, 2,5-diethyltetrahydro-	41239-48-9	19.67	NGS	200	JNT
S17T003992			2-Heptanone, 6-methyl-	928-68-7	20.06	NGS	26	JNT
S17T003992			Oxonane	6573-50-8	21.59	NGS	140	JNT

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U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-6
Customer Sample ID: 17-00252-2-SD1-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003992				1-Hexanol, 2-ethyl-	104-76-7	21.75	NGS	130	JNT
S17T003992				Undecane	1120214	23.54	NGS	9.1	JNT
S17T003992				Decane, 2,4,6-trimethyl-	62108-27-4	23.66	NGS	8.3	JNT
S17T003992				Unknown-2	--	26.18	NGS	29	JT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346

SDG Number:

Customer Sample ID: 17-00252-2-SD1-EF-7

Customer Sample ID: 17-00252-2-SD1-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003993				2-Butene	107-01-7	4.62	NGS	970	JNT
S17T003993				Cyclobutane, methyl-	598-61-8	6.00	NGS	240	JNT
S17T003993				2-Pentene	109-68-2	6.99	NGS	26	JNT
S17T003993				4-Methoxy-1-pentene	98386-09-5	7.14	NGS	41	JNT
S17T003993				Trimethylsilanol	1066-40-6	8.74	NGS	210	JNT
S17T003993				2,3-Dihydrofuran	1191-99-7	9.40	NGS	77	JNT
S17T003993				1-Hexene	592-41-6	9.91	NGS	120	JNT
S17T003993				2-Hexene	592-43-8	10.66	NGS	46	JNT
S17T003993				Tetrahydrofuran	109-99-9	11.98	NGS	2.5E+03	JNT
S17T003993				1-Hexene, 2-methyl-	6094-02-6	14.07	NGS	28	JNT
S17T003993				2-Pentanone	107-87-9	14.14	NGS	180	JNT
S17T003993				Formamide	75-12-7	14.68	NGS	64	JNT
S17T003993				2-Butanone, 3,3-dimethyl-	75-97-8	14.86	NGS	59	JNT
S17T003993				Propane, 2-methyl-1-nitro-	625-74-1	15.69	NGS	120	JNT
S17T003993				Hexane, 2,4-dimethyl-	589-43-5	16.15	NGS	45	JNT
S17T003993				Heptane, 3-methylene-	1632-16-2	16.45	NGS	76	JNT
S17T003993				2-Heptene, 3-methyl-	3404-75-9	16.68	NGS	45	JNT
S17T003993				Furan, tetrahydro-3,4-dimethyl	27953-97-5	16.86	NGS	30	JNT
S17T003993				Cyclotrisiloxane, hexamethyl-	541-05-9	16.91	NGS	34	JNT
S17T003993				Formic acid, 1,1-dimethylethyl	762-75-4	17.96	NGS	25	JNT
S17T003993				4-Heptanone	123-19-3	18.17	NGS	130	JNT
S17T003993				3-Heptanol	589-82-2	18.52	NGS	38	JNT
S17T003993				Unknown-1	--	19.37	NGS	130	JT
S17T003993				Furan, tetrahydro-2,2-dimethyl	97265-00-4	19.56	NGS	120	JNT
S17T003993				Furan, 2,5-diethyltetrahydro-	41239-48-9	19.67	NGS	130	JNT
S17T003993				Oxonane	6573-50-8	21.58	NGS	82	JNT
S17T003993				1-Hexanol, 2-ethyl-	104-76-7	21.75	NGS	74	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-7
Customer Sample ID: 17-00252-2-SD1-EF-7

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003993				Undecane	1120214	23.54	NGS	8.6	JNT
S17T003993				Decane, 2,4,6-trimethyl-	62108-27-4	23.66	NGS	16	JNT
S17T003993				Undecane, 3,7-dimethyl-	17301290	23.76	NGS	17	JNT
S17T003993				Dodecane	112403	25.07	NGS	9.4	JNT
S17T003993				Dodecane, 4,6-dimethyl-	61141728	26.22	NGS	8.6	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346

SDG Number:

Customer Sample ID: 17-00252-2-SD1-EF-8

Customer Sample ID: 17-00252-2-SD1-EF-8

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003994			2-Butene	107-01-7	4.62	NGS	830	JNT
S17T003994			Cyclobutane, methyl-	598-61-8	5.99	NGS	180	JNT
S17T003994			4-Methoxy-1-pentene	98386-09-5	7.11	NGS	26	JNT
S17T003994			Ethane, 1,1,2-trimethoxy-	24332-20-5	8.69	NGS	210	JNT
S17T003994			2,3-Dihydrofuran	1191-99-7	9.39	NGS	57	JNT
S17T003994			1-Hexene	592-41-6	9.91	NGS	100	JNT
S17T003994			2-Hexene	592-43-8	10.66	NGS	40	JNT
S17T003994			Tetrahydrofuran	109-99-9	11.96	NGS	2.4E+03	JNT
S17T003994			1-Hexene, 2-methyl-	6094-02-6	14.07	NGS	26	JNT
S17T003994			2-Pentanone	107-87-9	14.13	NGS	170	JNT
S17T003994			2-Butanone, 3,3-dimethyl-	75-97-8	14.85	NGS	50	JNT
S17T003994			Propane, 2-methyl-1-nitro-	625-74-1	15.68	NGS	120	JNT
S17T003994			Octane	111-65-9	16.15	NGS	32	JNT
S17T003994			Heptane, 3-methylene-	1632-16-2	16.45	NGS	61	JNT
S17T003994			2-Hexene, 3,5-dimethyl-	3404-79-3	16.68	NGS	42	JNT
S17T003994			Furan, tetrahydro-3,4-dimethyl	27953-97-5	16.86	NGS	27	JNT
S17T003994			Formic acid, 1,1-dimethylethyl	762-75-4	17.95	NGS	32	JNT
S17T003994			4-Heptanone	123-19-3	18.17	NGS	140	JNT
S17T003994			3-Hexanol, 5-methyl-	623-55-2	18.51	NGS	68	JNT
S17T003994			Unknown-1	--	19.36	NGS	170	JT
S17T003994			Furan, 2,5-diethyltetrahydro-	41239-48-9	19.56	NGS	170	JNT
S17T003994			Furan, tetrahydro-2,2-dimethyl	97265-00-4	19.67	NGS	190	JNT
S17T003994			2-Heptanone, 6-methyl-	928-68-7	20.05	NGS	44	JNT
S17T003994			Oxonane	6573-50-8	21.58	NGS	150	JNT
S17T003994			1-Hexanol, 2-ethyl-	104-76-7	21.74	NGS	150	JNT
S17T003994			Decane, 2,6,7-trimethyl-	62108-25-2	23.49	NGS	41	JNT
S17T003994			Undecane	1120214	23.54	NGS	25	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-EF-8
Customer Sample ID: 17-00252-2-SD1-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003994				Decane, 2,4,6-trimethyl-	62108-27-4	23.81	NGS	11	JNT
S17T003994				Undecane, 2,6-dimethyl-	17301-23-4	23.88	NGS	23	JNT
S17T003994				Undecane, 3,7-dimethyl-	17301290	24.20	NGS	38	JNT
S17T003994				Dodecane	112403	25.08	NGS	5.5	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-1
Customer Sample ID: 17-00252-2-SD1-IN-1

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003995			2-Butene	107-01-7	4.62	NGS	580	JNT
S17T003995			1-Pentene	109-67-1	6.02	NGS	36	JNT
S17T003995			2-Propanol, 2-methyl-	75-65-0	7.06	NGS	30	JNT
S17T003995			Silane, (2-methoxyethyl)trimet	18173-63-2	8.67	NGS	190	JNT
S17T003995			2,3-Dihydrofuran	1191-99-7	9.38	NGS	34	JNT
S17T003995			1-Hexene	592-41-6	9.94	NGS	120	JNT
S17T003995			2-Hexene	592-43-8	10.68	NGS	34	JNT
S17T003995			Tetrahydrofuran	109-99-9	11.95	NGS	1.5E+03	JNT
S17T003995			1-Hexene, 2-methyl-	6094-02-6	14.08	NGS	29	JNT
S17T003995			2-Pentanone	107-87-9	14.12	NGS	140	JNT
S17T003995			(Z)-3-Heptene	7642-10-6	14.35	NGS	27	JNT
S17T003995			2-Heptene, (E)-	14686-13-6	14.57	NGS	26	JNT
S17T003995			2-Butanone, 3,3-dimethyl-	75-97-8	14.85	NGS	39	JNT
S17T003995			Propane, 2-methyl-1-nitro-	625-74-1	15.68	NGS	83	JNT
S17T003995			Hexane, 2,4-dimethyl-	589-43-5	16.15	NGS	77	JNT
S17T003995			Heptane, 3-methylene-	1632-16-2	16.45	NGS	96	JNT
S17T003995			1-Hexene, 4-ethyl-	16746-85-3	16.67	NGS	17	JNT
S17T003995			2-Hexène, 3,5-dimethyl-	3404-79-3	16.68	NGS	35	JNT
S17T003995			Tetrahydrofuran, 2-ethyl-5-met	931-39-5	16.80	NGS	6.6	JNT
S17T003995			4-Heptanone	123-19-3	18.17	NGS	68	JNT
S17T003995			3-Hexanol, 5-methyl-	623-55-2	18.51	NGS	26	JNT
S17T003995			Unknown-1	--	19.36	NGS	43	JT
S17T003995			Furan, 2,5-diethyltetrahydro-	41239-48-9	19.56	NGS	33	JNT
S17T003995			Furan, tetrahydro-2,2-dimethyl	33978-70-0	19.67	NGS	34	JNT
S17T003995			D-Limonene	5989-27-5	22.40	NGS	32	JNT
S17T003995			Undecane	1120214	23.54	NGS	7.2	JNT
S17T003995			Dodecane	112403	25.07	NGS	9.6	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-1
Customer Sample ID: 17-00252-2-SD1-IN-1

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003995				Methenamine	100-97-0	26.02	NGS	34	JNT
S17T003995				Benzothiazole	95-16-9	26.13	NGS	27	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346

SDG Number:

Customer Sample ID: 17-00252-2-SD1-IN-8

Customer Sample ID: 17-00252-2-SD1-IN-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003996				2-Butene	107-01-7	4.60	NGS	1.1E+03	JNT
S17T003996				Unknown-1	--	8.26	NGS	55	JT
S17T003996				Tetrahydrofuran	109-99-9	11.96	NGS	39	JNT
S17T003996				Formamide	75-12-7	14.26	NGS	29	JNT
S17T003996				Undecane	1120214	23.55	NGS	8.8	JNT
S17T003996				Dodecane	112-40-3	25.09	NGS	13	JNT
S17T003996				Methenamine	100-97-0	26.03	NGS	20	JNT
S17T003996				Benzothiazole	95-16-9	26.14	NGS	26	JNT
S17T003996				Tridecane	629505	26.37	NGS	7.2	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-1
Customer Sample ID: 17-00253-2-SC1-EF-1

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T003997			D-Limonene	5989-27-5	22.40	NGS	29	JNT
S17T003997			Undecane	1120214	23.54	NGS	6.3	JNT
S17T003997			Nonanal	124-19-6	23.78	NGS	37	JNT
S17T003997			Dodecane	112403	25.08	NGS	7.9	JNT
S17T003997			Methenamine	100-97-0	26.02	NGS	33	JNT
S17T003997			Benzothiazole	95-16-9	26.13	NGS	33	JNT
S17T003997			Dodecane, 4,6-dimethyl-	61141728	26.22	NGS	9.6	JNT
S17T003997			Tetradecane	629594	26.79	NGS	6.9	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-2
Customer Sample ID: 17-00253-2-SC1-EF-2

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003998				Unknown-1	--	8.16	NGS	37	JT
S17T003998				D-Limonene	5989-27-5	22.40	NGS	44	JNT
S17T003998				Undecane	1120214	23.54	NGS	8.2	JNT
S17T003998				Decane, 2,4,6-trimethyl-	62108274	23.65	NGS	9.5	JNT
S17T003998				Nonanal	124-19-6	23.78	NGS	34	JNT
S17T003998				Unknown-2	--	24.05	NGS	27	JT
S17T003998				Dodecane	112403	25.08	NGS	14	JNT
S17T003998				Methenamine	100-97-0	26.02	NGS	58	JNT
S17T003998				Benzothiazole	95-16-9	26.13	NGS	52	JNT
S17T003998				Dodecane, 4,6-dimethyl-	61141728	26.23	NGS	15	JNT
S17T003998				Dodecane, 2,6,11-trimethyl-	31295564	26.79	NGS	9.0	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-3
Customer Sample ID: 17-00253-2-SC1-EF-3

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T003999				Methyl formate	107-31-3	4.67	NGS	28	JNT
S17T003999				Unknown-1	--	8.15	NGS	43	JT
S17T003999				Undecane	1120214	23.54	NGS	5.5	JNT
S17T003999				Dodecane	112403	25.07	NGS	7.7	JNT
S17T003999				Methenamine	100-97-0	26.01	NGS	110	JNT
S17T003999				Dodecane, 4,6-dimethyl-	61141728	26.22	NGS	7.7	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-4
Customer Sample ID: 17-00253-2-SC1-EF-4

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T004000				Methyl formate	107-31-3	4.66	NGS	51	JNT
S17T004000				Unknown-1	--	8.14	NGS	78	JT
S17T004000				Decane, 2,4,6-trimethyl-	62108-27-4	23.64	NGS	5.5	JNT
S17T004000				Methenamine	100-97-0	26.02	NGS	250	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346

SDG Number:

Customer Sample ID: 17-00253-2-SC1-EF-5

Customer Sample ID: 17-00253-2-SC1-EF-5

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T004001			2-Butene	107-01-7	4.60	NGS	270	JNT
S17T004001			Unknown-1	--	8.14	NGS	72	JT
S17T004001			Tetrahydrofuran	109-99-9	11.95	NGS	7.1	JNT
S17T004001			Methenamine	100-97-0	26.01	NGS	260	JNT
S17T004001			Benzothiazole	95-16-9	26.13	NGS	32	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-6
Customer Sample ID: 17-00253-2-SC1-EF-6

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T004002				2-Butene	107-01-7	4.61	NGS	1.6E+03	JNT
S17T004002				Unknown-1	--	8.22	NGS	95	JT
S17T004002				Tetrahydrofuran	109-99-9	11.95	NGS	13	JNT
S17T004002				Undecane	1120214	23.54	NGS	5.3	JNT
S17T004002				Decane, 2,4,6-trimethyl-	62108-27-4	23.65	NGS	5.6	JNT
S17T004002				Dodecane	112403	25.07	NGS	6.2	JNT
S17T004002				Methenamine	100-97-0	26.01	NGS	150	JNT
S17T004002				Benzothiazole	95-16-9	26.13	NGS	30	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-EF-7
Customer Sample ID: 17-00253-2-SC1-EF-7

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T004003			2-Butene	107-01-7	4.60	NGS	1.4E+03	JNT
S17T004003			Unknown-1	--	8.25	NGS	49	JT
S17T004003			Tetrahydrofuran	109-99-9	11.95	NGS	15	JNT
S17T004003			Formamide	75-12-7	14.15	NGS	31	JNT
S17T004003			Undecane	1120214	23.54	NGS	5.0	JNT
S17T004003			Decane, 2,4,6-trimethyl-	62108-27-4	23.65	NGS	9.2	JNT
S17T004003			Dodecane	112403	25.07	NGS	6.5	JNT
S17T004003			Methenamine	100-97-0	26.01	NGS	70	JNT

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U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346

SDG Number:

Customer Sample ID: 17-00253-2-SC1-EF-8

Customer Sample ID: 17-00253-2-SC1-EF-8

Sample#	R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2									
S17T004004				2-Butene	107-01-7	4.62	NGS	940	JNT
S17T004004				Unknown-1	--	8.23	NGS	57	JT
S17T004004				Tetrahydrofuran	109-99-9	11.95	NGS	19	JNT
S17T004004				Formamide	75-12-7	14.09	NGS	29	JNT
S17T004004				Methenamine	100-97-0	26.02	NGS	140	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-1
Customer Sample ID: 17-00253-2-SC1-IN-1

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T004005			2-Butene	107-01-7	4.68	NGS	440	JNT
S17T004005			Formamide	75-12-7	4.91	NGS	110	JNT
S17T004005			Trimethylsilanol	1066-40-6	8.72	NGS	250	JNT
S17T004005			2,3-Dihydrofuran	1191-99-7	9.43	NGS	75	JNT
S17T004005			1-Hexene	592-41-6	9.96	NGS	110	JNT
S17T004005			2-Hexene	592-43-8	10.70	NGS	44	JNT
S17T004005			Tetrahydrofuran	109-99-9	11.98	NGS	2.3E+03	JNT
S17T004005			1-Hexene, 2-methyl-	6094-02-6	14.10	NGS	35	JNT
S17T004005			2-Pentanone	107-87-9	14.14	NGS	170	JNT
S17T004005			2-Octanol, 3-methyl-	27644-49-1	14.35	NGS	55	JNT
S17T004005			2-Butanone, 3,3-dimethyl-	75-97-8	14.86	NGS	73	JNT
S17T004005			Propane, 2-methyl-1-nitro-	625-74-1	15.70	NGS	170	JNT
S17T004005			Hexane, 2,4-dimethyl-	589-43-5	16.15	NGS	32	JNT
S17T004005			Heptane, 3-methylene-	1632-16-2	16.45	NGS	110	JNT
S17T004005			Hexane, 2-methyl-4-methylene-	3404-80-6	16.69	NGS	53	JNT
S17T004005			Furan, tetrahydro-3,4-dimethyl	27953-97-5	16.86	NGS	35	JNT
S17T004005			Carbamic acid, (cyanomethyl)-,	85363-04-8	17.95	NGS	26	JNT
S17T004005			4-Heptanone	123-19-3	18.17	NGS	180	JNT
S17T004005			3-Hexanol, 5-methyl-	623-55-2	18.51	NGS	130	JNT
S17T004005			Unknown-1	--	19.36	NGS	300	JT
S17T004005			Furan, tetrahydro-2,2-dimethyl	97265-00-4	19.56	NGS	360	JNT
S17T004005			Furan, 2,5-diethyltetrahydro-	41239-48-9	19.67	NGS	430	JNT
S17T004005			2-Heptanone, 6-methyl-	928-68-7	20.06	NGS	41	JNT
S17T004005			Unknown-2	--	20.61	NGS	33	JT
S17T004005			2-Octanone	111-13-7	20.93	NGS	33	JNT
S17T004005			Oxonane	6573-50-8	21.58	NGS	410	JNT
S17T004005			1-Hexanol, 2-ethyl-	104-76-7	21.74	NGS	450	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346

SDG Number:

Customer Sample ID: 17-00253-2-SC1-IN-1

Customer Sample ID: 17-00253-2-SC1-IN-1

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T004005			Cyclohexene, 1-methyl-4-(1-met	5989-54-8	22.39	NGS	38	JNT
S17T004005			1-Octanol	111875	22.85	NGS	28	JNT
S17T004005			2-Nonanone	821-55-6	23.54	NGS	28	JNT
S17T004005			Unknown-3	--	24.05	NGS	26	JT
S17T004005			Dodecane	112403	25.07	NGS	15	JNT
S17T004005			Benzothiazole	95-16-9	26.13	NGS	26	JNT
S17T004005			Tridecane	629505	26.37	NGS	8.5	JNT

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170346
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-8
Customer Sample ID: 17-00253-2-SC1-IN-8

Sample# R	A#	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2								
S17T004006			2-Butene	107-01-7	4.61	NGS	140	JNT
S17T004006			Hydrogen azide	7782-79-8	6.92	NGS	59	JNT
S17T004006			Trimethylsilanol	1066-40-6	8.69	NGS	97	JNT
S17T004006			Tetrahydrofuran	109-99-9	11.96	NGS	640	JNT
S17T004006			2-Pentanone	107-87-9	14.12	NGS	39	JNT
S17T004006			Formamide	75-12-7	14.38	NGS	34	JNT
S17T004006			Propane, 2-methyl-1-nitro-	625-74-1	15.68	NGS	28	JNT
S17T004006			Acetonitrile, hydroxy-	107-16-4	16.09	NGS	37	JNT
S17T004006			4-Heptanone	123-19-3	18.17	NGS	56	JNT
S17T004006			3-Heptanol	589-82-2	18.51	NGS	32	JNT
S17T004006			Unknown-1	--	19.36	NGS	66	JT
S17T004006			Furan, tetrahydro-2,2-dimethyl	97265-00-4	19.56	NGS	74	JNT
S17T004006			Furan, 2,5-diethyltetrahydro-	41239-48-9	19.67	NGS	88	JNT
S17T004006			Unknown-2	--	21.58	NGS	55	JT
S17T004006			1-Hexanol, 2-ethyl-	104-76-7	21.74	NGS	61	JNT
S17T004006			Undecane	1120214	23.54	NGS	7.5	JNT
S17T004006			Dodecane	112403	25.08	NGS	6.8	JNT

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4/11/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BA-EF
Customer Sample ID: 17-00252-2-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004007			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004007			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004007			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004007			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004007			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004007			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004007			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004007			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004007			71-36-3	1-Butanol	NGS	110	<4.3	12	n/a	n/a	n/a	n/a	4.3	n/a	J
S17T004007			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004007			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004007			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004007			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004007			78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004007			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004007			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004007			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004007			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004007			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004007			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004007			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004007			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	3.4	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004007			67-64-1	Acetone	NGS	86	<2.8	64	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004007			75-05-8	Acetonitrile	NGS	91	<1.6	79	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004007			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004007			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004007			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004007			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BA-EF
Customer Sample ID: 17-00252-2-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004007			71-43-2	Benzene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004007			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004007			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004007			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004007			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004007			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004007			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004007			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004007			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004007			124-18-5	Decane	NGS	95	<3.3	5.6	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004007			64-17-5	Ethanol	NGS	98	<3.7	15	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T004007			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004007			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004007			110-00-9	Furan	NGS	89	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004007			110-54-3	Hexane	NGS	94	<1.3	1.7	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004007			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004007			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004007			75-09-2	Methylene Chloride	NGS	94	<4.1	8.2	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004007			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004007			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004007			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004007			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004007			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004007			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004007			127-18-4	Tetrachloroethene	NGS	94	<1.8	380	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004007			108-88-3	Toluene	NGS	93	<2.2	4.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004007			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004007			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BA-EF
Customer Sample ID: 17-00252-2-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004007			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004007			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004007			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004007			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BA-IN
Customer Sample ID: 17-00252-2-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004008			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004008			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004008			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004008			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004008			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004008			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004008			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004008			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004008			71-36-3	1-Butanol	NGS	110	<4.3	42	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004008			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004008			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004008			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004008			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004008			78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004008			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004008			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004008			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004008			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004008			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004008			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004008			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004008			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	2.9	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004008			67-64-1	Acetone	NGS	86	<2.8	67	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004008			75-05-8	Acetonitrile	NGS	91	<1.6	59	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004008			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004008			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004008			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004008			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BA-IN
Customer Sample ID: 17-00252-2-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004008			71-43-2	Benzene	NGS	96	<1.5	2.4	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T004008			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004008			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004008			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004008			56-23-5	Carbon tetrachloride	NGS	96	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T004008			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004008			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004008			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004008			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004008			124-18-5	Decane	NGS	95	<3.3	3.4	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004008			64-17-5	Ethanol	NGS	98	<3.7	51	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004008			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004008			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004008			110-00-9	Furan	NGS	89	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004008			110-54-3	Hexane	NGS	94	<1.3	2.5	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004008			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004008			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004008			75-09-2	Methylene Chloride	NGS	94	<4.1	5.8	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004008			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004008			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004008			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004008			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004008			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004008			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004008			127-18-4	Tetrachloroethene	NGS	94	<1.8	55	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004008			108-88-3	Toluene	NGS	93	<2.2	7.7	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004008			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004008			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	4.7	n/a	n/a	n/a	n/a	1.9	n/a	J

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BA-IN
Customer Sample ID: 17-00252-2-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004008			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004008			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004008			142-82-5	n-Heptane	NGS	97	<1.6	1.7	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004008			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BL-EF
Customer Sample ID: 17-00252-2-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004009			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004009			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004009			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004009			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004009			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004009			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004009			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004009			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004009			71-36-3	1-Butanol	NGS	110	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S17T004009			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004009			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004009			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004009			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004009			78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004009			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004009			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004009			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004009			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004009			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004009			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004009			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004009			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004009			67-64-1	Acetone	NGS	86	<2.8	9.6	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004009			75-05-8	Acetonitrile	NGS	91	<1.6	20	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004009			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004009			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004009			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004009			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BL-EF
Customer Sample ID: 17-00252-2-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004009			71-43-2	Benzene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004009			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004009			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004009			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004009			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004009			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004009			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004009			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004009			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004009			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004009			64-17-5	Ethanol	NGS	98	<3.7	5.3	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T004009			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004009			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004009			110-00-9	Furan	NGS	89	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004009			110-54-3	Hexane	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004009			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004009			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004009			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004009			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004009			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004009			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004009			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004009			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004009			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004009			127-18-4	Tetrachloroethene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004009			108-88-3	Toluene	NGS	93	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004009			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004009			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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E - Outside Calibration Range

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BL-EF
Customer Sample ID: 17-00252-2-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004009			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004009			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004009			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004009			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BL-IN
Customer Sample ID: 17-00252-2-SD1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004010			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004010			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004010			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004010			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004010			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004010			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004010			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004010			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004010			71-36-3	1-Butanol	NGS	110	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S17T004010			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004010			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004010			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004010			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004010			78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004010			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004010			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004010			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004010			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004010			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004010			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004010			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004010			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004010			67-64-1	Acetone	NGS	86	<2.8	4.0	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004010			75-05-8	Acetonitrile	NGS	91	<1.6	36	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004010			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004010			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004010			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004010			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BL-IN
Customer Sample ID: 17-00252-2-SD1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004010			71-43-2	Benzene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004010			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004010			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004010			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004010			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004010			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004010			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004010			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004010			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004010			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004010			64-17-5	Ethanol	NGS	98	<3.7	11	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T004010			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004010			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004010			110-00-9	Furan	NGS	89	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004010			110-54-3	Hexane	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004010			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004010			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004010			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004010			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004010			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004010			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004010			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004010			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004010			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004010			127-18-4	Tetrachloroethene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004010			108-88-3	Toluene	NGS	93	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004010			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004010			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-BL-IN
Customer Sample ID: 17-00252-2-SD1-BL-IN

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2														
S17T004010		10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004010		123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004010		142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004010		10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-2
Customer Sample ID: 17-00252-2-SD1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004011			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004011			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004011			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004011			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004011			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004011			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004011			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004011			123-91-1	1,4-Dioxane	NGS	97	<2.0	3.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004011			71-36-3	1-Butanol	NGS	110	<4.3	690	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004011			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004011			71-23-8	1-Propanol	NGS	99	<8.9	97	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004011			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004011			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004011			78-93-3	2-Butanone	NGS	89	<3.1	81	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004011			110-43-0	2-Heptanone	NGS	90	<2.6	96	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004011			591-78-6	2-Hexanone	NGS	92	<2.5	70	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004011			534-22-5	2-Methylfuran	NGS	93	<1.3	1.5	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004011			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004011			106-35-4	3-Heptanone	NGS	92	<2.7	74	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004011			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004011			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	4.7	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004011			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	17	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004011			67-64-1	Acetone	NGS	86	<2.8	3.2E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004011			75-05-8	Acetonitrile	NGS	91	<1.6	130	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004011			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004011			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004011			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004011			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-2
Customer Sample ID: 17-00252-2-SD1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004011			71-43-2	Benzene	NGS	96	<1.5	96	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004011			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004011			123-72-8	Butanal	NGS	110	<3.0	19	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004011			109-74-0	Butanenitrile	NGS	96	<2.1	15	n/a	n/a	n/a	n/a	2.1	n/a	
S17T004011			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004011			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004011			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004011			67-66-3	Chloroform	NGS	96	<1.8	2.7	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004011			110-82-7	Cyclohexane	NGS	94	<1.4	2.8	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004011			124-18-5	Decane	NGS	95	<3.3	4.0	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004011			64-17-5	Ethanol	NGS	98	<3.7	300	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004011			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004011			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004011			110-00-9	Furan	NGS	89	<1.6	330	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004011			110-54-3	Hexane	NGS	94	<1.3	49	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004011			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004011			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004011			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004011			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004011			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004011			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004011			107-12-0	Propanenitrile	NGS	95	<1.8	13	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004011			110-86-1	Pyridine	NGS	96	<2.8	12	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004011			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004011			127-18-4	Tetrachloroethene	NGS	94	<1.8	29	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004011			108-88-3	Toluene	NGS	93	<2.2	99	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004011			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004011			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	130	n/a	n/a	n/a	n/a	1.9	n/a	

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J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-2
Customer Sample ID: 17-00252-2-SD1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004011			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004011			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004011			142-82-5	n-Heptane	NGS	97	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004011			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-3
Customer Sample ID: 17-00252-2-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004012			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004012			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004012			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004012			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004012			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004012			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004012			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004012			123-91-1	1,4-Dioxane	NGS	97	<2.0	4.3	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004012			71-36-3	1-Butanol	NGS	110	<4.3	780	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004012			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004012			71-23-8	1-Propanol	NGS	99	<8.9	150	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004012			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004012			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004012			78-93-3	2-Butanone	NGS	89	<3.1	130	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004012			110-43-0	2-Heptanone	NGS	90	<2.6	130	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004012			591-78-6	2-Hexanone	NGS	92	<2.5	77	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004012			534-22-5	2-Methylfuran	NGS	93	<1.3	1.7	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004012			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004012			106-35-4	3-Heptanone	NGS	92	<2.7	97	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004012			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004012			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	5.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004012			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	18	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004012			67-64-1	Acetone	NGS	86	<2.8	3.7E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004012			75-05-8	Acetonitrile	NGS	91	<1.6	700	n/a	n/a	n/a	n/a	1.6	n/a	E
S17T004012			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004012			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004012			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004012			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-3
Customer Sample ID: 17-00252-2-SD1-IN-3

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2														
S17T004012		71-43-2	Benzene	NGS	96	<1.5	110	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004012		100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004012		123-72-8	Butanal	NGS	110	<3.0	24	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004012		109-74-0	Butanenitrile	NGS	96	<2.1	16	n/a	n/a	n/a	n/a	2.1	n/a	
S17T004012		56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004012		108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004012		75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004012		67-66-3	Chloroform	NGS	96	<1.8	2.4	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004012		110-82-7	Cyclohexane	NGS	94	<1.4	4.1	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004012		124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004012		64-17-5	Ethanol	NGS	98	<3.7	320	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004012		141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004012		100-41-4	Ethylbenzene	NGS	95	<2.4	4.1	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004012		110-00-9	Furan	NGS	89	<1.6	180	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004012		110-54-3	Hexane	NGS	94	<1.3	48	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004012		628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004012		126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004012		75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004012		91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004012		98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004012		110-59-8	Pentanenitrile	NGS	97	<2.6	3.2	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004012		107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004012		110-86-1	Pyridine	NGS	96	<2.8	13	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004012		100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004012		127-18-4	Tetrachloroethene	NGS	94	<1.8	21	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004012		108-88-3	Toluene	NGS	93	<2.2	54	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004012		79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004012		75-69-4	Trichlorofluoromethane	NGS	94	<1.9	140	n/a	n/a	n/a	n/a	1.9	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-3
Customer Sample ID: 17-00252-2-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004012			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004012			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004012			142-82-5	n-Heptane	NGS	97	<1.6	99	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004012			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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J - Estimated

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-4
Customer Sample ID: 17-00252-2-SD1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004013			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004013			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004013			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004013			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004013			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004013			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004013			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004013			123-91-1	1,4-Dioxane	NGS	97	<2.0	5.0	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004013			71-36-3	1-Butanol	NGS	110	<4.3	820	n/a	n/a	n/a	n/a	4.3	n/a	E
S17T004013			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004013			71-23-8	1-Propanol	NGS	99	<8.9	150	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004013			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004013			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004013			78-93-3	2-Butanone	NGS	89	<3.1	150	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004013			110-43-0	2-Heptanone	NGS	90	<2.6	160	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004013			591-78-6	2-Hexanone	NGS	92	<2.5	86	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004013			534-22-5	2-Methylfuran	NGS	93	<1.3	1.8	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004013			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004013			106-35-4	3-Heptanone	NGS	92	<2.7	120	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004013			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004013			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	6.4	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004013			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	20	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004013			67-64-1	Acetone	NGS	86	<2.8	4.1E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004013			75-05-8	Acetonitrile	NGS	91	<1.6	100	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004013			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004013			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004013			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004013			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-4
Customer Sample ID: 17-00252-2-SD1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004013			71-43-2	Benzene	NGS	96	<1.5	100	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004013			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004013			123-72-8	Butanal	NGS	110	<3.0	24	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004013			109-74-0	Butanenitrile	NGS	96	<2.1	18	n/a	n/a	n/a	n/a	2.1	n/a	
S17T004013			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004013			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004013			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004013			67-66-3	Chloroform	NGS	96	<1.8	3.0	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004013			110-82-7	Cyclohexane	NGS	94	<1.4	2.9	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004013			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004013			64-17-5	Ethanol	NGS	98	<3.7	330	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004013			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004013			100-41-4	Ethylbenzene	NGS	95	<2.4	2.8	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004013			110-00-9	Furan	NGS	89	<1.6	170	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004013			110-54-3	Hexane	NGS	94	<1.3	47	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004013			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004013			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004013			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004013			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004013			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004013			110-59-8	Pentanenitrile	NGS	97	<2.6	4.1	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004013			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004013			110-86-1	Pyridine	NGS	96	<2.8	15	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004013			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004013			127-18-4	Tetrachloroethene	NGS	94	<1.8	18	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004013			108-88-3	Toluene	NGS	93	<2.2	44	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004013			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004013			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	130	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-4
Customer Sample ID: 17-00252-2-SD1-IN-4

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2														
S17T004013		10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004013		123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004013		142-82-5	n-Heptane	NGS	97	<1.6	84	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004013		10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-5
Customer Sample ID: 17-00252-2-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004014			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004014			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004014			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004014			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004014			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004014			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004014			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004014			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004014			71-36-3	1-Butanol	NGS	110	<4.3	6.2	n/a	n/a	n/a	n/a	4.3	n/a	J
S17T004014			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004014			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004014			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004014			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004014			78-93-3	2-Butanone	NGS	89	<3.1	3.7	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T004014			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004014			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004014			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004014			78-94-4	3-Buten-2-one	NGS	86	<1.9	14	n/a	n/a	n/a	n/a	1.9	n/a	
S17T004014			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004014			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004014			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004014			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004014			67-64-1	Acetone	NGS	86	<2.8	23	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004014			75-05-8	Acetonitrile	NGS	91	<1.6	72	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004014			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004014			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004014			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004014			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-5
Customer Sample ID: 17-00252-2-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004014			71-43-2	Benzene	NGS	96	<1.5	2.8	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T004014			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004014			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004014			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004014			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004014			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004014			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004014			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004014			110-82-7	Cyclohexane	NGS	94	<1.4	1.9	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004014			124-18-5	Decane	NGS	95	<3.3	3.3	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004014			64-17-5	Ethanol	NGS	98	<3.7	38	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004014			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004014			100-41-4	Ethylbenzene	NGS	95	<2.4	2.6	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004014			110-00-9	Furan	NGS	89	<1.6	4.5	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004014			110-54-3	Hexane	NGS	94	<1.3	4.3	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004014			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004014			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004014			75-09-2	Methylene Chloride	NGS	94	<4.1	7.3	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004014			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004014			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004014			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004014			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004014			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004014			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004014			127-18-4	Tetrachloroethene	NGS	94	<1.8	30	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004014			108-88-3	Toluene	NGS	93	<2.2	16	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004014			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004014			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	57	n/a	n/a	n/a	n/a	1.9	n/a	

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J - Estimated

E - Outside Calibration Range

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-5
Customer Sample ID: 17-00252-2-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004014			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004014			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004014			142-82-5	n-Heptane	NGS	97	<1.6	3.3	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004014			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-6
Customer Sample ID: 17-00252-2-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004015			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004015			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004015			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004015			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004015			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004015			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004015			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004015			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004015			71-36-3	1-Butanol	NGS	110	<4.3	5.1	n/a	n/a	n/a	n/a	4.3	n/a	J
S17T004015			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004015			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004015			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004015			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004015			78-93-3	2-Butanone	NGS	89	<3.1	5.9	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T004015			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004015			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004015			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004015			78-94-4	3-Buten-2-one	NGS	86	<1.9	26	n/a	n/a	n/a	n/a	1.9	n/a	
S17T004015			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004015			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004015			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004015			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004015			67-64-1	Acetone	NGS	86	<2.8	61	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004015			75-05-8	Acetonitrile	NGS	91	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004015			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004015			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004015			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004015			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-6
Customer Sample ID: 17-00252-2-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004015			71-43-2	Benzene	NGS	96	<1.5	3.2	n/a	n/a	n/a	n/a	1.5	n/a	J
S17T004015			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004015			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004015			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004015			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004015			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004015			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004015			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004015			110-82-7	Cyclohexane	NGS	94	<1.4	2.3	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004015			124-18-5	Decane	NGS	95	<3.3	7.2	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004015			64-17-5	Ethanol	NGS	98	<3.7	87	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004015			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004015			100-41-4	Ethylbenzene	NGS	95	<2.4	3.0	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004015			110-00-9	Furan	NGS	89	<1.6	7.6	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004015			110-54-3	Hexane	NGS	94	<1.3	6.0	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004015			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004015			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004015			75-09-2	Methylene Chloride	NGS	94	<4.1	9.7	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004015			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004015			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004015			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004015			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004015			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004015			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004015			127-18-4	Tetrachloroethene	NGS	94	<1.8	25	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004015			108-88-3	Toluene	NGS	93	<2.2	18	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004015			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004015			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	170	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-6
Customer Sample ID: 17-00252-2-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004015			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004015			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004015			142-82-5	n-Heptane	NGS	97	<1.6	4.1	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004015			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-7
Customer Sample ID: 17-00252-2-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004016			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004016			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004016			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004016			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004016			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004016			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004016			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004016			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004016			71-36-3	1-Butanol	NGS	110	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S17T004016			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004016			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004016			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004016			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004016			78-93-3	2-Butanone	NGS	89	<3.1	5.8	n/a	n/a	n/a	n/a	3.1	n/a	J
S17T004016			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004016			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004016			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004016			78-94-4	3-Buten-2-one	NGS	86	<1.9	26	n/a	n/a	n/a	n/a	1.9	n/a	
S17T004016			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004016			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004016			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004016			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004016			67-64-1	Acetone	NGS	86	<2.8	170	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004016			75-05-8	Acetonitrile	NGS	91	<1.6	100	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004016			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004016			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004016			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004016			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-7
Customer Sample ID: 17-00252-2-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004016			71-43-2	Benzene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004016			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004016			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004016			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004016			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004016			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004016			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004016			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004016			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004016			124-18-5	Decane	NGS	95	<3.3	5.1	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004016			64-17-5	Ethanol	NGS	98	<3.7	160	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004016			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004016			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004016			110-00-9	Furan	NGS	89	<1.6	9.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004016			110-54-3	Hexane	NGS	94	<1.3	2.7	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004016			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004016			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004016			75-09-2	Methylene Chloride	NGS	94	<4.1	7.6	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004016			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004016			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004016			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004016			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004016			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004016			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004016			127-18-4	Tetrachloroethene	NGS	94	<1.8	19	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004016			108-88-3	Toluene	NGS	93	<2.2	3.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004016			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004016			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	260	n/a	n/a	n/a	n/a	1.9	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00252-2-SD1-IN-7
Customer Sample ID: 17-00252-2-SD1-IN-7

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2														
S17T004016		10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004016		123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004016		142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004016		10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BA-EF
Customer Sample ID: 17-00253-2-SC1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004017			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004017			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004017			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004017			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004017			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004017			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004017			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004017			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004017			71-36-3	1-Butanol	NGS	110	<4.3	27	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004017			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004017			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004017			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004017			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004017			78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004017			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004017			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004017			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004017			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004017			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004017			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004017			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004017			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004017			67-64-1	Acetone	NGS	86	<2.8	60	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004017			75-05-8	Acetonitrile	NGS	91	<1.6	190	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004017			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004017			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004017			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004017			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BA-EF
Customer Sample ID: 17-00253-2-SC1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004017			71-43-2	Benzene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004017			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004017			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004017			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004017			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004017			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004017			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004017			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004017			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004017			124-18-5	Decane	NGS	95	<3.3	5.9	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004017			64-17-5	Ethanol	NGS	98	<3.7	33	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004017			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004017			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004017			110-00-9	Furan	NGS	89	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004017			110-54-3	Hexane	NGS	94	<1.3	2.5	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004017			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004017			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004017			75-09-2	Methylene Chloride	NGS	94	<4.1	14	n/a	n/a	n/a	n/a	4.1	n/a	
S17T004017			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004017			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004017			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004017			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004017			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004017			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004017			127-18-4	Tetrachloroethene	NGS	94	<1.8	64	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004017			108-88-3	Toluene	NGS	93	<2.2	3.2	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004017			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004017			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	2.4	n/a	n/a	n/a	n/a	1.9	n/a	J

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BA-EF
Customer Sample ID: 17-00253-2-SC1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004017			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004017			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004017			142-82-5	n-Heptane	NGS	97	<1.6	3.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004017			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BA-IN
Customer Sample ID: 17-00253-2-SC1-BA-IN

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2														
S17T004018		79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004018		79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004018		75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004018		75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004018		107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004018		542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004018		106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004018		123-91-1	1,4-Dioxane	NGS	97	<2.0	3.6	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004018		71-36-3	1-Butanol	NGS	110	<4.3	620	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004018		111-70-6	1-Heptanol	NGS	95	<9.1	20	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T004018		71-23-8	1-Propanol	NGS	99	<8.9	150	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004018		108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004018		1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004018		78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004018		110-43-0	2-Heptanone	NGS	90	<2.6	190	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004018		591-78-6	2-Hexanone	NGS	92	<2.5	31	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004018		534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004018		78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004018		106-35-4	3-Heptanone	NGS	92	<2.7	130	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004018		106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004018		105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	4.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004018		108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	5.9	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004018		67-64-1	Acetone	NGS	86	<2.8	290	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004018		75-05-8	Acetonitrile	NGS	91	<1.6	19	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004018		98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004018		107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004018		107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004018		107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BA-IN
Customer Sample ID: 17-00253-2-SC1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004018			71-43-2	Benzene	NGS	96	<1.5	14	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004018			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004018			123-72-8	Butanal	NGS	110	<3.0	6.0	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T004018			109-74-0	Butanenitrile	NGS	96	<2.1	56	n/a	n/a	n/a	n/a	2.1	n/a	
S17T004018			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004018			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004018			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004018			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004018			110-82-7	Cyclohexane	NGS	94	<1.4	2.3	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004018			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004018			64-17-5	Ethanol	NGS	98	<3.7	310	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004018			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004018			100-41-4	Ethylbenzene	NGS	95	<2.4	3.2	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004018			110-00-9	Furan	NGS	89	<1.6	67	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004018			110-54-3	Hexane	NGS	94	<1.3	28	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004018			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004018			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004018			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004018			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004018			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004018			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004018			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004018			110-86-1	Pyridine	NGS	96	<2.8	7.6	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004018			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004018			127-18-4	Tetrachloroethene	NGS	94	<1.8	20	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004018			108-88-3	Toluene	NGS	93	<2.2	93	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004018			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004018			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	6.0	n/a	n/a	n/a	n/a	1.9	n/a	J

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BA-IN
Customer Sample ID: 17-00253-2-SC1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004018			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004018			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004018			142-82-5	n-Heptane	NGS	97	<1.6	51	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004018			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BL-EF
Customer Sample ID: 17-00253-2-SC1-BL-EF

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2														
S17T004019		79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004019		79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004019		75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004019		75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004019		107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004019		542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004019		106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004019		123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004019		71-36-3	1-Butanol	NGS	110	<4.3	5.9	n/a	n/a	n/a	n/a	4.3	n/a	J
S17T004019		111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004019		71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004019		108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004019		1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004019		78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004019		110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004019		591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004019		534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004019		78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004019		106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004019		106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004019		105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004019		108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004019		67-64-1	Acetone	NGS	86	<2.8	7.1	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004019		75-05-8	Acetonitrile	NGS	91	<1.6	47	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004019		98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004019		107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004019		107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004019		107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BL-EF
Customer Sample ID: 17-00253-2-SC1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004019			71-43-2	Benzene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004019			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004019			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004019			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004019			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004019			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004019			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004019			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004019			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004019			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004019			64-17-5	Ethanol	NGS	98	<3.7	12	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T004019			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004019			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004019			110-00-9	Furan	NGS	89	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004019			110-54-3	Hexane	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004019			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004019			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004019			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004019			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004019			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004019			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004019			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004019			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004019			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004019			127-18-4	Tetrachloroethene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004019			108-88-3	Toluene	NGS	93	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004019			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004019			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BL-EF
Customer Sample ID: 17-00253-2-SC1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004019			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004019			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004019			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004019			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BL-IN
Customer Sample ID: 17-00253-2-SC1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004020			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004020			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004020			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004020			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004020			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004020			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004020			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004020			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004020			71-36-3	1-Butanol	NGS	110	<4.3	<4.3	n/a	n/a	n/a	n/a	4.3	n/a	U
S17T004020			111-70-6	1-Heptanol	NGS	95	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	n/a	U
S17T004020			71-23-8	1-Propanol	NGS	99	<8.9	<8.9	n/a	n/a	n/a	n/a	8.9	n/a	U
S17T004020			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004020			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004020			78-93-3	2-Butanone	NGS	89	<3.1	<3.1	n/a	n/a	n/a	n/a	3.1	n/a	U
S17T004020			110-43-0	2-Heptanone	NGS	90	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004020			591-78-6	2-Hexanone	NGS	92	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004020			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004020			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004020			106-35-4	3-Heptanone	NGS	92	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004020			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004020			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004020			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004020			67-64-1	Acetone	NGS	86	<2.8	5.6	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004020			75-05-8	Acetonitrile	NGS	91	<1.6	34	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004020			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004020			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004020			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004020			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BL-IN
Customer Sample ID: 17-00253-2-SC1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicato	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004020			71-43-2	Benzene	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004020			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004020			123-72-8	Butanal	NGS	110	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004020			109-74-0	Butanenitrile	NGS	96	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004020			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004020			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004020			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004020			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004020			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004020			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004020			64-17-5	Ethanol	NGS	98	<3.7	10	n/a	n/a	n/a	n/a	3.7	n/a	J
S17T004020			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004020			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004020			110-00-9	Furan	NGS	89	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004020			110-54-3	Hexane	NGS	94	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004020			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004020			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004020			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004020			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004020			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004020			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004020			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004020			110-86-1	Pyridine	NGS	96	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a	U
S17T004020			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004020			127-18-4	Tetrachloroethene	NGS	94	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004020			108-88-3	Toluene	NGS	93	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004020			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004020			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U

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J - Estimated

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-BL-IN
Customer Sample ID: 17-00253-2-SC1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004020			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004020			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004020			142-82-5	n-Heptane	NGS	97	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004020			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-2
Customer Sample ID: 17-00253-2-SC1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004021			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004021			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004021			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004021			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004021			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004021			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004021			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004021			123-91-1	1,4-Dioxane	NGS	97	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a	U
S17T004021			71-36-3	1-Butanol	NGS	110	<4.3	450	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004021			111-70-6	1-Heptanol	NGS	95	<9.1	39	n/a	n/a	n/a	n/a	9.1	n/a	
S17T004021			71-23-8	1-Propanol	NGS	99	<8.9	34	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004021			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	5.0	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004021			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004021			78-93-3	2-Butanone	NGS	89	<3.1	130	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004021			110-43-0	2-Heptanone	NGS	90	<2.6	310	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004021			591-78-6	2-Hexanone	NGS	92	<2.5	92	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004021			534-22-5	2-Methylfuran	NGS	93	<1.3	1.5	n/a	n/a	n/a	n/a	1.3	n/a	J
S17T004021			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004021			106-35-4	3-Heptanone	NGS	92	<2.7	200	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004021			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004021			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	7.8	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004021			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	27	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004021			67-64-1	Acetone	NGS	86	<2.8	2.7E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004021			75-05-8	Acetonitrile	NGS	91	<1.6	32	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004021			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004021			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004021			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004021			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-2
Customer Sample ID: 17-00253-2-SC1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004021			71-43-2	Benzene	NGS	96	<1.5	76	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004021			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004021			123-72-8	Butanal	NGS	110	<3.0	9.9	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T004021			109-74-0	Butanenitrile	NGS	96	<2.1	11	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004021			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004021			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004021			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004021			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004021			110-82-7	Cyclohexane	NGS	94	<1.4	2.3	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004021			124-18-5	Decane	NGS	95	<3.3	8.4	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004021			64-17-5	Ethanol	NGS	98	<3.7	51	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004021			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004021			100-41-4	Ethylbenzene	NGS	95	<2.4	4.5	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004021			110-00-9	Furan	NGS	89	<1.6	110	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004021			110-54-3	Hexane	NGS	94	<1.3	59	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004021			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004021			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004021			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004021			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004021			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004021			110-59-8	Pentanenitrile	NGS	97	<2.6	4.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004021			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004021			110-86-1	Pyridine	NGS	96	<2.8	18	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004021			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004021			127-18-4	Tetrachloroethene	NGS	94	<1.8	28	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004021			108-88-3	Toluene	NGS	93	<2.2	150	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004021			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004021			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	100	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-2
Customer Sample ID: 17-00253-2-SC1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004021			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004021			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004021			142-82-5	n-Heptane	NGS	97	<1.6	29	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004021			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-3
Customer Sample ID: 17-00253-2-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004022			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004022			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004022			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004022			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004022			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004022			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004022			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004022			123-91-1	1,4-Dioxane	NGS	97	<2.0	2.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004022			71-36-3	1-Butanol	NGS	110	<4.3	580	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004022			111-70-6	1-Heptanol	NGS	95	<9.1	24	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T004022			71-23-8	1-Propanol	NGS	99	<8.9	97	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004022			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004022			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004022			78-93-3	2-Butanone	NGS	89	<3.1	80	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004022			110-43-0	2-Heptanone	NGS	90	<2.6	160	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004022			591-78-6	2-Hexanone	NGS	92	<2.5	61	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004022			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004022			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004022			106-35-4	3-Heptanone	NGS	92	<2.7	100	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004022			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004022			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	6.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004022			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	14	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004022			67-64-1	Acetone	NGS	86	<2.8	2.5E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004022			75-05-8	Acetonitrile	NGS	91	<1.6	790	n/a	n/a	n/a	n/a	1.6	n/a	E
S17T004022			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004022			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004022			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004022			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-3
Customer Sample ID: 17-00253-2-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004022			71-43-2	Benzene	NGS	96	<1.5	55	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004022			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004022			123-72-8	Butanal	NGS	110	<3.0	12	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004022			109-74-0	Butanenitrile	NGS	96	<2.1	8.2	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004022			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004022			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004022			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004022			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004022			110-82-7	Cyclohexane	NGS	94	<1.4	1.5	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004022			124-18-5	Decane	NGS	95	<3.3	4.1	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004022			64-17-5	Ethanol	NGS	98	<3.7	260	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004022			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004022			100-41-4	Ethylbenzene	NGS	95	<2.4	2.7	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004022			110-00-9	Furan	NGS	89	<1.6	270	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004022			110-54-3	Hexane	NGS	94	<1.3	29	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004022			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004022			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004022			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004022			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004022			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004022			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004022			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004022			110-86-1	Pyridine	NGS	96	<2.8	8.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004022			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004022			127-18-4	Tetrachloroethene	NGS	94	<1.8	17	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004022			108-88-3	Toluene	NGS	93	<2.2	46	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004022			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004022			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	82	n/a	n/a	n/a	n/a	1.9	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-3
Customer Sample ID: 17-00253-2-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004022			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004022			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004022			142-82-5	n-Heptane	NGS	97	<1.6	17	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004022			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-4
Customer Sample ID: 17-00253-2-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004023			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004023			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004023			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004023			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004023			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004023			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004023			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004023			123-91-1	1,4-Dioxane	NGS	97	<2.0	3.9	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004023			71-36-3	1-Butanol	NGS	110	<4.3	760	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004023			111-70-6	1-Heptanol	NGS	95	<9.1	15	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T004023			71-23-8	1-Propanol	NGS	99	<8.9	150	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004023			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004023			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004023			78-93-3	2-Butanone	NGS	89	<3.1	130	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004023			110-43-0	2-Heptanone	NGS	90	<2.6	150	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004023			591-78-6	2-Hexanone	NGS	92	<2.5	71	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004023			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004023			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004023			106-35-4	3-Heptanone	NGS	92	<2.7	93	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004023			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004023			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	5.1	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004023			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	16	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004023			67-64-1	Acetone	NGS	86	<2.8	3.7E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004023			75-05-8	Acetonitrile	NGS	91	<1.6	55	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004023			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004023			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004023			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004023			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

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E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-4
Customer Sample ID: 17-00253-2-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004023			71-43-2	Benzene	NGS	96	<1.5	56	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004023			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004023			123-72-8	Butanal	NGS	110	<3.0	21	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004023			109-74-0	Butanenitrile	NGS	96	<2.1	11	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004023			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004023			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004023			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004023			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004023			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004023			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004023			64-17-5	Ethanol	NGS	98	<3.7	260	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004023			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004023			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004023			110-00-9	Furan	NGS	89	<1.6	120	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004023			110-54-3	Hexane	NGS	94	<1.3	38	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004023			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004023			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004023			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004023			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004023			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004023			110-59-8	Pentanenitrile	NGS	97	<2.6	3.1	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004023			107-12-0	Propanenitrile	NGS	95	<1.8	10	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004023			110-86-1	Pyridine	NGS	96	<2.8	10	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004023			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004023			127-18-4	Tetrachloroethene	NGS	94	<1.8	14	n/a	n/a	n/a	n/a	1.8	n/a	
S17T004023			108-88-3	Toluene	NGS	93	<2.2	32	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004023			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004023			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	99	n/a	n/a	n/a	n/a	1.9	n/a	

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-4
Customer Sample ID: 17-00253-2-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004023			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004023			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004023			142-82-5	n-Heptane	NGS	97	<1.6	18	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004023			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-5
Customer Sample ID: 17-00253-2-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004024			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004024			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004024			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004024			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004024			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004024			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004024			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004024			123-91-1	1,4-Dioxane	NGS	97	<2.0	3.8	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004024			71-36-3	1-Butanol	NGS	110	<4.3	730	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004024			111-70-6	1-Heptanol	NGS	95	<9.1	12	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T004024			71-23-8	1-Propanol	NGS	99	<8.9	130	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004024			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004024			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004024			78-93-3	2-Butanone	NGS	89	<3.1	69	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004024			110-43-0	2-Heptanone	NGS	90	<2.6	130	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004024			591-78-6	2-Hexanone	NGS	92	<2.5	59	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004024			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004024			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004024			106-35-4	3-Heptanone	NGS	92	<2.7	83	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004024			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004024			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	4.3	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004024			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	12	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004024			67-64-1	Acetone	NGS	86	<2.8	2.1E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004024			75-05-8	Acetonitrile	NGS	91	<1.6	48	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004024			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004024			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004024			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004024			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347

SDG Number:

Customer Sample ID: 17-00253-2-SC1-IN-5

Customer Sample ID: 17-00253-2-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004024			71-43-2	Benzene	NGS	96	<1.5	44	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004024			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004024			123-72-8	Butanal	NGS	110	<3.0	11	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004024			109-74-0	Butanenitrile	NGS	96	<2.1	9.3	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004024			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004024			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004024			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004024			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004024			110-82-7	Cyclohexane	NGS	94	<1.4	1.5	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004024			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004024			64-17-5	Ethanol	NGS	98	<3.7	230	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004024			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004024			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004024			110-00-9	Furan	NGS	89	<1.6	160	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004024			110-54-3	Hexane	NGS	94	<1.3	31	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004024			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004024			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004024			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004024			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004024			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004024			110-59-8	Pentanenitrile	NGS	97	<2.6	3.9	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004024			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004024			110-86-1	Pyridine	NGS	96	<2.8	9.8	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004024			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004024			127-18-4	Tetrachloroethene	NGS	94	<1.8	10	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004024			108-88-3	Toluene	NGS	93	<2.2	38	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004024			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004024			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	100	n/a	n/a	n/a	n/a	1.9	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-5
Customer Sample ID: 17-00253-2-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004024			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004024			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004024			142-82-5	n-Heptane	NGS	97	<1.6	16	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004024			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-6
Customer Sample ID: 17-00253-2-SC1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004025			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004025			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004025			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004025			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004025			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004025			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004025			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004025			123-91-1	1,4-Dioxane	NGS	97	<2.0	5.5	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004025			71-36-3	1-Butanol	NGS	110	<4.3	740	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004025			111-70-6	1-Heptanol	NGS	95	<9.1	29	n/a	n/a	n/a	n/a	9.1	n/a	
S17T004025			71-23-8	1-Propanol	NGS	99	<8.9	160	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004025			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	4.4	n/a	n/a	n/a	n/a	4.1	n/a	J
S17T004025			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004025			78-93-3	2-Butanone	NGS	89	<3.1	100	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004025			110-43-0	2-Heptanone	NGS	90	<2.6	200	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004025			591-78-6	2-Hexanone	NGS	92	<2.5	60	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004025			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004025			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004025			106-35-4	3-Heptanone	NGS	92	<2.7	120	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004025			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004025			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	5.0	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004025			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	13	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004025			67-64-1	Acetone	NGS	86	<2.8	3.5E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004025			75-05-8	Acetonitrile	NGS	91	<1.6	100	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004025			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004025			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004025			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004025			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-6
Customer Sample ID: 17-00253-2-SC1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004025			71-43-2	Benzene	NGS	96	<1.5	45	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004025			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004025			123-72-8	Butanal	NGS	110	<3.0	21	n/a	n/a	n/a	n/a	3.0	n/a	
S17T004025			109-74-0	Butanenitrile	NGS	96	<2.1	11	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004025			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004025			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004025			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004025			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004025			110-82-7	Cyclohexane	NGS	94	<1.4	2.6	n/a	n/a	n/a	n/a	1.4	n/a	J
S17T004025			124-18-5	Decane	NGS	95	<3.3	3.4	n/a	n/a	n/a	n/a	3.3	n/a	J
S17T004025			64-17-5	Ethanol	NGS	98	<3.7	320	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004025			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004025			100-41-4	Ethylbenzene	NGS	95	<2.4	3.1	n/a	n/a	n/a	n/a	2.4	n/a	J
S17T004025			110-00-9	Furan	NGS	89	<1.6	100	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004025			110-54-3	Hexane	NGS	94	<1.3	95	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004025			628-73-9	Hexanenitrile	NGS	97	<2.6	3.6	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004025			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004025			75-09-2	Methylene Chloride	NGS	94	<4.1	16	n/a	n/a	n/a	n/a	4.1	n/a	
S17T004025			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004025			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004025			110-59-8	Pentanenitrile	NGS	97	<2.6	3.1	n/a	n/a	n/a	n/a	2.6	n/a	J
S17T004025			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004025			110-86-1	Pyridine	NGS	96	<2.8	12	n/a	n/a	n/a	n/a	2.8	n/a	
S17T004025			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004025			127-18-4	Tetrachloroethene	NGS	94	<1.8	11	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004025			108-88-3	Toluene	NGS	93	<2.2	100	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004025			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004025			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	160	n/a	n/a	n/a	n/a	1.9	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-6
Customer Sample ID: 17-00253-2-SC1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004025			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004025			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004025			142-82-5	n-Heptane	NGS	97	<1.6	17	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004025			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-7
Customer Sample ID: 17-00253-2-SC1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004026			79-34-5	1,1,2,2-Tetrachloroethane	NGS	96	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a	U
S17T004026			79-00-5	1,1,2-Trichloroethane	NGS	96	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004026			75-34-3	1,1-Dichloroethane	NGS	94	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004026			75-35-4	1,1-Dichloroethene	NGS	92	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004026			107-06-2	1,2-Dichloroethane	NGS	97	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a	U
S17T004026			542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004026			106-46-7	1,4-Dichlorobenzene	NGS	93	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004026			123-91-1	1,4-Dioxane	NGS	97	<2.0	3.7	n/a	n/a	n/a	n/a	2.0	n/a	J
S17T004026			71-36-3	1-Butanol	NGS	110	<4.3	360	n/a	n/a	n/a	n/a	4.3	n/a	
S17T004026			111-70-6	1-Heptanol	NGS	95	<9.1	13	n/a	n/a	n/a	n/a	9.1	n/a	J
S17T004026			71-23-8	1-Propanol	NGS	99	<8.9	67	n/a	n/a	n/a	n/a	8.9	n/a	
S17T004026			108-47-4	2,4-Dimethylpyridine	NGS	92	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004026			1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a	U
S17T004026			78-93-3	2-Butanone	NGS	89	<3.1	46	n/a	n/a	n/a	n/a	3.1	n/a	
S17T004026			110-43-0	2-Heptanone	NGS	90	<2.6	93	n/a	n/a	n/a	n/a	2.6	n/a	
S17T004026			591-78-6	2-Hexanone	NGS	92	<2.5	29	n/a	n/a	n/a	n/a	2.5	n/a	
S17T004026			534-22-5	2-Methylfuran	NGS	93	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a	U
S17T004026			78-94-4	3-Buten-2-one	NGS	86	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a	U
S17T004026			106-35-4	3-Heptanone	NGS	92	<2.7	58	n/a	n/a	n/a	n/a	2.7	n/a	
S17T004026			106-68-3	3-Octanone	NGS	94	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004026			105-42-0	4-Methyl-2-hexanone	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004026			108-10-1	4-Methyl-2-Pentanone	NGS	96	<2.2	6.0	n/a	n/a	n/a	n/a	2.2	n/a	J
S17T004026			67-64-1	Acetone	NGS	86	<2.8	1.2E+03	n/a	n/a	n/a	n/a	2.8	n/a	E
S17T004026			75-05-8	Acetonitrile	NGS	91	<1.6	41	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004026			98-86-2	Acetophenone	NGS	88	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a	U
S17T004026			107-13-1	Acrylonitrile	NGS	95	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U
S17T004026			107-18-6	Allyl Alcohol	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a	U
S17T004026			107-05-1	Allyl Chloride	NGS	97	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-7
Customer Sample ID: 17-00253-2-SC1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004026			71-43-2	Benzene	NGS	96	<1.5	19	n/a	n/a	n/a	n/a	1.5	n/a	
S17T004026			100-47-0	Benzonitrile	NGS	93	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a	U
S17T004026			123-72-8	Butanal	NGS	110	<3.0	8.0	n/a	n/a	n/a	n/a	3.0	n/a	J
S17T004026			109-74-0	Butanenitrile	NGS	96	<2.1	5.2	n/a	n/a	n/a	n/a	2.1	n/a	J
S17T004026			56-23-5	Carbon tetrachloride	NGS	96	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	U
S17T004026			108-90-7	Chlorobenzene	NGS	95	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a	U
S17T004026			75-00-3	Chloroethane	NGS	100	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004026			67-66-3	Chloroform	NGS	96	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004026			110-82-7	Cyclohexane	NGS	94	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a	U
S17T004026			124-18-5	Decane	NGS	95	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a	U
S17T004026			64-17-5	Ethanol	NGS	98	<3.7	160	n/a	n/a	n/a	n/a	3.7	n/a	
S17T004026			141-78-6	Ethyl acetate	NGS	77	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004026			100-41-4	Ethylbenzene	NGS	95	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004026			110-00-9	Furan	NGS	89	<1.6	50	n/a	n/a	n/a	n/a	1.6	n/a	
S17T004026			110-54-3	Hexane	NGS	94	<1.3	33	n/a	n/a	n/a	n/a	1.3	n/a	
S17T004026			628-73-9	Hexanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004026			126-98-7	Methacrylonitrile	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004026			75-09-2	Methylene Chloride	NGS	94	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a	U
S17T004026			91-20-3	Naphthalene	NGS	82	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a	U
S17T004026			98-95-3	Nitrobenzene	NGS	110	<4.7	<4.7	n/a	n/a	n/a	n/a	4.7	n/a	U
S17T004026			110-59-8	Pentanenitrile	NGS	97	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	U
S17T004026			107-12-0	Propanenitrile	NGS	95	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004026			110-86-1	Pyridine	NGS	96	<2.8	6.2	n/a	n/a	n/a	n/a	2.8	n/a	J
S17T004026			100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a	U
S17T004026			127-18-4	Tetrachloroethene	NGS	94	<1.8	8.2	n/a	n/a	n/a	n/a	1.8	n/a	J
S17T004026			108-88-3	Toluene	NGS	93	<2.2	55	n/a	n/a	n/a	n/a	2.2	n/a	
S17T004026			79-01-6	Trichloroethene	NGS	93	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a	U
S17T004026			75-69-4	Trichlorofluoromethane	NGS	94	<1.9	110	n/a	n/a	n/a	n/a	1.9	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated E - Outside Calibration Range U - Less Than Detection Limit

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170347
SDG Number:
Customer Sample ID: 17-00253-2-SC1-IN-7
Customer Sample ID: 17-00253-2-SC1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-TDU VOA #2															
S17T004026			10061-01-5	cis-1,3-Dichloropropene	NGS	98	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a	U
S17T004026			123-86-4	n-Butyl acetate	NGS	77	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	U
S17T004026			142-82-5	n-Heptane	NGS	97	<1.6	7.2	n/a	n/a	n/a	n/a	1.6	n/a	J
S17T004026			10061-02-6	trans-1,3-Dichloropropene	NGS	99	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a	U

NA = Not Analyzed, ND = Not Detected

J - Estimated

E - Outside Calibration Range

U - Less Than Detection Limit

C.3.3 Furans

Furan1 COMMENTS

DSRComment 2.7.32
DSR.Jar v. 3.0.12

2017 Cartridge Evaluation
3/20/2017 3:53:30PM

Verification Sample Comments
Sample: S17T003709 Group: 20170337
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003710 Group: 20170337
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003711 Group: 20170337
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003712 Group: 20170337
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003713 Group: 20170337
Y = Detector probably saturated for Tetrahydrofuran
Sample: S17T003714 Group: 20170337
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003715 Group: 20170337
Y = detector probably saturated for Tetrahydrofuran.
Sample: S17T003716 Group: 20170337
Y = detector probably saturated for Tetrahydrofuran.

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16 - Mar - 2017 15:47:33
DSRHardcopyWOLimits 3.0.13
DSR.Jar v. 3.0.12

3/20/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-BA-EF
Customer Sample ID: 17-00252-3-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003701			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003701			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003701			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003701			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003701			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003701			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003701			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003701			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003701			109-99-9	Tetrahydrofuran	NGS	99	<0.23	0.35	n/a	n/a	n/a	n/a	0.23	n/a	J

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

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-BA-IN
Customer Sample ID: 17-00252-3-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003702			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003702			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003702			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003702			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003702			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003702			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003702			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003702			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003702			109-99-9	Tetrahydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-BL-EF
Customer Sample ID: 17-00252-3-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003703			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003703			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003703			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003703			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003703			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003703			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003703			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003703			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003703			109-99-9	Tetrahydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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N - Named TIC
U - Less Than Detection Limit
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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-BL-IN
Customer Sample ID: 17-00252-3-SD1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003704			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003704			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003704			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003704			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003704			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003704			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003704			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003704			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003704			109-99-9	Tetrahydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC
U - Less Than Detection Limit
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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-1
Customer Sample ID: 17-00252-3-SD1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003705			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003705			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003705			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003705			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003705			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003705			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003705			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003705			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003705			109-99-9	Tetrahydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-2
Customer Sample ID: 17-00252-3-SD1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003706			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003706			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003706			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003706			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003706			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003706			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003706			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003706			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003706			109-99-9	Tetrahydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-3
Customer Sample ID: 17-00252-3-SD1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003707			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003707			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003707			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003707			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003707			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003707			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003707			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003707			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003707			109-99-9	Tetrahydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-4
Customer Sample ID: 17-00252-3-SD1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003708			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003708			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003708			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003708			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003708			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003708			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003708			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003708			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003708			109-99-9	Tetrahydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-5
Customer Sample ID: 17-00252-3-SD1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003709			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003709			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003709			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003709			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003709			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003709			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003709			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003709			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003709			109-99-9	Tetrahydrofuran	NGS	99	<0.23	960	n/a	n/a	n/a	n/a	0.23	n/a	EY

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-6
Customer Sample ID: 17-00252-3-SD1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003710			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003710			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003710			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003710			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003710			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003710			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003710			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003710			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003710			109-99-9	Tetrahydrofuran	NGS	99	<0.23	1000	n/a	n/a	n/a	n/a	0.23	n/a	EY

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-7
Customer Sample ID: 17-00252-3-SD1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003711			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003711			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003711			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003711			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003711			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003711			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003711			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003711			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003711			109-99-9	Tetrahydrofuran	NGS	99	<0.23	980	n/a	n/a	n/a	n/a	0.23	n/a	EY

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-EF-8
Customer Sample ID: 17-00252-3-SD1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003712			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003712			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003712			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003712			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003712			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003712			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003712			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003712			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003712			109-99-9	Tetrahydrofuran	NGS	99	<0.23	930	n/a	n/a	n/a	n/a	0.23	n/a	EY

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-1
Customer Sample ID: 17-00252-3-SD1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003713			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003713			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003713			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003713			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003713			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003713			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003713			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003713			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003713			109-99-9	Tetrahydrofuran	NGS	99	<0.23	880	n/a	n/a	n/a	n/a	0.23	n/a	EY

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-2
Customer Sample ID: 17-00252-3-SD1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003714			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003714			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003714			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003714			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003714			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003714			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003714			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003714			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003714			109-99-9	Tetrahydrofuran	NGS	99	<0.23	930	n/a	n/a	n/a	n/a	0.23	n/a	EY

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-3
Customer Sample ID: 17-00252-3-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003715			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003715			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003715			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003715			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003715			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003715			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003715			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003715			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003715			109-99-9	Tetrahydrofuran	NGS	99	<0.23	930	n/a	n/a	n/a	n/a	0.23	n/a	EY

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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-4
Customer Sample ID: 17-00252-3-SD1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003716			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003716			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003716			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003716			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003716			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003716			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003716			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003716			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003716			109-99-9	Tetrahydrofuran	NGS	99	<0.23	920	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC
U - Less Than Detection Limit
E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-5
Customer Sample ID: 17-00252-3-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003717			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003717			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003717			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003717			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003717			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003717			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003717			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003717			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003717			109-99-9	Tetrahydrofuran	NGS	99	<0.23	1.6	n/a	n/a	n/a	n/a	0.23	n/a	J

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

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-6
Customer Sample ID: 17-00252-3-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003718			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003718			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003718			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003718			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003718			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003718			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003718			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003718			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003718			109-99-9	Tetrahydrofuran	NGS	99	<0.23	3.7	n/a	n/a	n/a	n/a	0.23	n/a	

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J - Estimated
T - Tentatively Identified Compound
Y - Comment
N - Named TIC
U - Less Than Detection Limit
E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-7
Customer Sample ID: 17-00252-3-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003719			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003719			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003719			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003719			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003719			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003719			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003719			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003719			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003719			109-99-9	Tetrahydrofuran	NGS	99	<0.23	26	n/a	n/a	n/a	n/a	0.23	n/a	

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T - Tentatively Identified Compound
Y - Comment
N - Named TIC
U - Less Than Detection Limit
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2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170337
SDG Number:
Customer Sample ID: 17-00252-3-SD1-IN-8
Customer Sample ID: 17-00252-3-SD1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003720			1191-99-7	2,3-Dihydrofuran	NGS	73	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003720			1708-29-8	2,5-Dihydrofuran	NGS	100	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003720			625-86-5	2,5-Dimethylfuran	NGS	84	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003720			3777-71-7	2-Heptylfuran	NGS	90	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003720			534-22-5	2-Methylfuran	NGS	90	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003720			3777-69-3	2-Pentylfuran	NGS	87	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003720			4229-91-8	2-Propylfuran	NGS	88	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003720			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003720			109-99-9	Tetrahydrofuran	NGS	99	<0.23	81	n/a	n/a	n/a	n/a	0.23	n/a	E

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Y - Comment
N - Named TIC
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Furan2 COMMENTS

DSRComment 2.7.32
DSR.Jar v. 3.0.12

2017 Cartridge Evaluation
3/20/2017 3:51:50PM

Verification Sample Comments
Sample: S17T003733 Group: 20170338
Y = Detector probably saturated for tetrahydrofuran
Sample: S17T003734 Group: 20170338
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003735 Group: 20170338
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003736 Group: 20170338
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003737 Group: 20170338
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003738 Group: 20170338
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003739 Group: 20170338
Y = Detector probably saturated for Tetrahydrofuran.
Sample: S17T003740 Group: 20170338
Y = Detector probably saturated for Tetrahydrofuran.

20 - Mar - 2017 15:51:54
DSRHardcopyWOLimits 3.0.13
DSR.Jar v. 3.0.12

3/20/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-BA-EF
Customer Sample ID: 17-00253-3-SC1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003721			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003721			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	1.6	n/a	n/a	n/a	n/a	0.33	n/a	J
S17T003721			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003721			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003721			534-22-5	2-Methylfuran	NGS	85	<0.46	0.75	n/a	n/a	n/a	n/a	0.46	n/a	J
S17T003721			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003721			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003721			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003721			109-99-9	Tetrahydrofuran	NGS	97	<0.23	1.2	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003725			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003725			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003725			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003725			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003725			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003725			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003725			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003725			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003725			109-99-9	Tetrahydrofuran	NGS	97	<0.23	0.37	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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-BA-IN
Customer Sample ID: 17-00253-3-SC1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003722			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003722			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	0.97	n/a	n/a	n/a	n/a	0.33	n/a	J
S17T003722			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003722			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003722			534-22-5	2-Methylfuran	NGS	85	<0.46	0.87	n/a	n/a	n/a	n/a	0.46	n/a	J
S17T003722			3777-69-3	2-Pentylfuran	NGS	79	<0.90	1.6	n/a	n/a	n/a	n/a	0.90	n/a	J
S17T003722			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003722			110-00-9	Furan	NGS	100	<0.37	0.50	n/a	n/a	n/a	n/a	0.37	n/a	J
S17T003722			109-99-9	Tetrahydrofuran	NGS	97	<0.23	86	n/a	n/a	n/a	n/a	0.23	n/a	E

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-BL-EF
Customer Sample ID: 17-00253-3-SC1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003723			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003723			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003723			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003723			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003723			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003723			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003723			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003723			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003723			109-99-9	Tetrahydrofuran	NGS	97	<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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-BL-IN
Customer Sample ID: 17-00253-3-SC1-BL-IN

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples														
S17T003724		1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003724		1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003724		625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003724		3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003724		534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003724		3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003724		4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003724		110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003724		109-99-9	Tetrahydrofuran	NGS	97	<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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-EF-2
Customer Sample ID: 17-00253-3-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003726			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003726			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003726			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003726			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003726			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003726			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003726			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003726			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003726			109-99-9	Tetrahydrofuran	NGS	97	<0.23	0.30	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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-EF-3
Customer Sample ID: 17-00253-3-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003727			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003727			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003727			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003727			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003727			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003727			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003727			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003727			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003727			109-99-9	Tetrahydrofuran	NGS	97	<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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-EF-4
Customer Sample ID: 17-00253-3-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003728			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003728			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003728			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003728			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003728			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003728			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003728			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003728			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003728			109-99-9	Tetrahydrofuran	NGS	97	<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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-EF-5
Customer Sample ID: 17-00253-3-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003729			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003729			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003729			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003729			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003729			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003729			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003729			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003729			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003729			109-99-9	Tetrahydrofuran	NGS	97	<0.23	4.9	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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-EF-6
Customer Sample ID: 17-00253-3-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003730			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003730			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003730			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003730			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003730			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003730			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003730			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003730			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003730			109-99-9	Tetrahydrofuran	NGS	97	<0.23	10	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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-EF-7
Customer Sample ID: 17-00253-3-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003731			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003731			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003731			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003731			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003731			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003731			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003731			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003731			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003731			109-99-9	Tetrahydrofuran	NGS	97	<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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-EF-8
Customer Sample ID: 17-00253-3-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003732			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	0.31	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003732			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003732			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003732			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003732			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003732			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003732			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003732			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003732			109-99-9	Tetrahydrofuran	NGS	97	<0.23	15	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 E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-1
Customer Sample ID: 17-00253-3-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003733			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	1.8	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003733			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003733			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003733			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003733			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003733			3777-69-3	2-Pentylfuran	NGS	79	<0.90	2.1	n/a	n/a	n/a	n/a	0.90	n/a	J
S17T003733			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003733			110-00-9	Furan	NGS	100	<0.37	0.62	n/a	n/a	n/a	n/a	0.37	n/a	J
S17T003733			109-99-9	Tetrahydrofuran	NGS	97	<0.23	790	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-2
Customer Sample ID: 17-00253-3-SC1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003734			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	1.8	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003734			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003734			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003734			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003734			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003734			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003734			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003734			110-00-9	Furan	NGS	100	<0.37	0.70	n/a	n/a	n/a	n/a	0.37	n/a	J
S17T003734			109-99-9	Tetrahydrofuran	NGS	97	<0.23	780	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-3
Customer Sample ID: 17-00253-3-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003735			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	2.4	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003735			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003735			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003735			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003735			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003735			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003735			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003735			110-00-9	Furan	NGS	100	<0.37	0.61	n/a	n/a	n/a	n/a	0.37	n/a	J
S17T003735			109-99-9	Tetrahydrofuran	NGS	97	<0.23	760	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-4
Customer Sample ID: 17-00253-3-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003736			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	2.8	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003736			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003736			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003736			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003736			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003736			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003736			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003736			110-00-9	Furan	NGS	100	<0.37	0.74	n/a	n/a	n/a	n/a	0.37	n/a	J
S17T003736			109-99-9	Tetrahydrofuran	NGS	97	<0.23	790	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-5
Customer Sample ID: 17-00253-3-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003737			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	2.1	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003737			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003737			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003737			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003737			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003737			3777-69-3	2-Pentylfuran	NGS	79	<0.90	1.1	n/a	n/a	n/a	n/a	0.90	n/a	J
S17T003737			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003737			110-00-9	Furan	NGS	100	<0.37	0.59	n/a	n/a	n/a	n/a	0.37	n/a	J
S17T003737			109-99-9	Tetrahydrofuran	NGS	97	<0.23	710	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-6
Customer Sample ID: 17-00253-3-SC1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003738			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	1.5	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003738			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003738			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003738			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003738			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003738			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003738			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003738			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003738			109-99-9	Tetrahydrofuran	NGS	97	<0.23	390	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-7
Customer Sample ID: 17-00253-3-SC1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003739			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	0.34	n/a	n/a	n/a	n/a	0.23	n/a	J
S17T003739			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003739			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003739			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003739			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003739			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003739			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003739			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003739			109-99-9	Tetrahydrofuran	NGS	97	<0.23	430	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170338
SDG Number:
Customer Sample ID: 17-00253-3-SC1-IN-8
Customer Sample ID: 17-00253-3-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Furans in Vapor Samples															
S17T003740			1191-99-7	2,3-Dihydrofuran	NGS	69	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	U
S17T003740			1708-29-8	2,5-Dihydrofuran	NGS	95	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a	U
S17T003740			625-86-5	2,5-Dimethylfuran	NGS	75	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	U
S17T003740			3777-71-7	2-Heptylfuran	NGS	83	<0.86	<0.86	n/a	n/a	n/a	n/a	0.86	n/a	U
S17T003740			534-22-5	2-Methylfuran	NGS	85	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	n/a	U
S17T003740			3777-69-3	2-Pentylfuran	NGS	79	<0.90	<0.90	n/a	n/a	n/a	n/a	0.90	n/a	U
S17T003740			4229-91-8	2-Propylfuran	NGS	81	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	n/a	U
S17T003740			110-00-9	Furan	NGS	100	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a	U
S17T003740			109-99-9	Tetrahydrofuran	NGS	97	<0.23	340	n/a	n/a	n/a	n/a	0.23	n/a	EY

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit J - Estimated E - Outside Calibration Range Y - Comment

C.3.4 Amines

ANALYTICAL REPORT

Report Date: February 24, 2017

Robert (Buddy) Sosa
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20170343
Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003907** Collected: 02/10/2017
Lab ID: 1704850001 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003908** Collected: 02/10/2017
Lab ID: 1704850002 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003909** Collected: 02/10/2017
Lab ID: 1704850003 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003910** Collected: 02/10/2017
Lab ID: 1704850004 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **S17T003911** Collected: 02/10/2017
Lab ID: 1704850005 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **S17T003912** Collected: 02/10/2017
Lab ID: 1704850006 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **S17T003913** Collected: 02/10/2017
Lab ID: 1704850007 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003914** Collected: 02/10/2017
Lab ID: 1704850008 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003915** Collected: 02/10/2017
Lab ID: 1704850009 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003916** Collected: 02/10/2017
Lab ID: 1704850010 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003917** Collected: 02/10/2017
Lab ID: 1704850011 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003918** Collected: 02/10/2017
Lab ID: 1704850012 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **S17T003919** Collected: 02/10/2017
Lab ID: 1704850013 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **S17T003920** Collected: 02/10/2017
Lab ID: 1704850014 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **S17T003921** Collected: 02/10/2017
Lab ID: 1704850015 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **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: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003922** Collected: 02/10/2017
Lab ID: 1704850016 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003923** Collected: 02/10/2017
Lab ID: 1704850017 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003924** Collected: 02/10/2017
Lab ID: 1704850018 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003925** Collected: 02/10/2017
Lab ID: 1704850019 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003926** Collected: 02/10/2017
Lab ID: 1704850020 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/22/2017 (185797)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003927** Collected: 02/11/2017
Lab ID: 1704850021 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003928** Collected: 02/11/2017
Lab ID: 1704850022 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003929** Collected: 02/11/2017
Lab ID: 1704850023 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003930** Collected: 02/11/2017
Lab ID: 1704850024 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003931** Collected: 02/11/2017
Lab ID: 1704850025 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	**1.6**	NA	NA	0.10

Sample ID: **S17T003932** Collected: 02/11/2017
Lab ID: 1704850026 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	**0.43**	NA	NA	0.10
Methylamine	**0.88**	NA	NA	0.10

Sample ID: **S17T003933** Collected: 02/11/2017
Lab ID: 1704850027 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	**0.44**	NA	NA	0.10
Methylamine	**0.84**	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003934** Collected: 02/11/2017
Lab ID: 1704850028 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **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: **S17T003935** Collected: 02/11/2017
Lab ID: 1704850029 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **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	**0.39**	NA	NA	0.10
Methylamine	**0.29**	NA	NA	0.10

Sample ID: **S17T003936** Collected: 02/11/2017
Lab ID: 1704850030 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **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: **S17T003937** Collected: 02/11/2017
Lab ID: 1704850031 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **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	**0.44**	NA	NA	0.10
Methylamine	**0.55**	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003938** Collected: 02/11/2017
Lab ID: 1704850032 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	**0.24**	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003939** Collected: 02/11/2017
Lab ID: 1704850033 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	**0.15**	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003940** Collected: 02/11/2017
Lab ID: 1704850034 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003941** Collected: 02/11/2017
Lab ID: 1704850035 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	**0.12**	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003942** Collected: 02/11/2017
Lab ID: 1704850036 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003943** Collected: 02/11/2017
Lab ID: 1704850037 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003944** Collected: 02/11/2017
Lab ID: 1704850038 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: **S17T003945** Collected: 02/11/2017
Lab ID: 1704850039 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003946** Collected: 02/11/2017
Lab ID: 1704850040 Received: 02/17/2017

Method: **Amines-VOA Aliphatic VAA-1** Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Analyzed: 02/23/2017 (185867)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Comments

Workorder: **1704850**

Report was re-issued 2/28/17 to include info about which QC samples performed with this group.

Quality Control: **Amines-VOA Aliphatic VAA-1 - (HBN: 185797)**

QC pair 538130, 538131 and 538132 relate to samples 001-020.

Quality Control: **Amines-VOA Aliphatic VAA-1 - (HBN: 185867)**

QC pair 538273, 538274 and 538275 relate to samples 021-040.

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

Method	Analyst	Peer Review
Amines-VOA Aliphatic VAA-1	/S/ Thomas Bosch 02/24/2017 15:25	/S/ Christopher Winter 02/24/2017 15:37

Laboratory Contact Information

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

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: **34-1704850**
Client Project ID: S17T003907 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.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
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	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	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.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 Envrionmental 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: 1704850

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** IH Aliphatic Amines
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/13873 (HBN: 185797)
	Prepared By: NA	**Analyzed By:** Thomas Bosch

Blank

LMB: 538130
Analyzed: 02/22/2017 00:00
Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 538131
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: ug/sample

LCSD: 538132
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Dimethylamine	5.02	5.00	100	60.4	134.6	5.03	100	0.0996	0.0	20.0
Ethylamine	4.94	5.00	98.7	40.0	160.0	4.79	95.7	3.11	0.0	20.0
Methylamine	5.26	5.00	105	40.0	160.0	5.12	102	2.73	0.0	20.0

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

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Christopher Winter
02/24/2017 14:49	02/24/2017 15:34

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1704850

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** IH Aliphatic Amines
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/13888 (HBN: 185867)
	Prepared By: NA	**Analyzed By:** Thomas Bosch

Blank

LMB: 538273
Analyzed: 02/23/2017 00:00
Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 538274
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: ug/sample

LCSD: 538275
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Dimethylamine	4.99	5.00	99.8	60.4	134.6	5.17	103	3.50	0.0	20.0
Ethylamine	5.09	5.00	102	40.0	160.0	5.57	111	8.97	0.0	20.0
Methylamine	5.23	5.00	105	40.0	160.0	5.24	105	0.287	0.0	20.0

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

Analyst	Peer Review
/S/ Thomas Bosch 02/24/2017 15:25	/S/ Christopher Winter 02/24/2017 15:37

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1704850

A
N/ W

1704850

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20170343

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003907	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-BA-EF	N/A
	S17T003908	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-BA-IN	N/A
	S17T003909	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-BL-EF	N/A
	S17T003910	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-BL-IN	N/A
	S17T003911	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-1	N/A
	S17T003912	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-2	N/A
	S17T003913	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-3	N/A
	S17T003914	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-4	N/A
	S17T003915	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-5	N/A
	S17T003916	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-6	N/A

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

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 15

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/16/17 1300	RE Rogers	2/15/17 1300
RE Rogers	2/15/17 1400	FEDEX	

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Tom Brush	02/24/17 15:00

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170343
N/A		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. wts-033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003917	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-7	N/A
	S17T003918	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-EF-8	N/A
	S17T003919	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-1	N/A
	S17T003920	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-2	N/A
	S17T003921	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-3	N/A
	S17T003922	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-4	N/A
	S17T003923	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-5	N/A
	S17T003924	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-6	N/A
	S17T003925	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-7	N/A
	S17T003926	VA	02/10/17		XAD-7-NBD	AMINES 17-00252-4-SD1-IN-8	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 15

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 1300	RE Rogers [signature]	2/15/17 1300
RE Rogers [signature]	2/15/17 1400	FEDEX	
FedEx		Meredith Edwards Meredith Edwards	2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Tom Bush	02/24/17 15:00

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170343
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003927	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-BA-EF	N/A
	S17T003928	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-BA-IN	N/A
	S17T003929	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-BL-EF	N/A
	S17T003930	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-BL-IN	N/A
	S17T003931	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-1	N/A
	S17T003932	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-2	N/A
	S17T003933	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-3	N/A
	S17T003934	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-4	N/A
	S17T003935	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-5	N/A
	S17T003936	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-6	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 15

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	Dianne Turner		2/15/17 13:00	RE Rogers			2/15/17 1300
RE Rogers			2/15/17 1400	FEDEX			
							2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Tom Bosch	02/24/17 15:00

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

A-6003-962 (03/05)

1704850 - Page 17 of 18

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170343
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003937	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-7	N/A
	S17T003938	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-IN-8	N/A
	S17T003939	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-1	N/A
	S17T003940	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-2	N/A
	S17T003941	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-3	N/A
	S17T003942	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-4	N/A
	S17T003943	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-5	N/A
	S17T003944	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-6	N/A
	S17T003945	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-7	N/A
	S17T003946	VA	02/11/17		XAD-7-NBD	AMINES 17-00253-4-SC1-EF-8	N/A

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

SPECIAL INSTRUCTIONS Hold Time

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55502

RELEASE 15

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 13:00	RERogers [signature]	2/15/17 1300
RE Rogers [signature]	2/15/17 1400	FEDEX	
[signature]		[signature]	2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Tom Bosch	02/24/17 15:00

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

A-6003-962 (03/05)

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C.3.5 Acetonitrile

ANALYTICAL REPORT

Report Date: February 23, 2017

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20170341
Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003827** Collected: 02/10/2017
Lab ID: 1704845001 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003828** Collected: 02/10/2017
Lab ID: 1704845002 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003829** Collected: 02/10/2017
Lab ID: 1704845003 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003830** Collected: 02/10/2017
Lab ID: 1704845004 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003831** Collected: 02/10/2017
Lab ID: 1704845005 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003832** Collected: 02/10/2017
Lab ID: 1704845006 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003833** Collected: 02/10/2017
Lab ID: 1704845007 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003834** Collected: 02/10/2017
Lab ID: 1704845008 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003835** Collected: 02/10/2017
Lab ID: 1704845009 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003836** Collected: 02/10/2017
Lab ID: 1704845010 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003837** Collected: 02/10/2017
Lab ID: 1704845011 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003838** Collected: 02/10/2017
Lab ID: 1704845012 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003839** Collected: 02/10/2017
Lab ID: 1704845013 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003840** Collected: 02/10/2017
Lab ID: 1704845014 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003841** Collected: 02/10/2017
Lab ID: 1704845015 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003842** Collected: 02/10/2017
Lab ID: 1704845016 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003843** Collected: 02/10/2017
Lab ID: 1704845017 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003844** Collected: 02/10/2017
Lab ID: 1704845018 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003845** Collected: 02/10/2017
Lab ID: 1704845019 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003846** Collected: 02/10/2017
Lab ID: 1704845020 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003847** Collected: 02/11/2017
Lab ID: 1704845021 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003848** Collected: 02/11/2017
Lab ID: 1704845022 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003849** Collected: 02/11/2017
Lab ID: 1704845023 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: 34-1704845
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003850** Collected: 02/11/2017
Lab ID: 1704845024 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003851** Collected: 02/11/2017
Lab ID: 1704845025 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003852** Collected: 02/11/2017
Lab ID: 1704845026 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003853** Collected: 02/11/2017
Lab ID: 1704845027 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003854** Collected: 02/11/2017
Lab ID: 1704845028 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003855**				Collected: 02/11/2017
Lab ID: 1704845029				Received: 02/17/2017
Method: **NIOSH 1606**		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 02/21/2017
		Sampling Parameter: **Air Volume Not Provided**		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003856**				Collected: 02/11/2017
Lab ID: 1704845030				Received: 02/17/2017
Method: **NIOSH 1606**		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 02/21/2017
		Sampling Parameter: **Air Volume Not Provided**		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003857**				Collected: 02/11/2017
Lab ID: 1704845031				Received: 02/17/2017
Method: **NIOSH 1606**		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 02/21/2017
		Sampling Parameter: **Air Volume Not Provided**		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003858**				Collected: 02/11/2017
Lab ID: 1704845032				Received: 02/17/2017
Method: **NIOSH 1606**		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 02/21/2017
		Sampling Parameter: **Air Volume Not Provided**		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003859**				Collected: 02/11/2017
Lab ID: 1704845033				Received: 02/17/2017
Method: **NIOSH 1606**		Media: SKC 226-09, Charcoal Tube 400/200mg		Analyzed: 02/21/2017
		Sampling Parameter: **Air Volume Not Provided**		
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003860** Collected: 02/11/2017
Lab ID: 1704845034 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003861** Collected: 02/11/2017
Lab ID: 1704845035 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003862** Collected: 02/11/2017
Lab ID: 1704845036 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003863** Collected: 02/11/2017
Lab ID: 1704845037 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003864** Collected: 02/11/2017
Lab ID: 1704845038 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003865** Collected: 02/11/2017
Lab ID: 1704845039 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Sample ID: **S17T003866** Collected: 02/11/2017
Lab ID: 1704845040 Received: 02/17/2017

Method: **NIOSH 1606** Media: SKC 226-09, Charcoal Tube 400/200mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA	NA	0.010

Comments

Quality Control: **NIOSH 1606 - (HBN: 185608)**

QC samples 537720, 537721, and 537722 are associated with samples 1704845001 thru 1704845020, and QC samples 537723, 537724, and 537725 are associated with samples 1704845021 thru 1704845040.

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

Method	Analyst	Peer Review
NIOSH 1606	/S/ Young Hee Yoon 02/23/2017 13:19	/S/ Lyle Edwards 02/23/2017 13:50

Laboratory Contact Information

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

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: **34-1704845**
Client Project ID: S17T003827 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.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
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	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	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.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 Envrionmental 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: 1704845

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** IH GC-FID QC
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/8181 (HBN: 185608)
	Prepared By: NA	**Analyzed By:** Young Hee Yoon

Blank

MB: 537720
Analyzed: 02/20/2017 00:00
Units: mg/sample

Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

MB: 537723
Analyzed: 02/20/2017 00:00
Units: mg/sample

Analyte	Result	MDL	RL
Acetonitrile	ND	NA	0.0100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 537721
Analyzed: 02/20/2017 00:00
Dilution: 1
Units: mg/sample

LCSD: 537722
Analyzed: 02/20/2017 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	%Rec	QC Limits		LCSD Result	%Rec	RPD	QC Limits	
Acetonitrile	0.293	0.281	104	86.6	115.3	0.254	90.5	14.3	0.0	20.0

LCS: 537724
Analyzed: 02/20/2017 00:00
Dilution: 1
Units: mg/sample

LCSD: 537725
Analyzed: 02/20/2017 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	%Rec	QC Limits		LCSD Result	%Rec	RPD	QC Limits	
Acetonitrile	0.355	0.343	103	86.6	115.3	0.372	108	4.68	0.0	20.0

Comments

QC samples 537720, 537721, and 537722 are associated with samples 1704845001 thru 1704845020, and QC samples 537723, 537724, and 537725 are associated with samples 1704845021 thru 1704845040.

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

Analyst	Peer Review
/S/ Young Hee Yoon	/S/ Lyle Edwards
02/23/2017 13:19	02/23/2017 13:50

Symbols and Definitions

- *- Analyte above reporting limit or outside of control limits
- ▲- Sample result is greater than 4 times the spike added
- ◓- Sample and Matrix Duplicate less than 5 times the reporting limit
- ●- Result is above the calibration range
- #- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1704845

As N/A

1704845

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20170341

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033	Temp. ON Ice
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003827	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-BA-EF	N/A
	S17T003828	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-BA-IN	N/A
	S17T003829	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-BL-EF	N/A
	S17T003830	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-BL-IN	N/A
	S17T003831	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-1	N/A
	S17T003832	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-2	N/A
	S17T003833	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-3	N/A
	S17T003834	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-4	N/A
	S17T003835	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-5	N/A
	S17T003836	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-6	N/A

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

SPECIAL INSTRUCTIONS: Hold Time

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 15
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner / Dianne Turner	2/15/17 1300	Julie Gadshaw / Julie Gadshaw	2/15/17 1300
Julie Gadshaw / Julie Gadshaw	2/15/17 1400	FEDEX	
FEDEX			

Matrix*

S = Soil	DL = Drum Liquids		
SE = Sediment	T = Tissue		
SO = Solid	WI = Wipe		
SL = Sludge	L = Liquid		
W = Water	V = Vegetation		
O = Oil	VA = Vapor		
A = Air	X = Other		
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Feb 21, 2017 1200 PM Date/Time

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)

1704845- Page 12 of 15

C.297

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20170341
		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-033	Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003837	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-7	N/A
	S17T003838	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-EF-8	N/A
	S17T003839	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-1	N/A
	S17T003840	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-2	N/A
	S17T003841	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-3	N/A
	S17T003842	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-4	N/A
	S17T003843	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-5	N/A
	S17T003844	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-6	N/A
	S17T003845	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-7	N/A
	S17T003846	VA	2/10/17		CHARCOAL TUBE	Acetonitrile 17-00252-5-SD1-IN-8	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 15
Reference Contract # 55502

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner	2/15/17 13:00	Julie Gadshaw	2/15/17 1300
Julie Gadshaw	2/15/17 1400	FEDEX	

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, (used in process)) Disposed By: Feb 21, 2017 1:20 pm — Date/Time

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170341
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WFS-033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003847	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-BA-EF	N/A
	S17T003848	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-BA-IN	N/A
	S17T003849	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-BL-EF	N/A
	S17T003850	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-BL-IN	N/A
	S17T003851	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-1	N/A
	S17T003852	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-2	N/A
	S17T003853	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-3	N/A
	S17T003854	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-4	N/A
	S17T003855	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-5	N/A
	S17T003856	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-6	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 15
Reference Contract # 55502

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner / Dianne Turner	2/15/17 1300	Julie Gadsden / Julie Gadsden	2/15/17 1100
Julie Gadsden / Julie Gadsden	2/15/17 1400	FEDEX	
[illegible]		[illegible]	2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Young Hee Yom Feb 21, 2017 1:00pm — Date/Time

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

A-6003-962 (03/05)

Assembler N/A	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**	C.O.C. No. 20170341 Page 4 of 4
Collector JONES	Contact/Requestor CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-02 FAX 372-1878
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 203006/CB20
Project Title 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ice Chest No. W75-033 Temp. ON ICE
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003857	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-7	N/A
	S17T003858	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-EF-8	N/A
	S17T003859	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-1	N/A
	S17T003860	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-2	N/A
	S17T003861	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-3	N/A
	S17T003862	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-4	N/A
	S17T003863	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-5	N/A
	S17T003864	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-6	N/A
	S17T003865	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-7	N/A
	S17T003866	VA	2/11/17		CHARCOAL TUBE	Acetonitrile 17-00253-5-SC1-IN-8	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email
15
Reference Contract # 55502

Hold Time

Relinquished By Print / Sign	Date/Time	Received By Print / Sign	Date/Time
Dianne Turner Dianne Turner	2/15/17 1300	Julie Gadstone Julie Gadstone	2/15/17 1:00
Relinquished By Julie Gadstone Julie Gadstone	2/15/17 1400	Received By FEDEX	Date/Time
Relinquished By Fedex	Date/Time	Received By	Date/Time 2/17/17 1100
Relinquished By	Date/Time	Received By	Date/Time

Matrix*

S = Soil	DL = Drum Liquids		
SE = Sediment	T = Tissue		
SO = Solid	WI = Wipe		
SL = Sludge	L = Liquid		
W = Water	V = Vegetation		
O = Oil	VA = Vapor		
A = Air	X = Other		
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Yong Han Yong Han	Feb 21, 2017 1:00 PM

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

A-6003-962 (03/05)

C.3.6 Mercury

FINAL REPORT ON MERCURY VAPOR TUBES FOR CARTRIDGE EVALUATION February 2017

Document No.: 20170316 Rev. 0

Amanda M. Black
WAI Hanford Laboratory

Date Published
March 9, 2017

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ACCREDITED LABORATORY
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ISO/IEC 17025:2005
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Prepared for:

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1955 Jadwin Ave, Suite 330
Richland, WA 99354
509-373-3240

March 9, 2017
Amanda M. Black, WHL Project Coordinator

NARRATIVE

FINAL REPORT ON MERCURY VAPOR TUBES FOR CARTRIDGE EVALUATION FEBRUARY 2017

This final report presents the results of forty mercury vapor tubes received at the 222-S Laboratory on February 13, 2017, in good condition and with adequate paperwork. The mercury vapor tubes were logged into sample delivery group 20170316.

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.

The Relative Percent Difference (RPD) between the Laboratory Control Standard (LCS) and Laboratory Control Standard Duplicate (LCS DUP) was outside the acceptance criteria of 9% for ten of the samples in this group. A "c" flag was applied to the associated samples (see Attachment 1). The LCS and LCS DUP were within the percent recovery acceptance criteria of 81-115% at 94% and 106% respectively. All other 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).

Sample tube lot numbers for this group included 8679, 9473, 10187 and 10825.

The mercury detected in sixteen of the total samples in this group exceeded the reporting limit of 0.05 µg/sample. 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).

Attachment 1

DATA SUMMARY REPORT

DATA SUMMARY REPORT FOR SAMPLE GROUP 20170316

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-00252-6-SD1-BA-EF	Total	S17T003500	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BA-EF	Resin	S17T003501	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BA-EF	Glass Wool	S17T003502	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BA-IN	Total	S17T003503	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BA-IN	Resin	S17T003504	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BA-IN	Glass Wool	S17T003505	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BL-EF	Total	S17T003514	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BL-EF	Resin	S17T003515	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BL-EF	Glass Wool	S17T003516	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BL-IN	Total	S17T003517	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BL-IN	Resin	S17T003527	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-BL-IN	Glass Wool	S17T003528	Mercury	µg/sample	89.1	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-1	Total	S17T003531	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-1	Resin	S17T003533	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-1	Glass Wool	S17T003534	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-2	Total	S17T003537	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-2	Resin	S17T003538	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-2	Glass Wool	S17T003539	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-3	Total	S17T003543	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-3	Resin	S17T003545	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-3	Glass Wool	S17T003546	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-4	Total	S17T003550	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-4	Resin	S17T003569	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-4	Glass Wool	S17T003570	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-5	Total	S17T003577	Mercury	µg/sample	n/a	<0.0500	0.338	0.0500	
17-00252-6-SD1-EF-5	Resin	S17T003580	Mercury	µg/sample	86.0	<0.0500	0.333	0.0500	
17-00252-6-SD1-EF-5	Glass Wool	S17T003581	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-6	Total	S17T003583	Mercury	µg/sample	n/a	<0.0500	0.334	0.0500	
17-00252-6-SD1-EF-6	Resin	S17T003599	Mercury	µg/sample	86.0	<0.0500	0.329	0.0500	
17-00252-6-SD1-EF-6	Glass Wool	S17T003600	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-7	Total	S17T003603	Mercury	µg/sample	n/a	<0.0500	0.344	0.0500	
17-00252-6-SD1-EF-7	Resin	S17T003604	Mercury	µg/sample	86.0	<0.0500	0.339	0.0500	
17-00252-6-SD1-EF-7	Glass Wool	S17T003605	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-EF-8	Total	S17T003606	Mercury	µg/sample	n/a	<0.0500	0.314	0.0500	
17-00252-6-SD1-EF-8	Resin	S17T003607	Mercury	µg/sample	86.0	<0.0500	0.309	0.0500	
17-00252-6-SD1-EF-8	Glass Wool	S17T003608	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-1	Total	S17T003609	Mercury	µg/sample	n/a	<0.0500	0.302	0.0500	
17-00252-6-SD1-IN-1	Resin	S17T003610	Mercury	µg/sample	86.0	<0.0500	0.297	0.0500	
17-00252-6-SD1-IN-1	Glass Wool	S17T003611	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-2	Total	S17T003612	Mercury	µg/sample	n/a	<0.0500	0.315	0.0500	
17-00252-6-SD1-IN-2	Resin	S17T003613	Mercury	µg/sample	86.0	<0.0500	0.310	0.0500	
17-00252-6-SD1-IN-2	Glass Wool	S17T003614	Mercury	µg/sample	86.0	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-3	Total	S17T003615	Mercury	µg/sample	n/a	<0.0500	0.320	0.0500	
17-00252-6-SD1-IN-3	Resin	S17T003616	Mercury	µg/sample	90.8	<0.0500	0.314	0.0500	
17-00252-6-SD1-IN-3	Glass Wool	S17T003617	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-4	Total	S17T003618	Mercury	µg/sample	n/a	<0.0500	0.336	0.0500	
17-00252-6-SD1-IN-4	Resin	S17T003619	Mercury	µg/sample	90.8	<0.0500	0.331	0.0500	
17-00252-6-SD1-IN-4	Glass Wool	S17T003620	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-5	Total	S17T003770	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-5	Resin	S17T003782	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	

DATA SUMMARY REPORT FOR SAMPLE GROUP 20170316

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-00252-6-SD1-IN-5	Glass Wool	S17T003783	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-6	Total	S17T003784	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-6	Resin	S17T003785	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-6	Glass Wool	S17T003786	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-7	Total	S17T004042	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-7	Resin	S17T004043	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-7	Glass Wool	S17T004044	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00252-6-SD1-IN-8	Total	S17T004045	Mercury	µg/sample	n/a	<0.0500	0.210	0.0500	
17-00252-6-SD1-IN-8	Resin	S17T004046	Mercury	µg/sample	90.8	<0.0500	0.202	0.0500	
17-00252-6-SD1-IN-8	Glass Wool	S17T004047	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BA-EF	Total	S17T004195	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BA-EF	Resin	S17T004196	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BA-EF	Glass Wool	S17T004197	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BA-IN	Total	S17T004198	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BA-IN	Resin	S17T004199	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BA-IN	Glass Wool	S17T004200	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BL-EF	Total	S17T004201	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BL-EF	Resin	S17T004202	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BL-EF	Glass Wool	S17T004203	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BL-IN	Total	S17T004204	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BL-IN	Resin	S17T004205	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-BL-IN	Glass Wool	S17T004206	Mercury	µg/sample	90.8	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-EF-1	Total	S17T004207	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-1	Resin	S17T004208	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-1	Glass Wool	S17T004209	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-2	Total	S17T004210	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-2	Resin	S17T004211	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-2	Glass Wool	S17T004212	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-3	Total	S17T004213	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-3	Resin	S17T004214	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-3	Glass Wool	S17T004215	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-4	Total	S17T004216	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-4	Resin	S17T004217	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-4	Glass Wool	S17T004218	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-5	Total	S17T004219	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-5	Resin	S17T004220	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-5	Glass Wool	S17T004221	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-6	Total	S17T004222	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-6	Resin	S17T004223	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-6	Glass Wool	S17T004224	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-7	Total	S17T004225	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-7	Resin	S17T004226	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-7	Glass Wool	S17T004227	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-8	Total	S17T004228	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-8	Resin	S17T004229	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-EF-8	Glass Wool	S17T004230	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-IN-1	Total	S17T004231	Mercury	µg/sample	n/a	<0.0500	0.396	0.0500	c
17-00253-6-SC1-IN-1	Resin	S17T004232	Mercury	µg/sample	94.2	<0.0500	0.391	0.0500	c
17-00253-6-SC1-IN-1	Glass Wool	S17T004233	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-IN-2	Total	S17T004234	Mercury	µg/sample	n/a	<0.0500	0.392	0.0500	c

DATA SUMMARY REPORT FOR SAMPLE GROUP 20170316

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit	Qualifier
17-00253-6-SC1-IN-2	Resin	S17T004235	Mercury	µg/sample	94.2	<0.0500	0.385	0.0500	c
17-00253-6-SC1-IN-2	Glass Wool	S17T004236	Mercury	µg/sample	94.2	<0.0500	<0.0500	0.0500	c
17-00253-6-SC1-IN-3	Total	S17T004237	Mercury	µg/sample	n/a	<0.0500	0.375	0.0500	
17-00253-6-SC1-IN-3	Resin	S17T004238	Mercury	µg/sample	94.4	<0.0500	0.370	0.0500	
17-00253-6-SC1-IN-3	Glass Wool	S17T004239	Mercury	µg/sample	94.4	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-IN-4	Total	S17T004240	Mercury	µg/sample	n/a	<0.0500	0.370	0.0500	
17-00253-6-SC1-IN-4	Resin	S17T004241	Mercury	µg/sample	94.4	<0.0500	0.365	0.0500	
17-00253-6-SC1-IN-4	Glass Wool	S17T004242	Mercury	µg/sample	94.4	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-IN-5	Total	S17T004243	Mercury	µg/sample	n/a	<0.0500	0.314	0.0500	
17-00253-6-SC1-IN-5	Resin	S17T004244	Mercury	µg/sample	94.4	<0.0500	0.309	0.0500	
17-00253-6-SC1-IN-5	Glass Wool	S17T004245	Mercury	µg/sample	94.4	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-IN-6	Total	S17T004246	Mercury	µg/sample	n/a	<0.0500	0.274	0.0500	
17-00253-6-SC1-IN-6	Resin	S17T004247	Mercury	µg/sample	94.4	<0.0500	0.269	0.0500	
17-00253-6-SC1-IN-6	Glass Wool	S17T004248	Mercury	µg/sample	94.4	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-IN-7	Total	S17T004249	Mercury	µg/sample	n/a	<0.0500	0.229	0.0500	
17-00253-6-SC1-IN-7	Resin	S17T004250	Mercury	µg/sample	87.1	<0.0500	0.224	0.0500	
17-00253-6-SC1-IN-7	Glass Wool	S17T004251	Mercury	µg/sample	87.1	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-IN-8	Total	S17T004252	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-IN-8	Resin	S17T004253	Mercury	µg/sample	87.1	<0.0500	<0.0500	0.0500	
17-00253-6-SC1-IN-8	Glass Wool	S17T004254	Mercury	µg/sample	87.1	<0.0500	<0.0500	0.0500	

Attachment 2

ANALYSIS DATE REPORT

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20170316

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T003501	17-00252-6-SD1-BA-EF	Mercury	02/15/2017 14:20	02/16/2017 10:16
S17T003502	17-00252-6-SD1-BA-EF	Mercury	02/15/2017 14:20	02/16/2017 10:18
S17T003504	17-00252-6-SD1-BA-IN	Mercury	02/15/2017 14:20	02/16/2017 10:19
S17T003505	17-00252-6-SD1-BA-IN	Mercury	02/15/2017 14:20	02/16/2017 10:21
S17T003515	17-00252-6-SD1-BL-EF	Mercury	02/15/2017 14:20	02/16/2017 10:22
S17T003516	17-00252-6-SD1-BL-EF	Mercury	02/15/2017 14:20	02/16/2017 10:24
S17T003527	17-00252-6-SD1-BL-IN	Mercury	02/15/2017 14:20	02/16/2017 10:26
S17T003528	17-00252-6-SD1-BL-IN	Mercury	02/15/2017 14:20	02/16/2017 10:27
S17T003533	17-00252-6-SD1-EF-1	Mercury	02/15/2017 15:05	02/16/2017 11:25
S17T003534	17-00252-6-SD1-EF-1	Mercury	02/15/2017 15:05	02/16/2017 11:27
S17T003538	17-00252-6-SD1-EF-2	Mercury	02/15/2017 15:05	02/16/2017 11:28
S17T003539	17-00252-6-SD1-EF-2	Mercury	02/15/2017 15:05	02/16/2017 11:30
S17T003545	17-00252-6-SD1-EF-3	Mercury	02/15/2017 15:05	02/16/2017 11:31
S17T003546	17-00252-6-SD1-EF-3	Mercury	02/15/2017 15:05	02/16/2017 11:33
S17T003569	17-00252-6-SD1-EF-4	Mercury	02/15/2017 15:05	02/16/2017 11:38
S17T003570	17-00252-6-SD1-EF-4	Mercury	02/15/2017 15:05	02/16/2017 11:40
S17T003580	17-00252-6-SD1-EF-5	Mercury	02/15/2017 15:05	02/16/2017 11:42
S17T003581	17-00252-6-SD1-EF-5	Mercury	02/15/2017 15:05	02/16/2017 11:44
S17T003599	17-00252-6-SD1-EF-6	Mercury	02/15/2017 15:05	02/16/2017 11:45
S17T003600	17-00252-6-SD1-EF-6	Mercury	02/15/2017 15:05	02/16/2017 11:47
S17T003604	17-00252-6-SD1-EF-7	Mercury	02/15/2017 15:05	02/16/2017 11:49
S17T003605	17-00252-6-SD1-EF-7	Mercury	02/15/2017 15:05	02/16/2017 11:50
S17T003607	17-00252-6-SD1-EF-8	Mercury	02/15/2017 15:05	02/16/2017 11:52
S17T003608	17-00252-6-SD1-EF-8	Mercury	02/15/2017 15:05	02/16/2017 11:54
S17T003610	17-00252-6-SD1-IN-1	Mercury	02/15/2017 15:05	02/16/2017 11:59
S17T003611	17-00252-6-SD1-IN-1	Mercury	02/15/2017 15:05	02/16/2017 12:01
S17T003613	17-00252-6-SD1-IN-2	Mercury	02/15/2017 15:05	02/16/2017 12:03
S17T003614	17-00252-6-SD1-IN-2	Mercury	02/15/2017 15:05	02/16/2017 12:04
S17T003616	17-00252-6-SD1-IN-3	Mercury	02/15/2017 15:05	02/16/2017 12:11
S17T003617	17-00252-6-SD1-IN-3	Mercury	02/15/2017 15:05	02/16/2017 12:13
S17T003619	17-00252-6-SD1-IN-4	Mercury	02/15/2017 15:05	02/16/2017 12:18
S17T003620	17-00252-6-SD1-IN-4	Mercury	02/15/2017 15:05	02/16/2017 12:20
S17T003782	17-00252-6-SD1-IN-5	Mercury	02/15/2017 15:05	02/16/2017 12:22
S17T003783	17-00252-6-SD1-IN-5	Mercury	02/15/2017 15:05	02/16/2017 12:24
S17T003785	17-00252-6-SD1-IN-6	Mercury	02/15/2017 15:05	02/16/2017 12:25
S17T003786	17-00252-6-SD1-IN-6	Mercury	02/15/2017 15:05	02/16/2017 12:27
S17T004043	17-00252-6-SD1-IN-7	Mercury	02/15/2017 15:05	02/16/2017 12:29
S17T004044	17-00252-6-SD1-IN-7	Mercury	02/15/2017 15:05	02/16/2017 12:31
S17T004046	17-00252-6-SD1-IN-8	Mercury	02/15/2017 15:05	02/16/2017 12:33
S17T004047	17-00252-6-SD1-IN-8	Mercury	02/15/2017 15:05	02/16/2017 12:35
S17T004196	17-00253-6-SC1-BA-EF	Mercury	02/15/2017 15:05	02/16/2017 12:40
S17T004197	17-00253-6-SC1-BA-EF	Mercury	02/15/2017 15:05	02/16/2017 12:41
S17T004199	17-00253-6-SC1-BA-IN	Mercury	02/15/2017 15:05	02/16/2017 12:43
S17T004200	17-00253-6-SC1-BA-IN	Mercury	02/15/2017 15:05	02/16/2017 12:45
S17T004202	17-00253-6-SC1-BL-EF	Mercury	02/15/2017 15:05	02/16/2017 12:46
S17T004203	17-00253-6-SC1-BL-EF	Mercury	02/15/2017 15:05	02/16/2017 12:48
S17T004205	17-00253-6-SC1-BL-IN	Mercury	02/15/2017 15:05	02/16/2017 12:50

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20170316

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T004206	17-00253-6-SC1-BL-IN	Mercury	02/15/2017 15:05	02/16/2017 12:51
S17T004208	17-00253-6-SC1-EF-1	Mercury	02/21/2017 08:00	02/21/2017 13:36
S17T004209	17-00253-6-SC1-EF-1	Mercury	02/21/2017 08:00	02/21/2017 13:38
S17T004211	17-00253-6-SC1-EF-2	Mercury	02/21/2017 08:00	02/21/2017 13:39
S17T004212	17-00253-6-SC1-EF-2	Mercury	02/21/2017 08:00	02/21/2017 13:41
S17T004214	17-00253-6-SC1-EF-3	Mercury	02/21/2017 08:00	02/21/2017 13:42
S17T004215	17-00253-6-SC1-EF-3	Mercury	02/21/2017 08:00	02/21/2017 13:44
S17T004217	17-00253-6-SC1-EF-4	Mercury	02/21/2017 08:00	02/21/2017 13:49
S17T004218	17-00253-6-SC1-EF-4	Mercury	02/21/2017 08:00	02/21/2017 13:51
S17T004220	17-00253-6-SC1-EF-5	Mercury	02/21/2017 08:00	02/21/2017 13:53
S17T004221	17-00253-6-SC1-EF-5	Mercury	02/21/2017 08:00	02/21/2017 13:55
S17T004223	17-00253-6-SC1-EF-6	Mercury	02/21/2017 08:00	02/21/2017 13:56
S17T004224	17-00253-6-SC1-EF-6	Mercury	02/21/2017 08:00	02/21/2017 13:58
S17T004226	17-00253-6-SC1-EF-7	Mercury	02/21/2017 08:00	02/21/2017 14:00
S17T004227	17-00253-6-SC1-EF-7	Mercury	02/21/2017 08:00	02/21/2017 14:02
S17T004229	17-00253-6-SC1-EF-8	Mercury	02/21/2017 08:00	02/21/2017 14:03
S17T004230	17-00253-6-SC1-EF-8	Mercury	02/21/2017 08:00	02/21/2017 14:05
S17T004232	17-00253-6-SC1-IN-1	Mercury	02/21/2017 08:00	02/21/2017 14:10
S17T004233	17-00253-6-SC1-IN-1	Mercury	02/21/2017 08:00	02/21/2017 14:11
S17T004235	17-00253-6-SC1-IN-2	Mercury	02/21/2017 08:00	02/21/2017 14:13
S17T004236	17-00253-6-SC1-IN-2	Mercury	02/21/2017 08:00	02/21/2017 14:15
S17T004238	17-00253-6-SC1-IN-3	Mercury	02/21/2017 08:00	02/21/2017 14:22
S17T004239	17-00253-6-SC1-IN-3	Mercury	02/21/2017 08:00	02/21/2017 14:24
S17T004241	17-00253-6-SC1-IN-4	Mercury	02/21/2017 08:00	02/21/2017 14:30
S17T004242	17-00253-6-SC1-IN-4	Mercury	02/21/2017 08:00	02/21/2017 14:31
S17T004244	17-00253-6-SC1-IN-5	Mercury	02/21/2017 08:00	02/21/2017 14:33
S17T004245	17-00253-6-SC1-IN-5	Mercury	02/21/2017 08:00	02/21/2017 14:35
S17T004247	17-00253-6-SC1-IN-6	Mercury	02/21/2017 08:00	02/21/2017 14:37
S17T004248	17-00253-6-SC1-IN-6	Mercury	02/21/2017 08:00	02/21/2017 14:39
S17T004250	17-00253-6-SC1-IN-7	Mercury	02/22/2017 08:50	02/22/2017 11:08
S17T004251	17-00253-6-SC1-IN-7	Mercury	02/22/2017 08:50	02/22/2017 11:10
S17T004253	17-00253-6-SC1-IN-8	Mercury	02/22/2017 08:50	02/22/2017 11:12
S17T004254	17-00253-6-SC1-IN-8	Mercury	02/22/2017 08:50	02/22/2017 11:13

Attachment 3

RECEIPT PAPERWORK

222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST 480	ATS-LO-090-101 Rev DH-0

Date Samples Received: 2-13-17 Total Number of Samples: 440 (480) Group #: 20170316

Sample Custodian: Leslie DIAZ IH Technician: 2-13-17

Sample Custodian to Complete:

Action	Yes	No	N/A	Comments
RSR provided?			✓	
Verify GKI is complete			✓	☐ In Project File
Received from an alpha facility?		✓		☐ Contact PC for approval to release
Check that outer custody seal is intact, if present			✓	
Record cooler temperature in centigrade, as appropriate	✓			☐ Check if no cooler and/or no ice 3
Samples are intact and in good condition	✓			If No, provide comments below
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	✓			
• Date and time of sampling	✓			
• Sampling location or origin	✓			
• Container type, size, and number	✓			
• Preservatives (if used) noted on the COC/RSA and sample bottles			✓	
• Analysis request is clear	✓			
• Signature of persons relinquishing and receiving samples	✓			
• Date and/or time of sample custody exchange	✓			
Verify that sample numbers on containers match the COC and/or RSA	✓			
Samples stored properly (e.g., refrigeration)	✓			

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? Y PC/SC Initials LJ Date 2-13-17

If No, comment on communication and resolution:

Acetonitrile - 40

Number of IH Samples Received:

Aldehyde Screen:	40	Amines:	40	Ammonia:	40	Aromatic HC:		Asbestos:	
Beryllium:		Be-Bulk:		Be-Filter:		Be-Wipe		1,3-Butadiene:	80
Formaldehyde:		Furans:	40	Mercury:	40	Methanol:		Nitrosamines:	40
Nitrous Oxide:		Pyridines:	40	SVOA:	40	VOA:	40	Other-IH:	

A-6005-302 (REV 4)

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 02/10/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00252 - Cartridge Testing Friday-Sat	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T003500	17-00252-6-SD1-BA-EF / Hydrar (SKC 226-17-1A) S17T003501 S17T003502	Hg-Elemental Source
S17T003503	17-00252-6-SD1-BA-IN / Hydrar (SKC 226-17-1A) S17T003504 S17T003505	Hg-Elemental Source
S17T003514	17-00252-6-SD1-BL-EF / Hydrar (SKC 226-17-1A) S17T003515 S17T003516	Hg-Elemental Source
S17T003517	17-00252-6-SD1-BL-IN / Hydrar (SKC 226-17-1A) S17T003527 S17T003528	Hg-Elemental Source
S17T003531	17-00252-6-SD1-EF-1 / Hydrar (SKC 226-17-1A) S17T003533 S17T003534	Hg-Elemental Source
S17T003537	17-00252-6-SD1-EF-2 / Hydrar (SKC 226-17-1A) S17T003538 S17T003539	Hg-Elemental Source
S17T003543	17-00252-6-SD1-EF-3 / Hydrar (SKC 226-17-1A) S17T003545 S17T003546	Hg-Elemental Source
S17T003550	17-00252-6-SD1-EF-4 / Hydrar (SKC 226-17-1A) S17T003569 S17T003570	Hg-Elemental Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704HV H104	02-11-17	0626
Retrieved from Storage:	Brett Garner	BRETT GARNER		2-13-17	0837

	Signature	Printed Name	Date	Time
Relinquished By:	Brett Garner	BRETT GARNER	2-13-17	1130
Received By:	Teresa Forrester	TERESA FORRESTER	2-13-17	1130
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:** 02/10/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00252 - Cartridge Testing Friday-Sat	
Contact Name: Jonas, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T003577	17-00252-6-SD1-EF-5 / Hydrar (SKC 226-17-1A) S17T003580 [redacted] S17T003581	Hg-Elemental Source
S17T003583	17-00252-6-SD1-EF-6 / Hydrar (SKC 226-17-1A) S17T003599 [redacted] S17T003600	Hg-Elemental Source
S17T003603	17-00252-6-SD1-EF-7 / Hydrar (SKC 226-17-1A) S17T003604 [redacted] S17T003605	Hg-Elemental Source
S17T003606	17-00252-6-SD1-EF-8 / Hydrar (SKC 226-17-1A) S17T003607 [redacted] S17T003608	Hg-Elemental Source
S17T003609	17-00252-6-SD1-IN-1 / Hydrar (SKC 226-17-1A) S17T003610 [redacted] S17T003611	Hg-Elemental Source
S17T003612	17-00252-6-SD1-IN-2 / Hydrar (SKC 226-17-1A) S17T003613 [redacted] S17T003614	Hg-Elemental Source
S17T003615	17-00252-6-SD1-IN-3 / Hydrar (SKC 226-17-1A) S17T003616 [redacted] S17T003617	Hg-Elemental Source
S17T003618	17-00252-6-SD1-IN-4 / Hydrar (SKC 226-17-1A) S17T003619 [redacted] S17T003620	Hg-Elemental Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704 HV H104	02-11-17	0626
Retrieved from Storage:	[signature]	BRETT GARNER		2-13-17	0837

	Signature	Printed Name	Date	Time
Relinquished By:	[signature]	BRETT GARNER	2-13-17	1130
Received By:	[signature]	TERESA FORRESTER	2-13-17	1130
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:** 02/10/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00252 - Cartridge Testing Friday-Sat	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T003770	17-00252-6-SD1-IN-5 / Hydrar (SKC 226-17-1A) S17T003782 S17T003783	Hg-Elemental Source
S17T003784	17-00252-6-SD1-IN-6 / Hydrar (SKC 226-17-1A) S17T003785 S17T003786	Hg-Elemental Source
S17T004042	17-00252-6-SD1-IN-7 / Hydrar (SKC 226-17-1A) S17T004043 S17T004044	Hg-Elemental Source
S17T004045	17-00252-6-SD1-IN-8 / Hydrar (SKC 226-17-1A) S17T004046 S17T004047	Hg-Elemental Source
	17-00252-7-SD1-BA-EF / CISA (SKC 226-29)	NH3 Source
	17-00252-7-SD1-BA-IN / CISA (SKC 226-29)	NH3 Source
	17-00252-7-SD1-BL-EF / CISA (SKC 226-29)	NH3 Source
	17-00252-7-SD1-BL-IN / CISA (SKC 226-29)	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	[signature]	Erica Wheeler	2704 HV H104	02-11-17	0626
Retrieved from Storage:	[signature]	BRETT GARNER		2-17-17	0837

	Signature	Printed Name	Date	Time
Relinquished By:	[signature]	BRET GARNER	2-13-17	1130
Received By:	[signature]	TERESA FORRESTER	2-13-17	1130
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:** 02/11/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00253 - Cartridge Testing Sat-Sun	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
	17-00253-3-SC1-IN-5 / TDU (Tenax)	Furans Source
	17-00253-3-SC1-IN-6 / TDU (Tenax)	Furans Source
	17-00253-3-SC1-IN-7 / TDU (Tenax)	Furans Source
	17-00253-3-SC1-IN-8 / TDU (Tenax)	Furans Source
S17T004195	17-00253-6-SC1-BA-EF / Hydrar (SKC 226-17-1A) S17T004196 S17T004197	Hg-Elemental Source 1
S17T004198	17-00253-6-SC1-BA-IN / Hydrar (SKC 226-17-1A) S17T004199 S17T004200	Hg-Elemental Source 2
S17T004201	17-00253-6-SC1-BL-EF / Hydrar (SKC 226-17-1A) S17T004202 S17T004203	Hg-Elemental Source 3
S17T004204	17-00253-6-SC1-BL-IN / Hydrar (SKC 226-17-1A) S17T004205 S17T004206	Hg-Elemental Source 4

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Gerardo Sanz	2704HV/H-104	2-12-17	0900
Retrieved from Storage:		BRET GARNER		2-13-17	0844

	Signature	Printed Name	Date	Time
Relinquished By:		BRET GARNER	2-13-17	1130
Received By:		TERESA FORRESTER	2-13-17	1130
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:** 02/11/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00253 - Cartridge Testing Sat-Sun	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T004207	17-00253-6-SC1-EF-1 / Hydrar (SKC 226-17-1A) S17T004208 S17T004209	Hg-Elemental Source 5
S17T004210	17-00253-6-SC1-EF-2 / Hydrar (SKC 226-17-1A) S17T004211 S17T004212	Hg-Elemental Source 6
S17T004213	17-00253-6-SC1-EF-3 / Hydrar (SKC 226-17-1A) S17T004214 S17T004215	Hg-Elemental Source 7
S17T004216	17-00253-6-SC1-EF-4 / Hydrar (SKC 226-17-1A) S17T004217 S17T004218	Hg-Elemental Source 8
S17T004219	17-00253-6-SC1-EF-5 / Hydrar (SKC 226-17-1A) S17T004220 S17T004221	Hg-Elemental Source 9
S17T004222	17-00253-6-SC1-EF-6 / Hydrar (SKC 226-17-1A) S17T004223 S17T004224	Hg-Elemental Source 10
S17T004225	17-00253-6-SC1-EF-7 / Hydrar (SKC 226-17-1A) S17T004226 S17T004227	Hg-Elemental Source 11
S17T004228	17-00253-6-SC1-EF-8 / Hydrar (SKC 226-17-1A) S17T004229 S17T004230	Hg-Elemental Source 12

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	[signature]	Gerardo Saenz	2704HV/H-184	2-12-17	0400
Retrieved from Storage:	[signature]	BRETT GARNER		2-13-17	0844

	Signature	Printed Name	Date	Time
Relinquished By:	[signature]	BRETT GARNER	2-13-17	1130
Received By:	[signature]	TERESA FORRESTER	2-13-17	1130
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:** 02/11/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00253 - Cartridge Testing Sat-Sun	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T004231	17-00253-6-SC1-IN-1 / Hydrar (SKC 226-17-1A) S17T004232 S17T004233	Hg-Elemental Source 13
S17T004234	17-00253-6-SC1-IN-2 / Hydrar (SKC 226-17-1A) S17T004235 S17T004236	Hg-Elemental Source 14
S17T004237	17-00253-6-SC1-IN-3 / Hydrar (SKC 226-17-1A) S17T004238 S17T004239	Hg-Elemental Source 15
S17T004240	17-00253-6-SC1-IN-4 / Hydrar (SKC 226-17-1A) S17T004241 S17T004242	Hg-Elemental Source 16
S17T004243	17-00253-6-SC1-IN-5 / Hydrar (SKC 226-17-1A) S17T004244 S17T004245	Hg-Elemental Source 17
S17T004246	17-00253-6-SC1-IN-6 / Hydrar (SKC 226-17-1A) S17T004247 S17T004248	Hg-Elemental Source 18
S17T004249	17-00253-6-SC1-IN-7 / Hydrar (SKC 226-17-1A) S17T004250 S17T004251	Hg-Elemental Source 19
S17T004252	17-00253-6-SC1-IN-8 / Hydrar (SKC 226-17-1A) S17T004253 S17T004254	Hg-Elemental Source 20

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Gerardo Sierra	2704 HV/H-104	2-12-17	0400
Retrieved from Storage:		BRETT GARNER		2-13-17	0844

	Signature	Printed Name	Date	Time
Relinquished By:		BRETT GARNER	2-13-17	1130
Received By:		TERESA FORRESTER	2-13-17	1130
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

C.3.7 Ammonia

FINAL REPORT ON AMMONIA VAPOR TUBES FOR CARTRIDGE EVALUATION FEBRUARY 2017

Document No.: 20170315 Rev. 0

Amanda M. Black
WAI Hanford Laboratory

Date Published
March 9, 2017

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509-373-3240

March 9, 2017
Amanda M. Black, WHL Project Coordinator

NARRATIVE

FINAL REPORT ON AMMONIA VAPOR TUBES FOR CARTRIDGE EVALUATION FEBRUARY 2017

This final report presents the results of forty ammonia vapor tubes received at the 222-S Laboratory on February 13, 2017, in good condition and with adequate paperwork. The samples were logged into sample delivery group 20170315.

DISCLAIMERS

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys. Requirements or anomalies concerning field sampling are not addressed in this report.

PROCEDURES

Method	Preparation Procedure	Analysis Procedure
Ammonia by OSHA ID-188	LA-533-117, Rev. 3-1	LA-533-117, Rev. 3-1

ANALYTICAL SUMMARY

The vapor tubes were tested for ammonia, as specified on the chain of custody. Standard laboratory procedures for ion chromatography were followed as well as the requirements in WHL-MP-1029, *WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory* (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control samples (LCS). The results of 373 LCS determinations indicate a mean recovery of 98% with a standard deviation of 3.3%. Statistical process control limits for the LCS are 89-111%, 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.

Twenty nine of the forty ammonia results for sample group 20170315 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).

Attachment 1

DATA SUMMARY REPORT

DATA SUMMARY REPORT FOR SAMPLE GROUP 20170315

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-00252-7-SD1-BA-EF	Total	S17T004048	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00252-7-SD1-BA-EF	Front Resin	S17T004049	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-BA-EF	Back Resin	S17T004050	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-BA-IN	Total	S17T004051	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00252-7-SD1-BA-IN	Front Resin	S17T004052	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-BA-IN	Back Resin	S17T004053	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-BL-EF	Total	S17T004054	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00252-7-SD1-BL-EF	Front Resin	S17T004055	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-BL-EF	Back Resin	S17T004056	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-BL-IN	Total	S17T004057	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00252-7-SD1-BL-IN	Front Resin	S17T004058	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-BL-IN	Back Resin	S17T004059	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-1	Total	S17T004060	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00252-7-SD1-EF-1	Front Resin	S17T004061	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-1	Back Resin	S17T004062	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-2	Total	S17T004063	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00252-7-SD1-EF-2	Front Resin	S17T004076	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-2	Back Resin	S17T004077	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-3	Total	S17T004078	Ammonia	µg/sample	n/a	<10.0	23.7	10.0
17-00252-7-SD1-EF-3	Front Resin	S17T004079	Ammonia	µg/sample	94.6	<10.0	22.6	10.0
17-00252-7-SD1-EF-3	Back Resin	S17T004080	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-4	Total	S17T004081	Ammonia	µg/sample	n/a	<10.0	74.2	10.0
17-00252-7-SD1-EF-4	Front Resin	S17T004082	Ammonia	µg/sample	94.6	<10.0	73.2	10.0
17-00252-7-SD1-EF-4	Back Resin	S17T004083	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-5	Total	S17T004084	Ammonia	µg/sample	n/a	<10.0	1.24E+03	200
17-00252-7-SD1-EF-5	Front Resin	S17T004085	Ammonia	µg/sample	94.6	<10.0	1.24E+03	200
17-00252-7-SD1-EF-5	Back Resin	S17T004086	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-6	Total	S17T004087	Ammonia	µg/sample	n/a	<10.0	1.25E+03	200
17-00252-7-SD1-EF-6	Front Resin	S17T004088	Ammonia	µg/sample	94.6	<10.0	1.24E+03	200
17-00252-7-SD1-EF-6	Back Resin	S17T004089	Ammonia	µg/sample	94.6	<10.0	<10.0	10.0
17-00252-7-SD1-EF-7	Total	S17T004090	Ammonia	µg/sample	n/a	<10.0	1.27E+03	200
17-00252-7-SD1-EF-7	Front Resin	S17T004091	Ammonia	µg/sample	97.5	<10.0	1.26E+03	200
17-00252-7-SD1-EF-7	Back Resin	S17T004092	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-EF-8	Total	S17T004093	Ammonia	µg/sample	n/a	<10.0	1.07E+03	200
17-00252-7-SD1-EF-8	Front Resin	S17T004097	Ammonia	µg/sample	97.5	<10.0	1.07E+03	200
17-00252-7-SD1-EF-8	Back Resin	S17T004098	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-IN-1	Total	S17T004105	Ammonia	µg/sample	n/a	<10.0	1.10E+03	200
17-00252-7-SD1-IN-1	Front Resin	S17T004106	Ammonia	µg/sample	97.5	<10.0	1.10E+03	200
17-00252-7-SD1-IN-1	Back Resin	S17T004107	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-IN-2	Total	S17T004108	Ammonia	µg/sample	n/a	<10.0	1.17E+03	200
17-00252-7-SD1-IN-2	Front Resin	S17T004109	Ammonia	µg/sample	97.5	<10.0	1.16E+03	200
17-00252-7-SD1-IN-2	Back Resin	S17T004110	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-IN-3	Total	S17T004111	Ammonia	µg/sample	n/a	<10.0	1.09E+03	200
17-00252-7-SD1-IN-3	Front Resin	S17T004112	Ammonia	µg/sample	97.5	<10.0	1.09E+03	200
17-00252-7-SD1-IN-3	Back Resin	S17T004113	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-IN-4	Total	S17T004114	Ammonia	µg/sample	n/a	<10.0	1.09E+03	200
17-00252-7-SD1-IN-4	Front Resin	S17T004115	Ammonia	µg/sample	97.5	<10.0	1.09E+03	200
17-00252-7-SD1-IN-4	Back Resin	S17T004116	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-IN-5	Total	S17T004117	Ammonia	µg/sample	n/a	<10.0	583	200
17-00252-7-SD1-IN-5	Front Resin	S17T004118	Ammonia	µg/sample	97.5	<10.0	582	200
17-00252-7-SD1-IN-5	Back Resin	S17T004119	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20170315

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-00252-7-SD1-IN-6	Total	S17T004120	Ammonia	µg/sample	n/a	<10.0	214	100
17-00252-7-SD1-IN-6	Front Resin	S17T004127	Ammonia	µg/sample	97.5	<10.0	213	100
17-00252-7-SD1-IN-6	Back Resin	S17T004128	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-IN-7	Total	S17T004129	Ammonia	µg/sample	n/a	<10.0	199	100
17-00252-7-SD1-IN-7	Front Resin	S17T004130	Ammonia	µg/sample	97.5	<10.0	198	100
17-00252-7-SD1-IN-7	Back Resin	S17T004131	Ammonia	µg/sample	97.5	<10.0	<10.0	10.0
17-00252-7-SD1-IN-8	Total	S17T004132	Ammonia	µg/sample	n/a	<10.0	1.51E+03	200
17-00252-7-SD1-IN-8	Front Resin	S17T004133	Ammonia	µg/sample	91.8	<10.0	1.51E+03	200
17-00252-7-SD1-IN-8	Back Resin	S17T004134	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-BA-EF	Total	S17T004135	Ammonia	µg/sample	n/a	<10.0	13.1	10.0
17-00253-7-SC1-BA-EF	Front Resin	S17T004136	Ammonia	µg/sample	91.8	<10.0	12.1	10.0
17-00253-7-SC1-BA-EF	Back Resin	S17T004137	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-BA-IN	Total	S17T004138	Ammonia	µg/sample	n/a	<10.0	21.4	10.0
17-00253-7-SC1-BA-IN	Front Resin	S17T004139	Ammonia	µg/sample	91.8	<10.0	20.4	10.0
17-00253-7-SC1-BA-IN	Back Resin	S17T004140	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-BL-EF	Total	S17T004141	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00253-7-SC1-BL-EF	Front Resin	S17T004142	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-BL-EF	Back Resin	S17T004143	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-BL-IN	Total	S17T004144	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00253-7-SC1-BL-IN	Front Resin	S17T004145	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-BL-IN	Back Resin	S17T004146	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-1	Total	S17T004147	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00253-7-SC1-EF-1	Front Resin	S17T004148	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-1	Back Resin	S17T004149	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-2	Total	S17T004150	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00253-7-SC1-EF-2	Front Resin	S17T004151	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-2	Back Resin	S17T004152	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-3	Total	S17T004153	Ammonia	µg/sample	n/a	<10.0	70.7	10.0
17-00253-7-SC1-EF-3	Front Resin	S17T004154	Ammonia	µg/sample	91.8	<10.0	69.8	10.0
17-00253-7-SC1-EF-3	Back Resin	S17T004155	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-4	Total	S17T004156	Ammonia	µg/sample	n/a	<10.0	49.4	10.0
17-00253-7-SC1-EF-4	Front Resin	S17T004157	Ammonia	µg/sample	91.8	<10.0	48.4	10.0
17-00253-7-SC1-EF-4	Back Resin	S17T004158	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-5	Total	S17T004159	Ammonia	µg/sample	n/a	<10.0	169	50.0
17-00253-7-SC1-EF-5	Front Resin	S17T004160	Ammonia	µg/sample	91.8	<10.0	168	50.0
17-00253-7-SC1-EF-5	Back Resin	S17T004161	Ammonia	µg/sample	91.8	<10.0	<10.0	10.0
17-00253-7-SC1-EF-6	Total	S17T004162	Ammonia	µg/sample	n/a	<10.0	314	100
17-00253-7-SC1-EF-6	Front Resin	S17T004163	Ammonia	µg/sample	99.6	<10.0	313	100
17-00253-7-SC1-EF-6	Back Resin	S17T004164	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-EF-7	Total	S17T004165	Ammonia	µg/sample	n/a	<10.0	411	100
17-00253-7-SC1-EF-7	Front Resin	S17T004166	Ammonia	µg/sample	99.6	<10.0	410	100
17-00253-7-SC1-EF-7	Back Resin	S17T004167	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-EF-8	Total	S17T004168	Ammonia	µg/sample	n/a	<10.0	508	100
17-00253-7-SC1-EF-8	Front Resin	S17T004169	Ammonia	µg/sample	99.6	<10.0	507	100
17-00253-7-SC1-EF-8	Back Resin	S17T004170	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-IN-1	Total	S17T004171	Ammonia	µg/sample	n/a	<10.0	1.23E+03	200
17-00253-7-SC1-IN-1	Front Resin	S17T004172	Ammonia	µg/sample	99.6	<10.0	1.22E+03	200
17-00253-7-SC1-IN-1	Back Resin	S17T004173	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-IN-2	Total	S17T004174	Ammonia	µg/sample	n/a	<10.0	1.22E+03	200
17-00253-7-SC1-IN-2	Front Resin	S17T004175	Ammonia	µg/sample	99.6	<10.0	1.22E+03	200
17-00253-7-SC1-IN-2	Back Resin	S17T004176	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20170315

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
17-00253-7-SC1-IN-3	Total	S17T004177	Ammonia	µg/sample	n/a	<10.0	1.12E+03	200
17-00253-7-SC1-IN-3	Front Resin	S17T004178	Ammonia	µg/sample	99.6	<10.0	1.12E+03	200
17-00253-7-SC1-IN-3	Back Resin	S17T004179	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-IN-4	Total	S17T004180	Ammonia	µg/sample	n/a	<10.0	1.16E+03	200
17-00253-7-SC1-IN-4	Front Resin	S17T004181	Ammonia	µg/sample	99.6	<10.0	1.16E+03	200
17-00253-7-SC1-IN-4	Back Resin	S17T004182	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-IN-5	Total	S17T004183	Ammonia	µg/sample	n/a	<10.0	1.00E+03	200
17-00253-7-SC1-IN-5	Front Resin	S17T004184	Ammonia	µg/sample	99.6	<10.0	1000	200
17-00253-7-SC1-IN-5	Back Resin	S17T004185	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-IN-6	Total	S17T004186	Ammonia	µg/sample	n/a	<10.0	483	100
17-00253-7-SC1-IN-6	Front Resin	S17T004187	Ammonia	µg/sample	99.6	<10.0	482	100
17-00253-7-SC1-IN-6	Back Resin	S17T004188	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-IN-7	Total	S17T004189	Ammonia	µg/sample	n/a	<10.0	880	200
17-00253-7-SC1-IN-7	Front Resin	S17T004190	Ammonia	µg/sample	99.6	<10.0	879	200
17-00253-7-SC1-IN-7	Back Resin	S17T004191	Ammonia	µg/sample	99.6	<10.0	<10.0	10.0
17-00253-7-SC1-IN-8	Total	S17T004192	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
17-00253-7-SC1-IN-8	Front Resin	S17T004193	Ammonia	µg/sample	92.2	<10.0	<10.0	10.0
17-00253-7-SC1-IN-8	Back Resin	S17T004194	Ammonia	µg/sample	92.2	<10.0	<10.0	10.0

Attachment 2

ANALYSIS DATE REPORT

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20170315

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T004049	17-00252-7-SD1-BA-EF	Ammonia	02/16/2017 08:10	02/16/2017 11:55
S17T004050	17-00252-7-SD1-BA-EF	Ammonia	02/16/2017 08:10	02/16/2017 12:14
S17T004052	17-00252-7-SD1-BA-IN	Ammonia	02/16/2017 08:10	02/16/2017 12:32
S17T004053	17-00252-7-SD1-BA-IN	Ammonia	02/16/2017 08:10	02/16/2017 12:50
S17T004055	17-00252-7-SD1-BL-EF	Ammonia	02/16/2017 08:10	02/16/2017 13:08
S17T004056	17-00252-7-SD1-BL-EF	Ammonia	02/16/2017 08:10	02/16/2017 13:26
S17T004058	17-00252-7-SD1-BL-IN	Ammonia	02/16/2017 08:10	02/16/2017 14:38
S17T004059	17-00252-7-SD1-BL-IN	Ammonia	02/16/2017 08:10	02/16/2017 14:56
S17T004061	17-00252-7-SD1-EF-1	Ammonia	02/16/2017 08:10	02/16/2017 15:14
S17T004062	17-00252-7-SD1-EF-1	Ammonia	02/16/2017 08:10	02/16/2017 15:32
S17T004076	17-00252-7-SD1-EF-2	Ammonia	02/16/2017 08:10	02/16/2017 15:50
S17T004077	17-00252-7-SD1-EF-2	Ammonia	02/16/2017 08:10	02/16/2017 16:08
S17T004079	17-00252-7-SD1-EF-3	Ammonia	02/16/2017 08:10	02/16/2017 16:26
S17T004080	17-00252-7-SD1-EF-3	Ammonia	02/16/2017 08:10	02/16/2017 16:44
S17T004082	17-00252-7-SD1-EF-4	Ammonia	02/16/2017 08:10	02/16/2017 17:02
S17T004083	17-00252-7-SD1-EF-4	Ammonia	02/16/2017 08:10	02/16/2017 17:20
S17T004085	17-00252-7-SD1-EF-5	Ammonia	02/16/2017 08:10	02/21/2017 11:05
S17T004086	17-00252-7-SD1-EF-5	Ammonia	02/16/2017 08:10	02/16/2017 18:50
S17T004088	17-00252-7-SD1-EF-6	Ammonia	02/16/2017 08:10	02/21/2017 11:23
S17T004089	17-00252-7-SD1-EF-6	Ammonia	02/16/2017 08:10	02/16/2017 19:26
S17T004091	17-00252-7-SD1-EF-7	Ammonia	02/16/2017 08:10	02/21/2017 11:41
S17T004092	17-00252-7-SD1-EF-7	Ammonia	02/16/2017 08:10	02/16/2017 22:09
S17T004097	17-00252-7-SD1-EF-8	Ammonia	02/16/2017 08:10	02/21/2017 11:59
S17T004098	17-00252-7-SD1-EF-8	Ammonia	02/16/2017 08:10	02/16/2017 22:45
S17T004106	17-00252-7-SD1-IN-1	Ammonia	02/16/2017 08:10	02/21/2017 12:17
S17T004107	17-00252-7-SD1-IN-1	Ammonia	02/16/2017 08:10	02/16/2017 23:21
S17T004109	17-00252-7-SD1-IN-2	Ammonia	02/16/2017 08:10	02/21/2017 12:35
S17T004110	17-00252-7-SD1-IN-2	Ammonia	02/16/2017 08:10	02/17/2017 00:51
S17T004112	17-00252-7-SD1-IN-3	Ammonia	02/16/2017 08:10	02/21/2017 12:53
S17T004113	17-00252-7-SD1-IN-3	Ammonia	02/16/2017 08:10	02/17/2017 01:27
S17T004115	17-00252-7-SD1-IN-4	Ammonia	02/16/2017 08:10	02/21/2017 13:12
S17T004116	17-00252-7-SD1-IN-4	Ammonia	02/16/2017 08:10	02/17/2017 02:03
S17T004118	17-00252-7-SD1-IN-5	Ammonia	02/16/2017 08:10	02/21/2017 13:30
S17T004119	17-00252-7-SD1-IN-5	Ammonia	02/16/2017 08:10	02/17/2017 02:39
S17T004127	17-00252-7-SD1-IN-6	Ammonia	02/16/2017 08:10	02/21/2017 13:48
S17T004128	17-00252-7-SD1-IN-6	Ammonia	02/16/2017 08:10	02/17/2017 03:15
S17T004130	17-00252-7-SD1-IN-7	Ammonia	02/16/2017 08:10	02/21/2017 15:00
S17T004131	17-00252-7-SD1-IN-7	Ammonia	02/16/2017 08:10	02/17/2017 04:46
S17T004133	17-00252-7-SD1-IN-8	Ammonia	02/21/2017 12:40	02/22/2017 10:24
S17T004134	17-00252-7-SD1-IN-8	Ammonia	02/21/2017 12:40	02/21/2017 18:36
S17T004136	17-00253-7-SC1-BA-EF	Ammonia	02/21/2017 12:40	02/21/2017 18:54
S17T004137	17-00253-7-SC1-BA-EF	Ammonia	02/21/2017 12:40	02/21/2017 19:12
S17T004139	17-00253-7-SC1-BA-IN	Ammonia	02/21/2017 12:40	02/21/2017 19:30
S17T004140	17-00253-7-SC1-BA-IN	Ammonia	02/21/2017 12:40	02/21/2017 19:48
S17T004142	17-00253-7-SC1-BL-EF	Ammonia	02/21/2017 12:40	02/21/2017 21:01
S17T004143	17-00253-7-SC1-BL-EF	Ammonia	02/21/2017 12:40	02/21/2017 21:19
S17T004145	17-00253-7-SC1-BL-IN	Ammonia	02/21/2017 12:40	02/21/2017 21:37

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20170315

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S17T004146	17-00253-7-SC1-BL-IN	Ammonia	02/21/2017 12:40	02/21/2017 21:55
S17T004148	17-00253-7-SC1-EF-1	Ammonia	02/21/2017 12:40	02/21/2017 22:13
S17T004149	17-00253-7-SC1-EF-1	Ammonia	02/21/2017 12:40	02/21/2017 22:31
S17T004151	17-00253-7-SC1-EF-2	Ammonia	02/21/2017 12:40	02/21/2017 22:49
S17T004152	17-00253-7-SC1-EF-2	Ammonia	02/21/2017 12:40	02/21/2017 23:07
S17T004154	17-00253-7-SC1-EF-3	Ammonia	02/21/2017 12:40	02/21/2017 23:25
S17T004155	17-00253-7-SC1-EF-3	Ammonia	02/21/2017 12:40	02/21/2017 23:43
S17T004157	17-00253-7-SC1-EF-4	Ammonia	02/21/2017 12:40	02/22/2017 00:55
S17T004158	17-00253-7-SC1-EF-4	Ammonia	02/21/2017 12:40	02/22/2017 01:13
S17T004160	17-00253-7-SC1-EF-5	Ammonia	02/21/2017 12:40	02/22/2017 10:42
S17T004161	17-00253-7-SC1-EF-5	Ammonia	02/21/2017 12:40	02/22/2017 01:49
S17T004163	17-00253-7-SC1-EF-6	Ammonia	02/22/2017 08:45	02/23/2017 00:50
S17T004164	17-00253-7-SC1-EF-6	Ammonia	02/22/2017 08:45	02/22/2017 14:36
S17T004166	17-00253-7-SC1-EF-7	Ammonia	02/22/2017 08:45	02/23/2017 01:08
S17T004167	17-00253-7-SC1-EF-7	Ammonia	02/22/2017 08:45	02/22/2017 15:12
S17T004169	17-00253-7-SC1-EF-8	Ammonia	02/22/2017 08:45	02/23/2017 01:26
S17T004170	17-00253-7-SC1-EF-8	Ammonia	02/22/2017 08:45	02/22/2017 15:48
S17T004172	17-00253-7-SC1-IN-1	Ammonia	02/22/2017 08:45	02/23/2017 09:10
S17T004173	17-00253-7-SC1-IN-1	Ammonia	02/22/2017 08:45	02/22/2017 17:19
S17T004175	17-00253-7-SC1-IN-2	Ammonia	02/22/2017 08:45	02/23/2017 09:28
S17T004176	17-00253-7-SC1-IN-2	Ammonia	02/22/2017 08:45	02/22/2017 17:55
S17T004178	17-00253-7-SC1-IN-3	Ammonia	02/22/2017 08:45	02/23/2017 09:46
S17T004179	17-00253-7-SC1-IN-3	Ammonia	02/22/2017 08:45	02/22/2017 18:31
S17T004181	17-00253-7-SC1-IN-4	Ammonia	02/22/2017 08:45	02/23/2017 10:04
S17T004182	17-00253-7-SC1-IN-4	Ammonia	02/22/2017 08:45	02/22/2017 19:07
S17T004184	17-00253-7-SC1-IN-5	Ammonia	02/22/2017 08:45	02/23/2017 10:22
S17T004185	17-00253-7-SC1-IN-5	Ammonia	02/22/2017 08:45	02/22/2017 19:43
S17T004187	17-00253-7-SC1-IN-6	Ammonia	02/22/2017 08:45	02/23/2017 10:40
S17T004188	17-00253-7-SC1-IN-6	Ammonia	02/22/2017 08:45	02/22/2017 21:13
S17T004190	17-00253-7-SC1-IN-7	Ammonia	02/22/2017 08:45	02/23/2017 10:58
S17T004191	17-00253-7-SC1-IN-7	Ammonia	02/22/2017 08:45	02/22/2017 21:49
S17T004193	17-00253-7-SC1-IN-8	Ammonia	02/22/2017 08:45	02/23/2017 00:14
S17T004194	17-00253-7-SC1-IN-8	Ammonia	02/22/2017 08:45	02/23/2017 00:32

Attachment 3

RECEIPT PAPERWORK

20170315 Rev. 0 FY17 NH_3 Cartridge Eval.

222-S	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST 480	ATS-LO-090-101 Rev DH-0

Date Samples Received: 2-13-17 Total Number of Samples: 440 (480) Group #: 20170315

Sample Custodian: Leslie DIAZ IH Technician: [signature] 2-13-17

Sample Custodian to Complete:

Action	Yes	No	N/A	Comments
RSR provided?			✓	
Verify GKI is complete			✓	☐ In Project File
Received from an alpha facility?		✓		☐ Contact PC for approval to release
Check that outer custody seal is intact, if present			✓	
Record cooler temperature in centigrade, as appropriate	✓			☐ Check if no cooler and/or no ice 3
Samples are intact and in good condition	✓			If No, provide comments below
RSA/COC provided and complete containing the following information?				
• Client name and client sample number	✓			
• Date and time of sampling	✓			
• Sampling location or origin	✓			
• Container type, size, and number	✓			
• Preservatives (if used) noted on the COC/RSA and sample bottles			✓	
• Analysis request is clear	✓			
• Signature of persons relinquishing and receiving samples	✓			
• Date and/or time of sample custody exchange	✓			
Verify that sample numbers on containers match the COC and/or RSA	✓			
Samples stored properly (e.g., refrigeration)	✓			

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? Y PC/SC Initials LJ Date 2-13-17

If No, comment on communication and resolution:

Acetonitrile - 40

Number of IH Samples Received:

Aldehyde Screen:	40	Amines:	40	Ammonia:	40	Aromatic HC:		Asbestos:	
Beryllium:		Be-Bulk:		Be-Filter:		Be-Wipe		1,3-Butadiene:	80
Formaldehyde:		Furans:	40	Mercury:	40	Methanol:		Nitrosamines:	40
Nitrous Oxide:		Pyridines:	40	SVOA:	40	VOA:	40	Other-IH:	

A-6095-302 (REV 4)

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 02/10/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00252 - Cartridge Testing Friday-Sat	
Contact Name: Jones, Parker L	**Phone:** (509)373-4988	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
	17-00252-6-SD1-IN-5 / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	17-00252-6-SD1-IN-6 / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	17-00252-6-SD1-IN-7 / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
	17-00252-6-SD1-IN-8 / Hydrar (SKC 226-17-1A)	Hg-Elemental Source
S17T004048	17-00252-7-SD1-BA-EF / CISA (SKC 226-29) S17T004049 4050	NH3 Source
S17T004051	17-00252-7-SD1-BA-IN / CISA (SKC 226-29) S17T004052 4053	NH3 Source
S17T004054	17-00252-7-SD1-BL-EF / CISA (SKC 226-29) S17T004055 4056	NH3 Source
S17T004057	17-00252-7-SD1-BL-IN / CISA (SKC 226-29) S17T004058 4059	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	[signature]	Erica Wheeler	2704 HV H104	02-11-17	0620
Retrieved from Storage:	[signature]	BRET GARNER		2-13-17	0829

	Signature	Printed Name	Date	Time
Relinquished By:	[signature]	BRETT GARNER	2-13-17	1130
Received By:	[signature]	Leslie DIAZ	2-13-17	1130
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:** 02/10/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00252 - Cartridge Testing Friday-Sat	
Contact Name: Jones, Parker L	**Phone:** (509)373-4968	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T004060	17-00252-7-SD1-EF-1 / CISA (SKC 226-29) S17T004061 4062	NH3 Source
S17T004063	17-00252-7-SD1-EF-2 / CISA (SKC 226-29) S17T004076 4077	NH3 Source
S17T004078	17-00252-7-SD1-EF-3 / CISA (SKC 226-29) S17T00 4079 4080	NH3 Source
S17T004081	17-00252-7-SD1-EF-4 / CISA (SKC 226-29) S17T00 4082 4083	NH3 Source
S17T004084	17-00252-7-SD1-EF-5 / CISA (SKC 226-29) S17T004085 4086	NH3 Source
S17T004087	17-00252-7-SD1-EF-6 / CISA (SKC 226-29) S17T00 4088 4089	NH3 Source
S17T004090	17-00252-7-SD1-EF-7 / CISA (SKC 226-29) S17T004091 4092	NH3 Source
S17T004093	17-00252-7-SD1-EF-8 / CISA (SKC 226-29) S17T00 4097 4098	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704 HV H104	02-11-17	0820
Retrieved from Storage:		BRETT GARNER		2-13-17	0826

	Signature	Printed Name	Date	Time
Relinquished By:		BRETT GARNER	2-13-17	1130
Received By:		Leslie Diaz	2-13-17	1130
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:** 02/10/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00252 - Cartridge Testing Friday-Sat	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-08	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T004105	17-00252-7-SD1-IN-1 / CISA (SKC 226-29) S17T004106 4107	NH3 Source
S17T004108	17-00252-7-SD1-IN-2 / CISA (SKC 226-29) S17T004109 4110	NH3 Source
S17T004111	17-00252-7-SD1-IN-3 / CISA (SKC 226-29) S17T004112 4113	NH3 Source
S17T004114	17-00252-7-SD1-IN-4 / CISA (SKC 226-29) S17T004115 4116	NH3 Source
S17T004117	17-00252-7-SD1-IN-5 / CISA (SKC 226-29) S17T004118 4119	NH3 Source
S17T004120	17-00252-7-SD1-IN-6 / CISA (SKC 226-29) S17T004127 4128	NH3 Source
S17T004129	17-00252-7-SD1-IN-7 / CISA (SKC 226-29) S17T004130 4131	NH3 Source
S17T004132	17-00252-7-SD1-IN-8 / CISA (SKC 226-29) S17T004133 4134	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	Erica Wheeler	Erica Wheeler	2704 HV H164	02-11-17	0620
Retrieved from Storage:		BRETT GARNER		2-13-17	0829

	Signature	Printed Name	Date	Time
Relinquished By:		BRETT GARNER	2-13-17	1130
Received By:		Leslie Diaz	2-13-17	1130
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 02/11/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00253 - Cartridge Testing Sat-Sun	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T004135 X	17-00253-7-SC1-BA-EF / CISA (SKC 226-29) S17T004136 4137	NH3 Source
S17T004138 X	17-00253-7-SC1-BA-IN / CISA (SKC 226-29) S17T004139 4140	NH3 Source
S17T004141 X	17-00253-7-SC1-BL-EF / CISA (SKC 226-29) S17T004142 4143	NH3 Source
S17T004144 X	17-00253-7-SC1-BL-IN / CISA (SKC 226-29) S17T004145 4146	NH3 Source
S17T004147 X	17-00253-7-SC1-EF-1 / CISA (SKC 226-29) S17T004148 4149	NH3 Source
S17T004150 X	17-00253-7-SC1-EF-2 / CISA (SKC 226-29) S17T004151 4152	NH3 Source
S17T004153 X	17-00253-7-SC1-EF-3 / CISA (SKC 226-29) S17T004154 4155	NH3 Source
S17T004156 X	17-00253-7-SC1-EF-4 / CISA (SKC 226-29) S17T004157 4158	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Gerardo Saenz	2704 HV/11-104	2-12-17	0400
Retrieved from Storage:		BRETT GARNER		2-13-17	0824

	Signature	Printed Name	Date	Time
Relinquished By:		BRETT GARNER	2-13-17	1130
Received By:		Leslie Diaz	2-13-17	1130
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

SWHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washington River Protection Solutions			**Date Sampled:** 02/11/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00253 - Cartridge Testing Sat-Sun	
Contact Name: Jones, Parker L	**Phone:** (509)373-4966	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A	**MSIN:** R1-06	**Phone:** (509)373-3324	

Laboratory Log No.	Sample ID/Type/Description		Required Analysis
S17T004159	17-00253-7-SC1-EF-5 / CISA (SKC 226-29)	S17T004160 4161	NH3 Source
S17T004162	17-00253-7-SC1-EF-6 / CISA (SKC 226-29)	S17T004163 4164	NH3 Source
S17T004165	17-00253-7-SC1-EF-7 / CISA (SKC 226-29)	S17T004166 4167	NH3 Source
S17T004168	17-00253-7-SC1-EF-8 / CISA (SKC 226-29)	S17T004169 4170	NH3 Source
S17T004171	17-00253-7-SC1-IN-1 / CISA (SKC 226-29)	S17T004172 4173	NH3 Source
S17T004174	17-00253-7-SC1-IN-2 / CISA (SKC 226-29)	S17T004175 4176	NH3 Source
S17T004177	17-00253-7-SC1-IN-3 / CISA (SKC 226-29)	S17T004178 4179	NH3 Source
S17T004180	17-00253-7-SC1-IN-4 / CISA (SKC 226-29)	S17T004181 4182	NH3 Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:		Gerardo Suarez	2704HU/H404	2-12-17	0400
Retrieved from Storage:		BRETT GARNER		2-13-17	0824

↑ 2-13-17

	Signature	Printed Name	Date	Time
Relinquished By:		BRETT GARNER	2-13-17	1130
Received By:		Leslie Diaz	2-13-17	1130
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:** 02/11/2017
CACN: 202843	**COA:** CB20	**Survey No.:** 17-00253 - Cartridge Testing Sat-Sun	
Contact Name: Jones, Parker L	**Phone:** (509)373-4968	**Turnaround:** N/A	
Return Report To: Maxwell, Sally A		**MSIN:** R1-06	**Phone:** (509)373-3324

Laboratory Log No.	Sample ID/Type/Description	Required Analysis
S17T004183 X	17-00253-7-SC1-IN-5 / CISA (SKC 226-29) S17T004184 4185	NH3 Source
S17T004186 X	17-00253-7-SC1-IN-6 / CISA (SKC 226-29) S17T004187 4188	NH3 Source
S17T004189 X	17-00253-7-SC1-IN-7 / CISA (SKC 226-29) S17T004190 4191	NH3 Source
S17T004192 X	17-00253-7-SC1-IN-8 / CISA (SKC 226-29) S17T004193 4194	NH3 Source
	17-00253-12-SC1-BA-EF / Thermosorb-N (TDX)	Nitrosamines Source
	17-00253-12-SC1-BA-IN / Thermosorb-N (TDX)	Nitrosamines Source
	17-00253-12-SC1-BL-EF / Thermosorb-N (TDX)	Nitrosamines Source
	17-00253-12-SC1-BL-IN / Thermosorb-N (TDX)	Nitrosamines Source

Special Instructions:

	Signature	Printed Name	Location	Date	Time
Delivered to Storage:	[signature]	Gerardo Suarez	2704 HV / A-104	2-12-17	0400
Retrieved from Storage:	[signature]	BRETT GARNER		2-13-17	0824

	Signature	Printed Name	Date	Time
Relinquished By:	[signature]	BRETT GARNER	2-13-17	1130
Received By:	[signature]	Leslie Diaz	2-13-17	1130
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				

Additional Comments:

C.3.8 Aldehydes

ANALYTICAL REPORT

Report Date: March 01, 2017

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20170342
Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003867** Collected: 02/10/2017
Lab ID: 1704844001 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.25**	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: **S17T003868** Collected: 02/10/2017
Lab ID: 1704844002 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.051**	NA	NA	0.050
Acetaldehyde	**0.053**	NA	NA	0.050

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003868** Collected: 02/10/2017
Lab ID: 1704844002 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
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	<0.050	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: **S17T003869** Collected: 02/10/2017
Lab ID: 1704844003 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.16**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003870** Collected: 02/10/2017
Lab ID: 1704844004 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.085**	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: **S17T003871** Collected: 02/10/2017
Lab ID: 1704844005 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**1.4**	NA	NA	0.050
Acetone	**0.10**	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

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003871** Collected: 02/10/2017
Lab ID: 1704844005 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003872** Collected: 02/10/2017
Lab ID: 1704844006 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.055**	NA	NA	0.050
Acetaldehyde	**2.9**	NA	NA	0.050
Acetone	**0.081**	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: **S17T003873** Collected: 02/10/2017
Lab ID: 1704844007 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**2.4**	NA	NA	0.050
Acetone	**0.097**	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

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003873** Collected: 02/10/2017
Lab ID: 1704844007 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	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: **S17T003874** Collected: 02/10/2017
Lab ID: 1704844008 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**3.0**	NA	NA	0.050
Acetone	<0.050	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003875** Collected: 02/10/2017
Lab ID: 1704844009 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m^3)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.067**	NA	NA	0.050
Acetaldehyde	**4.8**	NA	NA	0.050
Acetone	**38**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**1.0**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.3**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003876** Collected: 02/10/2017
Lab ID: 1704844010 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m^3)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.053**	NA	NA	0.050
Acetaldehyde	**4.2**	NA	NA	0.050
Acetone	**37**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.88**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.4**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003876** Collected: 02/10/2017
Lab ID: 1704844010 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003877** Collected: 02/10/2017
Lab ID: 1704844011 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**3.8**	NA	NA	0.050
Acetone	**39**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.81**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.2**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003878** Collected: 02/10/2017
Lab ID: 1704844012 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**2.8**	NA	NA	0.050
Acetone	**33**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.60**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003878** Collected: 02/10/2017
Lab ID: 1704844012 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **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	**0.92**	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: **S17T003879** Collected: 02/10/2017
Lab ID: 1704844013 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **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	**6.5**	NA	NA	0.050
Acetone	**42**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**1.4**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.3**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.16**	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003880** Collected: 02/10/2017
Lab ID: 1704844014 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**6.1**	NA	NA	0.050
Acetone	**37**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**1.3**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.4**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.13**	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: **S17T003881** Collected: 02/10/2017
Lab ID: 1704844015 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**5.6**	NA	NA	0.050
Acetone	**36**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**1.2**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.3**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.14**	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

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003881**				Collected: 02/10/2017
Lab ID: 1704844015				Received: 02/17/2017
Method: **EPA TO-11A**		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 02/22/2017 (185652)
		Sampling Info: **Air Volume Not Provided**		
Analyte	**Result (ug/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (ug/sample)**
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003882**				Collected: 02/10/2017
Lab ID: 1704844016				Received: 02/17/2017
Method: **EPA TO-11A**		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 02/22/2017 (185652)
		Sampling Info: **Air Volume Not Provided**		
Analyte	**Result (ug/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (ug/sample)**
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**5.3**	NA	NA	0.050
Acetone	**38**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**1.1**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.4**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	**0.13**	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: **S17T003883**				Collected: 02/10/2017
Lab ID: 1704844017				Received: 02/17/2017
Method: **EPA TO-11A**		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 02/22/2017 (185652)
		Sampling Info: **Air Volume Not Provided**		
Analyte	**Result (ug/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (ug/sample)**
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**2.0**	NA	NA	0.050
Acetone	**2.6**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.17**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003883** Collected: 02/10/2017
Lab ID: 1704844017 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	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: **S17T003884** Collected: 02/10/2017
Lab ID: 1704844018 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**2.0**	NA	NA	0.050
Acetone	**0.72**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.077**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003885** Collected: 02/10/2017
Lab ID: 1704844019 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**2.5**	NA	NA	0.050
Acetone	**0.21**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003886** Collected: 02/10/2017
Lab ID: 1704844020 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.18**	NA	NA	0.050
Acetaldehyde	**2.9**	NA	NA	0.050
Acetone	**11**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.42**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.37**	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

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003886** Collected: 02/10/2017
Lab ID: 1704844020 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185652)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003887** Collected: 02/11/2017
Lab ID: 1704844021 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.61**	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: **S17T003888** Collected: 02/11/2017
Lab ID: 1704844022 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.12**	NA	NA	0.050
Acetaldehyde	**0.12**	NA	NA	0.050
Acetone	**1.4**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003888** Collected: 02/11/2017
Lab ID: 1704844022 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	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: **S17T003889** Collected: 02/11/2017
Lab ID: 1704844023 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.14**	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	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003890** Collected: 02/11/2017
Lab ID: 1704844024 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.89**	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: **S17T003891** Collected: 02/11/2017
Lab ID: 1704844025 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.38**	NA	NA	0.050
Acetone	**0.92**	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

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003891**				Collected: 02/11/2017
Lab ID: 1704844025				Received: 02/17/2017
Method: **EPA TO-11A**		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 02/22/2017 (185654)
		Sampling Info: **Air Volume Not Provided**		
Analyte	**Result (ug/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (ug/sample)**
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003892**				Collected: 02/11/2017
Lab ID: 1704844026				Received: 02/17/2017
Method: **EPA TO-11A**		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 02/22/2017 (185654)
		Sampling Info: **Air Volume Not Provided**		
Analyte	**Result (ug/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (ug/sample)**
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.69**	NA	NA	0.050
Acetone	**0.74**	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: **S17T003893**				Collected: 02/11/2017
Lab ID: 1704844027				Received: 02/17/2017
Method: **EPA TO-11A**		Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine)		Analyzed: 02/22/2017 (185654)
		Sampling Info: **Air Volume Not Provided**		
Analyte	**Result (ug/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (ug/sample)**
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.55**	NA	NA	0.050
Acetone	**0.82**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003893** Collected: 02/11/2017
Lab ID: 1704844027 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **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: **S17T003894** Collected: 02/11/2017
Lab ID: 1704844028 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **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	**0.69**	NA	NA	0.050
Acetone	**0.65**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003895** Collected: 02/11/2017
Lab ID: 1704844029 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.76**	NA	NA	0.050
Acetone	**0.64**	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: **S17T003896** Collected: 02/11/2017
Lab ID: 1704844030 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.14**	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	<0.050	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

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003896** Collected: 02/11/2017
Lab ID: 1704844030 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003897** Collected: 02/11/2017
Lab ID: 1704844031 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.64**	NA	NA	0.050
Acetone	**1.5**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003898** Collected: 02/11/2017
Lab ID: 1704844032 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**0.65**	NA	NA	0.050
Acetone	**3.8**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003898** Collected: 02/11/2017
Lab ID: 1704844032 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	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: **S17T003899** Collected: 02/11/2017
Lab ID: 1704844033 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.12**	NA	NA	0.050
Acetaldehyde	**2.5**	NA	NA	0.050
Acetone	**45**	NA	NA	0.10
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.59**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.1**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003900** Collected: 02/11/2017
Lab ID: 1704844034 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.12**	NA	NA	0.050
Acetaldehyde	**2.4**	NA	NA	0.050
Acetone	**46**	NA	NA	0.10
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.56**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.1**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003901** Collected: 02/11/2017
Lab ID: 1704844035 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**2.3**	NA	NA	0.050
Acetone	**45**	NA	NA	0.10
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.51**	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

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003901** Collected: 02/11/2017
Lab ID: 1704844035 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003902** Collected: 02/11/2017
Lab ID: 1704844036 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.070**	NA	NA	0.050
Acetaldehyde	**2.3**	NA	NA	0.050
Acetone	**45**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.49**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**1.0**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: **S17T003903** Collected: 02/11/2017
Lab ID: 1704844037 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.053**	NA	NA	0.050
Acetaldehyde	**2.0**	NA	NA	0.050
Acetone	**32**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.40**	NA	NA	0.050

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ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003903** Collected: 02/11/2017
Lab ID: 1704844037 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.77**	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: **S17T003904** Collected: 02/11/2017
Lab ID: 1704844038 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	**0.059**	NA	NA	0.050
Acetaldehyde	**1.8**	NA	NA	0.050
Acetone	**22**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.32**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.58**	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003905** Collected: 02/11/2017
Lab ID: 1704844039 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	**1.7**	NA	NA	0.050
Acetone	**19**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	**0.28**	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	**0.42**	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: **S17T003906** Collected: 02/11/2017
Lab ID: 1704844040 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	**0.68**	NA	NA	0.050
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003906** Collected: 02/11/2017
Lab ID: 1704844040 Received: 02/17/2017

Method: **EPA TO-11A** Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Analyzed: 02/22/2017 (185654)
Sampling Info: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Comments

Workorder: **1704844**

Samples 1704844033, 1704844034, and 1704844035 received a 2X dilution, for Acetone only, to show the results within the range of the calibration curve. The reporting limit for Acetone reflects the dilution, for these samples only.

Quality Control: **EPA TO-11A - (HBN: 185652)**

LMB 537824 was used to media blank correct LCS 537825, LCSD 537826 and field samples for Acetone only.

LCS 537825/LCSD 537826: All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken.

Quality Control: **EPA TO-11A - (HBN: 185654)**

LMB 537827 was used to media blank correct LCS 537828, LCSD 537829 and field samples for Acetone only.

LCS 537828/LCSD 537829: All of the analytes recovered within +/- 10% of the target concentration. Only 2,5-Dimethylbenzaldehyde was outside of established limits but result was within general laboratory limits. This analyte was not found in any of the samples so at this time no further action was taken.

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

Method	Analyst	Peer Review
EPA TO-11A	/S/ Emilie Pratt 02/28/2017 13:59	/S/ Christopher Winter 03/01/2017 16:47

Laboratory Contact Information

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

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: **34-1704844**
Client Project ID: S17T003867 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.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
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	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	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.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 Envrionmental 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: 1704844

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/13842 (HBN: 185652)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Blank

LMB: 537824
Analyzed: 02/22/2017 00:00
Units: ug/sample

Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.159	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 537825
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: ug/sample

LCSD: 537826
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: ug/sample

Analyte	Result	Target		% Rec	QC Limits		Result		% Rec	RPD	QC Limits	
Formaldehyde	3.00	3.00		99.9	87.8	116.8	3.01		100	0.366	0.0	20.0
Acetaldehyde	2.98	3.00		99.2	94.7	110.5	3.01		100	1.00	0.0	20.0
Acetone	3.05	3.00		102	69.2	119.9	3.07		102	0.718	0.0	20.0
Acrolein	2.96	3.00		98.5	83.5	120.2	3.00		100	1.51	0.0	20.0
Propionaldehyde	2.88	3.00		96.0	92.2	117.2	2.95		98.3	2.37	0.0	20.0
Crotonaldehyde	2.97	3.00		99.1	93.1	114.8	2.98		99.4	0.369	0.0	20.0
Butyraldehyde	2.78	3.00		92.7	86.6	120.8	2.74		91.4	1.45	0.0	20.0
Benzaldehyde	2.89	3.00		96.4	96.0	112.3	2.95		98.3	1.92	0.0	20.0
Isovaleraldehyde	3.03	3.00		101	95.4	121.6	3.09		103	1.96	0.0	20.0
Valeraldehyde	3.26	3.00		109	85.3	120.4	3.32		111	1.55	0.0	20.0
m-Tolualdehyde	2.85	3.00		95.1	80.9	118.6	2.94		97.9	2.90	0.0	20.0
p-Tolualdehyde	2.89	3.00		96.2	83.5	122.2	2.86		95.4	0.905	0.0	20.0
o-Tolualdehyde	2.92	3.00		97.4	91.6	111.4	2.93		97.7	0.273	0.0	20.0
Hexanal	2.81	3.00		93.6	85.4	127.6	2.91		97.0	3.50	0.0	20.0
2,5-Dimethylbenzaldehyde	2.77	3.00	*	92.2	99.6	118.7	2.72	*	90.6	1.75	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1704844

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/13842 (HBN: 185652)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Comments

LMB 537824 was used to media blank correct LCS 537825, LCSD 537826 and field samples for Acetone only.

LCS 537825/LCSD 537826: All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken.

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

Analyst	Peer Review
/S/ Emilie Pratt	/S/ Christopher Winter
02/24/2017 14:13	02/24/2017 15:30

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1704844

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/13843 (HBN: 185654)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Blank

LMB: 537827
Analyzed: 02/22/2017 00:00
Units: ug/sample

Analyte	Result	MDL	RL
Formaldehyde	ND	NA	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.162	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 537828
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: ug/sample

LCSD: 537829
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: ug/sample

Analyte	LCS Result	Target	LCS %Rec	QC Limits		LCSD Result	LCSD %Rec	RPD	QC Limits	
Formaldehyde	2.98	3.00	99.4	87.8	116.8	3.04	101	1.80	0.0	20.0
Acetaldehyde	2.99	3.00	99.6	94.7	110.5	3.01	100	0.767	0.0	20.0
Acetone	3.08	3.00	103	69.2	119.9	3.09	103	0.259	0.0	20.0
Acrolein	2.96	3.00	98.7	83.5	120.2	3.00	100	1.41	0.0	20.0
Propionaldehyde	2.92	3.00	97.2	92.2	117.2	2.95	98.3	1.12	0.0	20.0
Crotonaldehyde	2.95	3.00	98.4	93.1	114.8	2.96	98.8	0.406	0.0	20.0
Butyraldehyde	2.77	3.00	92.4	86.6	120.8	2.81	93.5	1.22	0.0	20.0
Benzaldehyde	2.90	3.00	96.7	96.0	112.3	2.91	97.1	0.447	0.0	20.0
Isovaleraldehyde	3.01	3.00	100	95.4	121.6	3.08	103	2.53	0.0	20.0
Valeraldehyde	3.27	3.00	109	85.3	120.4	3.35	112	2.18	0.0	20.0
m-Tolualdehyde	3.14	3.00	105	80.9	118.6	3.22	107	2.64	0.0	20.0
p-Tolualdehyde	2.73	3.00	91.0	83.5	122.2	2.80	93.5	2.71	0.0	20.0
o-Tolualdehyde	2.96	3.00	98.8	91.6	111.4	2.93	97.8	1.05	0.0	20.0
Hexanal	2.89	3.00	96.2	85.4	127.6	2.97	98.9	2.77	0.0	20.0
2,5-Dimethylbenzaldehyde	2.72	3.00	* 90.7	99.6	118.7	2.70	* 90.0	0.738	0.0	20.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1704844

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA TO-11A
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ILC/13843 (HBN: 185654)
	Prepared By: NA	**Analyzed By:** Emilie Pratt

Comments

LMB 537827 was used to media blank correct LCS 537828, LCSD 537829 and field samples for Acetone only.

LCS 537828/LCSD 537829: All of the analytes recovered within +/- 10% of the target concentration. Only 2,5-Dimethylbenzaldehyde was outside of established limits but result was within general laboratory limits. This analyte was not found in any of the samples so at this time no further action was taken.

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

Analyst	Peer Review
/S/ Emilie Pratt	/S/ Christopher Winter
02/28/2017 13:59	03/01/2017 16:46

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1704844

Ass N/A	1704844	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170342 Page 1 of 4

Collector JONES	Contact/Requestor CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 203006/CB20
Project Title 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ice Chest No. WTS-033 Temp. ON ICE
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
1	S17T003867	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-BA-EF	25C or low
2	S17T003868	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-BA-IN	25C or low
3	S17T003869	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-BL-EF	25C or low
4	S17T003870	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-BL-IN	25C or low
5	S17T003871	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-1	25C or low
6	S17T003872	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-2	25C or low
7	S17T003873	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-3	25C or low
8	S17T003874	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-4	25C or low
9	S17T003875	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-5	25C or low
10	S17T003876	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-6	25C or low

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No
EPA TO-11A

SPECIAL INSTRUCTIONS
Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 15
Reference Contract # 55502
NIOSH 2016 MOD / EPA TO-11A

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	Dianne Turner		2/15/17 1300	Julie Gradisher	Julie Gradisher		2/15/17 1000
JA Gradisher WRPS	Julie Gradisher		2/15/17 1400	FEDEX			
[illegible]				[illegible]	[illegible]		2/17/17 1000

Matrix*
S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, VA = Vapor, X = Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Emilie R Pratt	2/22/17 14:15

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20170342
		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861	MSIN: T6-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: 645-033	Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
11	S17T003877	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-7	25C or low
12	S17T003878	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-EF-8	25C or low
13	S17T003879	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-1	25C or low
14	S17T003880	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-2	25C or low
15	S17T003881	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-3	25C or low
16	S17T003882	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-4	25C or low
17	S17T003883	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-5	25C or low
18	S17T003884	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-6	25C or low
19	S17T003885	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-7	25C or low
20	S17T003886	VA	2/10/17		SILICA GEL	Aldehyde 17-00252-8-SD1-IN-8	25C or low

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No
EPA TO-11A

SPECIAL INSTRUCTIONS — Hold Time
Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 15
Reference Contract # 55502
NIOSH 2016 MOD / EPA TO-11A

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
	Dianne Turner	2/15/17 13:00	Julie Gradisher	Julie Gradisher	2/15/17 1400
Relinquished By	JA Gradisher WRPS	Date/Time	Received By	FEDEX	Date/Time
Relinquished By	FEDEX	Date/Time	Received By		Date/Time
Relinquished By		Date/Time	Received By		Date/Time

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Emilie R Pratt	2/22/17 14:15

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)

1704844 - Page 32 of 34

C.368

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20170342
		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033 Temp ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
21	S17T003887	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-BA-EF	25C or low
22	S17T003888	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-BA-IN	25C or low
23	S17T003889	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-BL-EF	25C or low
24	S17T003890	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-BL-IN	25C or low
25	S17T003891	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-1	25C or low
26	S17T003892	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-2	25C or low
27	S17T003893	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-3	25C or low
28	S17T003894	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-4	25C or low
29	S17T003895	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-5	25C or low
30	S17T003896	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-6	25C or low

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

EPA TO-11A

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl W Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 15
Reference Contract # 55502
NIOSH 2016 MOD / EPA TO-11A

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner	2/15/17 1300	Julie Gradisher	2/15/17 1300
JA Gradisher WRPS	2/15/17 1400	FEDEX	
			2/22/17 1020

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Emilie Pratt — Date/Time: 2/22/17 15:20

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)

1704844

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170342
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-033 Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
31	S17T003897	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-7	25C or low
32	S17T003898	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-EF-8	25C or low
33	S17T003899	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-1	25C or low
34	S17T003900	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-2	25C or low
35	S17T003901	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-3	25C or low
36	S17T003902	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-4	25C or low
37	S17T003903	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-5	25C or low
38	S17T003904	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-6	25C or low
39	S17T003905	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-7	25C or low
40	S17T003906	VA	2/11/17		SILICA GEL	Aldehyde 17-00253-8-SC1-IN-8	25C or low

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

EPA TO-11A

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Release 15
Reference Contract # 55502
NIOSH 2016 MOD / EPA TO-11A

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	Dianne Turner		2/15/17 1300	Julie Gradishar	Julie Gradishar		2/15/17 1:00
JA Gradishar WRPS	Julie Gradishar		2/15/17 1400	FEDEX			
FedEx				Meredith Edwards	Meredith Edwards		2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
		Emilie R Pratt	2/22/17 15:20

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

A-6003-962 (03/05)

C.3.9 1, 3-Butadiene

ANALYTICAL REPORT

Report Date: February 23, 2017

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20170340
Workorder: 34-1704846
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003787** / Lab ID: 1704846001				Collected: 02/11/2017 / Received: 02/17/2017
Method: **NIOSH 1024**	Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**			Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003788** / Lab ID: 1704846002				Collected: 02/11/2017 / Received: 02/17/2017
Method: **NIOSH 1024**	Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**			Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003789** / Lab ID: 1704846003				Collected: 02/11/2017 / Received: 02/17/2017
Method: **NIOSH 1024**	Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**			Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003790** / Lab ID: 1704846004				Collected: 02/11/2017 / Received: 02/17/2017
Method: **NIOSH 1024**	Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**			Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003791**				Collected: 02/11/2017
Lab ID: 1704846005				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m^3)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003792**				Collected: 02/11/2017
Lab ID: 1704846006				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m^3)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003793**				Collected: 02/11/2017
Lab ID: 1704846007				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m^3)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003794**				Collected: 02/11/2017
Lab ID: 1704846008				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m^3)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003795**				Collected: 02/11/2017
Lab ID: 1704846009				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
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: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003796**				Collected: 02/11/2017
Lab ID: 1704846010				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003797**				Collected: 02/11/2017
Lab ID: 1704846011				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003798**				Collected: 02/11/2017
Lab ID: 1704846012				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003799**				Collected: 02/11/2017
Lab ID: 1704846013				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003800**				Collected: 02/11/2017
Lab ID: 1704846014				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003801**				Collected: 02/11/2017
Lab ID: 1704846015				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003802**				Collected: 02/11/2017
Lab ID: 1704846016				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003803**				Collected: 02/11/2017
Lab ID: 1704846017				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003804**				Collected: 02/11/2017
Lab ID: 1704846018				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003805**				Collected: 02/11/2017
Lab ID: 1704846019				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003806**				Collected: 02/11/2017
Lab ID: 1704846020				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003807**				Collected: 02/11/2017
Lab ID: 1704846021				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003808**				Collected: 02/11/2017
Lab ID: 1704846022				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003809**				Collected: 02/11/2017
Lab ID: 1704846023				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003810**				Collected: 02/11/2017
Lab ID: 1704846024				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003811**				Collected: 02/11/2017
Lab ID: 1704846025				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003812**				Collected: 02/11/2017
Lab ID: 1704846026				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003813**				Collected: 02/11/2017
Lab ID: 1704846027				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003814**				Collected: 02/11/2017
Lab ID: 1704846028				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003815**				Collected: 02/11/2017
Lab ID: 1704846029				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003816**				Collected: 02/11/2017
Lab ID: 1704846030				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003817**				Collected: 02/11/2017
Lab ID: 1704846031				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003818**				Collected: 02/11/2017
Lab ID: 1704846032				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003819**				Collected: 02/11/2017
Lab ID: 1704846033				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003820**				Collected: 02/11/2017
Lab ID: 1704846034				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003821**				Collected: 02/11/2017
Lab ID: 1704846035				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003822**				Collected: 02/11/2017
Lab ID: 1704846036				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003823**				Collected: 02/11/2017
Lab ID: 1704846037				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003824**				Collected: 02/11/2017
Lab ID: 1704846038				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003825**				Collected: 02/11/2017
Lab ID: 1704846039				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/22/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003826**	Collected: 02/11/2017
Lab ID: 1704846040	Received: 02/17/2017
Method: **NIOSH 1024**	Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**
	Analyzed: 02/22/2017

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Comments

Workorder: **1704846**

QC/QD pair 537921/537922 relate to samples 1704846001-020.

QC/QD pair 537924/537925 relate to samples 1704846021-040

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

Method	Analyst	Peer Review
NIOSH 1024	/S/ Fred Rejali 02/23/2017 01:07	/S/ Thomas J. Masoian 02/23/2017 13:00

Laboratory Contact Information

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

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: **34-1704846**
Client Project ID: S17T003787 021117
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.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
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	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	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.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 Envrionmental 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: 1704846

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1024
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/8186 (HBN: 185696)
	Prepared By: NA	**Analyzed By:** Fred Rejali

Blank

MB: 537920
Analyzed: 02/22/2017 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 537923
Analyzed: 02/22/2017 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 537921
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: mg/sample

LCSD: 537922
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	%Rec	QC Limits		LCSD Result	%Rec	RPD	QC Limits	
1,3-Butadiene	0.0304	0.0308	98.8	78.0	117.6	0.0297	96.5	2.33	0.0	20.0

LCS: 537924
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: mg/sample

LCSD: 537925
Analyzed: 02/22/2017 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	%Rec	QC Limits		LCSD Result	%Rec	RPD	QC Limits	
1,3-Butadiene	0.0300	0.0308	97.5	78.0	117.6	0.0298	96.8	0.669	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	/S/ Thomas J. Masoian
02/23/2017 01:07	02/23/2017 13:00

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1704846

As N/A W 1704846

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20170340

Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003787	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-BA-EFA	CHILL -4C
	S17T003788	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-BA-EFB	CHILL -4C
	S17T003789	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-BA-INA	CHILL -4C
	S17T003790	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-BA-INB	CHILL -4C
	S17T003791	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-BL-EFA	CHILL -4C
	S17T003792	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-BL-EFB	CHILL -4C
	S17T003793	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-BL-INA	CHILL -4C
	S17T003794	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-BL-INB	CHILL -4C
	S17T003795	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-1-A	CHILL -4C
	S17T003796	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-1-B	CHILL -4C

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 1300	RE Rogers	2/15/17 1300
RE Rogers	2/15/17 1400	FEDEX	
		Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Fred Reich — Date/Time: 02/22/17 0400

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170340
N/A		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033	Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003797	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-2-A	CHILL -4C
	S17T003798	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-2-B	CHILL -4C
	S17T003799	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-3-A	CHILL -4C
	S17T003800	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-3-B	CHILL -4C
	S17T003801	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-4-A	CHILL -4C
	S17T003802	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-4-B	CHILL -4C
	S17T003803	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-5-A	CHILL -4C
	S17T003804	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-5-B	CHILL -4C
	S17T003805	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-6-A	CHILL -4C
	S17T003806	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-6-B	CHILL -4C

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 13:00	RE Rogers	2/15/17 1300
RE Rogers	2/15/17 1400	FEDEX	

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Fred Reich — Date/Time: 02/22/17 0400

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170340
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WFS-033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003807	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-7-A	CHILL -4C
	S17T003808	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-7-B	CHILL -4C
	S17T003809	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-EF-8-A	CHILL -4C
	S17T003810	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-EF-8-B	CHILL -4C
	S17T003811	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-1-A	CHILL -4C
	S17T003812	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-IN-1-B	CHILL -4C
	S17T003813	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-2-A	CHILL -4C
	S17T003814	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-IN-2-B	CHILL -4C
	S17T003815	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-3-A	CHILL -4C
	S17T003816	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-IN-3-B	CHILL -4C

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

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	Dianne Turner	Dianne Turner	2/15/17 13:00	RE Rogers			2/15/17 1300
Relinquished By			Date/Time	Received By			Date/Time
RE Rogers			2/15/17 1400	FEDEX			
Relinquished By			Date/Time	Received By			Date/Time
							2/16/17 1000
Relinquished By			Date/Time	Received By			Date/Time

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Fred Rejali Date/Time: 02/22/17 0400

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)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20170340

Page 4 of 4

Assembler: N/A	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
Collector: JONES	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
SAF No.: N/A	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033 Temp. ON ICE
Project Title: 2017 CARTRIDGE EVALUATION	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Shipped To (Lab): ALS	Data Turnaround: 10 DAYS	Parts and Return No. 41947
Protocol: N/A		

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003817	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-4-A	CHILL -4C
	S17T003818	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-IN-4-B	CHILL -4C
	S17T003819	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-5-A	CHILL -4C
	S17T003820	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-5-B	CHILL -4C
	S17T003821	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-6-A	CHILL -4C
	S17T003822	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-IN-6-B	CHILL -4C
	S17T003823	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-7-A	CHILL -4C
	S17T003824	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-IN-7-B	CHILL -4C
	S17T003825	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-9-SC1-IN-8-A	CHILL -4C
	S17T003826	VA	2/11/17		CHARCOAL TUBE	1,3-Butadiene 17-00253-10-SC1-IN-8-B	CHILL -4C

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	Dianne Turner		2/15/17 13:00	RE Rogers			2/15/17 1300
RE Rogers			2/15/17 1400	FEDEX			
Fedex				[illegible]			2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Fred Rejali Date/Time: 02/22/17 0400

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: February 24, 2017

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20170339

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003741** Collected: 02/10/2017
Lab ID: 1704847001 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003742** Collected: 02/10/2017
Lab ID: 1704847002 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003743** Collected: 02/10/2017
Lab ID: 1704847003 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003744** Collected: 02/10/2017
Lab ID: 1704847004 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003745** Collected: 02/10/2017
Lab ID: 1704847005 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003746** Collected: 02/10/2017
Lab ID: 1704847006 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003747** Collected: 02/10/2017
Lab ID: 1704847007 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003748** Collected: 02/10/2017
Lab ID: 1704847008 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003749** Collected: 02/10/2017
Lab ID: 1704847009 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003750**				Collected: 02/10/2017
Lab ID: 1704847010				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003751**				Collected: 02/10/2017
Lab ID: 1704847011				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003752**				Collected: 02/10/2017
Lab ID: 1704847012				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003753**				Collected: 02/10/2017
Lab ID: 1704847013				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003754**				Collected: 02/10/2017
Lab ID: 1704847014				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003755**				Collected: 02/10/2017
Lab ID: 1704847015				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003756**				Collected: 02/10/2017
Lab ID: 1704847016				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003757**				Collected: 02/10/2017
Lab ID: 1704847017				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003758**				Collected: 02/10/2017
Lab ID: 1704847018				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003759**				Collected: 02/10/2017
Lab ID: 1704847019				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003760**				Collected: 02/10/2017
Lab ID: 1704847020				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003761**				Collected: 02/10/2017
Lab ID: 1704847021				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003762**				Collected: 02/10/2017
Lab ID: 1704847022				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003763**				Collected: 02/10/2017
Lab ID: 1704847023				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003764**				Collected: 02/10/2017
Lab ID: 1704847024				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003765**				Collected: 02/10/2017
Lab ID: 1704847025				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003766**				Collected: 02/10/2017
Lab ID: 1704847026				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003767**				Collected: 02/10/2017
Lab ID: 1704847027				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003768**				Collected: 02/10/2017
Lab ID: 1704847028				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003769**				Collected: 02/10/2017
Lab ID: 1704847029				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003771**				Collected: 02/10/2017
Lab ID: 1704847030				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003772**				Collected: 02/10/2017
Lab ID: 1704847031				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003773**				Collected: 02/10/2017
Lab ID: 1704847032				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003774**				Collected: 02/10/2017
Lab ID: 1704847033				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003775**				Collected: 02/10/2017
Lab ID: 1704847034				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003776**				Collected: 02/10/2017
Lab ID: 1704847035				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003777**				Collected: 02/10/2017
Lab ID: 1704847036				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003778**				Collected: 02/10/2017
Lab ID: 1704847037				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003779**				Collected: 02/10/2017
Lab ID: 1704847038				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: **S17T003780**				Collected: 02/10/2017
Lab ID: 1704847039				Received: 02/17/2017
Method: **NIOSH 1024**		Media: SKC 226-37 Sorbent Tube Sampling Parameter: **Air Volume Not Provided**		Analyzed: 02/23/2017
Analyte	**Result (mg/sample)**	**Result (mg/m³)**	**Result (ppm)**	**RL (mg/sample)**
1,3-Butadiene	<0.0010	NA	NA	0.0010

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003781** Collected: 02/10/2017
Lab ID: 1704847040 Received: 02/17/2017

Method: **NIOSH 1024** Media: SKC 226-37 Sorbent Tube Analyzed: 02/23/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Comments

Workorder: **1704847**

QC/QD pair 538243/538244 relate to samples 1704847001-020.

QC/QD pair 538246/538247 relate to samples 1704847021-040.

QC/QD pair 538249/538250 relate to samples 1704849001-012.

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

Method	Analyst	Peer Review
NIOSH 1024	*/S/* Fred Rejali 02/24/2017 04:14	*/S/* Thomas J. Masoian 02/24/2017 09:18

Laboratory Contact Information

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

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: **34-1704847**
Client Project ID: S17T003741 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.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
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	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	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.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 Envrionmental 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: 1704847

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1024
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/8193 (HBN: 185858)
	Prepared By: NA	**Analyzed By:** Fred Rejali

Blank

MB: 538242
Analyzed: 02/23/2017 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 538245
Analyzed: 02/23/2017 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

MB: 538248
Analyzed: 02/23/2017 00:00
Units: mg/sample

Analyte	Result	MDL	RL
1,3-Butadiene	ND	NA	0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 538243
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: mg/sample

LCSD: 538244
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	% Rec	QC Limits		LCSD Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0287	0.0274	105	78.0	117.6	0.0273	99.8	5.00	0.0	20.0

LCS: 538246
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: mg/sample

LCSD: 538247
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	% Rec	QC Limits		LCSD Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0253	0.0274	92.5	78.0	117.6	0.0262	95.8	3.50	0.0	20.0

LCS: 538249
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: mg/sample

LCSD: 538250
Analyzed: 02/23/2017 00:00
Dilution: 1
Units: mg/sample

Analyte	LCS Result	Target	% Rec	QC Limits		LCSD Result	% Rec	RPD	QC Limits	
1,3-Butadiene	0.0237	0.0239	99.0	78.0	117.6	0.0243	102	2.50	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1704847

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1024
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** IFID/8193 (HBN: 185858)
	Prepared By: NA	**Analyzed By:** Fred Rejali

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

Analyst	Peer Review
/S/ Fred Rejali	/S/ Thomas J. Masoian
02/24/2017 04:14	02/24/2017 09:18

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1704847

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20170339

Page 1 of 4

Assembler: N 1704847		
Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-033 Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment:	Bill of Lading/Air Bill No.: 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003741	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-BA-EFA	CHILL -4C
	S17T003742	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-BA-EFB	CHILL -4C
	S17T003743	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-BA-INA	CHILL -4C
	S17T003744	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-BA-INB	CHILL -4C
	S17T003745	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-BL-EFA	CHILL -4C
	S17T003746	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-BL-EFB	CHILL -4C
	S17T003747	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-BL-INA	CHILL -4C
	S17T003748	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-BL-INB	CHILL -4C
	S17T003749	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-1-A	CHILL -4C
	S17T003750	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-1-B	CHILL -4C

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 13:00	RE Rogers [signature]	2/15/17 1300
Julie Gadsohn Julie Gadsohn	2/15/17 1400	FEDEX	
RE Rogers [signature]	2/15/17 1400	FEDEX	
[signature]		[signature]	2/17/17 1200

JG 2/15/17

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Fred Rejnik Date/Time: 02/23/17 1400

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)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20170339

Page 2 of 4

Assembler: N/A	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
Collector: JONES	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
SAF No.: N/A	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS- 033 Temp.: ON Ice
Project Title: 2017 CARTRIDGE EVALUATION	Method of Shipment:	Bill of Lading/Air Bill No.: 7784 4016 3307
Shipped To (Lab): ALS	Data Turnaround: 10 DAYS	Parts and Return No.: 41947
Protocol: N/A		

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003751	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-2-A	CHILL -4C
	S17T003752	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-2-B	CHILL -4C
	S17T003753	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-3-A	CHILL -4C
	S17T003754	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-3-B	CHILL -4C
	S17T003755	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-4-A	CHILL -4C
	S17T003756	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-4-B	CHILL -4C
	S17T003757	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-5-A	CHILL -4C
	S17T003758	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-5-B	CHILL -4C
	S17T003759	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-6-A	CHILL -4C
	S17T003760	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-6-B	CHILL -4C

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SCW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	Dianne Turner		2/15/17 13:00	RE Rogers			2/15/17 1300
Julie Gackstone	Julie Gackstone		2/15/17 1400	FEDEX			
RE Rogers			2/15/17 1400	FEDEX			
				[illegible]			2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Fred Rajah Date/Time: 02/23/17 1400

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)

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C.399

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170339
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. WTS-033 Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003761	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-7-A	CHILL -4C
	S17T003762	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-7-B	CHILL -4C
	S17T003763	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-EF-8-A	CHILL -4C
	S17T003764	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-EF-8-B	CHILL -4C
	S17T003765	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-1-A	CHILL -4C
	S17T003766	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-1-B	CHILL -4C
	S17T003767	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-2-A	CHILL -4C
	S17T003768	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-2-B	CHILL -4C
	S17T003769	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-3-A	CHILL -4C
	S17T003771	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-3-B	CHILL -4C

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

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Relinquished By	Print - Sign	Date/Time	Received By	Print Sign	Date/Time
Dianne Turner	Dianne Turner	2/15/17 1300	RE Rogers	RE Rogers	2/15/17 1300
Julie Gadoka	Julie Gadoka	2/15/17 1400	FEDEX		Date/Time
RE Rogers	RE Rogers	2/15/17 1400	FEDEX		Date/Time
		Date/Time			Date/Time

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): — Disposed By: Fred Rajab — Date/Time: 02/23/17 1400

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170339
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. wts-033	Temp. ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No. 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003772	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-4-A	CHILL -4C
	S17T003773	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-4-B	CHILL -4C
	S17T003774	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-5-A	CHILL -4C
	S17T003775	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-5-B	CHILL -4C
	S17T003776	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-6-A	CHILL -4C
	S17T003777	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-6-B	CHILL -4C
	S17T003778	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-7-A	CHILL -4C
	S17T003779	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-7-B	CHILL -4C
	S17T003780	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-9-SD1-IN-8-A	CHILL -4C
	S17T003781	VA	2/10/17		CHARCOAL TUBE	1,3-Butadiene 17-00252-10-SD1-IN-8-B	CHILL -4C

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

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald & Greg Scanlan -
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

Reference Contract # 55502
RELEASE 15
NIOSH 1024 CHILL BELOW -4 C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 1300	RE Rogers RE Rogers	2/15/17 1300
Julie Gadson Julie Gad BC	2/15/17	FEDEX	
RE Rogers RE Rogers	2/15/17 1400		
Relinquished By: Fedex		Received By: ~~FEDEX~~ FEDEX	2/17/2017

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By: Fred Rejali — Date/Time: 02/23/17 1400

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

A-6003-962 (03/05)

C.3.10 Pyridines

ANALYTICAL REPORT

Report Date: February 23, 2017

Robert (Buddy) Sosa
Washington River Protection So
PO Box 850, MSIN T6-02
Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20170335
Workorder: 34-1704848
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003621** Collected: 02/10/2017
Lab ID: 1704848001 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003622** Collected: 02/10/2017
Lab ID: 1704848002 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003623** Collected: 02/10/2017
Lab ID: 1704848003 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003624** Collected: 02/10/2017
Lab ID: 1704848004 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003625** Collected: 02/10/2017
Lab ID: 1704848005 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003626** Collected: 02/10/2017
Lab ID: 1704848006 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003627** Collected: 02/10/2017
Lab ID: 1704848007 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003628** Collected: 02/10/2017
Lab ID: 1704848008 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003629** Collected: 02/10/2017
Lab ID: 1704848009 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	**0.62**	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003630** Collected: 02/10/2017
Lab ID: 1704848010 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	**0.69**	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003631** Collected: 02/10/2017
Lab ID: 1704848011 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	**0.73**	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003632** Collected: 02/10/2017
Lab ID: 1704848012 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003633** Collected: 02/10/2017
Lab ID: 1704848013 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	**0.61**	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003634** Collected: 02/10/2017
Lab ID: 1704848014 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	**0.58**	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003635** Collected: 02/10/2017
Lab ID: 1704848015 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	**0.65**	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003636** Collected: 02/10/2017
Lab ID: 1704848016 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	**0.51**	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003637** Collected: 02/10/2017
Lab ID: 1704848017 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003638** Collected: 02/10/2017
Lab ID: 1704848018 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003639** Collected: 02/10/2017
Lab ID: 1704848019 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003640** Collected: 02/10/2017
Lab ID: 1704848020 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003641** Collected: 02/11/2017
Lab ID: 1704848021 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003642** Collected: 02/11/2017
Lab ID: 1704848022 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003643** Collected: 02/11/2017
Lab ID: 1704848023 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003644** Collected: 02/11/2017
Lab ID: 1704848024 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003645** Collected: 02/11/2017
Lab ID: 1704848025 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003646** Collected: 02/11/2017
Lab ID: 1704848026 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003647** Collected: 02/11/2017
Lab ID: 1704848027 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003648** Collected: 02/11/2017
Lab ID: 1704848028 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003649** Collected: 02/11/2017
Lab ID: 1704848029 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003650** Collected: 02/11/2017
Lab ID: 1704848030 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003651** Collected: 02/11/2017
Lab ID: 1704848031 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003652** Collected: 02/11/2017
Lab ID: 1704848032 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003653** Collected: 02/11/2017
Lab ID: 1704848033 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003654** Collected: 02/11/2017
Lab ID: 1704848034 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/20/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003655** Collected: 02/11/2017
Lab ID: 1704848035 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003656** Collected: 02/11/2017
Lab ID: 1704848036 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003657** Collected: 02/11/2017
Lab ID: 1704848037 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003658** Collected: 02/11/2017
Lab ID: 1704848038 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Sample ID: **S17T003659** Collected: 02/11/2017
Lab ID: 1704848039 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

Analytical Results

Sample ID: **S17T003660** Collected: 02/11/2017
Lab ID: 1704848040 Received: 02/17/2017

Method: **NIOSH 1613 Mod.** Media: SKC 226-01, Charcoal Tube 100/50mg Analyzed: 02/21/2017
Sampling Parameter: **Air Volume Not Provided**

Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

Comments

Workorder: **1704848**

NIOSH 1613 Mod.: The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed.

QC samples 537871, 537872 and 537873 are associated with samples 001-020. QC samples 537874, 537875, 537876 are associated with samples 021-040.

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

Method	Analyst	Peer Review
NIOSH 1613 Mod.	/S/ David Teynor 02/22/2017 11:47	/S/ Thomas J. Masoian 02/23/2017 15:55

Laboratory Contact Information

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

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: **34-1704848**
Client Project ID: S17T003621 021017
Purchase Order: 55502 Rel15
Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.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
	Kansas	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	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	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.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 Envrionmental 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: 1704848

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1613 Mod.
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ISVO/3342 (HBN: 185674)
	Prepared By: NA	**Analyzed By:** David Teynor

Blank

LMB: 537871
Analyzed: 02/20/2017 14:16
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: 537872
Analyzed: 02/20/2017 14:36
Dilution: 1
Units: ug/sample

LCSD: 537873
Analyzed: 02/20/2017 14:57
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Pyridine	1.20	1.00	120	61.8	141.1	1.22	122	1.50	0.0	22.1
2,4-Dimethylpyridine	1.14	1.00	114	51.7	130.6	1.14	114	0.754	0.0	22.2

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

Analyst	Peer Review
/S/ David Teynor 02/22/2017 09:24	/S/ Thomas J. Masoian 02/23/2017 15:49

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1704848

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** NIOSH 1613 Mod.
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ISVO/3343 (HBN: 185675)
	Prepared By: NA	**Analyzed By:** David Teynor

Blank

LMB: 537874
Analyzed: 02/20/2017 14:27
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: 537875
Analyzed: 02/20/2017 14:47
Dilution: 1
Units: ug/sample

LCSD: 537876
Analyzed: 02/20/2017 15:06
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Pyridine	0.959	1.00	95.9	61.8	141.1	0.990	99.0	3.22	0.0	22.1
2,4-Dimethylpyridine	0.965	1.00	96.5	51.7	130.6	1.01	101	5.01	0.0	22.2

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

Analyst	Peer Review
/S/ David Teynor 02/22/2017 11:47	/S/ Thomas J. Masoian 02/23/2017 15:55

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1704848

Ass N/A W 1704848

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20170335

Page 1 of 4

Collector JONES	Contact/Requestor CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No. N/A	Sample Origin 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code 203006/C320
Project Title 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No. N/A	Ice Chest No. WTS-033 Temp. ON ICE
Shipped To (Lab) ALS	Method of Shipment	Bill of Lading/Air Bill No. 7784 4016 3307
Protocol N/A	Data Turnaround 10 DAYS	Parts and Return No. 41947

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003621	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-BA-EF	N/A
	S17T003622	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-BA-IN	N/A
	S17T003623	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-BL-EF	N/A
	S17T003624	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-BL-IN	N/A
	S17T003625	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-1	N/A
	S17T003626	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-2	N/A
	S17T003627	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-3	N/A
	S17T003628	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-4	N/A
	S17T003629	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-5	N/A
	S17T003630	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-6	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 15
Reference Contract # 55502

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	Dianne Turner		2/15/17 13:00	Julie Gadishu	Julie Gadishu		2/15/17 1300
Julie Gadishu	Julie Gadishu		2/15/17 1400	FEDEX			
[illegible]				[illegible]	Edwards	[illegible]	2/17/17 1000

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process): Per lab Procedure

Disposed By: [signature]

Date/Time: 2/20/17 10:30

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170335
N/A		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861	MSIN: 76-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WIS-033	Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003631	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-7	N/A
	S17T003632	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-EF-8	N/A
	S17T003633	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-1	N/A
	S17T003634	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-2	N/A
	S17T003635	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-3	N/A
	S17T003636	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-4	N/A
	S17T003637	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-5	N/A
	S17T003638	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-6	N/A
	S17T003639	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-7	N/A
	S17T003640	VA	02/10/17		CHARCOAL TUBE	Pyridines 17-00252-11-SD1-IN-8	N/A

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

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 15
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner / Dianne Turner	2/15/17 1300	Julie Gradwohl / Julie Gradwohl	2/15/17 1400
Julie Gradwohl / Julie Gradwohl	2/15/17 1400	FEDEX	
FEDEX			2/17/17 1020

Matrix*

S = Soil	DL = Drum Liquids		
SE = Sediment	T = Tissue		
SO = Solid	WI = Wipe		
SL = Sludge	L = Liquid		
W = Water	V = Vegetation		
O = Oil	VA = Vapor		
A = Air	X = Other		
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): per lab Procedure — Disposed By: — Date/Time: 2/20/17 10:30

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

A-6003-962 (03/05)

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170335
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN 26-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-033	Temp.: ON Ice
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003641	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-BA-EF	N/A
	S17T003642	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-BA-IN	N/A
	S17T003643	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-BL-EF	N/A
	S17T003644	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-BL-IN	N/A
	S17T003645	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-1	N/A
	S17T003646	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-2	N/A
	S17T003647	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-3	N/A
	S17T003648	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-4	N/A
	S17T003649	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-5	N/A
	S17T003650	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-6	N/A

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

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 15
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 1300	Julie Gadoshek Julie Gadoshek	2/15/17 1400
Julie Gadoshek Julie Gadoshek	2/15/17 1400	FEDEX	
FAST		Meredith Edwards Meredith Edwards	2/16/17 0700

Matrix*

S = Soil	DL = Drum Liquids		
SE = Sediment	T = Tissue		
SO = Solid	WI = Wipe		
SL = Sludge	L = Liquid		
W = Water	V = Vegetation		
O = Oil	VA = Vapor		
A = Air	X = Other		
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): Per Lab Procedure. Disposed By: Date/Time: 2/21/17 10:30

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

A-6003-952 (03/05)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Assembler: N/A			C.O.C. No. 20170335
			Page 4 of 4
Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.: WTS-033	Temp.: ON ICE
Shipped To (Lab): ALS	Method of Shipment	Bill of Lading/Air Bill No.: 7784 4016 3307	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.: 41947	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003651	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-7	N/A
	S17T003652	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-EF-8	N/A
	S17T003653	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-1	N/A
	S17T003654	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-2	N/A
	S17T003655	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-3	N/A
	S17T003656	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-4	N/A
	S17T003657	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-5	N/A
	S17T003658	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-6	N/A
	S17T003659	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-7	N/A
	S17T003660	VA	02/11/17		CHARCOAL TUBE	Pyridines 17-00253-11-SC1-IN-8	N/A

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

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV and Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

RELEASE 15
Reference Contract # 55502

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 1300	Julie Gradisher Julie Gradisher	2/15/17 1:00
Julie Gradisher Julie Gradisher	2/15/17 1400	FEDEX	
		Meredith Edwards Meredith Edwards	2/17/17 1020

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process): per lab procedure — Disposed By — Date/Time: 2/20/17 10:30

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

A-6003-962 (03/05)

C.3.11 Nitrosamines

RJ LEE GROUP

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09/07/17

Washington River Protection Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

Contract No.: 55503 R9

Project: 2017 Cartridge Evaluation

Subject: Nitrosamines Analysis Report, Group Number 20170336

Enclosed is the final report for group 20170336 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20170336 has been assigned a Columbia Basin Analytical Laboratories login order number of W702049. This report consists of a summary report of the samples, a single quality control report for the analysis batch, and a copy of the chain of custody.

General Set Comments

Columbia Basin Analytical Laboratories received 40 samples on 02/15/17 to be tested for Nitrosamines. The samples were analyzed in accordance with NIOSH 2522-Modified for N-Nitrosodimethylamine, N-Nitrosomethylethylamine, N-Nitrosodiethylamine, N-Nitrosodi-n-propylamine,
N-Nitrosodi-n-butylamine, N-Nitrosopiperidine, N-Nitrosopyrrolidine,and N-Nitrosomorpholine. All results have been corrected for desorption efficiency and measurable levels in the blanks.

**- Analyte not detected at or above MRL on initial analysis. Analyte detected at or above MRL on confirmation analysis. Analyte not confirmed.*

X- Analyte detected at or above MRL on initial analysis. Analyte not detected at or above MRL on confirmation analysis. Analyte not confirmed.

C- Analyte detected at or above MRL on initial analysis and confirmation analysis. Poor mass agreement between initial and confirmation analysis indicates interference such that this result should be considered qualitative only.

-Revision is due to an error discovered in the previous reporting template regarding the use of blank subtraction applied to final results. This revision is through our current reporting template, which has been validated and approved per QA manager.

Results

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

SampleName	Analyzed	Analyte	CAS Number	Results	RL	Units	Flags
17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosodiethylamine	55-18-5	0.107	0.010	µg/tube	

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17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosodimethylamine	62-75-9	0.107	0.010	µg/tube	
17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.120	0.010	µg/tube	
17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.111	0.010	µg/tube	
17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.111	0.010	µg/tube	
17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosomorpholine	59-89-2	0.120	0.010	µg/tube	
17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosopiperidine	100-75-4	0.122	0.010	µg/tube	
17-00252-12-SD1-BA-EF	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.134	0.010	µg/tube	
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosodiethylamine	55-18-5	0.011	0.010	µg/tube	
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosodimethylamine	62-75-9	0.015	0.010	µg/tube	
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	*
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	µg/tube	X
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.011	0.010	µg/tube	
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosomorpholine	59-89-2	0.013	0.010	µg/tube	
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosopiperidine	100-75-4	0.013	0.010	µg/tube	
17-00252-12-SD1-BA-IN	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.013	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosodiethylamine	55-18-5	0.014	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosodimethylamine	62-75-9	0.014	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.015	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.012	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.012	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosomorpholine	59-89-2	0.016	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosopiperidine	100-75-4	0.016	0.010	µg/tube	
17-00252-12-SD1-BL-EF	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.016	0.010	µg/tube	
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosodimethylamine	62-75-9	0.011	0.010	µg/tube	
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.010	0.010	µg/tube	X
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube	
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosomorpholine	59-89-2	0.015	0.010	µg/tube	
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosopiperidine	100-75-4	0.012	0.010	µg/tube	X
17-00252-12-SD1-BL-IN	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.014	0.010	µg/tube	

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17-00252-12-SD1-EF-1	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-1	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-1	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-1	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-1	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-1	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-1	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-1	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-2	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-3	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-4	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-4	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-4	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-4	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-4	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-4	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00252-12-SD1-EF-4	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube

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17-00252-12-SD1-EF-4	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-EF-5	02/18/17	N-Nitrosodiethylamine	55-18-5	0.275	0.010	µg/tube	C
17-00252-12-SD1-EF-5	02/21/17	N-Nitrosodimethylamine	62-75-9	2.565	0.103	µg/tube	D
17-00252-12-SD1-EF-5	02/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.054	0.010	µg/tube	
17-00252-12-SD1-EF-5	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.022	0.010	µg/tube	X
17-00252-12-SD1-EF-5	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.053	0.010	µg/tube	
17-00252-12-SD1-EF-5	02/18/17	N-Nitrosomorpholine	59-89-2	0.010	0.010	µg/tube	X
17-00252-12-SD1-EF-5	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	
17-00252-12-SD1-EF-5	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-EF-6	02/18/17	N-Nitrosodiethylamine	55-18-5	0.278	0.010	µg/tube	C
17-00252-12-SD1-EF-6	02/21/17	N-Nitrosodimethylamine	62-75-9	2.838	0.103	µg/tube	D
17-00252-12-SD1-EF-6	02/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.039	0.010	µg/tube	
17-00252-12-SD1-EF-6	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.017	0.010	µg/tube	
17-00252-12-SD1-EF-6	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.056	0.010	µg/tube	
17-00252-12-SD1-EF-6	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-EF-6	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	
17-00252-12-SD1-EF-6	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-EF-7	02/18/17	N-Nitrosodiethylamine	55-18-5	0.263	0.010	µg/tube	C
17-00252-12-SD1-EF-7	02/21/17	N-Nitrosodimethylamine	62-75-9	2.645	0.103	µg/tube	D
17-00252-12-SD1-EF-7	02/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.045	0.010	µg/tube	
17-00252-12-SD1-EF-7	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.020	0.010	µg/tube	
17-00252-12-SD1-EF-7	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.052	0.010	µg/tube	
17-00252-12-SD1-EF-7	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-EF-7	02/18/17	N-Nitrosopiperidine	100-75-4	0.015	0.010	µg/tube	
17-00252-12-SD1-EF-7	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-EF-8	02/18/17	N-Nitrosodiethylamine	55-18-5	0.230	0.010	µg/tube	C
17-00252-12-SD1-EF-8	02/21/17	N-Nitrosodimethylamine	62-75-9	2.425	0.103	µg/tube	D
17-00252-12-SD1-EF-8	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.030	0.010	µg/tube	
17-00252-12-SD1-EF-8	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.018	0.010	µg/tube	
17-00252-12-SD1-EF-8	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.050	0.010	µg/tube	
17-00252-12-SD1-EF-8	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	*

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17-00252-12-SD1-EF-8	02/18/17	N-Nitrosopiperidine	100-75-4	0.021	0.010	µg/tube	X
17-00252-12-SD1-EF-8	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-1	02/18/17	N-Nitrosodiethylamine	55-18-5	0.387	0.010	µg/tube	C
17-00252-12-SD1-IN-1	02/21/17	N-Nitrosodimethylamine	62-75-9	2.484	0.103	µg/tube	D
17-00252-12-SD1-IN-1	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.033	0.010	µg/tube	
17-00252-12-SD1-IN-1	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.029	0.010	µg/tube	
17-00252-12-SD1-IN-1	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.063	0.010	µg/tube	C
17-00252-12-SD1-IN-1	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-1	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-1	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-2	02/18/17	N-Nitrosodiethylamine	55-18-5	0.395	0.010	µg/tube	C
17-00252-12-SD1-IN-2	02/21/17	N-Nitrosodimethylamine	62-75-9	3.212	0.109	µg/tube	D
17-00252-12-SD1-IN-2	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.045	0.010	µg/tube	
17-00252-12-SD1-IN-2	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.034	0.010	µg/tube	
17-00252-12-SD1-IN-2	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.067	0.010	µg/tube	
17-00252-12-SD1-IN-2	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-2	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-2	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.013	0.010	µg/tube	
17-00252-12-SD1-IN-3	02/18/17	N-Nitrosodiethylamine	55-18-5	0.298	0.010	µg/tube	C
17-00252-12-SD1-IN-3	02/21/17	N-Nitrosodimethylamine	62-75-9	2.775	0.109	µg/tube	D
17-00252-12-SD1-IN-3	02/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.037	0.010	µg/tube	
17-00252-12-SD1-IN-3	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.018	0.010	µg/tube	
17-00252-12-SD1-IN-3	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	µg/tube	
17-00252-12-SD1-IN-3	02/18/17	N-Nitrosomorpholine	59-89-2	0.010	0.010	µg/tube	
17-00252-12-SD1-IN-3	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-3	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-4	02/18/17	N-Nitrosodiethylamine	55-18-5	0.273	0.010	µg/tube	C
17-00252-12-SD1-IN-4	02/22/17	N-Nitrosodimethylamine	62-75-9	2.631	0.103	µg/tube	D
17-00252-12-SD1-IN-4	02/22/17	N-Nitrosodi-n-butylamine	924-16-3	0.043	0.010	µg/tube	
17-00252-12-SD1-IN-4	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-4	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	µg/tube	

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17-00252-12-SD1-IN-4	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-4	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-4	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	*
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosodimethylamine	62-75-9	0.014	0.010	µg/tube	X
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-5	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-6	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-7	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-8	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-8	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-8	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-8	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	

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17-00252-12-SD1-IN-8	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-8	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-8	02/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	µg/tube	
17-00252-12-SD1-IN-8	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.014	0.010	µg/tube	
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	µg/tube	
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube	*
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosomorpholine	59-89-2	0.016	0.010	µg/tube	
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosopiperidine	100-75-4	0.014	0.011	µg/tube	
17-00253-12-SC1-BA-EF	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.013	0.010	µg/tube	
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	*
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosodimethylamine	62-75-9	0.038	0.010	µg/tube	
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.018	0.010	µg/tube	
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	*
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube	
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube	*
17-00253-12-SC1-BA-IN	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube	
17-00253-12-SC1-BL-EF	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	

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17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-BL-IN	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-1	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-2	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-3	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-4	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-4	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube

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17-00253-12-SC1-EF-4	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-4	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-4	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-4	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-4	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-4	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-5	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-6	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube
17-00253-12-SC1-EF-7	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube
17-00253-12-SC1-EF-8	02/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	µg/tube

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17-00253-12-SC1-EF-8	02/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	µg/tube	
17-00253-12-SC1-EF-8	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	µg/tube	
17-00253-12-SC1-EF-8	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	
17-00253-12-SC1-EF-8	02/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	µg/tube	
17-00253-12-SC1-EF-8	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-EF-8	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube	
17-00253-12-SC1-EF-8	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-1	02/18/17	N-Nitrosodiethylamine	55-18-5	0.015	0.010	µg/tube	C
17-00253-12-SC1-IN-1	02/21/17	N-Nitrosodimethylamine	62-75-9	2.810	0.105	µg/tube	D
17-00253-12-SC1-IN-1	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.046	0.010	µg/tube	
17-00253-12-SC1-IN-1	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.021	0.010	µg/tube	
17-00253-12-SC1-IN-1	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.037	0.011	µg/tube	C
17-00253-12-SC1-IN-1	02/18/17	N-Nitrosomorpholine	59-89-2	0.022	0.010	µg/tube	
17-00253-12-SC1-IN-1	02/18/17	N-Nitrosopiperidine	100-75-4	0.085	0.011	µg/tube	C
17-00253-12-SC1-IN-1	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.021	0.010	µg/tube	X
17-00253-12-SC1-IN-2	02/18/17	N-Nitrosodiethylamine	55-18-5	0.044	0.010	µg/tube	C
17-00253-12-SC1-IN-2	02/21/17	N-Nitrosodimethylamine	62-75-9	3.251	0.105	µg/tube	D
17-00253-12-SC1-IN-2	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.055	0.010	µg/tube	
17-00253-12-SC1-IN-2	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.023	0.010	µg/tube	
17-00253-12-SC1-IN-2	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.042	0.011	µg/tube	C
17-00253-12-SC1-IN-2	02/18/17	N-Nitrosomorpholine	59-89-2	0.025	0.010	µg/tube	X
17-00253-12-SC1-IN-2	02/18/17	N-Nitrosopiperidine	100-75-4	0.084	0.011	µg/tube	C
17-00253-12-SC1-IN-2	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.022	0.010	µg/tube	X
17-00253-12-SC1-IN-3	02/18/17	N-Nitrosodiethylamine	55-18-5	0.017	0.010	µg/tube	C
17-00253-12-SC1-IN-3	02/21/17	N-Nitrosodimethylamine	62-75-9	3.010	0.105	µg/tube	D
17-00253-12-SC1-IN-3	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.054	0.010	µg/tube	
17-00253-12-SC1-IN-3	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.021	0.010	µg/tube	
17-00253-12-SC1-IN-3	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.043	0.011	µg/tube	C
17-00253-12-SC1-IN-3	02/18/17	N-Nitrosomorpholine	59-89-2	0.022	0.010	µg/tube	X
17-00253-12-SC1-IN-3	02/18/17	N-Nitrosopiperidine	100-75-4	0.074	0.011	µg/tube	C
17-00253-12-SC1-IN-3	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.018	0.010	µg/tube	X

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17-00253-12-SC1-IN-4	02/18/17	N-Nitrosodiethylamine	55-18-5	0.017	0.010	µg/tube	C
17-00253-12-SC1-IN-4	02/21/17	N-Nitrosodimethylamine	62-75-9	3.391	0.105	µg/tube	D
17-00253-12-SC1-IN-4	02/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.046	0.010	µg/tube	
17-00253-12-SC1-IN-4	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.030	0.010	µg/tube	
17-00253-12-SC1-IN-4	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.048	0.011	µg/tube	C
17-00253-12-SC1-IN-4	02/18/17	N-Nitrosomorpholine	59-89-2	0.011	0.010	µg/tube	X
17-00253-12-SC1-IN-4	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube	
17-00253-12-SC1-IN-4	02/18/17	N-Nitrosopyrrolidine	930-55-2	0.012	0.010	µg/tube	X
17-00253-12-SC1-IN-5	02/18/17	N-Nitrosodiethylamine	55-18-5	0.015	0.010	µg/tube	C
17-00253-12-SC1-IN-5	02/21/17	N-Nitrosodimethylamine	62-75-9	2.628	0.105	µg/tube	D
17-00253-12-SC1-IN-5	02/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.048	0.010	µg/tube	
17-00253-12-SC1-IN-5	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.015	0.010	µg/tube	X
17-00253-12-SC1-IN-5	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.038	0.011	µg/tube	
17-00253-12-SC1-IN-5	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-5	02/18/17	N-Nitrosopiperidine	100-75-4	0.021	0.011	µg/tube	
17-00253-12-SC1-IN-5	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-6	02/18/17	N-Nitrosodiethylamine	55-18-5	0.014	0.010	µg/tube	C
17-00253-12-SC1-IN-6	02/21/17	N-Nitrosodimethylamine	62-75-9	2.797	0.105	µg/tube	D
17-00253-12-SC1-IN-6	02/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.055	0.010	µg/tube	
17-00253-12-SC1-IN-6	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	µg/tube	X
17-00253-12-SC1-IN-6	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.035	0.011	µg/tube	
17-00253-12-SC1-IN-6	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-6	02/18/17	N-Nitrosopiperidine	100-75-4	0.012	0.011	µg/tube	X
17-00253-12-SC1-IN-6	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-7	02/18/17	N-Nitrosodiethylamine	55-18-5	0.014	0.010	µg/tube	C
17-00253-12-SC1-IN-7	02/21/17	N-Nitrosodimethylamine	62-75-9	2.493	0.105	µg/tube	D
17-00253-12-SC1-IN-7	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.037	0.010	µg/tube	
17-00253-12-SC1-IN-7	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	µg/tube	X
17-00253-12-SC1-IN-7	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.032	0.011	µg/tube	
17-00253-12-SC1-IN-7	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-7	02/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	µg/tube	

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17-00253-12-SC1-IN-7	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-8	02/18/17	N-Nitrosodiethylamine	55-18-5	0.011	0.010	µg/tube	C
17-00253-12-SC1-IN-8	02/21/17	N-Nitrosodimethylamine	62-75-9	2.341	0.105	µg/tube	D
17-00253-12-SC1-IN-8	02/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.029	0.010	µg/tube	
17-00253-12-SC1-IN-8	02/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-8	02/18/17	N-Nitrosomethylethylamine	10595-95-6	0.030	0.011	µg/tube	
17-00253-12-SC1-IN-8	02/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	µg/tube	
17-00253-12-SC1-IN-8	02/18/17	N-Nitrosopiperidine	100-75-4	0.013	0.011	µg/tube	X
17-00253-12-SC1-IN-8	02/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	µg/tube	

Recovery Failures in the ICV, CCV, LCS, and MRL

There were no recovery failures in the CCV, ICV, LCS, MRL.

RSD Failures in the LCS

There were no RSD failures between the laboratory control samples.

Measurable Blank Values

There were no measurable analytes in the blank samples.

Calibration Curves

The calibration curves for the Nitrosamines had an R-value that was 0.997 or better, over a range of 5.0 ng/mL to 200 ng/mL.

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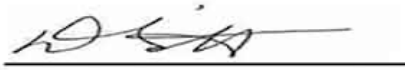
General Lab Comments

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.

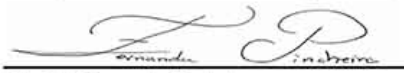


02/28/17

Scientist II Dennese Smith

If you have any questions, please feel free to contact Dennese Smith at dennese.smith@rjleegroup.com or at 509-545-4989.

This report has been reviewed and approved by the following individual:



09/07/17

Scientist I Fernanda Pincheira

RJ LEE GROUP

Carl Howald IV
Washington River Protection
Solutions, LLC
P.O. Box 850 MSIN H6-16
Richland, WA 99352

Client Project: 2017 Cartridge Evaluation

Laboratory Report

NIOSH 2522-Modified
Air/Emissions No Vol on GC/TEA Analyzer
Summary Table

RJ Lee Group No.: W702049
Samples Received: 2/15/17
Report Date: 9/7/17
COC No.: 20170336
Extraction Date: 2/16/17

Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-00252-12-SD1-BA-EF | S17T003661	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.107	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	0.107	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.120	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.111	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.111	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.120	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.122	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.134	0.010	
17-00252-12-SD1-BA-IN | S17T003662	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.011	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	0.015	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	X
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.011	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.013	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.013	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.013	0.010	
17-00252-12-SD1-BL-EF | S17T003663	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.014	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	0.014	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.015	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.012	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.012	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.016	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.016	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.016	0.010	
17-00252-12-SD1-BL-IN | S17T003664	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	0.011	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.010	0.010	X
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.015	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.012	0.010	X
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.014	0.010	
17-00252-12-SD1-EF-1 | S17T003665	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	

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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-00252-12-SD1-EF-2 | S17T003666	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00252-12-SD1-EF-3 | S17T003667	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00252-12-SD1-EF-4 | S17T003668	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00252-12-SD1-EF-5 | S17T003669	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.275	0.010	C
	2/10/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.142	0.011	
	2/10/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.422	0.103	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.033	0.010	
	2/10/17	2/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.021	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.022	0.010	X
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.053	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.010	0.010	X
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	*
17-00252-12-SD1-EF-6 | S17T003670	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.278	0.010	C
	2/10/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.176	0.011	
	2/10/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.662	0.103	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.026	0.010	
	2/10/17	2/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.013	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.017	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.056	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00252-12-SD1-EF-7 | S17T003671	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.263	0.010	C
	2/10/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.178	0.011	

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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-00252-12-SD1-EF-7 | S17T003671	2/10/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.467	0.103	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.035	0.010	
	2/10/17	2/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.011	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.020	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.052	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.015	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	*
17-00252-12-SD1-EF-8 | S17T003672	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.230	0.010	C
	2/10/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.138	0.011	
	2/10/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.288	0.103	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.030	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.018	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.050	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.021	0.010	X
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	*
17-00252-12-SD1-IN-1 | S17T003673	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.387	0.010	C
	2/10/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.168	0.011	
	2/10/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.317	0.103	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.033	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.029	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.063	0.010	C
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	*
17-00252-12-SD1-IN-2 | S17T003674	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.395	0.010	C
	2/10/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.122	0.011	
	2/10/17	2/20/17	N-Nitrosodimethylamine	62-75-9	3.090	0.109	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.045	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.034	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.067	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.013	0.010	
17-00252-12-SD1-IN-3 | S17T003675	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.298	0.010	C
	2/10/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.130	0.011	
	2/10/17	2/20/17	N-Nitrosodimethylamine	62-75-9	2.645	0.109	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.026	0.010	
	2/10/17	2/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.012	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.018	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	*
17-00252-12-SD1-IN-4 | S17T003676	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.273	0.010	C

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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-00252-12-SD1-IN-4 | S17T003676	2/10/17	2/22/17	N-Nitrosodimethylamine	62-75-9	0.147	0.011	
	2/10/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.483	0.103	D
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.024	0.010	
	2/10/17	2/22/17	N-Nitrosodi-n-butylamine	924-16-3	0.019	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.055	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	*
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	*
17-00252-12-SD1-IN-5 | S17T003677	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	0.014	0.010	X
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00252-12-SD1-IN-6 | S17T003678	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00252-12-SD1-IN-7 | S17T003679	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00252-12-SD1-IN-8 | S17T003680	2/10/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.010	0.010	
	2/10/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-BA-EF | S17T003681	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.014	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	*

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Sample Identification Client Sample ID	Sampling Date	Analysis Date	Analyte	CAS Number	Concentration µg/tube	RL	Qualifiers
17-00253-12-SC1-BA-EF | S17T003681	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.016	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.014	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.013	0.010	
17-00253-12-SC1-BA-IN | S17T003682	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	*
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	0.038	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.018	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	*
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	*
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-BL-EF | S17T003683	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-BL-IN | S17T003684	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-1 | S17T003685	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-2 | S17T003686	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-3 | S17T003687	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	

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17-00253-12-SC1-EF-3 | S17T003687	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-4 | S17T003688	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-5 | S17T003689	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-6 | S17T003690	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-7 | S17T003691	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-EF-8 | S17T003692	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-IN-1 | S17T003693	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.015	0.010	C

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17-00253-12-SC1-IN-1 | S17T003693	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.146	0.011	
	2/11/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.665	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.046	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.021	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.037	0.011	C
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.022	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.085	0.011	C
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.021	0.010	X
17-00253-12-SC1-IN-2 | S17T003694	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.044	0.010	C
	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.056	0.011	
	2/11/17	2/17/17	N-Nitrosodimethylamine	62-75-9	3.194	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.055	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.023	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.042	0.011	C
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.025	0.010	X
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.084	0.011	C
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.022	0.010	X
17-00253-12-SC1-IN-3 | S17T003695	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.017	0.010	C
	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.086	0.011	
	2/11/17	2/17/17	N-Nitrosodimethylamine	62-75-9	2.924	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.054	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.021	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.043	0.011	C
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.022	0.010	X
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.074	0.011	C
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.018	0.010	X
17-00253-12-SC1-IN-4 | S17T003696	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.017	0.010	C
	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.125	0.011	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	3.266	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.029	0.010	
	2/11/17	2/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.017	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.030	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.048	0.011	C
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	0.011	0.010	X
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	0.012	0.010	X
17-00253-12-SC1-IN-5 | S17T003697	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.015	0.010	C
	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.091	0.011	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	2.537	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.029	0.010	
	2/11/17	2/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.019	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.015	0.010	X
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.038	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.021	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	

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17-00253-12-SC1-IN-6 | S17T003698	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.014	0.010	C
	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.085	0.011	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	2.712	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.026	0.010	
	2/11/17	2/21/17	N-Nitrosodi-n-butylamine	924-16-3	0.030	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	X
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.035	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.012	0.011	X
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-IN-7 | S17T003699	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.014	0.010	C
	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.087	0.011	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	2.406	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.037	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	0.011	0.010	X
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.032	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	<0.011	0.011	
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	
17-00253-12-SC1-IN-8 | S17T003700	2/11/17	2/18/17	N-Nitrosodiethylamine	55-18-5	0.011	0.010	C
	2/11/17	2/21/17	N-Nitrosodimethylamine	62-75-9	0.062	0.011	
	2/11/17	2/18/17	N-Nitrosodimethylamine	62-75-9	2.279	0.105	D
	2/11/17	2/18/17	N-Nitrosodi-n-butylamine	924-16-3	0.029	0.010	
	2/11/17	2/18/17	N-Nitrosodi-n-propylamine	621-64-7	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosomethylethylamine	10595-95-6	0.030	0.011	
	2/11/17	2/18/17	N-Nitrosomorpholine	59-89-2	<0.010	0.010	
	2/11/17	2/18/17	N-Nitrosopiperidine	100-75-4	0.013	0.011	X
	2/11/17	2/18/17	N-Nitrosopyrrolidine	930-55-2	<0.010	0.010	

Report Qualifiers:
A = Target Analyte media breakthrough suspect, see analytical report
B = Analyte detected in the associated blank
D = Analyte analyzed in a dilution
d = Data that exceeds the RSD criteria set by the SOP
E = Report concentration was above the instrument calibration range
H = Holding times for preparation or analysis exceeded
I = Analyte detected below quantitation limits, concentration is estimated
L = Sample condition at receipt out of compliance with method defined conditions
P = Library spectrum match, rsd >90% w RT match
Q = Result out of method specific acceptance QC criteria
R = RPD (relative percent difference) outside accepted recovery limits
S = Spike Recovery outside accepted recovery limits
U = Analyte analyzed for but not detected
Z = Not ELAP accredited analyte
N/A = Not Applicable
ND = Not Detected



Scientist II Dennese Smith

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 ORELAP Lab Code 4061 AIHA-LAP, LLC Lab ID 178656 EPA ID WA01195 and WA DOE Lab ID C859. This report may not be used to claim product endorsement by any laboratory accrediting agency. The results contained in this report relate only to the items tested or to the sample(s) as received by the laboratory. Any reproduction of this document must be in full for the report to be valid. Quality control data is available upon request.

RJ LEE GROUP

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Richland, WA 99352
Client Project: 2017 Cartridge Evaluation

Quality Control

NIOSH 2522-Modified

RJ Lee Group No.: W702049
Samples Received: 2/15/17
Report Date: 9/7/17
COC No.: 20170336
Extraction Date: 2/16/17

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	2/17/17	0.200	0.195	0.99		1.17	97.5	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-1	2/20/17	0.200	0.186	0.96		3.45	92.8	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-1	2/20/17	0.200	0.195	1.00		2.42	97.5	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-1	2/20/17	0.200	0.189	1.02		7.00	94.1	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-1	2/17/17	0.200	0.194	0.97		2.27	96.8	69.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-1	2/20/17	0.200	0.171	0.94		8.01	85.4	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-1	2/17/17	0.200	0.187	0.97		3.14	93.5	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-1	2/20/17	0.200	0.185	0.94		1.92	92.3	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-1	2/20/17	0.200	0.175	0.92		4.43	87.2	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-1	2/17/17	0.200	0.207	0.96		7.24	103	63.2 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	2/20/17	0.200	0.167	0.98		12.62	83.5	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	2/20/17	0.200	0.203	1.02		1.87	101	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	2/20/17	0.200	0.199	0.99		0.42	99.2	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	2/17/17	0.200	0.204	1.00		2.28	102	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	2/17/17	0.200	0.191	0.97		1.80	95.2	74 - 115	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	2/20/17	0.200	0.198	1.01		1.40	99.1	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	2/20/17	0.200	0.193	1.00		3.11	96.5	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	2/17/17	0.200	0.203	1.02		1.28	101	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	2/20/17	0.200	0.172	0.99		11.35	85.9	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	2/17/17	0.200	0.193	0.96		1.52	96.5	73.2 - 116	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	2/20/17	0.200	0.185	0.96		3.62	92.2	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	2/20/17	0.200	0.197	0.99		1.22	98.2	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	2/17/17	0.200	0.184	0.95		2.58	91.9	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	2/20/17	0.200	0.180	0.99		9.48	89.8	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	2/17/17	0.200	0.194	0.98		1.41	96.6	66.8 - 122	
N-Nitrosomorpholine	59-89-2	LCS-1	2/20/17	0.200	0.196	0.99		1.13	97.9	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-1	2/20/17	0.200	0.186	0.96		2.97	92.8	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-1	2/20/17	0.200	0.160	0.97		15.64	79.9	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-1	2/17/17	0.200	0.192	0.97		1.34	96.0	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-1	2/17/17	0.200	0.190	0.96		0.91	94.9	69.7 - 120	
N-Nitrosopiperidine	100-75-4	LCS-1	2/20/17	0.200	0.195	0.99		1.61	97.4	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-1	2/20/17	0.200	0.164	0.96		12.66	82.0	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-1	2/17/17	0.200	0.188	0.94		0.43	94.0	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-1	2/20/17	0.200	0.189	0.97		2.94	94.3	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-1	2/17/17	0.200	0.192	0.97		1.02	95.9	71.3 - 114	
N-Nitrosopyrrolidine	930-55-2	LCS-1	2/20/17	0.200	0.159	0.96		15.25	79.5	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-1	2/17/17	0.200	0.190	0.97		2.15	94.9	67.6 - 117	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosopyrrolidine	930-55-2	LCS-1	2/20/17	0.200	0.185	0.96		3.14	92.4	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-1	2/17/17	0.200	0.191	0.97		2.74	95.2	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-1	2/20/17	0.200	0.191	0.97		1.41	95.6	67.6 - 117	

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-2	2/17/17	0.200	0.199	0.99		1.17	99.3	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-2	2/20/17	0.200	0.194	0.96		3.45	97.0	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-2	2/20/17	0.200	0.200	1.00		2.42	99.8	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-2	2/20/17	0.200	0.211	1.02		7.00	105	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-2	2/17/17	0.200	0.189	0.97		2.27	94.5	69.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-2	2/20/17	0.200	0.190	0.94		8.01	95.1	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-2	2/20/17	0.200	0.192	0.94		1.92	95.9	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-2	2/17/17	0.200	0.196	0.97		3.14	97.7	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-2	2/17/17	0.200	0.188	0.96		7.24	94.1	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-2	2/20/17	0.200	0.188	0.92		4.43	94.0	63.2 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	2/17/17	0.200	0.203	1.00		2.28	102	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	2/20/17	0.200	0.197	0.99		0.42	98.5	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	2/20/17	0.200	0.201	1.02		1.87	100	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	2/20/17	0.200	0.210	0.98		12.62	105	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	2/17/17	0.200	0.193	0.97		1.80	96.6	74 - 115	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	2/20/17	0.200	0.209	0.99		11.35	104	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	2/17/17	0.200	0.201	1.02		1.28	100	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	2/17/17	0.200	0.196	0.96		1.52	97.8	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	2/20/17	0.200	0.203	1.01		1.40	101	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	2/20/17	0.200	0.202	1.00		3.11	101	73.2 - 116	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	2/17/17	0.200	0.199	0.98		1.41	99.3	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	2/20/17	0.200	0.199	0.99		1.22	99.5	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	2/20/17	0.200	0.218	0.99		9.48	109	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	2/17/17	0.200	0.194	0.95		2.58	96.6	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	2/20/17	0.200	0.191	0.96		3.62	95.4	66.8 - 122	
N-Nitrosomorpholine	59-89-2	LCS-2	2/20/17	0.200	0.198	0.99		1.13	99.1	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-2	2/17/17	0.200	0.196	0.97		1.34	97.7	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-2	2/20/17	0.200	0.217	0.97		15.64	109	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-2	2/17/17	0.200	0.193	0.96		0.91	96.6	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-2	2/20/17	0.200	0.191	0.96		2.97	95.3	69.7 - 120	
N-Nitrosopiperidine	100-75-4	LCS-2	2/17/17	0.200	0.190	0.94		0.43	94.7	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-2	2/20/17	0.200	0.195	0.97		2.94	97.6	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-2	2/20/17	0.200	0.200	0.99		1.61	100.0	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-2	2/17/17	0.200	0.193	0.97		1.02	96.4	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-2	2/20/17	0.200	0.204	0.96		12.66	102	71.3 - 114	
N-Nitrosopyrrolidine	930-55-2	LCS-2	2/17/17	0.200	0.198	0.97		2.15	98.7	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-2	2/17/17	0.200	0.200	0.97		2.74	100	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-2	2/20/17	0.200	0.214	0.96		15.25	107	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-2	2/20/17	0.200	0.194	0.97		1.41	97.1	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-2	2/20/17	0.200	0.193	0.96		3.14	96.6	67.6 - 117	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-3	2/20/17	0.200	0.215	1.02		7.00	107	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-3	2/17/17	0.200	0.198	0.97		2.27	98.9	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-3	2/17/17	0.200	0.200	0.99		1.17	99.7	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-3	2/20/17	0.200	0.199	0.96		3.45	99.3	69.2 - 120	
N-Nitrosodiethylamine	55-18-5	LCS-3	2/20/17	0.200	0.205	1.00		2.42	102	69.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-3	2/20/17	0.200	0.201	0.94		8.01	100	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-3	2/20/17	0.200	0.190	0.94		1.92	94.7	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-3	2/20/17	0.200	0.189	0.92		4.43	94.4	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-3	2/17/17	0.200	0.179	0.96		7.24	89.6	63.2 - 120	
N-Nitrosodimethylamine	62-75-9	LCS-3	2/17/17	0.200	0.199	0.97		3.14	99.4	63.2 - 120	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	2/17/17	0.200	0.198	0.97		1.80	98.7	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	2/20/17	0.200	0.208	1.02		1.87	104	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	2/20/17	0.200	0.198	0.99		0.42	98.6	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	2/17/17	0.200	0.196	1.00		2.28	97.8	74 - 115	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	2/20/17	0.200	0.210	0.98		12.62	105	74 - 115	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	2/20/17	0.200	0.213	0.99		11.35	106	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	2/17/17	0.200	0.190	0.96		1.52	94.9	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	2/20/17	0.200	0.204	1.01		1.40	102	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	2/17/17	0.200	0.206	1.02		1.28	103	73.2 - 116	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	2/20/17	0.200	0.205	1.00		3.11	103	73.2 - 116	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	2/20/17	0.200	0.199	0.99		9.48	99.5	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	2/20/17	0.200	0.199	0.96		3.62	99.2	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	2/17/17	0.200	0.195	0.98		1.41	97.3	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	2/17/17	0.200	0.191	0.95		2.58	95.3	66.8 - 122	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	2/20/17	0.200	0.202	0.99		1.22	101	66.8 - 122	
N-Nitrosomorpholine	59-89-2	LCS-3	2/17/17	0.200	0.193	0.96		0.91	96.2	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-3	2/17/17	0.200	0.197	0.97		1.34	98.5	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-3	2/20/17	0.200	0.197	0.96		2.97	98.5	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-3	2/20/17	0.200	0.200	0.99		1.13	100	69.7 - 120	
N-Nitrosomorpholine	59-89-2	LCS-3	2/20/17	0.200	0.206	0.97		15.64	103	69.7 - 120	
N-Nitrosopiperidine	100-75-4	LCS-3	2/20/17	0.200	0.208	0.96		12.66	104	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-3	2/20/17	0.200	0.200	0.97		2.94	100.0	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-3	2/17/17	0.200	0.188	0.94		0.43	94.0	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-3	2/17/17	0.200	0.196	0.97		1.02	97.8	71.3 - 114	
N-Nitrosopiperidine	100-75-4	LCS-3	2/20/17	0.200	0.201	0.99		1.61	100	71.3 - 114	
N-Nitrosopyrrolidine	930-55-2	LCS-3	2/20/17	0.200	0.204	0.96		15.25	102	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-3	2/17/17	0.200	0.192	0.97		2.74	95.8	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-3	2/17/17	0.200	0.197	0.97		2.15	98.2	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-3	2/20/17	0.200	0.197	0.97		1.41	98.3	67.6 - 117	
N-Nitrosopyrrolidine	930-55-2	LCS-3	2/20/17	0.200	0.197	0.96		3.14	98.2	67.6 - 117	

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	2/17/17		<0.010	0.99	<0.010				
N-Nitrosodiethylamine	55-18-5	MB	2/17/17		<0.010	0.97	<0.010				
N-Nitrosodiethylamine	55-18-5	MB	2/20/17		<0.010	1.02	<0.010				

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	2/20/17		<0.010	0.96	<0.010				
N-Nitrosodiethylamine	55-18-5	MB	2/20/17		<0.010	1.00	<0.010				
N-Nitrosodimethylamine	62-75-9	MB	2/20/17		<0.010	0.94	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	2/17/17		<0.010	0.97	<0.010				
N-Nitrosodimethylamine	62-75-9	MB	2/20/17		<0.010	0.92	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	2/20/17		<0.010	0.94	<0.011				
N-Nitrosodimethylamine	62-75-9	MB	2/17/17		<0.010	0.96	<0.010				
N-Nitrosodi-n-butylamine	924-16-3	MB	2/20/17		<0.010	0.98	<0.010				
N-Nitrosodi-n-butylamine	924-16-3	MB	2/17/17		<0.010	0.97	<0.010				
N-Nitrosodi-n-butylamine	924-16-3	MB	2/17/17		<0.010	1.00	<0.010				
N-Nitrosodi-n-butylamine	924-16-3	MB	2/20/17		<0.010	1.02	<0.010				
N-Nitrosodi-n-butylamine	924-16-3	MB	2/20/17		<0.010	0.99	<0.010				
N-Nitrosodi-n-propylamine	621-64-7	MB	2/17/17		<0.010	0.96	<0.010				
N-Nitrosodi-n-propylamine	621-64-7	MB	2/17/17		<0.010	1.02	<0.010				
N-Nitrosodi-n-propylamine	621-64-7	MB	2/20/17		<0.010	0.99	<0.010				
N-Nitrosodi-n-propylamine	621-64-7	MB	2/20/17		<0.010	1.01	<0.010				
N-Nitrosodi-n-propylamine	621-64-7	MB	2/20/17		<0.010	1.00	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	2/20/17		<0.010	0.96	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	2/17/17		<0.010	0.95	<0.011				
N-Nitrosomethylethylamine	10595-95-6	MB	2/17/17		<0.010	0.98	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	2/20/17		<0.010	0.99	<0.010				
N-Nitrosomethylethylamine	10595-95-6	MB	2/20/17		<0.010	0.99	<0.010				
N-Nitrosomorpholine	59-89-2	MB	2/17/17		<0.010	0.96	<0.010				
N-Nitrosomorpholine	59-89-2	MB	2/17/17		<0.010	0.97	<0.010				
N-Nitrosomorpholine	59-89-2	MB	2/20/17		<0.010	0.97	<0.010				
N-Nitrosomorpholine	59-89-2	MB	2/20/17		<0.010	0.99	<0.010				
N-Nitrosomorpholine	59-89-2	MB	2/20/17		<0.010	0.96	<0.010				
N-Nitrosopiperidine	100-75-4	MB	2/17/17		<0.010	0.97	<0.010				
N-Nitrosopiperidine	100-75-4	MB	2/20/17		<0.010	0.97	<0.010				
N-Nitrosopiperidine	100-75-4	MB	2/20/17		<0.010	0.99	<0.010				
N-Nitrosopiperidine	100-75-4	MB	2/20/17		<0.010	0.96	<0.010				
N-Nitrosopiperidine	100-75-4	MB	2/17/17		<0.010	0.94	<0.011				
N-Nitrosopyrrolidine	930-55-2	MB	2/20/17		<0.010	0.96	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	2/17/17		<0.010	0.97	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	2/20/17		<0.010	0.97	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	2/17/17		<0.010	0.97	<0.010				
N-Nitrosopyrrolidine	930-55-2	MB	2/20/17		<0.010	0.96	<0.010				

Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodiethylamine	55-18-5	MRL	2/20/17	0.010	0.009	1.02	0.009		88.2	65.6 - 156	
N-Nitrosodiethylamine	55-18-5	MRL	2/20/17	0.010	0.010	1.00	0.010		98.7	65.6 - 156	
N-Nitrosodiethylamine	55-18-5	MRL	2/20/17	0.010	0.010	0.96	0.010		101	65.6 - 156	
N-Nitrosodiethylamine	55-18-5	MRL	2/17/17	0.010	0.011	0.97	0.012		118	65.6 - 156	
N-Nitrosodiethylamine	55-18-5	MRL	2/17/17	0.010	0.009	0.99	0.009		90.4	65.6 - 156	
N-Nitrosodimethylamine	62-75-9	MRL	2/20/17	0.010	0.011	0.92	0.012		123	66.1 - 173	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expected µg/tube	Result µg/tube	DE	DE Corrected	RSD %	REC %	Limits	Qualifier
N-Nitrosodimethylamine	62-75-9	MRL	2/17/17	0.010	0.011	0.96	0.012		115	66.1 - 173	
N-Nitrosodimethylamine	62-75-9	MRL	2/17/17	0.010	0.012	0.97	0.012		120	66.1 - 173	
N-Nitrosodimethylamine	62-75-9	MRL	2/20/17	0.010	0.011	0.94	0.011		113	66.1 - 173	
N-Nitrosodimethylamine	62-75-9	MRL	2/20/17	0.010	0.010	0.94	0.011		106	66.1 - 173	
N-Nitrosodi-n-butylamine	924-16-3	MRL	2/20/17	0.010	0.009	0.99	0.009		93.9	61.4 - 162	
N-Nitrosodi-n-butylamine	924-16-3	MRL	2/20/17	0.010	0.011	1.02	0.011		109	61.4 - 162	
N-Nitrosodi-n-butylamine	924-16-3	MRL	2/17/17	0.010	0.012	1.00	0.012		118	61.4 - 162	
N-Nitrosodi-n-butylamine	924-16-3	MRL	2/20/17	0.010	0.013	0.98	0.013		132	61.4 - 162	
N-Nitrosodi-n-butylamine	924-16-3	MRL	2/17/17	0.010	0.012	0.97	0.013		127	61.4 - 162	
N-Nitrosodi-n-propylamine	621-64-7	MRL	2/20/17	0.010	0.009	0.99	0.009		86.6	63.5 - 148	
N-Nitrosodi-n-propylamine	621-64-7	MRL	2/17/17	0.010	0.012	1.02	0.012		115	63.5 - 148	
N-Nitrosodi-n-propylamine	621-64-7	MRL	2/20/17	0.010	0.010	1.00	0.010		104	63.5 - 148	
N-Nitrosodi-n-propylamine	621-64-7	MRL	2/20/17	0.010	0.012	1.01	0.012		116	63.5 - 148	
N-Nitrosodi-n-propylamine	621-64-7	MRL	2/17/17	0.010	0.013	0.96	0.014		137	63.5 - 148	
N-Nitrosomethylethylamine	10595-95-6	MRL	2/20/17	0.010	0.008	0.99	0.008		83.4	68 - 152	
N-Nitrosomethylethylamine	10595-95-6	MRL	2/20/17	0.010	0.009	0.96	0.009		90.6	68 - 152	
N-Nitrosomethylethylamine	10595-95-6	MRL	2/17/17	0.010	0.009	0.95	0.010		98.5	68 - 152	
N-Nitrosomethylethylamine	10595-95-6	MRL	2/17/17	0.010	0.009	0.98	0.010		95.9	68 - 152	
N-Nitrosomethylethylamine	10595-95-6	MRL	2/20/17	0.010	0.012	0.99	0.012		117	68 - 152	
N-Nitrosomorpholine	59-89-2	MRL	2/20/17	0.010	0.010	0.96	0.010		103	74 - 153	
N-Nitrosomorpholine	59-89-2	MRL	2/17/17	0.010	0.010	0.97	0.010		102	74 - 153	
N-Nitrosomorpholine	59-89-2	MRL	2/20/17	0.010	0.011	0.97	0.011		113	74 - 153	
N-Nitrosomorpholine	59-89-2	MRL	2/17/17	0.010	0.011	0.96	0.012		119	74 - 153	
N-Nitrosomorpholine	59-89-2	MRL	2/20/17	0.010	0.011	0.99	0.011		109	74 - 153	
N-Nitrosopiperidine	100-75-4	MRL	2/17/17	0.010	0.012	0.97	0.012		121	63.9 - 152	
N-Nitrosopiperidine	100-75-4	MRL	2/20/17	0.010	0.011	0.96	0.011		110	63.9 - 152	
N-Nitrosopiperidine	100-75-4	MRL	2/20/17	0.010	0.010	0.97	0.011		106	63.9 - 152	
N-Nitrosopiperidine	100-75-4	MRL	2/20/17	0.010	0.010	0.99	0.010		103	63.9 - 152	
N-Nitrosopiperidine	100-75-4	MRL	2/17/17	0.010	0.010	0.94	0.011		106	63.9 - 152	
N-Nitrosopyrrolidine	930-55-2	MRL	2/20/17	0.010	0.011	0.97	0.012		116	67.2 - 158	
N-Nitrosopyrrolidine	930-55-2	MRL	2/17/17	0.010	0.011	0.97	0.011		114	67.2 - 158	
N-Nitrosopyrrolidine	930-55-2	MRL	2/17/17	0.010	0.010	0.97	0.010		103	67.2 - 158	
N-Nitrosopyrrolidine	930-55-2	MRL	2/20/17	0.010	0.011	0.96	0.012		119	67.2 - 158	
N-Nitrosopyrrolidine	930-55-2	MRL	2/20/17	0.010	0.009	0.96	0.010		96.2	67.2 - 158	

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Report Qualifiers:

A = Target Analyte media breakthrough suspect, see analytical report
B = Analyte detected in the associated blank
D = Analyte analyzed in a dilution
d = Data that exceeds the RSD criteria set by the SOP
E = Report concentration was above the instrument calibration range
H = Holding times for preparation or analysis exceeded
J = Analyte detected below quantitation limits, concentration is estimated
L = Sample condition at receipt out of compliance with method defined conditions
P = Library spectrum match, rsd >90% w RT match
Q = Result out of method specific acceptance QC criteria
R = RPD (relative percent difference) outside accepted recovery limits
S = Spike Recovery outside accepted recovery limits
U = Analyte analyzed for but not detected
Z = Not ELAP accredited analyte
N/A = Not Applicable
ND = Not Detected



Scientist II Dennese Smith

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 ORELAP Lab Code 4061 AIHA-LAP, LLC Lab ID 178656 EPA ID WA01195 and WA DOE Lab ID C859. This report may not be used to claim product endorsement by any laboratory accrediting agency. The results contained in this report relate only to the items tested or to the sample(s) as received by the laboratory. Any reproduction of this document must be in full for the report to be

W702049

Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20170336
		Page 1 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861	MSIN: T6-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.	Temp.: 19.1°C
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003661	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-BA-EF	N/A
	S17T003662	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-BA-IN	N/A
	S17T003663	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-BL-EF	N/A
	S17T003664	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-BL-IN	N/A
	S17T003665	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-1	N/A
	S17T003666	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-2	N/A
	S17T003667	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-3	N/A
	S17T003668	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-4	N/A
	S17T003669	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-5	N/A
	S17T003670	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-6	N/A

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

SPECIAL INSTRUCTIONS: Send Results to Carl Howald IV & Greg Scanlan Carl_W_Howald@rl.gov and Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 9

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 13:00	RE Rogers	2/15/17 1300
RE Rogers	2/15/17 15:25	Anna Wahl	02/15/17 15:25

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Les Mills	02/24/17 15:55

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)

W702049

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Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No.
N/A		20170336
		Page 2 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861	MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.	Temp. 19.6 C
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003671	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-7 * ✓	N/A
	S17T003672	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-EF-8 * ✓	N/A
	S17T003673	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-1 * ✓	N/A
	S17T003674	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-2 * ✓	N/A
	S17T003675	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-3 * ✓	N/A
	S17T003676	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-4 * ✓	N/A
	S17T003677	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-5 * ✓	N/A
	S17T003678	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-6 * ✓	N/A
	S17T003679	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-7 ✓	N/A
	S17T003680	VA	02/10/17		Thermosorb-N	Nitrosamines 17-00252-12-SD1-IN-8 * ✓	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 9

Hold Time

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Dianne Turner	Dianne Turner	Dianne Turner	2/15/17 13:00	RE Rogers			2/15/17 1300
RE Rogers			2/15/17 15:25	Anna Wehle		Anna Wehle	02/15/17 15:25

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Tess Tilly	02/24/17 15:55

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

A-6003-962 (03/05)

C.448

W702049

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Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170336
N/A		Page 3 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No. 373-6861 MSIN T6-05 FAX 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No. Temp. 20.0°C
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003681	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-BA-EF ✓	N/A
	S17T003682	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-BA-IN ✓	N/A
	S17T003683	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-BL-EF ✓	N/A
	S17T003684	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-BL-IN ✓	N/A
	S17T003685	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-1 ✓	N/A
	S17T003686	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-2 ✓	N/A
	S17T003687	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-3 ✓	N/A
	S17T003688	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-4 ✓	N/A
	S17T003689	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-5 ✓	N/A
	S17T003690	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-6 ✓	N/A

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

SPECIAL INSTRUCTIONS

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 9

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 13:00	RE Rogers [signature]	2/15/17 1300
RE Rogers [signature]	2/15/17 15:25	Anna Wahle Anna Wahle	02/15/17 15:25

Matrix*

S	= Soil	DL	= Drum Liquids
SE	= Sediment	T	= Tissue
SO	= Solid	WI	= Wipe
SL	= Sludge	L	= Liquid
W	= Water	V	= Vegetation
O	= Oil	VA	= Vapor
A	= Air	X	= Other
DS	= Drum Solids		

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Lee Miller	02/24/17 15:55

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)

W702049

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Assembler	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. No. 20170336
N/A		Page 4 of 4

Collector: JONES	Contact/Requestor: CARL HOWALD IV	Telephone No.: 373-6861	MSIN: T6-05 FAX: 372-1878
SAF No.: N/A	Sample Origin: 2017 CARTRIDGE EVALUATION	Purchase Order/Charge Code: 203006/CB20	
Project Title: 2017 CARTRIDGE EVALUATION	Logbook/ Work Package No.: N/A	Ice Chest No.	Temp. 20.0°C
Shipped To (Lab): CBAL	Method of Shipment	Bill of Lading/Air Bill No.	
Protocol: N/A	Data Turnaround: 10 DAYS	Parts and Return No.	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
	S17T003691	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-7	N/A
	S17T003692	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-EF-8	N/A
	S17T003693	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-1	N/A
	S17T003694	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-2	N/A
	S17T003695	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-3	N/A
	S17T003696	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-4	N/A
	S17T003697	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-5	N/A
	S17T003698	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-6	N/A
	S17T003699	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-7	N/A
	S17T003700	VA	02/11/17		Thermosorb-N	Nitrosamines 17-00253-12-SC1-IN-8	N/A

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

SPECIAL INSTRUCTIONS — Hold Time

Send Results to Carl Howald IV & Greg Scanlan
Carl_W_Howald@rl.gov and
Gregory_L_Scanlan@rl.gov see SOW for email

CONTRACT 55503
RELEASE 9

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Dianne Turner Dianne Turner	2/15/17 13:00	RE Rogers	2/15/17 1300
RE Rogers	2/15/17 15:25	Anna Wohler	02/15/17 15:25

Matrix*

S = Soil		DL = Drum Liquids	
SE = Sediment		T = Tissue	
SO = Solid		WI = Wipe	
SL = Sludge		L = Liquid	
W = Water		V = Vegetation	
O = Oil		VA = Vapor	
A = Air		X = Other	
DS = Drum Solids			

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
	CONSUMED	Lee Mitts	02/24/17 15:55

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

A-6003-962 (03/05)

C.450

30 - Mar - 2017 10:57:09
DSRHardcopyWOLimits 3.0.13
DSR.Jar v. 3.0.12

3/30/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BA-EF
Customer Sample ID: 17-00252-13-SD1-BA-EF

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2														
S17T003242		79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003242		79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003242		75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003242		75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003242		107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003242		106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003242		542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003242		106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003242		123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003242		71-36-3	1-Butanol	PPBV	137	<0.424	<0.848	n/a	n/a	n/a	n/a	0.848	n/a	a
S17T003242		71-23-8	1-Propanol	PPBV	120	<0.210	<0.420	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003242		78-93-3	2-Butanone	PPBV	103	0.370	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003242		110-43-0	2-Heptanone	PPBV	118	0.640	1.78	n/a	n/a	n/a	n/a	0.600	n/a	J
S17T003242		591-78-6	2-Hexanone	PPBV	105	0.440	0.780	n/a	n/a	n/a	n/a	0.760	n/a	J
S17T003242		78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003242		106-35-4	3-Heptanone	PPBV	107	0.790	1.56	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003242		108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.728	n/a	n/a	n/a	n/a	0.728	n/a	
S17T003242		75-07-0	Acetaldehyde	PPBV	109	4.89	5.18	n/a	n/a	n/a	n/a	0.780	n/a	J
S17T003242		67-64-1	Acetone	PPBV	102	2.42	6.30	n/a	n/a	n/a	n/a	0.540	n/a	J
S17T003242		75-05-8	Acetonitrile	PPBV	93.0	<0.470	<0.940	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003242		107-02-8	Acrolein	PPBV	97.1	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003242		107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003242		107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.540	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003242		71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003242		123-72-8	Butanal	PPBV	105	0.620	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003242		56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003242		108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003242		75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

a - LCS Outside Range

Y - Comment

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BA-EF
Customer Sample ID: 17-00252-13-SD1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003242			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003242			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.642	n/a	n/a	n/a	n/a	0.642	n/a	
S17T003242			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003242			64-17-5	Ethanol	PPBV	107	0.670	1.68	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003242			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003242			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003242			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003242			67-56-1	Methanol	PPBV	103	1.64	1.09E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003242			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.628	n/a	n/a	n/a	n/a	0.628	n/a	
S17T003242			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003242			127-18-4	Tetrachloroethene	PPBV	102	<0.320	4.24	n/a	n/a	n/a	n/a	0.640	n/a	J
S17T003242			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003242			108-88-3	Toluene	PPBV	100	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003242			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003242			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003242			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003242			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003242			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003242			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

J - Estimated

a - LCS Outside Range

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NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BA-IN
Customer Sample ID: 17-00252-13-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003243			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003243			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	1.02	n/a	n/a	n/a	n/a	0.740	n/a	J
S17T003243			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003243			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003243			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003243			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003243			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003243			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003243			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003243			71-36-3	1-Butanol	PPBV	137	<0.424	6.90	n/a	n/a	n/a	n/a	0.840	n/a	Ja
S17T003243			71-23-8	1-Propanol	PPBV	120	<0.210	<0.420	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003243			78-93-3	2-Butanone	PPBV	103	0.370	3.28	n/a	n/a	n/a	n/a	0.520	n/a	J
S17T003243			110-43-0	2-Heptanone	PPBV	118	0.640	1.72	n/a	n/a	n/a	n/a	0.600	n/a	J
S17T003243			591-78-6	2-Hexanone	PPBV	105	0.440	1.14	n/a	n/a	n/a	n/a	0.760	n/a	J
S17T003243			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003243			106-35-4	3-Heptanone	PPBV	107	0.790	1.52	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003243			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	1.86	n/a	n/a	n/a	n/a	0.720	n/a	J
S17T003243			75-07-0	Acetaldehyde	PPBV	109	4.89	8.92	n/a	n/a	n/a	n/a	0.780	n/a	J
S17T003243			67-64-1	Acetone	PPBV	102	2.42	2.68E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003243			75-05-8	Acetonitrile	PPBV	93.0	<0.470	1.30	n/a	n/a	n/a	n/a	0.940	n/a	J
S17T003243			107-02-8	Acrolein	PPBV	97.1	<0.320	0.740	n/a	n/a	n/a	n/a	0.640	n/a	J
S17T003243			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003243			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.540	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003243			71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003243			123-72-8	Butanal	PPBV	105	0.620	1.78	n/a	n/a	n/a	n/a	0.560	n/a	J
S17T003243			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003243			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003243			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

a - LCS Outside Range

Y - Comment

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BA-IN
Customer Sample ID: 17-00252-13-SD1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003243			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003243			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.642	n/a	n/a	n/a	n/a	0.642	n/a	
S17T003243			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003243			64-17-5	Ethanol	PPBV	107	0.670	7.60	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003243			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003243			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003243			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003243			67-56-1	Methanol	PPBV	103	1.64	3.00E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003243			75-09-2	Methylene Chloride	PPBV	101	<0.314	0.800	n/a	n/a	n/a	n/a	0.620	n/a	J
S17T003243			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003243			127-18-4	Tetrachloroethene	PPBV	102	<0.320	56.5	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003243			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003243			108-88-3	Toluene	PPBV	100	<0.300	3.84	n/a	n/a	n/a	n/a	0.600	n/a	J
S17T003243			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003243			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003243			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003243			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003243			142-82-5	n-Heptane	PPBV	99.9	<0.261	0.520	n/a	n/a	n/a	n/a	0.520	n/a	J
S17T003243			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BL-EF
Customer Sample ID: 17-00252-13-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003244			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003244			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003244			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003244			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003244			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003244			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003244			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003244			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003244			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003244			71-36-3	1-Butanol	PPBV	137	<0.424	1.46	n/a	n/a	n/a	n/a	0.840	n/a	Ja
S17T003244			71-23-8	1-Propanol	PPBV	120	<0.210	1.60	n/a	n/a	n/a	n/a	0.420	n/a	J
S17T003244			78-93-3	2-Butanone	PPBV	103	0.370	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003244			110-43-0	2-Heptanone	PPBV	118	0.640	<0.602	n/a	n/a	n/a	n/a	0.602	n/a	
S17T003244			591-78-6	2-Hexanone	PPBV	105	0.440	0.940	n/a	n/a	n/a	n/a	0.760	n/a	J
S17T003244			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003244			106-35-4	3-Heptanone	PPBV	107	0.790	1.46	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003244			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.728	n/a	n/a	n/a	n/a	0.728	n/a	
S17T003244			75-07-0	Acetaldehyde	PPBV	109	4.89	4.60	n/a	n/a	n/a	n/a	0.780	n/a	J
S17T003244			67-64-1	Acetone	PPBV	102	2.42	1.29E+04	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003244			75-05-8	Acetonitrile	PPBV	93.0	<0.470	<0.940	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003244			107-02-8	Acrolein	PPBV	97.1	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003244			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003244			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.540	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003244			71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003244			123-72-8	Butanal	PPBV	105	0.620	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003244			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003244			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003244			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

a - LCS Outside Range

Y - Comment

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BL-EF
Customer Sample ID: 17-00252-13-SD1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003244			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003244			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003244			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003244			64-17-5	Ethanol	PPBV	107	0.670	5.18	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003244			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003244			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003244			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003244			67-56-1	Methanol	PPBV	103	1.64	1.73E+04	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003244			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.628	n/a	n/a	n/a	n/a	0.628	n/a	
S17T003244			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003244			127-18-4	Tetrachloroethene	PPBV	102	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003244			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003244			108-88-3	Toluene	PPBV	100	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003244			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003244			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003244			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003244			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003244			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003244			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BL-IN
Customer Sample ID: 17-00252-13-SD1-BL-IN

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2														
S17T003245		79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003245		79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003245		75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003245		75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003245		107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003245		106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003245		542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003245		106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003245		123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003245		71-36-3	1-Butanol	PPBV	137	<0.424	<0.848	n/a	n/a	n/a	n/a	0.848	n/a	a
S17T003245		71-23-8	1-Propanol	PPBV	120	<0.210	<0.420	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003245		78-93-3	2-Butanone	PPBV	103	0.370	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003245		110-43-0	2-Heptanone	PPBV	118	0.640	<0.602	n/a	n/a	n/a	n/a	0.602	n/a	
S17T003245		591-78-6	2-Hexanone	PPBV	105	0.440	<0.766	n/a	n/a	n/a	n/a	0.766	n/a	
S17T003245		78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003245		106-35-4	3-Heptanone	PPBV	107	0.790	<0.486	n/a	n/a	n/a	n/a	0.486	n/a	
S17T003245		108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.728	n/a	n/a	n/a	n/a	0.728	n/a	
S17T003245		75-07-0	Acetaldehyde	PPBV	109	4.89	2.04	n/a	n/a	n/a	n/a	0.780	n/a	J
S17T003245		67-64-1	Acetone	PPBV	102	2.42	17.6	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003245		75-05-8	Acetonitrile	PPBV	93.0	<0.470	<0.940	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003245		107-02-8	Acrolein	PPBV	97.1	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003245		107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003245		107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.540	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003245		71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003245		123-72-8	Butanal	PPBV	105	0.620	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003245		56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003245		108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003245		75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

a - LCS Outside Range

Y - Comment

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-BL-IN
Customer Sample ID: 17-00252-13-SD1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003245			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003245			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003245			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003245			64-17-5	Ethanol	PPBV	107	0.670	2.10	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003245			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003245			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003245			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003245			67-56-1	Methanol	PPBV	103	1.64	291	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003245			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.628	n/a	n/a	n/a	n/a	0.628	n/a	
S17T003245			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003245			127-18-4	Tetrachloroethene	PPBV	102	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003245			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003245			108-88-3	Toluene	PPBV	100	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003245			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003245			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003245			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003245			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003245			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003245			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-1
Customer Sample ID: 17-00252-13-SD1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003246			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003246			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003246			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003246			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003246			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003246			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003246			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003246			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003246			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003246			71-36-3	1-Butanol	PPBV	137	<0.424	<0.848	n/a	n/a	n/a	n/a	0.848	n/a	a
S17T003246			71-23-8	1-Propanol	PPBV	120	<0.210	<0.420	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003246			78-93-3	2-Butanone	PPBV	103	0.370	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003246			110-43-0	2-Heptanone	PPBV	118	0.640	<0.602	n/a	n/a	n/a	n/a	0.602	n/a	
S17T003246			591-78-6	2-Hexanone	PPBV	105	0.440	0.880	n/a	n/a	n/a	n/a	0.760	n/a	J
S17T003246			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003246			106-35-4	3-Heptanone	PPBV	107	0.790	1.38	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003246			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.728	n/a	n/a	n/a	n/a	0.728	n/a	
S17T003246			75-07-0	Acetaldehyde	PPBV	109	4.89	90.5	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003246			67-64-1	Acetone	PPBV	102	2.42	10.4	n/a	n/a	n/a	n/a	0.540	n/a	J
S17T003246			75-05-8	Acetonitrile	PPBV	93.0	<0.470	1.12	n/a	n/a	n/a	n/a	0.940	n/a	J
S17T003246			107-02-8	Acrolein	PPBV	97.1	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003246			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003246			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.542	n/a	n/a	n/a	n/a	0.542	n/a	
S17T003246			71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003246			123-72-8	Butanal	PPBV	105	0.620	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003246			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003246			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003246			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-1
Customer Sample ID: 17-00252-13-SD1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003246			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003246			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003246			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003246			64-17-5	Ethanol	PPBV	107	0.670	1.40	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003246			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003246			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003246			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003246			67-56-1	Methanol	PPBV	103	1.64	1.26E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003246			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.628	n/a	n/a	n/a	n/a	0.628	n/a	
S17T003246			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003246			127-18-4	Tetrachloroethene	PPBV	102	<0.320	5.94	n/a	n/a	n/a	n/a	0.640	n/a	J
S17T003246			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003246			108-88-3	Toluene	PPBV	100	<0.300	0.760	n/a	n/a	n/a	n/a	0.600	n/a	J
S17T003246			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003246			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003246			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003246			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003246			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003246			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-2
Customer Sample ID: 17-00252-13-SD1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003247			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003247			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003247			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003247			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003247			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003247			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003247			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003247			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003247			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003247			71-36-3	1-Butanol	PPBV	137	<0.424	<0.848	n/a	n/a	n/a	n/a	0.848	n/a	a
S17T003247			71-23-8	1-Propanol	PPBV	120	<0.210	0.420	n/a	n/a	n/a	n/a	0.420	n/a	J
S17T003247			78-93-3	2-Butanone	PPBV	103	0.370	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003247			110-43-0	2-Heptanone	PPBV	118	0.640	0.780	n/a	n/a	n/a	n/a	0.600	n/a	J
S17T003247			591-78-6	2-Hexanone	PPBV	105	0.440	<0.766	n/a	n/a	n/a	n/a	0.766	n/a	
S17T003247			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003247			106-35-4	3-Heptanone	PPBV	107	0.790	1.44	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003247			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.728	n/a	n/a	n/a	n/a	0.728	n/a	
S17T003247			75-07-0	Acetaldehyde	PPBV	109	4.89	69.2	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003247			67-64-1	Acetone	PPBV	102	2.42	3.11E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003247			75-05-8	Acetonitrile	PPBV	93.0	<0.470	2.38	n/a	n/a	n/a	n/a	0.940	n/a	J
S17T003247			107-02-8	Acrolein	PPBV	97.1	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003247			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003247			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.542	n/a	n/a	n/a	n/a	0.542	n/a	
S17T003247			71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003247			123-72-8	Butanal	PPBV	105	0.620	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003247			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003247			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003247			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-2
Customer Sample ID: 17-00252-13-SD1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003247			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003247			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.642	n/a	n/a	n/a	n/a	0.642	n/a	
S17T003247			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003247			64-17-5	Ethanol	PPBV	107	0.670	2.38	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003247			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003247			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003247			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003247			67-56-1	Methanol	PPBV	103	1.64	4.03E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003247			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.628	n/a	n/a	n/a	n/a	0.628	n/a	
S17T003247			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003247			127-18-4	Tetrachloroethene	PPBV	102	<0.320	4.38	n/a	n/a	n/a	n/a	0.640	n/a	J
S17T003247			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003247			108-88-3	Toluene	PPBV	100	<0.300	0.680	n/a	n/a	n/a	n/a	0.600	n/a	J
S17T003247			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003247			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003247			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003247			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003247			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003247			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-3
Customer Sample ID: 17-00252-13-SD1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003248			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003248			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003248			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003248			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003248			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003248			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003248			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003248			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003248			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003248			71-36-3	1-Butanol	PPBV	137	<0.424	<0.848	n/a	n/a	n/a	n/a	0.848	n/a	a
S17T003248			71-23-8	1-Propanol	PPBV	120	<0.210	<0.420	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003248			78-93-3	2-Butanone	PPBV	103	0.370	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003248			110-43-0	2-Heptanone	PPBV	118	0.640	<0.602	n/a	n/a	n/a	n/a	0.602	n/a	
S17T003248			591-78-6	2-Hexanone	PPBV	105	0.440	<0.766	n/a	n/a	n/a	n/a	0.766	n/a	
S17T003248			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003248			106-35-4	3-Heptanone	PPBV	107	0.790	1.36	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003248			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.728	n/a	n/a	n/a	n/a	0.728	n/a	
S17T003248			75-07-0	Acetaldehyde	PPBV	109	4.89	75.2	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003248			67-64-1	Acetone	PPBV	102	2.42	5.64	n/a	n/a	n/a	n/a	0.540	n/a	J
S17T003248			75-05-8	Acetonitrile	PPBV	93.0	<0.470	3.44	n/a	n/a	n/a	n/a	0.940	n/a	J
S17T003248			107-02-8	Acrolein	PPBV	97.1	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003248			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003248			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.542	n/a	n/a	n/a	n/a	0.542	n/a	
S17T003248			71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003248			123-72-8	Butanal	PPBV	105	0.620	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003248			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003248			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003248			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-3
Customer Sample ID: 17-00252-13-SD1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003248			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003248			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.642	n/a	n/a	n/a	n/a	0.642	n/a	
S17T003248			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003248			64-17-5	Ethanol	PPBV	107	0.670	1.96	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003248			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003248			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003248			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003248			67-56-1	Methanol	PPBV	103	1.64	716	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003248			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.628	n/a	n/a	n/a	n/a	0.628	n/a	
S17T003248			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003248			127-18-4	Tetrachloroethene	PPBV	102	<0.320	2.34	n/a	n/a	n/a	n/a	0.640	n/a	J
S17T003248			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003248			108-88-3	Toluene	PPBV	100	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003248			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003248			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003248			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003248			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003248			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003248			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-4
Customer Sample ID: 17-00252-13-SD1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003249			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003249			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.740	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003249			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003249			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.502	n/a	n/a	n/a	n/a	0.502	n/a	
S17T003249			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.622	n/a	n/a	n/a	n/a	0.622	n/a	
S17T003249			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003249			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003249			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003249			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003249			71-36-3	1-Butanol	PPBV	137	<0.424	0.920	n/a	n/a	n/a	n/a	0.840	n/a	Ja
S17T003249			71-23-8	1-Propanol	PPBV	120	<0.210	<0.420	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003249			78-93-3	2-Butanone	PPBV	103	0.370	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003249			110-43-0	2-Heptanone	PPBV	118	0.640	<0.602	n/a	n/a	n/a	n/a	0.602	n/a	
S17T003249			591-78-6	2-Hexanone	PPBV	105	0.440	<0.766	n/a	n/a	n/a	n/a	0.766	n/a	
S17T003249			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003249			106-35-4	3-Heptanone	PPBV	107	0.790	1.38	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003249			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.728	n/a	n/a	n/a	n/a	0.728	n/a	
S17T003249			75-07-0	Acetaldehyde	PPBV	109	4.89	<0.780	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003249			67-64-1	Acetone	PPBV	102	2.42	2.72E+03	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003249			75-05-8	Acetonitrile	PPBV	93.0	<0.470	492	n/a	n/a	n/a	n/a	0.940	n/a	E
S17T003249			107-02-8	Acrolein	PPBV	97.1	<0.320	<0.640	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003249			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003249			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.542	n/a	n/a	n/a	n/a	0.542	n/a	
S17T003249			71-43-2	Benzene	PPBV	102	<0.400	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003249			123-72-8	Butanal	PPBV	105	0.620	<0.560	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003249			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003249			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.580	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003249			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-4
Customer Sample ID: 17-00252-13-SD1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003249			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.804	n/a	n/a	n/a	n/a	0.804	n/a	
S17T003249			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.642	n/a	n/a	n/a	n/a	0.642	n/a	
S17T003249			124-18-5	Decane	PPBV	107	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003249			64-17-5	Ethanol	PPBV	107	0.670	5.42	n/a	n/a	n/a	n/a	0.700	n/a	J
S17T003249			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003249			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.660	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003249			110-54-3	Hexane	PPBV	97.4	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003249			67-56-1	Methanol	PPBV	103	1.64	3.11E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003249			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.628	n/a	n/a	n/a	n/a	0.628	n/a	
S17T003249			100-42-5	Styrene	PPBV	104	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003249			127-18-4	Tetrachloroethene	PPBV	102	<0.320	2.14	n/a	n/a	n/a	n/a	0.640	n/a	J
S17T003249			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	<0.820	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003249			108-88-3	Toluene	PPBV	100	<0.300	<0.600	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003249			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.620	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003249			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	<1.74	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003249			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003249			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.700	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003249			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003249			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.520	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-5
Customer Sample ID: 17-00252-13-SD1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003250			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.741	n/a	n/a	n/a	n/a	0.741	n/a	
S17T003250			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.741	n/a	n/a	n/a	n/a	0.741	n/a	
S17T003250			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.400	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003250			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.503	n/a	n/a	n/a	n/a	0.503	n/a	
S17T003250			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.623	n/a	n/a	n/a	n/a	0.623	n/a	
S17T003250			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.621	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003250			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.521	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003250			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.561	n/a	n/a	n/a	n/a	0.561	n/a	
S17T003250			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.641	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003250			71-36-3	1-Butanol	PPBV	137	<0.424	1.14	n/a	n/a	n/a	n/a	0.841	n/a	Ja
S17T003250			71-23-8	1-Propanol	PPBV	120	<0.210	0.621	n/a	n/a	n/a	n/a	0.420	n/a	J
S17T003250			78-93-3	2-Butanone	PPBV	103	0.370	1.38	n/a	n/a	n/a	n/a	0.521	n/a	J
S17T003250			110-43-0	2-Heptanone	PPBV	118	0.640	<0.603	n/a	n/a	n/a	n/a	0.603	n/a	
S17T003250			591-78-6	2-Hexanone	PPBV	105	0.440	0.841	n/a	n/a	n/a	n/a	0.761	n/a	J
S17T003250			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.462	n/a	n/a	n/a	n/a	0.462	n/a	
S17T003250			106-35-4	3-Heptanone	PPBV	107	0.790	1.52	n/a	n/a	n/a	n/a	0.480	n/a	J
S17T003250			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.729	n/a	n/a	n/a	n/a	0.729	n/a	
S17T003250			75-07-0	Acetaldehyde	PPBV	109	4.89	<0.781	n/a	n/a	n/a	n/a	0.781	n/a	
S17T003250			67-64-1	Acetone	PPBV	102	2.42	5.04E+03	n/a	n/a	n/a	n/a	0.541	n/a	EY
S17T003250			75-05-8	Acetonitrile	PPBV	93.0	<0.470	6.53	n/a	n/a	n/a	n/a	0.941	n/a	J
S17T003250			107-02-8	Acrolein	PPBV	97.1	<0.320	<0.641	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003250			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.480	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003250			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.543	n/a	n/a	n/a	n/a	0.543	n/a	
S17T003250			71-43-2	Benzene	PPBV	102	<0.400	<0.801	n/a	n/a	n/a	n/a	0.801	n/a	
S17T003250			123-72-8	Butanal	PPBV	105	0.620	1.38	n/a	n/a	n/a	n/a	0.561	n/a	J
S17T003250			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.601	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003250			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.581	n/a	n/a	n/a	n/a	0.581	n/a	
S17T003250			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.661	n/a	n/a	n/a	n/a	0.661	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-5
Customer Sample ID: 17-00252-13-SD1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003250			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.805	n/a	n/a	n/a	n/a	0.805	n/a	
S17T003250			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.643	n/a	n/a	n/a	n/a	0.643	n/a	
S17T003250			124-18-5	Decane	PPBV	107	<0.330	<0.661	n/a	n/a	n/a	n/a	0.661	n/a	
S17T003250			64-17-5	Ethanol	PPBV	107	0.670	11.1	n/a	n/a	n/a	n/a	0.701	n/a	
S17T003250			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.521	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003250			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.661	n/a	n/a	n/a	n/a	0.661	n/a	
S17T003250			110-54-3	Hexane	PPBV	97.4	<0.310	<0.621	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003250			67-56-1	Methanol	PPBV	103	1.64	5.33E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003250			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.629	n/a	n/a	n/a	n/a	0.629	n/a	
S17T003250			100-42-5	Styrene	PPBV	104	<0.300	<0.601	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003250			127-18-4	Tetrachloroethene	PPBV	102	<0.320	1.92	n/a	n/a	n/a	n/a	0.641	n/a	J
S17T003250			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	2.88	n/a	n/a	n/a	n/a	0.821	n/a	J
S17T003250			108-88-3	Toluene	PPBV	100	<0.300	<0.601	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003250			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.621	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003250			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	6.01	n/a	n/a	n/a	n/a	1.74	n/a	J
S17T003250			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.521	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003250			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.701	n/a	n/a	n/a	n/a	0.701	n/a	
S17T003250			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.523	n/a	n/a	n/a	n/a	0.523	n/a	
S17T003250			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.521	n/a	n/a	n/a	n/a	0.521	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-6
Customer Sample ID: 17-00252-13-SD1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003251			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	102	<0.370	<0.743	n/a	n/a	n/a	n/a	0.743	n/a	
S17T003251			79-00-5	1,1,2-Trichloroethane	PPBV	99.0	<0.370	<0.743	n/a	n/a	n/a	n/a	0.743	n/a	
S17T003251			75-34-3	1,1-Dichloroethane	PPBV	100	<0.200	<0.402	n/a	n/a	n/a	n/a	0.402	n/a	
S17T003251			75-35-4	1,1-Dichloroethene	PPBV	104	<0.251	<0.504	n/a	n/a	n/a	n/a	0.504	n/a	
S17T003251			107-06-2	1,2-Dichloroethane	PPBV	99.1	<0.311	<0.625	n/a	n/a	n/a	n/a	0.625	n/a	
S17T003251			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<0.623	n/a	n/a	n/a	n/a	0.623	n/a	
S17T003251			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003251			106-46-7	1,4-Dichlorobenzene	PPBV	103	<0.280	<0.562	n/a	n/a	n/a	n/a	0.562	n/a	
S17T003251			123-91-1	1,4-Dioxane	PPBV	104	<0.320	<0.643	n/a	n/a	n/a	n/a	0.643	n/a	
S17T003251			71-36-3	1-Butanol	PPBV	137	<0.424	1.02	n/a	n/a	n/a	n/a	0.844	n/a	Ja
S17T003251			71-23-8	1-Propanol	PPBV	120	<0.210	<0.422	n/a	n/a	n/a	n/a	0.422	n/a	
S17T003251			78-93-3	2-Butanone	PPBV	103	0.370	0.924	n/a	n/a	n/a	n/a	0.522	n/a	J
S17T003251			110-43-0	2-Heptanone	PPBV	118	0.640	<0.605	n/a	n/a	n/a	n/a	0.605	n/a	
S17T003251			591-78-6	2-Hexanone	PPBV	105	0.440	0.783	n/a	n/a	n/a	n/a	0.763	n/a	J
S17T003251			78-94-4	3-Buten-2-one	PPBV	99.6	<0.231	<0.464	n/a	n/a	n/a	n/a	0.464	n/a	
S17T003251			106-35-4	3-Heptanone	PPBV	107	0.790	1.47	n/a	n/a	n/a	n/a	0.482	n/a	J
S17T003251			108-10-1	4-Methyl-2-Pentanone	PPBV	99.4	<0.364	<0.731	n/a	n/a	n/a	n/a	0.731	n/a	
S17T003251			75-07-0	Acetaldehyde	PPBV	109	4.89	<0.783	n/a	n/a	n/a	n/a	0.783	n/a	
S17T003251			67-64-1	Acetone	PPBV	102	2.42	1.56E+03	n/a	n/a	n/a	n/a	0.542	n/a	E
S17T003251			75-05-8	Acetonitrile	PPBV	93.0	<0.470	26.8	n/a	n/a	n/a	n/a	0.944	n/a	
S17T003251			107-02-8	Acrolein	PPBV	97.1	<0.320	<0.643	n/a	n/a	n/a	n/a	0.643	n/a	
S17T003251			107-13-1	Acrylonitrile	PPBV	99.3	<0.240	<0.482	n/a	n/a	n/a	n/a	0.482	n/a	
S17T003251			107-05-1	Allyl Chloride	PPBV	101	<0.270	<0.544	n/a	n/a	n/a	n/a	0.544	n/a	
S17T003251			71-43-2	Benzene	PPBV	102	<0.400	<0.803	n/a	n/a	n/a	n/a	0.803	n/a	
S17T003251			123-72-8	Butanal	PPBV	105	0.620	0.703	n/a	n/a	n/a	n/a	0.562	n/a	J
S17T003251			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<0.603	n/a	n/a	n/a	n/a	0.603	n/a	
S17T003251			108-90-7	Chlorobenzene	PPBV	104	<0.290	<0.582	n/a	n/a	n/a	n/a	0.582	n/a	
S17T003251			75-00-3	Chloroethane	PPBV	96.1	<0.330	<0.663	n/a	n/a	n/a	n/a	0.663	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-6
Customer Sample ID: 17-00252-13-SD1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003251			67-66-3	Chloroform	PPBV	97.2	<0.402	<0.807	n/a	n/a	n/a	n/a	0.807	n/a	
S17T003251			110-82-7	Cyclohexane	PPBV	99.6	<0.320	<0.645	n/a	n/a	n/a	n/a	0.645	n/a	
S17T003251			124-18-5	Decane	PPBV	107	<0.330	<0.663	n/a	n/a	n/a	n/a	0.663	n/a	
S17T003251			64-17-5	Ethanol	PPBV	107	0.670	20.3	n/a	n/a	n/a	n/a	0.703	n/a	
S17T003251			141-78-6	Ethyl acetate	PPBV	99.0	<0.260	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003251			100-41-4	Ethylbenzene	PPBV	105	<0.330	<0.663	n/a	n/a	n/a	n/a	0.663	n/a	
S17T003251			110-54-3	Hexane	PPBV	97.4	<0.310	<0.623	n/a	n/a	n/a	n/a	0.623	n/a	
S17T003251			67-56-1	Methanol	PPBV	103	1.64	1.75E+03	n/a	n/a	n/a	n/a	1.29	n/a	E
S17T003251			75-09-2	Methylene Chloride	PPBV	101	<0.314	<0.631	n/a	n/a	n/a	n/a	0.631	n/a	
S17T003251			100-42-5	Styrene	PPBV	104	<0.300	<0.603	n/a	n/a	n/a	n/a	0.603	n/a	
S17T003251			127-18-4	Tetrachloroethene	PPBV	102	<0.320	1.93	n/a	n/a	n/a	n/a	0.643	n/a	J
S17T003251			109-99-9	Tetrahydrofuran	PPBV	98.1	<0.410	3.03	n/a	n/a	n/a	n/a	0.824	n/a	J
S17T003251			108-88-3	Toluene	PPBV	100	<0.300	<0.603	n/a	n/a	n/a	n/a	0.603	n/a	
S17T003251			79-01-6	Trichloroethene	PPBV	102	<0.310	<0.623	n/a	n/a	n/a	n/a	0.623	n/a	
S17T003251			75-69-4	Trichlorofluoromethane	PPBV	106	<0.870	12.6	n/a	n/a	n/a	n/a	1.75	n/a	
S17T003251			10061-01-5	cis-1,3-Dichloropropene	PPBV	100	<0.260	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	
S17T003251			123-86-4	n-Butyl acetate	PPBV	100	<0.350	<0.703	n/a	n/a	n/a	n/a	0.703	n/a	
S17T003251			142-82-5	n-Heptane	PPBV	99.9	<0.261	<0.524	n/a	n/a	n/a	n/a	0.524	n/a	
S17T003251			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.5	<0.260	<0.522	n/a	n/a	n/a	n/a	0.522	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-7
Customer Sample ID: 17-00252-13-SD1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003252			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.1	n/a	n/a	n/a	n/a	0.734	n/a	
S17T003252			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.4	n/a	n/a	n/a	n/a	0.734	n/a	
S17T003252			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.5	n/a	n/a	n/a	n/a	0.397	n/a	
S17T003252			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<10.9	n/a	n/a	n/a	n/a	0.496	n/a	
S17T003252			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.5	n/a	n/a	n/a	n/a	0.615	n/a	
S17T003252			106-99-0	1,3-Butadiene	PPBV	107	<0.310	41.5	n/a	n/a	n/a	n/a	0.615	n/a	
S17T003252			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.0	n/a	n/a	n/a	n/a	0.516	n/a	
S17T003252			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.0	n/a	n/a	n/a	n/a	0.555	n/a	
S17T003252			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<10.9	n/a	n/a	n/a	n/a	0.634	n/a	
S17T003252			71-36-3	1-Butanol	PPBV	135	<0.424	<11.2	n/a	n/a	n/a	n/a	0.833	n/a	
S17T003252			71-23-8	1-Propanol	PPBV	117	<0.210	<10.9	n/a	n/a	n/a	n/a	0.416	n/a	
S17T003252			78-93-3	2-Butanone	PPBV	102	0.360	<11.2	n/a	n/a	n/a	n/a	0.516	n/a	
S17T003252			110-43-0	2-Heptanone	PPBV	113	0.430	<9.91	n/a	n/a	n/a	n/a	0.595	n/a	
S17T003252			591-78-6	2-Hexanone	PPBV	100	0.520	<10.8	n/a	n/a	n/a	n/a	0.753	n/a	
S17T003252			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.4	n/a	n/a	n/a	n/a	0.456	n/a	
S17T003252			106-35-4	3-Heptanone	PPBV	105	0.870	<10.0	n/a	n/a	n/a	n/a	0.476	n/a	
S17T003252			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.1	n/a	n/a	n/a	n/a	0.714	n/a	
S17T003252			75-07-0	Acetaldehyde	PPBV	110	4.98	46.0	n/a	n/a	n/a	n/a	0.773	n/a	
S17T003252			67-64-1	Acetone	PPBV	101	2.24	245	n/a	n/a	n/a	n/a	0.535	n/a	E
S17T003252			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.5	n/a	n/a	n/a	n/a	0.932	n/a	
S17T003252			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.2	n/a	n/a	n/a	n/a	0.634	n/a	
S17T003252			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.8	n/a	n/a	n/a	n/a	0.476	n/a	
S17T003252			107-05-1	Allyl Chloride	PPBV	101	<0.271	<10.9	n/a	n/a	n/a	n/a	0.535	n/a	
S17T003252			71-43-2	Benzene	PPBV	98.6	<0.400	<10.7	n/a	n/a	n/a	n/a	0.793	n/a	
S17T003252			123-72-8	Butanal	PPBV	104	0.620	<10.9	n/a	n/a	n/a	n/a	0.555	n/a	
S17T003252			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.6	n/a	n/a	n/a	n/a	0.595	n/a	
S17T003252			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.7	n/a	n/a	n/a	n/a	0.575	n/a	
S17T003252			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.2	n/a	n/a	n/a	n/a	0.654	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-7
Customer Sample ID: 17-00252-13-SD1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003252			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.6	n/a	n/a	n/a	n/a	0.793	n/a	
S17T003252			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.6	n/a	n/a	n/a	n/a	0.634	n/a	
S17T003252			124-18-5	Decane	PPBV	104	0.470	<10.1	n/a	n/a	n/a	n/a	0.654	n/a	
S17T003252			64-17-5	Ethanol	PPBV	106	0.680	34.6	n/a	n/a	n/a	n/a	0.694	n/a	
S17T003252			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.3	n/a	n/a	n/a	n/a	0.516	n/a	
S17T003252			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.6	n/a	n/a	n/a	n/a	0.654	n/a	
S17T003252			110-54-3	Hexane	PPBV	97.3	<0.310	<10.8	n/a	n/a	n/a	n/a	0.615	n/a	
S17T003252			67-56-1	Methanol	PPBV	112	1.39	702	n/a	n/a	n/a	n/a	1.27	n/a	E
S17T003252			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.6	n/a	n/a	n/a	n/a	0.615	n/a	
S17T003252			100-42-5	Styrene	PPBV	103	<0.300	<10.3	n/a	n/a	n/a	n/a	0.595	n/a	
S17T003252			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.3	n/a	n/a	n/a	n/a	0.634	n/a	
S17T003252			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	<10.8	n/a	n/a	n/a	n/a	0.813	n/a	
S17T003252			108-88-3	Toluene	PPBV	97.3	<0.300	<10.8	n/a	n/a	n/a	n/a	0.595	n/a	
S17T003252			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.4	n/a	n/a	n/a	n/a	0.615	n/a	
S17T003252			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	14.7	n/a	n/a	n/a	n/a	1.72	n/a	
S17T003252			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.516	n/a	
S17T003252			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.5	n/a	n/a	n/a	n/a	0.694	n/a	
S17T003252			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.7	n/a	n/a	n/a	n/a	0.516	n/a	
S17T003252			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.0	n/a	n/a	n/a	n/a	0.516	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

a - LCS Outside Range

Y - Comment

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-8
Customer Sample ID: 17-00252-13-SD1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003253			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003253			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003253			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003253			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003253			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003253			106-99-0	1,3-Butadiene	PPBV	107	<0.310	112	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003253			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003253			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003253			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003253			71-36-3	1-Butanol	PPBV	135	<0.424	<11.3	n/a	n/a	n/a	n/a	0.839	n/a	
S17T003253			71-23-8	1-Propanol	PPBV	117	<0.210	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003253			78-93-3	2-Butanone	PPBV	102	0.360	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003253			110-43-0	2-Heptanone	PPBV	113	0.430	<9.99	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003253			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.759	n/a	
S17T003253			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003253			106-35-4	3-Heptanone	PPBV	105	0.870	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003253			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003253			75-07-0	Acetaldehyde	PPBV	110	4.98	48.2	n/a	n/a	n/a	n/a	0.779	n/a	
S17T003253			67-64-1	Acetone	PPBV	101	2.24	5.16E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003253			75-05-8	Acetonitrile	PPBV	103	<0.470	12.1	n/a	n/a	n/a	n/a	0.939	n/a	
S17T003253			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003253			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003253			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003253			71-43-2	Benzene	PPBV	98.6	<0.400	<10.8	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003253			123-72-8	Butanal	PPBV	104	0.620	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003253			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003253			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003253			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-EF-8
Customer Sample ID: 17-00252-13-SD1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003253			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003253			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003253			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003253			64-17-5	Ethanol	PPBV	106	0.680	55.0	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003253			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003253			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003253			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003253			67-56-1	Methanol	PPBV	112	1.39	5.41E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003253			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003253			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003253			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003253			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	21.5	n/a	n/a	n/a	n/a	0.819	n/a	
S17T003253			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003253			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003253			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	11.7	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003253			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003253			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003253			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003253			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-1
Customer Sample ID: 17-00252-13-SD1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003254			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.741	n/a	
S17T003254			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.741	n/a	
S17T003254			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.401	n/a	
S17T003254			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.501	n/a	
S17T003254			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003254			106-99-0	1,3-Butadiene	PPBV	107	<0.310	<10.7	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003254			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003254			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.561	n/a	
S17T003254			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003254			71-36-3	1-Butanol	PPBV	135	<0.424	128	n/a	n/a	n/a	n/a	0.841	n/a	
S17T003254			71-23-8	1-Propanol	PPBV	117	<0.210	37.9	n/a	n/a	n/a	n/a	0.421	n/a	
S17T003254			78-93-3	2-Butanone	PPBV	102	0.360	33.1	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003254			110-43-0	2-Heptanone	PPBV	113	0.430	19.1	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003254			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.761	n/a	
S17T003254			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.461	n/a	
S17T003254			106-35-4	3-Heptanone	PPBV	105	0.870	14.7	n/a	n/a	n/a	n/a	0.481	n/a	
S17T003254			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.721	n/a	
S17T003254			75-07-0	Acetaldehyde	PPBV	110	4.98	189	n/a	n/a	n/a	n/a	0.781	n/a	
S17T003254			67-64-1	Acetone	PPBV	101	2.24	744	n/a	n/a	n/a	n/a	0.541	n/a	E
S17T003254			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.941	n/a	
S17T003254			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003254			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.481	n/a	
S17T003254			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.541	n/a	
S17T003254			71-43-2	Benzene	PPBV	98.6	<0.400	11.9	n/a	n/a	n/a	n/a	0.801	n/a	
S17T003254			123-72-8	Butanal	PPBV	104	0.620	18.4	n/a	n/a	n/a	n/a	0.561	n/a	
S17T003254			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003254			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.581	n/a	
S17T003254			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.661	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-1
Customer Sample ID: 17-00252-13-SD1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003254			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.801	n/a	
S17T003254			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003254			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.661	n/a	
S17T003254			64-17-5	Ethanol	PPBV	106	0.680	79.6	n/a	n/a	n/a	n/a	0.701	n/a	
S17T003254			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003254			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.661	n/a	
S17T003254			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003254			67-56-1	Methanol	PPBV	112	1.39	1.30E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003254			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003254			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003254			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003254			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	405	n/a	n/a	n/a	n/a	0.821	n/a	E
S17T003254			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003254			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003254			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003254			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003254			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.701	n/a	
S17T003254			142-82-5	n-Heptane	PPBV	97.9	<0.261	12.1	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003254			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.521	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

a - LCS Outside Range

Y - Comment

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-2
Customer Sample ID: 17-00252-13-SD1-IN-2

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2														
S17T003255		79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003255		79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003255		75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003255		75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003255		107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003255		106-99-0	1,3-Butadiene	PPBV	107	<0.310	39.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003255		542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003255		106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003255		123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003255		71-36-3	1-Butanol	PPBV	135	<0.424	113	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003255		71-23-8	1-Propanol	PPBV	117	<0.210	31.8	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003255		78-93-3	2-Butanone	PPBV	102	0.360	35.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003255		110-43-0	2-Heptanone	PPBV	113	0.430	18.2	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003255		591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003255		78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003255		106-35-4	3-Heptanone	PPBV	105	0.870	15.0	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003255		108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003255		75-07-0	Acetaldehyde	PPBV	110	4.98	128	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003255		67-64-1	Acetone	PPBV	101	2.24	823	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003255		75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003255		107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003255		107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003255		107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003255		71-43-2	Benzene	PPBV	98.6	<0.400	12.1	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003255		123-72-8	Butanal	PPBV	104	0.620	17.6	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003255		56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003255		108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003255		75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-2
Customer Sample ID: 17-00252-13-SD1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003255			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003255			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003255			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003255			64-17-5	Ethanol	PPBV	106	0.680	66.1	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003255			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003255			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003255			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003255			67-56-1	Methanol	PPBV	112	1.39	555	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003255			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003255			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003255			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003255			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	443	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003255			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003255			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003255			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003255			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003255			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003255			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003255			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-3
Customer Sample ID: 17-00252-13-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003256			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003256			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003256			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003256			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003256			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003256			106-99-0	1,3-Butadiene	PPBV	107	<0.310	17.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003256			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003256			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003256			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003256			71-36-3	1-Butanol	PPBV	135	<0.424	125	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003256			71-23-8	1-Propanol	PPBV	117	<0.210	33.1	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003256			78-93-3	2-Butanone	PPBV	102	0.360	37.9	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003256			110-43-0	2-Heptanone	PPBV	113	0.430	16.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003256			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003256			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003256			106-35-4	3-Heptanone	PPBV	105	0.870	13.6	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003256			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003256			75-07-0	Acetaldehyde	PPBV	110	4.98	141	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003256			67-64-1	Acetone	PPBV	101	2.24	818	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003256			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003256			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003256			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003256			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003256			71-43-2	Benzene	PPBV	98.6	<0.400	11.2	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003256			123-72-8	Butanal	PPBV	104	0.620	20.2	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003256			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003256			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003256			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-3
Customer Sample ID: 17-00252-13-SD1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003256			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003256			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003256			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003256			64-17-5	Ethanol	PPBV	106	0.680	65.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003256			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003256			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003256			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003256			67-56-1	Methanol	PPBV	112	1.39	360	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003256			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003256			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003256			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003256			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	448	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003256			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003256			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003256			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003256			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003256			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003256			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003256			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-4
Customer Sample ID: 17-00252-13-SD1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003257			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003257			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003257			75-34-3	1;1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003257			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003257			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003257			106-99-0	1,3-Butadiene	PPBV	107	<0.310	77.3	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003257			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003257			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003257			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003257			71-36-3	1-Butanol	PPBV	135	<0.424	118	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003257			71-23-8	1-Propanol	PPBV	117	<0.210	29.7	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003257			78-93-3	2-Butanone	PPBV	102	0.360	28.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003257			110-43-0	2-Heptanone	PPBV	113	0.430	13.5	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003257			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003257			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003257			106-35-4	3-Heptanone	PPBV	105	0.870	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003257			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003257			75-07-0	Acetaldehyde	PPBV	110	4.98	80.0	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003257			67-64-1	Acetone	PPBV	101	2.24	1.05E+04	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003257			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003257			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003257			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003257			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003257			71-43-2	Benzene	PPBV	98.6	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003257			123-72-8	Butanal	PPBV	104	0.620	16.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003257			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003257			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003257			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-4
Customer Sample ID: 17-00252-13-SD1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003257			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003257			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003257			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003257			64-17-5	Ethanol	PPBV	106	0.680	59.3	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003257			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003257			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003257			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003257			67-56-1	Methanol	PPBV	112	1.39	1.87E+04	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003257			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003257			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003257			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003257			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	394	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003257			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003257			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003257			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003257			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003257			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003257			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003257			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-5
Customer Sample ID: 17-00252-13-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003258			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003258			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003258			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003258			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003258			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003258			106-99-0	1,3-Butadiene	PPBV	107	<0.310	19.8	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003258			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003258			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003258			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003258			71-36-3	1-Butanol	PPBV	135	<0.424	129	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003258			71-23-8	1-Propanol	PPBV	117	<0.210	32.9	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003258			78-93-3	2-Butanone	PPBV	102	0.360	35.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003258			110-43-0	2-Heptanone	PPBV	113	0.430	14.8	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003258			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003258			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003258			106-35-4	3-Heptanone	PPBV	105	0.870	11.2	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003258			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003258			75-07-0	Acetaldehyde	PPBV	110	4.98	85.4	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003258			67-64-1	Acetone	PPBV	101	2.24	830	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003258			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003258			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003258			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003258			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003258			71-43-2	Benzene	PPBV	98.6	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003258			123-72-8	Butanal	PPBV	104	0.620	15.5	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003258			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003258			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003258			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-5
Customer Sample ID: 17-00252-13-SD1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003258			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003258			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003258			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003258			64-17-5	Ethanol	PPBV	106	0.680	62.1	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003258			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003258			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003258			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003258			67-56-1	Methanol	PPBV	112	1.39	689	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003258			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003258			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003258			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003258			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	468	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003258			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003258			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003258			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003258			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003258			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003258			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003258			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-6
Customer Sample ID: 17-00252-13-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003259			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003259			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003259			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003259			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003259			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003259			106-99-0	1,3-Butadiene	PPBV	107	<0.310	26.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003259			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003259			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003259			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003259			71-36-3	1-Butanol	PPBV	135	<0.424	141	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003259			71-23-8	1-Propanol	PPBV	117	<0.210	34.6	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003259			78-93-3	2-Butanone	PPBV	102	0.360	36.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003259			110-43-0	2-Heptanone	PPBV	113	0.430	14.8	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003259			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003259			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003259			106-35-4	3-Heptanone	PPBV	105	0.870	10.7	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003259			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003259			75-07-0	Acetaldehyde	PPBV	110	4.98	77.1	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003259			67-64-1	Acetone	PPBV	101	2.24	882	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003259			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003259			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003259			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003259			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003259			71-43-2	Benzene	PPBV	98.6	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003259			123-72-8	Butanal	PPBV	104	0.620	16.8	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003259			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003259			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003259			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-6
Customer Sample ID: 17-00252-13-SD1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003259			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003259			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003259			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003259			64-17-5	Ethanol	PPBV	106	0.680	64.0	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003259			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003259			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003259			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003259			67-56-1	Methanol	PPBV	112	1.39	1.06E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003259			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003259			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003259			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003259			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	486	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003259			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003259			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003259			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003259			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003259			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003259			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003259			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-7
Customer Sample ID: 17-00252-13-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003260			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003260			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003260			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003260			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003260			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003260			106-99-0	1,3-Butadiene	PPBV	107	<0.310	46.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003260			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003260			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003260			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003260			71-36-3	1-Butanol	PPBV	135	<0.424	139	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003260			71-23-8	1-Propanol	PPBV	117	<0.210	33.9	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003260			78-93-3	2-Butanone	PPBV	102	0.360	35.6	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003260			110-43-0	2-Heptanone	PPBV	113	0.430	15.1	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003260			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003260			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003260			106-35-4	3-Heptanone	PPBV	105	0.870	10.8	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003260			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003260			75-07-0	Acetaldehyde	PPBV	110	4.98	66.0	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003260			67-64-1	Acetone	PPBV	101	2.24	827	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003260			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003260			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003260			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003260			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003260			71-43-2	Benzene	PPBV	98.6	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003260			123-72-8	Butanal	PPBV	104	0.620	14.8	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003260			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003260			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003260			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-7
Customer Sample ID: 17-00252-13-SD1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003260			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003260			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003260			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003260			64-17-5	Ethanol	PPBV	106	0.680	60.3	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003260			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003260			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003260			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003260			67-56-1	Methanol	PPBV	112	1.39	470	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003260			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003260			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003260			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003260			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	479	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003260			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003260			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003260			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003260			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003260			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003260			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003260			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated

a - LCS Outside Range

Y - Comment

E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-8
Customer Sample ID: 17-00252-13-SD1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003261			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	98.6	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003261			79-00-5	1,1,2-Trichloroethane	PPBV	96.1	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003261			75-34-3	1,1-Dichloroethane	PPBV	99.9	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003261			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003261			107-06-2	1,2-Dichloroethane	PPBV	97.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003261			106-99-0	1,3-Butadiene	PPBV	107	<0.310	12.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003261			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003261			106-46-7	1,4-Dichlorobenzene	PPBV	97.5	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003261			123-91-1	1,4-Dioxane	PPBV	101	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003261			71-36-3	1-Butanol	PPBV	135	<0.424	138	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003261			71-23-8	1-Propanol	PPBV	117	<0.210	33.4	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003261			78-93-3	2-Butanone	PPBV	102	0.360	34.2	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003261			110-43-0	2-Heptanone	PPBV	113	0.430	15.3	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003261			591-78-6	2-Hexanone	PPBV	100	0.520	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003261			78-94-4	3-Buten-2-one	PPBV	98.5	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003261			106-35-4	3-Heptanone	PPBV	105	0.870	10.5	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003261			108-10-1	4-Methyl-2-Pentanone	PPBV	95.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003261			75-07-0	Acetaldehyde	PPBV	110	4.98	60.2	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003261			67-64-1	Acetone	PPBV	101	2.24	904	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003261			75-05-8	Acetonitrile	PPBV	103	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003261			107-02-8	Acrolein	PPBV	97.9	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003261			107-13-1	Acrylonitrile	PPBV	100	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003261			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003261			71-43-2	Benzene	PPBV	98.6	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003261			123-72-8	Butanal	PPBV	104	0.620	14.5	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003261			56-23-5	Carbon tetrachloride	PPBV	103	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003261			108-90-7	Chlorobenzene	PPBV	102	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003261			75-00-3	Chloroethane	PPBV	98.2	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170310
SDG Number:
Customer Sample ID: 17-00252-13-SD1-IN-8
Customer Sample ID: 17-00252-13-SD1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003261			67-66-3	Chloroform	PPBV	96.1	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003261			110-82-7	Cyclohexane	PPBV	98.1	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003261			124-18-5	Decane	PPBV	104	0.470	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003261			64-17-5	Ethanol	PPBV	106	0.680	59.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003261			141-78-6	Ethyl acetate	PPBV	98.5	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003261			100-41-4	Ethylbenzene	PPBV	103	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003261			110-54-3	Hexane	PPBV	97.3	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003261			67-56-1	Methanol	PPBV	112	1.39	1.02E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003261			75-09-2	Methylene Chloride	PPBV	100	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003261			100-42-5	Styrene	PPBV	103	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003261			127-18-4	Tetrachloroethene	PPBV	98.0	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003261			109-99-9	Tetrahydrofuran	PPBV	97.1	<0.410	469	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003261			108-88-3	Toluene	PPBV	97.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003261			79-01-6	Trichloroethene	PPBV	100	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003261			75-69-4	Trichlorofluoromethane	PPBV	104	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003261			10061-01-5	cis-1,3-Dichloropropene	PPBV	96.5	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003261			123-86-4	n-Butyl acetate	PPBV	97.2	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003261			142-82-5	n-Heptane	PPBV	97.9	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003261			10061-02-6	trans-1,3-Dichloropropene	PPBV	96.7	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

J - Estimated a - LCS Outside Range Y - Comment E - Outside Calibration Range

VOA1 COMMENTS

DSRComment 2.7.32
DSR.Jar v. 3.0.12

2017 Cartridge Evaluation
3/30/2017 10:56:09AM

Verification Sample Comments
Sample: S17T003243 Group: 20170310
Y= Evidence of detector saturation
Sample: S17T003244 Group: 20170310
Y= Evidence of detector saturation
MS 3/30/17
Sample: S17T003250 Group: 20170310
Y= Evidence of detector saturation.
MS 3/30/17
Sample: S17T003253 Group: 20170310
Y flag: Acetone and methyl alcohol - detector saturation; reported result is a rough estimate. kak 03/20/17
Sample: S17T003256 Group: 20170310
Y flag (methyl alcohol): Detector saturation; reported result is a rough estimation. kak 03/20/17
Sample: S17T003257 Group: 20170310
Y flag (acetone): Detector saturation; reported value is a rough estimate. kak 03/20/17

Jenn Luge 4/20/17

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BA-EF
Customer Sample ID: 17-00253-13-SC1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003262			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003262			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003262			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003262			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003262			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003262			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003262			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003262			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003262			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003262			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.839	n/a	
S17T003262			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003262			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003262			110-43-0	2-Heptanone	PPBV	95.7	0.700	<9.99	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003262			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.759	n/a	
S17T003262			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003262			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003262			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.719	n/a	
S17T003262			75-07-0	Acetaldehyde	PPBV	98.0	5.99	<12.0	n/a	n/a	n/a	n/a	0.779	n/a	
S17T003262			67-64-1	Acetone	PPBV	98.3	2.77	48.1	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003262			75-05-8	Acetonitrile	PPBV	84.5	<0.470	14.3	n/a	n/a	n/a	n/a	0.939	n/a	
S17T003262			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003262			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003262			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003262			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003262			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003262			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003262			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003262			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BA-EF
Customer Sample ID: 17-00253-13-SC1-BA-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003262			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003262			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003262			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003262			64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003262			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003262			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003262			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003262			67-56-1	Methanol	PPBV	89.0	2.04	703	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003262			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003262			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003262			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003262			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.819	n/a	
S17T003262			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003262			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003262			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003262			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003262			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003262			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003262			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BA-IN
Customer Sample ID: 17-00253-13-SC1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003263			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003263			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003263			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003263			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003263			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003263			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003263			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003263			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003263			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003263			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.839	n/a	
S17T003263			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003263			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003263			110-43-0	2-Heptanone	PPBV	95.7	0.700	<9.99	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003263			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.759	n/a	
S17T003263			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003263			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003263			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003263			75-07-0	Acetaldehyde	PPBV	98.0	5.99	<12.0	n/a	n/a	n/a	n/a	0.779	n/a	
S17T003263			67-64-1	Acetone	PPBV	98.3	2.77	122	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003263			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.939	n/a	
S17T003263			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003263			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003263			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003263			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003263			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003263			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003263			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003263			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BA-IN
Customer Sample ID: 17-00253-13-SC1-BA-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003263			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003263			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003263			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003263			64-17-5	Ethanol	PPBV	101	0.820	44.7	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003263			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003263			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003263			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003263			67-56-1	Methanol	PPBV	89.0	2.04	172	n/a	n/a	n/a	n/a	1.28	n/a	
S17T003263			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003263			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003263			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003263			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.819	n/a	
S17T003263			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003263			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003263			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003263			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003263			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003263			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003263			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BL-EF
Customer Sample ID: 17-00253-13-SC1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003264			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003264			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003264			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003264			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003264			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003264			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003264			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003264			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003264			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003264			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003264			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003264			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003264			110-43-0	2-Heptanone	PPBV	95.7	0.700	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003264			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003264			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003264			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003264			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003264			75-07-0	Acetaldehyde	PPBV	98.0	5.99	<12.0	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003264			67-64-1	Acetone	PPBV	98.3	2.77	31.5	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003264			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003264			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003264			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003264			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003264			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003264			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003264			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003264			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003264			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BL-EF
Customer Sample ID: 17-00253-13-SC1-BL-EF

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003264			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003264			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003264			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003264			64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003264			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003264			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003264			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003264			67-56-1	Methanol	PPBV	89.0	2.04	453	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003264			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003264			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003264			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003264			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003264			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003264			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003264			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003264			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003264			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003264			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003264			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BL-IN
Customer Sample ID: 17-00253-13-SC1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003265			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003265			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003265			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003265			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003265			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003265			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003265			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003265			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003265			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003265			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003265			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003265			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003265			110-43-0	2-Heptanone	PPBV	95.7	0.700	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003265			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003265			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003265			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003265			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003265			75-07-0	Acetaldehyde	PPBV	98.0	5.99	<12.0	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003265			67-64-1	Acetone	PPBV	98.3	2.77	1.77E+04	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003265			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003265			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003265			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003265			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003265			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003265			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003265			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003265			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003265			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-BL-IN
Customer Sample ID: 17-00253-13-SC1-BL-IN

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003265			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003265			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003265			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003265			64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003265			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003265			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003265			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003265			67-56-1	Methanol	PPBV	89.0	2.04	2.71E+04	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003265			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003265			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003265			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003265			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003265			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003265			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003265			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003265			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003265			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003265			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003265			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-1
Customer Sample ID: 17-00253-13-SC1-EF-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003266			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003266			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003266			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003266			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.499	n/a	
S17T003266			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003266			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003266			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003266			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.559	n/a	
S17T003266			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003266			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.839	n/a	
S17T003266			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003266			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003266			110-43-0	2-Heptanone	PPBV	95.7	0.700	<9.99	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003266			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.759	n/a	
S17T003266			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003266			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003266			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.719	n/a	
S17T003266			75-07-0	Acetaldehyde	PPBV	98.0	5.99	23.7	n/a	n/a	n/a	n/a	0.779	n/a	
S17T003266			67-64-1	Acetone	PPBV	98.3	2.77	52.7	n/a	n/a	n/a	n/a	0.539	n/a	
S17T003266			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.939	n/a	
S17T003266			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003266			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003266			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.539	n/a	
S17T003266			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003266			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.559	n/a	
S17T003266			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003266			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.579	n/a	
S17T003266			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.659	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-1
Customer Sample ID: 17-00253-13-SC1-EF-1

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2														
S17T003266		67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003266		110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003266		124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.659	n/a	
S17T003266		64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.699	n/a	
S17T003266		141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003266		100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.659	n/a	
S17T003266		110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003266		67-56-1	Methanol	PPBV	89.0	2.04	5.82E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003266		75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003266		100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003266		127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003266		109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.819	n/a	
S17T003266		108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003266		79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003266		75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003266		10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003266		123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.699	n/a	
S17T003266		142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003266		10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.519	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-2
Customer Sample ID: 17-00253-13-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003267			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003267			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003267			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003267			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003267			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003267			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003267			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003267			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003267			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003267			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003267			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003267			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003267			110-43-0	2-Heptanone	PPBV	95.7	0.700	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003267			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003267			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003267			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003267			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003267			75-07-0	Acetaldehyde	PPBV	98.0	5.99	19.8	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003267			67-64-1	Acetone	PPBV	98.3	2.77	9.25E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003267			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003267			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003267			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003267			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003267			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003267			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003267			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003267			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003267			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-2
Customer Sample ID: 17-00253-13-SC1-EF-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003267			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003267			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003267			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003267			64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003267			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003267			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003267			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003267			67-56-1	Methanol	PPBV	89.0	2.04	1.09E+04	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003267			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003267			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003267			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003267			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003267			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003267			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003267			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003267			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003267			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003267			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003267			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-3
Customer Sample ID: 17-00253-13-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003268			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.741	n/a	
S17T003268			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.741	n/a	
S17T003268			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003268			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.501	n/a	
S17T003268			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003268			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003268			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003268			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.561	n/a	
S17T003268			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003268			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.841	n/a	
S17T003268			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003268			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003268			110-43-0	2-Heptanone	PPBV	95.7	0.700	<10.0	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003268			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.761	n/a	
S17T003268			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003268			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003268			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.721	n/a	
S17T003268			75-07-0	Acetaldehyde	PPBV	98.0	5.99	19.4	n/a	n/a	n/a	n/a	0.781	n/a	
S17T003268			67-64-1	Acetone	PPBV	98.3	2.77	15.2	n/a	n/a	n/a	n/a	0.541	n/a	
S17T003268			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.941	n/a	
S17T003268			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003268			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003268			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.541	n/a	
S17T003268			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.801	n/a	
S17T003268			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.561	n/a	
S17T003268			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003268			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.581	n/a	
S17T003268			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.661	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-3
Customer Sample ID: 17-00253-13-SC1-EF-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003268			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.801	n/a	
S17T003268			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003268			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.661	n/a	
S17T003268			64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.701	n/a	
S17T003268			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003268			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.661	n/a	
S17T003268			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003268			67-56-1	Methanol	PPBV	89.0	2.04	967	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003268			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003268			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003268			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.641	n/a	
S17T003268			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.821	n/a	
S17T003268			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.601	n/a	
S17T003268			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.621	n/a	
S17T003268			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003268			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003268			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.701	n/a	
S17T003268			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.521	n/a	
S17T003268			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.521	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination

E - Outside Calibration Range

Y - Comment

J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-4
Customer Sample ID: 17-00253-13-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003269			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003269			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003269			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003269			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003269			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003269			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003269			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003269			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003269			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003269			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003269			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003269			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003269			110-43-0	2-Heptanone	PPBV	95.7	0.700	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003269			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003269			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003269			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003269			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003269			75-07-0	Acetaldehyde	PPBV	98.0	5.99	24.6	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003269			67-64-1	Acetone	PPBV	98.3	2.77	<11.4	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003269			75-05-8	Acetonitrile	PPBV	84.5	<0.470	25.9	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003269			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003269			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003269			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003269			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003269			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003269			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003269			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003269			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-4
Customer Sample ID: 17-00253-13-SC1-EF-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003269			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003269			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003269			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003269			64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003269			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003269			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003269			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003269			67-56-1	Methanol	PPBV	89.0	2.04	644	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003269			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003269			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003269			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003269			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003269			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003269			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003269			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003269			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003269			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003269			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003269			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-5
Customer Sample ID: 17-00253-13-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003270			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003270			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003270			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003270			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003270			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003270			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003270			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003270			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003270			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003270			71-36-3	1-Butanol	PPBV	126	0.460	97.1	n/a	n/a	n/a	n/a	0.839	n/a	
S17T003270			71-23-8	1-Propanol	PPBV	116	0.270	20.5	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003270			78-93-3	2-Butanone	PPBV	100	0.500	19.9	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003270			110-43-0	2-Heptanone	PPBV	95.7	0.700	<9.99	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003270			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.759	n/a	
S17T003270			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003270			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003270			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003270			75-07-0	Acetaldehyde	PPBV	98.0	5.99	55.7	n/a	n/a	n/a	n/a	0.779	n/a	
S17T003270			67-64-1	Acetone	PPBV	98.3	2.77	4.86E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003270			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.939	n/a	
S17T003270			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003270			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003270			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003270			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003270			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003270			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003270			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003270			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-5
Customer Sample ID: 17-00253-13-SC1-EF-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003270			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003270			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003270			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003270			64-17-5	Ethanol	PPBV	101	0.820	41.7	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003270			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003270			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003270			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003270			67-56-1	Methanol	PPBV	89.0	2.04	5.52E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003270			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003270			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003270			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003270			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	304	n/a	n/a	n/a	n/a	0.819	n/a	E
S17T003270			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003270			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003270			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003270			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003270			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003270			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003270			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-6
Customer Sample ID: 17-00253-13-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003271			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	110	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003271			79-00-5	1,1,2-Trichloroethane	PPBV	102	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003271			75-34-3	1,1-Dichloroethane	PPBV	98.8	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003271			75-35-4	1,1-Dichloroethene	PPBV	102	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003271			107-06-2	1,2-Dichloroethane	PPBV	102	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003271			106-99-0	1,3-Butadiene	PPBV	102	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003271			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003271			106-46-7	1,4-Dichlorobenzene	PPBV	111	0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003271			123-91-1	1,4-Dioxane	PPBV	103	0.350	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003271			71-36-3	1-Butanol	PPBV	126	0.460	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003271			71-23-8	1-Propanol	PPBV	116	0.270	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003271			78-93-3	2-Butanone	PPBV	100	0.500	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003271			110-43-0	2-Heptanone	PPBV	95.7	0.700	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003271			591-78-6	2-Hexanone	PPBV	98.1	0.660	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003271			78-94-4	3-Buten-2-one	PPBV	101	0.240	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003271			106-35-4	3-Heptanone	PPBV	94.8	1.05	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003271			108-10-1	4-Methyl-2-Pentanone	PPBV	95.6	0.370	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003271			75-07-0	Acetaldehyde	PPBV	98.0	5.99	<12.0	n/a	n/a	n/a	n/a	0.780	n/a	
S17T003271			67-64-1	Acetone	PPBV	98.3	2.77	. 152	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003271			75-05-8	Acetonitrile	PPBV	84.5	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003271			107-02-8	Acrolein	PPBV	100	0.370	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003271			107-13-1	Acrylonitrile	PPBV	97.6	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003271			107-05-1	Allyl Chloride	PPBV	101	<0.271	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003271			71-43-2	Benzene	PPBV	9.23	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003271			123-72-8	Butanal	PPBV	104	0.760	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003271			56-23-5	Carbon tetrachloride	PPBV	101	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003271			108-90-7	Chlorobenzene	PPBV	106	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003271			75-00-3	Chloroethane	PPBV	99.9	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-6
Customer Sample ID: 17-00253-13-SC1-EF-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003271			67-66-3	Chloroform	PPBV	100	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003271			110-82-7	Cyclohexane	PPBV	99.3	<0.321	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003271			124-18-5	Decane	PPBV	111	0.460	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003271			64-17-5	Ethanol	PPBV	101	0.820	<10.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003271			141-78-6	Ethyl acetate	PPBV	100	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003271			100-41-4	Ethylbenzene	PPBV	106	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003271			110-54-3	Hexane	PPBV	100	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003271			67-56-1	Methanol	PPBV	89.0	2.04	210	n/a	n/a	n/a	n/a	1.28	n/a	
S17T003271			75-09-2	Methylene Chloride	PPBV	101	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003271			100-42-5	Styrene	PPBV	108	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003271			127-18-4	Tetrachloroethene	PPBV	105	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003271			109-99-9	Tetrahydrofuran	PPBV	99.2	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003271			108-88-3	Toluene	PPBV	98.3	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003271			79-01-6	Trichloroethene	PPBV	104	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003271			75-69-4	Trichlorofluoromethane	PPBV	101	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003271			10061-01-5	cis-1,3-Dichloropropene	PPBV	101	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003271			123-86-4	n-Butyl acetate	PPBV	96.1	0.420	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003271			142-82-5	n-Heptane	PPBV	102	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003271			10061-02-6	trans-1,3-Dichloropropene	PPBV	103	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-7
Customer Sample ID: 17-00253-13-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003272			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003272			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003272			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003272			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003272			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003272			106-99-0	1,3-Butadiene	PPBV	101	<0.310	23.3	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003272			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003272			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003272			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003272			71-36-3	1-Butanol	PPBV	119	<0.424	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003272			71-23-8	1-Propanol	PPBV	108	<0.210	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003272			78-93-3	2-Butanone	PPBV	95.9	0.390	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003272			110-43-0	2-Heptanone	PPBV	89.6	0.460	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003272			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003272			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003272			106-35-4	3-Heptanone	PPBV	91.2	0.700	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003272			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003272			75-07-0	Acetaldehyde	PPBV	103	7.11	29.5	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003272			67-64-1	Acetone	PPBV	95.4	2.97	41.2	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003272			75-05-8	Acetonitrile	PPBV	87.1	<0.470	78.3	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003272			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003272			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003272			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003272			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003272			123-72-8	Butanal	PPBV	99.1	0.720	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003272			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003272			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003272			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-7
Customer Sample ID: 17-00253-13-SC1-EF-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003272			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003272			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003272			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003272			64-17-5	Ethanol	PPBV	96.6	0.700	22.1	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003272			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003272			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003272			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003272			67-56-1	Methanol	PPBV	92.1	2.00	1.17E+03	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003272			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003272			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003272			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003272			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003272			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003272			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003272			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	14.3	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003272			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003272			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003272			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003272			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-8
Customer Sample ID: 17-00253-13-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003273			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003273			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003273			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003273			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003273			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003273			106-99-0	1,3-Butadiene	PPBV	101	<0.310	22.2	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003273			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003273			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003273			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003273			71-36-3	1-Butanol	PPBV	119	<0.424	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003273			71-23-8	1-Propanol	PPBV	108	<0.210	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003273			78-93-3	2-Butanone	PPBV	95.9	0.390	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003273			110-43-0	2-Heptanone	PPBV	89.6	0.460	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003273			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003273			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003273			106-35-4	3-Heptanone	PPBV	91.2	0.700	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003273			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003273			75-07-0	Acetaldehyde	PPBV	103	7.11	23.3	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003273			67-64-1	Acetone	PPBV	95.4	2.97	3.79E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003273			75-05-8	Acetonitrile	PPBV	87.1	<0.470	29.5	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003273			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003273			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003273			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003273			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003273			123-72-8	Butanal	PPBV	99.1	0.720	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003273			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003273			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003273			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-EF-8
Customer Sample ID: 17-00253-13-SC1-EF-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003273			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003273			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003273			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003273			64-17-5	Ethanol	PPBV	96.6	0.700	39.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003273			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003273			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003273			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003273			67-56-1	Methanol	PPBV	92.1	2.00	5.23E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003273			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003273			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003273			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003273			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003273			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003273			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003273			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	12.4	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003273			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003273			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003273			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003273			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-1
Customer Sample ID: 17-00253-13-SC1-IN-1

Sample# R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2														
S17T003274		79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003274		79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003274		75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003274		75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003274		107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003274		106-99-0	1,3-Butadiene	PPBV	101	<0.310	34.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003274		542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003274		106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003274		123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003274		71-36-3	1-Butanol	PPBV	119	<0.424	164	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003274		71-23-8	1-Propanol	PPBV	108	<0.210	31.6	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003274		78-93-3	2-Butanone	PPBV	95.9	0.390	35.0	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003274		110-43-0	2-Heptanone	PPBV	89.6	0.460	15.6	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003274		591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003274		78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003274		106-35-4	3-Heptanone	PPBV	91.2	0.700	10.5	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003274		108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003274		75-07-0	Acetaldehyde	PPBV	103	7.11	65.0	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003274		67-64-1	Acetone	PPBV	95.4	2.97	879	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003274		75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003274		107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003274		107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003274		107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003274		71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003274		123-72-8	Butanal	PPBV	99.1	0.720	13.6	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003274		56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003274		108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003274		75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-1
Customer Sample ID: 17-00253-13-SC1-IN-1

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003274			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003274			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003274			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003274			64-17-5	Ethanol	PPBV	96.6	0.700	55.4	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003274			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003274			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003274			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003274			67-56-1	Methanol	PPBV	92.1	2.00	743	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003274			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003274			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003274			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003274			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	532	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003274			108-88-3	Toluene	PPBV	94.6	<0.300	23.5	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003274			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003274			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003274			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003274			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003274			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003274			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-2
Customer Sample ID: 17-00253-13-SC1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003275			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003275			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003275			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003275			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003275			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003275			106-99-0	1,3-Butadiene	PPBV	101	<0.310	57.8	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003275			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003275			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003275			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003275			71-36-3	1-Butanol	PPBV	119	<0.424	170	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003275			71-23-8	1-Propanol	PPBV	108	<0.210	33.9	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003275			78-93-3	2-Butanone	PPBV	95.9	0.390	36.7	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003275			110-43-0	2-Heptanone	PPBV	89.6	0.460	17.1	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003275			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003275			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003275			106-35-4	3-Heptanone	PPBV	91.2	0.700	11.5	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003275			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003275			75-07-0	Acetaldehyde	PPBV	103	7.11	70.6	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003275			67-64-1	Acetone	PPBV	95.4	2.97	836	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003275			75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003275			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003275			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003275			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003275			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003275			123-72-8	Butanal	PPBV	99.1	0.720	14.2	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003275			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003275			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003275			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-2
Customer Sample ID: 17-00253-13-SC1-IN-2

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003275			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003275			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003275			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003275			64-17-5	Ethanol	PPBV	96.6	0.700	58.0	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003275			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003275			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003275			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003275			67-56-1	Methanol	PPBV	92.1	2.00	687	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003275			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003275			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003275			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003275			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	547	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003275			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003275			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003275			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003275			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003275			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003275			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003275			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-3
Customer Sample ID: 17-00253-13-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003276			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003276			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.739	n/a	
S17T003276			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.399	n/a	
S17T003276			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.499	n/a	
S17T003276			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003276			106-99-0	1,3-Butadiene	PPBV	101	<0.310	11.4	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003276			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003276			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.559	n/a	
S17T003276			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003276			71-36-3	1-Butanol	PPBV	119	<0.424	170	n/a	n/a	n/a	n/a	0.839	n/a	
S17T003276			71-23-8	1-Propanol	PPBV	108	<0.210	34.9	n/a	n/a	n/a	n/a	0.419	n/a	
S17T003276			78-93-3	2-Butanone	PPBV	95.9	0.390	37.3	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003276			110-43-0	2-Heptanone	PPBV	89.6	0.460	16.0	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003276			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.759	n/a	
S17T003276			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.459	n/a	
S17T003276			106-35-4	3-Heptanone	PPBV	91.2	0.700	10.5	n/a	n/a	n/a	n/a	0.479	n/a	
S17T003276			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.719	n/a	
S17T003276			75-07-0	Acetaldehyde	PPBV	103	7.11	50.6	n/a	n/a	n/a	n/a	0.779	n/a	B
S17T003276			67-64-1	Acetone	PPBV	95.4	2.97	3.68E+03	n/a	n/a	n/a	n/a	0.539	n/a	EY
S17T003276			75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.938	n/a	
S17T003276			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003276			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.479	n/a	
S17T003276			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.539	n/a	
S17T003276			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003276			123-72-8	Butanal	PPBV	99.1	0.720	15.5	n/a	n/a	n/a	n/a	0.559	n/a	
S17T003276			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003276			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.579	n/a	
S17T003276			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.659	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-3
Customer Sample ID: 17-00253-13-SC1-IN-3

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003276			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.799	n/a	
S17T003276			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003276			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.659	n/a	
S17T003276			64-17-5	Ethanol	PPBV	96.6	0.700	60.0	n/a	n/a	n/a	n/a	0.699	n/a	
S17T003276			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003276			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.659	n/a	
S17T003276			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003276			67-56-1	Methanol	PPBV	92.1	2.00	3.45E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003276			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003276			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003276			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.639	n/a	
S17T003276			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	565	n/a	n/a	n/a	n/a	0.819	n/a	E
S17T003276			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.599	n/a	
S17T003276			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.619	n/a	
S17T003276			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003276			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003276			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.699	n/a	
S17T003276			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.519	n/a	
S17T003276			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.519	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-4
Customer Sample ID: 17-00253-13-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003277			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003277			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003277			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003277			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003277			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003277			106-99-0	1,3-Butadiene	PPBV	101	<0.310	43.2	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003277			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003277			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003277			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003277			71-36-3	1-Butanol	PPBV	119	<0.424	148	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003277			71-23-8	1-Propanol	PPBV	108	<0.210	32.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003277			78-93-3	2-Butanone	PPBV	95.9	0.390	32.7	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003277			110-43-0	2-Heptanone	PPBV	89.6	0.460	13.5	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003277			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003277			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003277			106-35-4	3-Heptanone	PPBV	91.2	0.700	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003277			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003277			75-07-0	Acetaldehyde	PPBV	103	7.11	56.5	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003277			67-64-1	Acetone	PPBV	95.4	2.97	3.75E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003277			75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003277			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003277			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003277			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003277			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003277			123-72-8	Butanal	PPBV	99.1	0.720	13.8	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003277			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003277			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003277			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-4
Customer Sample ID: 17-00253-13-SC1-IN-4

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003277			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003277			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003277			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003277			64-17-5	Ethanol	PPBV	96.6	0.700	55.7	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003277			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003277			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003277			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003277			67-56-1	Methanol	PPBV	92.1	2.00	3.99E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003277			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003277			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003277			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003277			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	479	n/a	n/a	n/a	n/a	0.820	n/a	E
S17T003277			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003277			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003277			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003277			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003277			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003277			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003277			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-5
Customer Sample ID: 17-00253-13-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003278			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003278			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003278			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003278			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003278			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003278			106-99-0	1,3-Butadiene	PPBV	101	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003278			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003278			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003278			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003278			71-36-3	1-Butanol	PPBV	119	<0.424	<11.3	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003278			71-23-8	1-Propanol	PPBV	108	<0.210	<11.0	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003278			78-93-3	2-Butanone	PPBV	95.9	0.390	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003278			110-43-0	2-Heptanone	PPBV	89.6	0.460	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003278			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003278			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003278			106-35-4	3-Heptanone	PPBV	91.2	0.700	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003278			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003278			75-07-0	Acetaldehyde	PPBV	103	7.11	21.8	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003278			67-64-1	Acetone	PPBV	95.4	2.97	42.8	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003278			75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003278			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003278			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003278			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003278			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003278			123-72-8	Butanal	PPBV	99.1	0.720	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003278			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003278			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003278			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-5
Customer Sample ID: 17-00253-13-SC1-IN-5

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003278			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003278			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003278			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003278			64-17-5	Ethanol	PPBV	96.6	0.700	<10.9	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003278			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003278			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003278			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003278			67-56-1	Methanol	PPBV	92.1	2.00	657	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003278			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003278			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003278			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	J
S17T003278			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	<10.9	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003278			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003278			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003278			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003278			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003278			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003278			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003278			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-6
Customer Sample ID: 17-00253-13-SC1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003279			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003279			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003279			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003279			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003279			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003279			106-99-0	1,3-Butadiene	PPBV	101	<0.310	13.8	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003279			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003279			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003279			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003279			71-36-3	1-Butanol	PPBV	119	<0.424	68.6	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003279			71-23-8	1-Propanol	PPBV	108	<0.210	17.2	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003279			78-93-3	2-Butanone	PPBV	95.9	0.390	14.2	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003279			110-43-0	2-Heptanone	PPBV	89.6	0.460	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003279			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003279			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003279			106-35-4	3-Heptanone	PPBV	91.2	0.700	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003279			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003279			75-07-0	Acetaldehyde	PPBV	103	7.11	46.4	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003279			67-64-1	Acetone	PPBV	95.4	2.97	404	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003279			75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003279			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003279			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003279			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003279			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003279			123-72-8	Butanal	PPBV	99.1	0.720	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003279			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003279			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003279			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-6
Customer Sample ID: 17-00253-13-SC1-IN-6

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003279			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003279			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003279			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003279			64-17-5	Ethanol	PPBV	96.6	0.700	37.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003279			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003279			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003279			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003279			67-56-1	Methanol	PPBV	92.1	2.00	534	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003279			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003279			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003279			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003279			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	208	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003279			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003279			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003279			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003279			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003279			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003279			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003279			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-7
Customer Sample ID: 17-00253-13-SC1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003280			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003280			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003280			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003280			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003280			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003280			106-99-0	1,3-Butadiene	PPBV	101	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003280			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003280			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003280			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003280			71-36-3	1-Butanol	PPBV	119	<0.424	57.0	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003280			71-23-8	1-Propanol	PPBV	108	<0.210	15.5	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003280			78-93-3	2-Butanone	PPBV	95.9	0.390	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003280			110-43-0	2-Heptanone	PPBV	89.6	0.460	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003280			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003280			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003280			106-35-4	3-Heptanone	PPBV	91.2	0.700	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003280			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003280			75-07-0	Acetaldehyde	PPBV	103	7.11	40.4	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003280			67-64-1	Acetone	PPBV	95.4	2.97	350	n/a	n/a	n/a	n/a	0.540	n/a	E
S17T003280			75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003280			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003280			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003280			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003280			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003280			123-72-8	Butanal	PPBV	99.1	0.720	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003280			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003280			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003280			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-7
Customer Sample ID: 17-00253-13-SC1-IN-7

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003280			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003280			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003280			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003280			64-17-5	Ethanol	PPBV	96.6	0.700	36.8	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003280			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003280			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003280			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003280			67-56-1	Methanol	PPBV	92.1	2.00	634	n/a	n/a	n/a	n/a	1.28	n/a	E
S17T003280			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003280			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003280			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003280			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	154	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003280			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003280			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003280			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003280			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003280			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003280			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003280			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-8
Customer Sample ID: 17-00253-13-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003281			79-34-5	1,1,2,2-Tetrachloroethane	PPBV	108	<0.370	<10.2	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003281			79-00-5	1,1,2-Trichloroethane	PPBV	96.7	<0.370	<10.5	n/a	n/a	n/a	n/a	0.740	n/a	
S17T003281			75-34-3	1,1-Dichloroethane	PPBV	94.6	<0.200	<10.6	n/a	n/a	n/a	n/a	0.400	n/a	
S17T003281			75-35-4	1,1-Dichloroethene	PPBV	98.1	<0.251	<11.0	n/a	n/a	n/a	n/a	0.500	n/a	
S17T003281			107-06-2	1,2-Dichloroethane	PPBV	98.8	<0.311	<10.6	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003281			106-99-0	1,3-Butadiene	PPBV	101	<0.310	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003281			542-75-6	1,3-Dichloropropene (Total)	PPBV	n/a	n/a	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003281			106-46-7	1,4-Dichlorobenzene	PPBV	107	<0.280	<10.1	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003281			123-91-1	1,4-Dioxane	PPBV	97.8	<0.320	<11.0	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003281			71-36-3	1-Butanol	PPBV	119	<0.424	48.4	n/a	n/a	n/a	n/a	0.840	n/a	
S17T003281			71-23-8	1-Propanol	PPBV	108	<0.210	13.9	n/a	n/a	n/a	n/a	0.420	n/a	
S17T003281			78-93-3	2-Butanone	PPBV	95.9	0.390	<11.3	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003281			110-43-0	2-Heptanone	PPBV	89.6	0.460	<10.0	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003281			591-78-6	2-Hexanone	PPBV	94.0	0.420	<10.9	n/a	n/a	n/a	n/a	0.760	n/a	
S17T003281			78-94-4	3-Buten-2-one	PPBV	95.6	<0.231	<10.5	n/a	n/a	n/a	n/a	0.460	n/a	
S17T003281			106-35-4	3-Heptanone	PPBV	91.2	0.700	<10.1	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003281			108-10-1	4-Methyl-2-Pentanone	PPBV	91.3	<0.364	<10.2	n/a	n/a	n/a	n/a	0.720	n/a	
S17T003281			75-07-0	Acetaldehyde	PPBV	103	7.11	39.0	n/a	n/a	n/a	n/a	0.780	n/a	B
S17T003281			67-64-1	Acetone	PPBV	95.4	2.97	5.41E+03	n/a	n/a	n/a	n/a	0.540	n/a	EY
S17T003281			75-05-8	Acetonitrile	PPBV	87.1	<0.470	<10.6	n/a	n/a	n/a	n/a	0.940	n/a	
S17T003281			107-02-8	Acrolein	PPBV	97.6	<0.320	<11.3	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003281			107-13-1	Acrylonitrile	PPBV	92.9	<0.240	<10.9	n/a	n/a	n/a	n/a	0.480	n/a	
S17T003281			107-05-1	Allyl Chloride	PPBV	97.4	<0.270	<11.0	n/a	n/a	n/a	n/a	0.540	n/a	
S17T003281			71-43-2	Benzene	PPBV	8.72	<0.400	<10.8	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003281			123-72-8	Butanal	PPBV	99.1	0.720	<11.0	n/a	n/a	n/a	n/a	0.560	n/a	
S17T003281			56-23-5	Carbon tetrachloride	PPBV	97.4	<0.300	<10.7	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003281			108-90-7	Chlorobenzene	PPBV	99.8	<0.290	<10.8	n/a	n/a	n/a	n/a	0.580	n/a	
S17T003281			75-00-3	Chloroethane	PPBV	103	<0.330	<10.3	n/a	n/a	n/a	n/a	0.660	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range Y - Comment J - Estimated

2017 Cartridge Evaluation
Data Summary Report

Sample Group: 20170311
SDG Number:
Customer Sample ID: 17-00253-13-SC1-IN-8
Customer Sample ID: 17-00253-13-SC1-IN-8

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
VAPOR-SUMMA VOA #2															
S17T003281			67-66-3	Chloroform	PPBV	94.8	<0.402	<10.7	n/a	n/a	n/a	n/a	0.800	n/a	
S17T003281			110-82-7	Cyclohexane	PPBV	94.0	<0.320	<10.7	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003281			124-18-5	Decane	PPBV	109	<0.330	<10.2	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003281			64-17-5	Ethanol	PPBV	96.6	0.700	33.5	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003281			141-78-6	Ethyl acetate	PPBV	95.6	<0.260	<10.4	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003281			100-41-4	Ethylbenzene	PPBV	102	<0.330	<10.7	n/a	n/a	n/a	n/a	0.660	n/a	
S17T003281			110-54-3	Hexane	PPBV	95.5	<0.310	<10.9	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003281			67-56-1	Methanol	PPBV	92.1	2.00	6.43E+03	n/a	n/a	n/a	n/a	1.28	n/a	EY
S17T003281			75-09-2	Methylene Chloride	PPBV	97.4	<0.314	<10.7	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003281			100-42-5	Styrene	PPBV	102	<0.300	<10.4	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003281			127-18-4	Tetrachloroethene	PPBV	101	<0.320	<10.4	n/a	n/a	n/a	n/a	0.640	n/a	
S17T003281			109-99-9	Tetrahydrofuran	PPBV	94.6	<0.410	117	n/a	n/a	n/a	n/a	0.820	n/a	
S17T003281			108-88-3	Toluene	PPBV	94.6	<0.300	<10.9	n/a	n/a	n/a	n/a	0.600	n/a	
S17T003281			79-01-6	Trichloroethene	PPBV	98.6	<0.310	<10.5	n/a	n/a	n/a	n/a	0.620	n/a	
S17T003281			75-69-4	Trichlorofluoromethane	PPBV	98.6	<0.870	<10.8	n/a	n/a	n/a	n/a	1.74	n/a	
S17T003281			10061-01-5	cis-1,3-Dichloropropene	PPBV	97.2	<0.260	<10.5	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003281			123-86-4	n-Butyl acetate	PPBV	91.8	<0.350	<10.6	n/a	n/a	n/a	n/a	0.700	n/a	
S17T003281			142-82-5	n-Heptane	PPBV	96.6	<0.261	<10.8	n/a	n/a	n/a	n/a	0.520	n/a	
S17T003281			10061-02-6	trans-1,3-Dichloropropene	PPBV	99.2	<0.260	<10.1	n/a	n/a	n/a	n/a	0.520	n/a	

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination

E - Outside Calibration Range

Y - Comment

J - Estimated

SUMMA VOA2 COMMENTS

DSRComment 2.7.32
DSR.Jar v. 3.0.12

2017 Cartridge Evaluation
4/20/2017 7:09:18AM

Verification Sample Comments
Sample: S17T003265 Group: 20170311
Y flag:(methanol & acetone) detector saturation, reported value is a rough estimate. kak 04/12/17
Sample: S17T003266 Group: 20170311
Y flag:(methanol) detector saturation, reported value is a rough estimate. kak 04/12/17

Sample: S17T003267 Group: 20170311
Y flag:(methanol & acetone) detector saturation, reported value is a rough estimate. kak 04/12/17
Sample: S17T003270 Group: 20170311
Y flag:(methanol & acetone) detector saturation, reported value is a rough estimate. kak 04/12/17
Sample: S17T003273 Group: 20170311
Y flags: (acetone & methanol) Detector saturation, reported result is a rough estimate. kak 04/17/17
Sample: S17T003276 Group: 20170311
Y flags: (acetone & methanol) Detector saturation, reported result is a rough estimate. kak 04/17/17
Sample: S17T003277 Group: 20170311
Y flags: (acetone & methanol) Detector saturation, reported result is a rough estimate. kak 04/17/17
Sample: S17T003281 Group: 20170311
Y flags: (acetone & methanol) Detector saturation, reported result is a rough estimate. kak 04/17/17

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:

$$C = 24.14\frac{r}{M\,V}$$

   where *C* is the concentration of COPC in ppmv; *r* is the analytical result with units of µg/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 $T_{standard}/T_{upstream}$.

   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 ($P_{cartridge}$) 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 $(P_{upstream} - P_{tube}) \div P_{standard}$. For measurements made at the outlet of the respirator cartridge the pressure correction factor is $(P_{upstream} - P_{cartridge} - P_{tube}) \div P_{standard}$.

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 85.9ºF (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, the product of these two factors is 0.929, which would be the overall correction to the reported volume measurement.

5. The analytical detection limit—or reporting limit (RL) in some cases—for every COPC was obtained from the 702-AZ analytical data. Here, the average flow rate was used to calculate the approximate analytical detection limit as the percentage of the OEL for each COPC. Because the flow rates vary, the calculated concentrations were different for each point, even though some of the results are less than the detection limit (DL) in the original reading. The last column in the tables below indicate if the original readings were less than the DL or not.

    - For ammonia and mercury, only the results obtained from using method of total vapor of ammonia and mercury were used.
    - The Carbotrap 300 TDU tube analytical results were used for furan, 2,5-dihydrofuran, and 2-methylfuran. All other surrogate furans used the TDU Tenax TA tube analytical results. For acetonitrile, results from the Carbotrap 300 TDU tube were used. For butanal, the results from the Carbotrap 300 TDU tube instead of the aldehydes tube were used. For pyridine and 2,4-dimethylpyridine, the results from the Carbotrap 300 TDU tube were used.
    - For N-nitrosodimethylamine 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.

6. Analytical results frequently have data qualifier flags documented for specific sample analyses. Depending on the data qualifier, specific data may be considered for deletion or removal from the analysis, or results described with appropriate clarifying language to indicate whether there are possible limitations to the data. The flags listed below were found to be associated with at least one of the COPC compounds analyzed through this effort. Here, key qualifier codes are given, along with their definitions and how they are being handled with the cartridge-testing analysis. This list is not inclusive of all flags that the analytical team may assign but is inclusive of the flags found associated with the data set compiled within this report. In addition, specific samples were identified at the time of sampling as potentially suspect by the test operator due to potential sample volume or sample tube media issues. These samples have been flagged with a project-specific qualifier code in the data set.

Action	Flag	Flag Description
Retain. (Result is treated in the analysis as a valid data point)	J	The "J" flag is applied to results that are considered estimates. Some examples of when a "J" flag are applied include (but are not limited to): • Results with concentrations less than or equal to the method detection limit but less than the RL. When results are reported based on the RL, the "J" is removed from the reported data. R702-AZ data are left as received from the analytical laboratory. • Unknown constituents—Tentatively Identified Compounds or positively identified compounds.
	E	The "E" flag is applied to each analyte that exceeded the calibration range of the instrument.
	U	The "U" flag is applied to analytes that were analyzed for, but were not detected, or were detected below the method detection limit. If results are reported based on RL, this flag is removed from the reported data. R702-AZ data are left as received from the analytical laboratory.
	D	The "D" flag is applied to all analytes in a sample that were diluted prior to analysis.
Retain/Evaluate. (Result is treated in the analysis as a valid data point, but evaluated on a case-by-case basis to determine whether clarification is needed in the analysis report to document the uncertainty or potential limitations of the data)	L	The "L" flag is applied to analyte results (both detected and not detected) within a sample batch that included a low level standard with a percent recovery for that analyte that was outside the analytical method specified range.
	Y	The "Y" flag is a user-defined flag and is applied to results that require written descriptions or qualifying comments. This flag is used by the analytical laboratory, Project Coordinator, or other technical authority to identify data that is questionable or may be inaccurate because of interferences, sampling problems, sample collection media (e.g., tubes or summa canisters) certification failures, or instrument limitations.
	S*	The "S*" flag is a project-specific user-defined flag applied to samples that were identified by the test operator as suspect due to potentially low sample volume/flowrate issues, or other sample-tube media problems
Delete. (Result is seriously suspect and should be screened out and not reported)	N/A	

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.

The position numbers that start with SD1 are for the SCOTT 7422-SD1 model of cartridge, and the position numbers that start with SC1 are for the SCOTT 7422-SC1 model of cartridge.

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
1	Ammonia	2	SD1-IN-A	61.09	25	244%			2.46%
1	Ammonia	4	SD1-IN-B	66.15	25	265%			2.46%
1	Ammonia	6	SD1-IN-C	68.60	25	274%			2.46%
1	Ammonia	8	SD1-IN-D	65.56	25	262%			2.46%
1	Ammonia	10	SD1-IN-E	75.06	25	300%			2.46%
1	Ammonia	12	SD1-IN-F	74.41	25	298%			2.46%
1	Ammonia	14	SD1-IN-G	77.60	25	310%			2.46%
1	Ammonia	16	SD1-IN-H	66.07	25	264%			2.46%
1	Ammonia	2	SD1-EF-A	0.57	25	2.29%	YES		2.46%
1	Ammonia	4	SD1-EF-B	0.58	25	2.34%	YES		2.46%
1	Ammonia	6	SD1-EF-C	1.43	25	5.74%			2.46%
1	Ammonia	8	SD1-EF-D	4.50	25	18.0%			2.46%
1	Ammonia	10	SD1-EF-E	35.35	25	141%			2.46%
1	Ammonia	12	SD1-EF-F	12.90	25	51.6%			2.46%
1	Ammonia	14	SD1-EF-G	11.97	25	47.9%			2.46%
1	Ammonia	16	SD1-EF-H	92.15	25	369%			2.46%
1	Ammonia	2	SC1-IN-A	71.04	25	284%			2.46%
1	Ammonia	4	SC1-IN-B	71.44	25	286%			2.46%
1	Ammonia	6	SC1-IN-C	69.41	25	278%			2.46%
1	Ammonia	8	SC1-IN-D	71.42	25	286%			2.46%
1	Ammonia	10	SC1-IN-E	59.45	25	238%			2.46%
1	Ammonia	12	SC1-IN-F	29.34	25	117%			2.46%
1	Ammonia	14	SC1-IN-G	53.34	25	213%			2.46%
1	Ammonia	16	SC1-IN-H	0.53	25	2.12%	YES		2.46%
1	Ammonia	2	SC1-EF-A	0.61	25	2.44%	YES		2.46%
1	Ammonia	4	SC1-EF-B	0.62	25	2.46%	YES		2.46%
1	Ammonia	6	SC1-EF-C	4.16	25	16.6%			2.46%
1	Ammonia	8	SC1-EF-D	2.92	25	11.7%			2.46%
1	Ammonia	10	SC1-EF-E	9.87	25	39.5%			2.46%
1	Ammonia	12	SC1-EF-F	18.63	25	74.5%			2.46%
1	Ammonia	14	SC1-EF-G	23.31	25	93.2%			2.46%
1	Ammonia	16	SC1-EF-H	28.17	25	113%			2.46%
3	Mercury	2	SD1-IN-A	1.2E-03	0.003	38.8%			7.01%
3	Mercury	4	SD1-IN-B	1.2E-03	0.003	40.9%			7.01%
3	Mercury	6	SD1-IN-C	1.3E-03	0.003	44.0%			7.01%
3	Mercury	8	SD1-IN-D	1.4E-03	0.003	45.3%			7.01%
3	Mercury	10	SD1-IN-E	1.4E-03	0.003	45.6%			7.01%
3	Mercury	12	SD1-IN-F	1.4E-03	0.003	45.0%			7.01%
3	Mercury	14	SD1-IN-G	1.4E-03	0.003	46.5%			7.01%
3	Mercury	16	SD1-IN-H	1.3E-03	0.003	42.5%			7.01%
3	Mercury	2	SD1-EF-A	2.0E-04	0.003	6.58%	YES		7.01%
3	Mercury	4	SD1-EF-B	2.0E-04	0.003	6.57%	YES		7.01%
3	Mercury	6	SD1-EF-C	2.1E-04	0.003	6.87%	YES		7.01%
3	Mercury	8	SD1-EF-D	2.1E-04	0.003	7.01%	YES		7.01%
3	Mercury	10	SD1-EF-E	2.0E-04	0.003	6.80%	YES		7.01%
3	Mercury	12	SD1-EF-F	2.0E-04	0.003	6.70%	YES		7.01%
3	Mercury	14	SD1-EF-G	2.0E-04	0.003	6.75%	YES		7.01%
3	Mercury	16	SD1-EF-H	8.5E-04	0.003	28.3%			7.01%
3	Mercury	2	SC1-IN-A	1.6E-03	0.003	52.9%		c	7.01%
3	Mercury	4	SC1-IN-B	1.6E-03	0.003	52.2%		c	7.01%
3	Mercury	6	SC1-IN-C	1.5E-03	0.003	50.8%			7.01%
3	Mercury	8	SC1-IN-D	1.5E-03	0.003	50.5%			7.01%
3	Mercury	10	SC1-IN-E	1.3E-03	0.003	42.6%			7.01%
3	Mercury	12	SC1-IN-F	1.1E-03	0.003	37.7%			7.01%
3	Mercury	14	SC1-IN-G	9.6E-04	0.003	31.8%			7.01%
3	Mercury	16	SC1-IN-H	1.9E-04	0.003	6.31%	YES		7.01%
3	Mercury	2	SC1-EF-A	1.9E-04	0.003	6.44%	YES	c	7.01%
3	Mercury	4	SC1-EF-B	2.0E-04	0.003	6.69%	YES	c	7.01%
3	Mercury	6	SC1-EF-C	2.0E-04	0.003	6.68%	YES	c	7.01%
3	Mercury	8	SC1-EF-D	2.0E-04	0.003	6.63%	YES	c	7.01%
3	Mercury	10	SC1-EF-E	2.0E-04	0.003	6.58%	YES	c	7.01%
3	Mercury	12	SC1-EF-F	2.0E-04	0.003	6.64%	YES	c	7.01%
3	Mercury	14	SC1-EF-G	2.0E-04	0.003	6.78%	YES	c	7.01%
3	Mercury	16	SC1-EF-H	1.9E-04	0.003	6.21%	YES	c	7.01%
4	1,3-Butadiene	2	SD1-IN-A	0.0181	1.0	1.81%	YES		1.96%
4	1,3-Butadiene	4	SD1-IN-B	0.0180	1.0	1.80%	YES		1.96%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
4	1,3-Butadiene	6	SD1-IN-C	0.0195	1.0	1.95%	YES		1.96%
4	1,3-Butadiene	8	SD1-IN-D	0.0190	1.0	1.90%	YES		1.96%
4	1,3-Butadiene	10	SD1-IN-E	0.0192	1.0	1.92%	YES		1.96%
4	1,3-Butadiene	12	SD1-IN-F	0.0191	1.0	1.91%	YES		1.96%
4	1,3-Butadiene	14	SD1-IN-G	0.0190	1.0	1.90%	YES		1.96%
4	1,3-Butadiene	16	SD1-IN-H	0.0186	1.0	1.86%	YES		1.96%
4	1,3-Butadiene	2	SD1-EF-A	0.0177	1.0	1.77%	YES		1.96%
4	1,3-Butadiene	4	SD1-EF-B	0.0191	1.0	1.91%	YES		1.96%
4	1,3-Butadiene	6	SD1-EF-C	0.0196	1.0	1.96%	YES		1.96%
4	1,3-Butadiene	8	SD1-EF-D	0.0192	1.0	1.92%	YES		1.96%
4	1,3-Butadiene	10	SD1-EF-E	0.0193	1.0	1.93%	YES		1.96%
4	1,3-Butadiene	12	SD1-EF-F	0.0189	1.0	1.89%	YES		1.96%
4	1,3-Butadiene	14	SD1-EF-G	0.0182	1.0	1.82%	YES		1.96%
4	1,3-Butadiene	16	SD1-EF-H	0.0183	1.0	1.83%	YES		1.96%
4	1,3-Butadiene	2	SC1-IN-A	0.0187	1.0	1.87%	YES		1.96%
4	1,3-Butadiene	4	SC1-IN-B	0.0192	1.0	1.92%	YES		1.96%
4	1,3-Butadiene	6	SC1-IN-C	0.0187	1.0	1.87%	YES		1.96%
4	1,3-Butadiene	8	SC1-IN-D	0.0190	1.0	1.90%	YES		1.96%
4	1,3-Butadiene	10	SC1-IN-E	0.0188	1.0	1.88%	YES		1.96%
4	1,3-Butadiene	12	SC1-IN-F	0.0189	1.0	1.89%	YES		1.96%
4	1,3-Butadiene	14	SC1-IN-G	0.0190	1.0	1.90%	YES		1.96%
4	1,3-Butadiene	16	SC1-IN-H	0.0170	1.0	1.70%	YES		1.96%
4	1,3-Butadiene	2	SC1-EF-A	0.0188	1.0	1.88%	YES		1.96%
4	1,3-Butadiene	4	SC1-EF-B	0.0187	1.0	1.87%	YES		1.96%
4	1,3-Butadiene	6	SC1-EF-C	0.0192	1.0	1.92%	YES		1.96%
4	1,3-Butadiene	8	SC1-EF-D	0.0182	1.0	1.82%	YES		1.96%
4	1,3-Butadiene	10	SC1-EF-E	0.0186	1.0	1.86%	YES		1.96%
4	1,3-Butadiene	12	SC1-EF-F	0.0187	1.0	1.87%	YES		1.96%
4	1,3-Butadiene	14	SC1-EF-G	0.0188	1.0	1.88%	YES		1.96%
4	1,3-Butadiene	16	SC1-EF-H	0.0177	1.0	1.77%	YES		1.96%
5	Benzene	2	SD1-IN-A	0.0076	0.50	1.52%			0.0250%
5	Benzene	4	SD1-IN-B	0.0076	0.50	1.52%			0.0250%
5	Benzene	6	SD1-IN-C	0.0090	0.50	1.80%			0.0250%
5	Benzene	8	SD1-IN-D	0.0081	0.50	1.61%			0.0250%
5	Benzene	10	SD1-IN-E	0.0087	0.50	1.74%			0.0250%
5	Benzene	12	SD1-IN-F	0.0080	0.50	1.59%			0.0250%
5	Benzene	14	SD1-IN-G	0.0079	0.50	1.58%			0.0250%
5	Benzene	16	SD1-IN-H	0.0066	0.50	1.31%			0.0250%
5	Benzene	2	SD1-EF-A	0.0002	0.50	0.042%		J	0.0250%
5	Benzene	4	SD1-EF-B	0.0002	0.50	0.043%		J	0.0250%
5	Benzene	6	SD1-EF-C	0.0002	0.50	0.044%		J	0.0250%
5	Benzene	8	SD1-EF-D	0.0002	0.50	0.032%		J	0.0250%
5	Benzene	10	SD1-EF-E	0.0002	0.50	0.047%		J	0.0250%
5	Benzene	12	SD1-EF-F	0.0003	0.50	0.052%		J	0.0250%
5	Benzene	14	SD1-EF-G	0.0001	0.50	0.025%	YES	U	0.0250%
5	Benzene	16	SD1-EF-H	0.0003	0.50	0.067%		J	0.0250%
5	Benzene	2	SC1-IN-A	0.0059	0.50	1.17%			0.0250%
5	Benzene	4	SC1-IN-B	0.0061	0.50	1.22%			0.0250%
5	Benzene	6	SC1-IN-C	0.0045	0.50	0.899%			0.0250%
5	Benzene	8	SC1-IN-D	0.0046	0.50	0.923%			0.0250%
5	Benzene	10	SC1-IN-E	0.0033	0.50	0.665%			0.0250%
5	Benzene	12	SC1-IN-F	0.0034	0.50	0.683%			0.0250%
5	Benzene	14	SC1-IN-G	0.0014	0.50	0.290%			0.0250%
5	Benzene	16	SC1-IN-H	0.0010	0.50	0.197%			0.0250%
5	Benzene	2	SC1-EF-A	0.0001	0.50	0.024%	YES	U	0.0250%
5	Benzene	4	SC1-EF-B	0.0001	0.50	0.025%	YES	U	0.0250%
5	Benzene	6	SC1-EF-C	0.0001	0.50	0.025%	YES	U	0.0250%
5	Benzene	8	SC1-EF-D	0.0001	0.50	0.024%	YES	U	0.0250%
5	Benzene	10	SC1-EF-E	0.0001	0.50	0.022%	YES	U	0.0250%
5	Benzene	12	SC1-EF-F	0.0001	0.50	0.024%		J	0.0250%
5	Benzene	14	SC1-EF-G	0.0001	0.50	0.027%		J	0.0250%
5	Benzene	16	SC1-EF-H	0.0001	0.50	0.021%	YES	U	0.0250%
6	Biphenyl	2	SD1-IN-A	0.000162	0.20	0.081%	YES	U	0.107%
6	Biphenyl	4	SD1-IN-B	0.000162	0.20	0.081%	YES	U	0.107%
6	Biphenyl	6	SD1-IN-C	0.000154	0.20	0.077%	YES	U	0.107%
6	Biphenyl	8	SD1-IN-D		0.20				0.107%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
6	Biphenyl	10	SD1-IN-E	0.000165	0.20	0.083%	YES	U	0.107%
6	Biphenyl	12	SD1-IN-F	0.000173	0.20	0.087%	YES	U, S*	0.107%
6	Biphenyl	14	SD1-IN-G	0.000177	0.20	0.088%	YES	U	0.107%
6	Biphenyl	16	SD1-IN-H	0.000172	0.20	0.086%	YES	U	0.107%
6	Biphenyl	2	SD1-EF-A		0.20				0.107%
6	Biphenyl	4	SD1-EF-B	0.000152	0.20	0.076%	YES	U	0.107%
6	Biphenyl	6	SD1-EF-C	0.000166	0.20	0.083%	YES	U	0.107%
6	Biphenyl	8	SD1-EF-D	0.000158	0.20	0.079%	YES	U	0.107%
6	Biphenyl	10	SD1-EF-E		0.20				0.107%
6	Biphenyl	12	SD1-EF-F	0.000166	0.20	0.083%	YES	U	0.107%
6	Biphenyl	14	SD1-EF-G	0.000166	0.20	0.083%	YES	UY	0.107%
6	Biphenyl	16	SD1-EF-H	0.000160	0.20	0.080%	YES	U	0.107%
6	Biphenyl	2	SC1-IN-A	0.000159	0.20	0.079%	YES	U	0.107%
6	Biphenyl	4	SC1-IN-B	0.000165	0.20	0.082%	YES	U	0.107%
6	Biphenyl	6	SC1-IN-C	0.000160	0.20	0.080%	YES	U	0.107%
6	Biphenyl	8	SC1-IN-D	0.000158	0.20	0.079%	YES	U	0.107%
6	Biphenyl	10	SC1-IN-E	0.000158	0.20	0.079%	YES	U	0.107%
6	Biphenyl	12	SC1-IN-F	0.000151	0.20	0.075%	YES	U	0.107%
6	Biphenyl	14	SC1-IN-G	0.000151	0.20	0.075%	YES	U	0.107%
6	Biphenyl	16	SC1-IN-H	0.000142	0.20	0.071%	YES	U	0.107%
6	Biphenyl	2	SC1-EF-A	0.000215	0.20	0.107%	YES	U, S*	0.107%
6	Biphenyl	4	SC1-EF-B	0.000212	0.20	0.106%	YES	U, S*	0.107%
6	Biphenyl	6	SC1-EF-C	0.000151	0.20	0.075%	YES	U	0.107%
6	Biphenyl	8	SC1-EF-D	0.000156	0.20	0.078%	YES	U	0.107%
6	Biphenyl	10	SC1-EF-E	0.000151	0.20	0.075%	YES	U	0.107%
6	Biphenyl	12	SC1-EF-F	0.000151	0.20	0.075%	YES	U, S*	0.107%
6	Biphenyl	14	SC1-EF-G	0.000159	0.20	0.079%	YES	U	0.107%
6	Biphenyl	16	SC1-EF-H	0.000149	0.20	0.075%	YES	U	0.107%
7	1-Butanol	2	SD1-IN-A	0.0526	20	0.263%		L	0.00190%
7	1-Butanol	4	SD1-IN-B	0.0575	20	0.288%			0.00190%
7	1-Butanol	6	SD1-IN-C	0.0672	20	0.336%			0.00190%
7	1-Butanol	8	SD1-IN-D	0.0696	20	0.348%		E	0.00190%
7	1-Butanol	10	SD1-IN-E	0.0617	20	0.308%		L	0.00190%
7	1-Butanol	12	SD1-IN-F	0.0630	20	0.315%		L	0.00190%
7	1-Butanol	14	SD1-IN-G	0.0617	20	0.308%		L	0.00190%
7	1-Butanol	16	SD1-IN-H	0.0510	20	0.255%		L	0.00190%
7	1-Butanol	2	SD1-EF-A	0.0016	20	0.008%		JL	0.00190%
7	1-Butanol	4	SD1-EF-B	0.0003	20	0.002%	YES	LU	0.00190%
7	1-Butanol	6	SD1-EF-C	0.0004	20	0.002%	YES	LU	0.00190%
7	1-Butanol	8	SD1-EF-D	0.0004	20	0.002%	YES	LU	0.00190%
7	1-Butanol	10	SD1-EF-E	0.0005	20	0.003%		J	0.00190%
7	1-Butanol	12	SD1-EF-F	0.0004	20	0.002%		J	0.00190%
7	1-Butanol	14	SD1-EF-G	0.0004	20	0.002%	YES	U	0.00190%
7	1-Butanol	16	SD1-EF-H	0.0004	20	0.002%	YES	LU	0.00190%
7	1-Butanol	2	SC1-IN-A	0.0387	20	0.193%		L	0.00190%
7	1-Butanol	4	SC1-IN-B	0.0381	20	0.190%			0.00190%
7	1-Butanol	6	SC1-IN-C	0.0500	20	0.250%			0.00190%
7	1-Butanol	8	SC1-IN-D	0.0660	20	0.330%			0.00190%
7	1-Butanol	10	SC1-IN-E	0.0581	20	0.291%			0.00190%
7	1-Butanol	12	SC1-IN-F	0.0592	20	0.296%			0.00190%
7	1-Butanol	14	SC1-IN-G	0.0289	20	0.145%			0.00190%
7	1-Butanol	16	SC1-IN-H	0.0178	20	0.089%		L	0.00190%
7	1-Butanol	2	SC1-EF-A	0.0004	20	0.002%	YES	LU	0.00190%
7	1-Butanol	4	SC1-EF-B	0.0004	20	0.002%	YES	LU	0.00190%
7	1-Butanol	6	SC1-EF-C	0.0004	20	0.002%	YES	LU	0.00190%
7	1-Butanol	8	SC1-EF-D	0.0004	20	0.002%	YES	LU	0.00190%
7	1-Butanol	10	SC1-EF-E	0.0003	20	0.002%	YES	LU	0.00190%
7	1-Butanol	12	SC1-EF-F	0.0003	20	0.002%	YES	LU	0.00190%
7	1-Butanol	14	SC1-EF-G	0.0003	20	0.002%	YES	LU	0.00190%
7	1-Butanol	16	SC1-EF-H	0.0004	20	0.002%		JL	0.00190%
8	Methanol	2	SD1-IN-A	1.30	200	0.650%		E	0.129%
8	Methanol	4	SD1-IN-B	0.56	200	0.278%		E	0.129%
8	Methanol	6	SD1-IN-C	0.36	200	0.180%		EY	0.129%
8	Methanol	8	SD1-IN-D	18.70	200	9.35%		E	0.129%
8	Methanol	10	SD1-IN-E	0.69	200	0.345%		EY	0.129%
8	Methanol	12	SD1-IN-F	1.06	200	0.530%		E	0.129%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
8	Methanol	14	SD1-IN-G	0.47	200	0.235%		E	0.129%
8	Methanol	16	SD1-IN-H	1.02	200	0.510%		EY	0.129%
8	Methanol	2	SD1-EF-A	1.26	200	0.630%		E	0.129%
8	Methanol	4	SD1-EF-B	4.03	200	2.02%		EY	0.129%
8	Methanol	6	SD1-EF-C	0.72	200	0.358%		E	0.129%
8	Methanol	8	SD1-EF-D	3.11	200	1.56%		E	0.129%
8	Methanol	10	SD1-EF-E	5.33	200	2.67%		E	0.129%
8	Methanol	12	SD1-EF-F	1.75	200	0.875%		E	0.129%
8	Methanol	14	SD1-EF-G	0.70	200	0.351%		E	0.129%
8	Methanol	16	SD1-EF-H	5.41	200	2.71%		E	0.129%
8	Methanol	2	SC1-IN-A	0.74	200	0.372%		E	0.129%
8	Methanol	4	SC1-IN-B	0.69	200	0.344%		E	0.129%
8	Methanol	6	SC1-IN-C	3.45	200	1.73%		EY	0.129%
8	Methanol	8	SC1-IN-D	3.99	200	2.00%		EY	0.129%
8	Methanol	10	SC1-IN-E	0.66	200	0.329%		E	0.129%
8	Methanol	12	SC1-IN-F	0.53	200	0.267%		E	0.129%
8	Methanol	14	SC1-IN-G	0.63	200	0.317%		E	0.129%
8	Methanol	16	SC1-IN-H	6.43	200	3.22%		EY	0.129%
8	Methanol	2	SC1-EF-A	5.82	200	2.91%		EY	0.129%
8	Methanol	4	SC1-EF-B	10.90	200	5.45%		EY	0.129%
8	Methanol	6	SC1-EF-C	0.97	200	0.484%		E	0.129%
8	Methanol	8	SC1-EF-D	0.64	200	0.322%		E	0.129%
8	Methanol	10	SC1-EF-E	5.52	200	2.76%		EY	0.129%
8	Methanol	12	SC1-EF-F	0.21	200	0.105%			0.129%
8	Methanol	14	SC1-EF-G	1.17	200	0.585%		E	0.129%
8	Methanol	16	SC1-EF-H	5.23	200	2.62%		EY	0.129%
9	2-Hexanone	2	SD1-IN-A	0.00370	5.0	0.074%			0.00327%
9	2-Hexanone	4	SD1-IN-B	0.00432	5.0	0.086%			0.00327%
9	2-Hexanone	6	SD1-IN-C	0.00491	5.0	0.098%			0.00327%
9	2-Hexanone	8	SD1-IN-D	0.00540	5.0	0.108%			0.00327%
9	2-Hexanone	10	SD1-IN-E	0.00524	5.0	0.105%			0.00327%
9	2-Hexanone	12	SD1-IN-F	0.00504	5.0	0.101%			0.00327%
9	2-Hexanone	14	SD1-IN-G	0.00506	5.0	0.101%			0.00327%
9	2-Hexanone	16	SD1-IN-H	0.00426	5.0	0.085%			0.00327%
9	2-Hexanone	2	SD1-EF-A	0.00015	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	4	SD1-EF-B	0.00015	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	6	SD1-EF-C	0.00015	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	8	SD1-EF-D	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	10	SD1-EF-E	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	12	SD1-EF-F	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	14	SD1-EF-G	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	16	SD1-EF-H	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	2	SC1-IN-A	0.00390	5.0	0.078%			0.00327%
9	2-Hexanone	4	SC1-IN-B	0.00576	5.0	0.115%			0.00327%
9	2-Hexanone	6	SC1-IN-C	0.00389	5.0	0.078%			0.00327%
9	2-Hexanone	8	SC1-IN-D	0.00456	5.0	0.091%			0.00327%
9	2-Hexanone	10	SC1-IN-E	0.00348	5.0	0.070%			0.00327%
9	2-Hexanone	12	SC1-IN-F	0.00355	5.0	0.071%			0.00327%
9	2-Hexanone	14	SC1-IN-G	0.00172	5.0	0.034%			0.00327%
9	2-Hexanone	16	SC1-IN-H	0.00126	5.0	0.025%			0.00327%
9	2-Hexanone	2	SC1-EF-A	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	4	SC1-EF-B	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	6	SC1-EF-C	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	8	SC1-EF-D	0.00016	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	10	SC1-EF-E	0.00015	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	12	SC1-EF-F	0.00014	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	14	SC1-EF-G	0.00015	5.0	0.003%	YES	U	0.00327%
9	2-Hexanone	16	SC1-EF-H	0.00014	5.0	0.003%	YES	U	0.00327%
11	4-Methyl-2-hexanone	2	SD1-IN-A	0.00022	0.50	0.045%		J	0.0299%
11	4-Methyl-2-hexanone	4	SD1-IN-B	0.00025	0.50	0.051%		J	0.0299%
11	4-Methyl-2-hexanone	6	SD1-IN-C	0.00032	0.50	0.065%		J	0.0299%
11	4-Methyl-2-hexanone	8	SD1-IN-D	0.00035	0.50	0.071%		J	0.0299%
11	4-Methyl-2-hexanone	10	SD1-IN-E	0.00040	0.50	0.080%		J	0.0299%
11	4-Methyl-2-hexanone	12	SD1-IN-F	0.00037	0.50	0.074%		J	0.0299%
11	4-Methyl-2-hexanone	14	SD1-IN-G	0.00036	0.50	0.073%		J	0.0299%
11	4-Methyl-2-hexanone	16	SD1-IN-H	0.00037	0.50	0.075%		J	0.0299%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
11	4-Methyl-2-hexanone	2	SD1-EF-A	0.00013	0.50	0.027%	YES	U	0.0299%
11	4-Methyl-2-hexanone	4	SD1-EF-B	0.00014	0.50	0.027%	YES	U	0.0299%
11	4-Methyl-2-hexanone	6	SD1-EF-C	0.00014	0.50	0.028%	YES	U	0.0299%
11	4-Methyl-2-hexanone	8	SD1-EF-D	0.00014	0.50	0.028%	YES	U	0.0299%
11	4-Methyl-2-hexanone	10	SD1-EF-E	0.00015	0.50	0.030%	YES	U	0.0299%
11	4-Methyl-2-hexanone	12	SD1-EF-F	0.00014	0.50	0.029%	YES	U	0.0299%
11	4-Methyl-2-hexanone	14	SD1-EF-G	0.00015	0.50	0.030%	YES	U	0.0299%
11	4-Methyl-2-hexanone	16	SD1-EF-H	0.00015	0.50	0.030%	YES	U	0.0299%
11	4-Methyl-2-hexanone	2	SC1-IN-A	0.00041	0.50	0.082%		J	0.0299%
11	4-Methyl-2-hexanone	4	SC1-IN-B	0.00043	0.50	0.086%		J	0.0299%
11	4-Methyl-2-hexanone	6	SC1-IN-C	0.00034	0.50	0.067%		J	0.0299%
11	4-Methyl-2-hexanone	8	SC1-IN-D	0.00029	0.50	0.057%		J	0.0299%
11	4-Methyl-2-hexanone	10	SC1-IN-E	0.00022	0.50	0.044%		J	0.0299%
11	4-Methyl-2-hexanone	12	SC1-IN-F	0.00026	0.50	0.052%		J	0.0299%
11	4-Methyl-2-hexanone	14	SC1-IN-G	0.00014	0.50	0.027%	YES	U	0.0299%
11	4-Methyl-2-hexanone	16	SC1-IN-H	0.00013	0.50	0.025%	YES	U	0.0299%
11	4-Methyl-2-hexanone	2	SC1-EF-A	0.00014	0.50	0.029%	YES	U	0.0299%
11	4-Methyl-2-hexanone	4	SC1-EF-B	0.00015	0.50	0.029%	YES	U	0.0299%
11	4-Methyl-2-hexanone	6	SC1-EF-C	0.00015	0.50	0.029%	YES	U	0.0299%
11	4-Methyl-2-hexanone	8	SC1-EF-D	0.00014	0.50	0.028%	YES	U	0.0299%
11	4-Methyl-2-hexanone	10	SC1-EF-E	0.00013	0.50	0.027%	YES	U	0.0299%
11	4-Methyl-2-hexanone	12	SC1-EF-F	0.00013	0.50	0.026%	YES	U	0.0299%
11	4-Methyl-2-hexanone	14	SC1-EF-G	0.00013	0.50	0.027%	YES	U	0.0299%
11	4-Methyl-2-hexanone	16	SC1-EF-H	0.00013	0.50	0.025%	YES	U	0.0299%
12	6-Methyl-2-heptanone	2	SD1-IN-A		8.0				
12	6-Methyl-2-heptanone	4	SD1-IN-B		8.0				
12	6-Methyl-2-heptanone	6	SD1-IN-C		8.0				
12	6-Methyl-2-heptanone	8	SD1-IN-D		8.0				
12	6-Methyl-2-heptanone	10	SD1-IN-E	2.3E-03	8.0	0.029%		JNT	
12	6-Methyl-2-heptanone	12	SD1-IN-F	1.3E-03	8.0	0.016%		JNT	
12	6-Methyl-2-heptanone	14	SD1-IN-G		8.0				
12	6-Methyl-2-heptanone	16	SD1-IN-H	2.1E-03	8.0	0.026%		JNT	
12	6-Methyl-2-heptanone	2	SD1-EF-A		8.0				
12	6-Methyl-2-heptanone	4	SD1-EF-B		8.0				
12	6-Methyl-2-heptanone	6	SD1-EF-C		8.0				
12	6-Methyl-2-heptanone	8	SD1-EF-D		8.0				
12	6-Methyl-2-heptanone	10	SD1-EF-E		8.0				
12	6-Methyl-2-heptanone	12	SD1-EF-F		8.0				
12	6-Methyl-2-heptanone	14	SD1-EF-G		8.0				
12	6-Methyl-2-heptanone	16	SD1-EF-H		8.0				
12	6-Methyl-2-heptanone	2	SC1-IN-A	2.0E-03	8.0	0.024%		JNT	
12	6-Methyl-2-heptanone	4	SC1-IN-B		8.0				
12	6-Methyl-2-heptanone	6	SC1-IN-C		8.0				
12	6-Methyl-2-heptanone	8	SC1-IN-D		8.0				
12	6-Methyl-2-heptanone	10	SC1-IN-E		8.0				
12	6-Methyl-2-heptanone	12	SC1-IN-F		8.0				
12	6-Methyl-2-heptanone	14	SC1-IN-G		8.0				
12	6-Methyl-2-heptanone	16	SC1-IN-H		8.0				
12	6-Methyl-2-heptanone	2	SC1-EF-A		8.0				
12	6-Methyl-2-heptanone	4	SC1-EF-B		8.0				
12	6-Methyl-2-heptanone	6	SC1-EF-C		8.0				
12	6-Methyl-2-heptanone	8	SC1-EF-D		8.0				
12	6-Methyl-2-heptanone	10	SC1-EF-E		8.0				
12	6-Methyl-2-heptanone	12	SC1-EF-F		8.0				
12	6-Methyl-2-heptanone	14	SC1-EF-G		8.0				
12	6-Methyl-2-heptanone	16	SC1-EF-H		8.0				
13	3-Buten-2-one	2	SD1-IN-A	1.7E-04	0.20	0.087%	YES	U	0.0877%
13	3-Buten-2-one	4	SD1-IN-B	1.7E-04	0.20	0.084%	YES	U	0.0877%
13	3-Buten-2-one	6	SD1-IN-C	1.7E-04	0.20	0.087%	YES	U	0.0877%
13	3-Buten-2-one	8	SD1-IN-D	1.7E-04	0.20	0.085%	YES	U	0.0877%
13	3-Buten-2-one	10	SD1-IN-E	1.7E-04	0.20	0.084%	YES	U	0.0877%
13	3-Buten-2-one	12	SD1-IN-F	1.7E-04	0.20	0.084%	YES	U	0.0877%
13	3-Buten-2-one	14	SD1-IN-G	1.7E-04	0.20	0.084%	YES	U	0.0877%
13	3-Buten-2-one	16	SD1-IN-H	1.7E-04	0.20	0.083%	YES	U	0.0877%
13	3-Buten-2-one	2	SD1-EF-A	1.6E-04	0.20	0.080%	YES	U	0.0877%
13	3-Buten-2-one	4	SD1-EF-B	1.6E-04	0.20	0.080%	YES	U	0.0877%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
13	3-Buten-2-one	6	SD1-EF-C	1.7E-04	0.20	0.083%	YES	U	0.0877%
13	3-Buten-2-one	8	SD1-EF-D	1.7E-04	0.20	0.085%	YES	U	0.0877%
13	3-Buten-2-one	10	SD1-EF-E	1.3E-03	0.20	0.649%			0.0877%
13	3-Buten-2-one	12	SD1-EF-F	2.3E-03	0.20	1.17%			0.0877%
13	3-Buten-2-one	14	SD1-EF-G	2.4E-03	0.20	1.21%			0.0877%
13	3-Buten-2-one	16	SD1-EF-H	5.4E-04	0.20	0.271%		J	0.0877%
13	3-Buten-2-one	2	SC1-IN-A	1.7E-04	0.20	0.083%	YES	U	0.0877%
13	3-Buten-2-one	4	SC1-IN-B	1.7E-04	0.20	0.085%	YES	U	0.0877%
13	3-Buten-2-one	6	SC1-IN-C	1.7E-04	0.20	0.087%	YES	U	0.0877%
13	3-Buten-2-one	8	SC1-IN-D	1.7E-04	0.20	0.087%	YES	U	0.0877%
13	3-Buten-2-one	10	SC1-IN-E	1.6E-04	0.20	0.080%	YES	U	0.0877%
13	3-Buten-2-one	12	SC1-IN-F	1.6E-04	0.20	0.080%	YES	U	0.0877%
13	3-Buten-2-one	14	SC1-IN-G	1.6E-04	0.20	0.081%	YES	U	0.0877%
13	3-Buten-2-one	16	SC1-IN-H	2.0E-04	0.20	0.102%		J	0.0877%
13	3-Buten-2-one	2	SC1-EF-A	1.7E-04	0.20	0.085%	YES	U	0.0877%
13	3-Buten-2-one	4	SC1-EF-B	1.8E-04	0.20	0.088%	YES	U	0.0877%
13	3-Buten-2-one	6	SC1-EF-C	1.8E-04	0.20	0.088%	YES	U	0.0877%
13	3-Buten-2-one	8	SC1-EF-D	1.7E-04	0.20	0.085%	YES	U	0.0877%
13	3-Buten-2-one	10	SC1-EF-E	1.6E-04	0.20	0.079%	YES	U	0.0877%
13	3-Buten-2-one	12	SC1-EF-F	2.3E-04	0.20	0.116%		J	0.0877%
13	3-Buten-2-one	14	SC1-EF-G	2.5E-04	0.20	0.125%		J	0.0877%
13	3-Buten-2-one	16	SC1-EF-H	1.7E-04	0.20	0.087%		J	0.0877%
14	Formaldehyde	2	SD1-IN-A	0.00161	0.30	0.538%	YES	U	0.586%
14	Formaldehyde	4	SD1-IN-B	0.00159	0.30	0.532%	YES	U	0.586%
14	Formaldehyde	6	SD1-IN-C	0.00173	0.30	0.576%	YES	U	0.586%
14	Formaldehyde	8	SD1-IN-D	0.00169	0.30	0.564%	YES	U	0.586%
14	Formaldehyde	10	SD1-IN-E	0.00235	0.30	0.783%			0.586%
14	Formaldehyde	12	SD1-IN-F	0.00172	0.30	0.572%			0.586%
14	Formaldehyde	14	SD1-IN-G	0.00165	0.30	0.551%	YES	U	0.586%
14	Formaldehyde	16	SD1-IN-H	0.00167	0.30	0.557%	YES	U	0.586%
14	Formaldehyde	2	SD1-EF-A	0.00157	0.30	0.523%	YES	U	0.586%
14	Formaldehyde	4	SD1-EF-B	0.00183	0.30	0.609%			0.586%
14	Formaldehyde	6	SD1-EF-C	0.00174	0.30	0.580%	YES	U	0.586%
14	Formaldehyde	8	SD1-EF-D	0.00168	0.30	0.558%	YES	U	0.586%
14	Formaldehyde	10	SD1-EF-E	0.00166	0.30	0.555%	YES	U	0.586%
14	Formaldehyde	12	SD1-EF-F	0.00170	0.30	0.568%	YES	U	0.586%
14	Formaldehyde	14	SD1-EF-G	0.00171	0.30	0.570%	YES	U	0.586%
14	Formaldehyde	16	SD1-EF-H	0.00619	0.30	2.06%			0.586%
14	Formaldehyde	2	SC1-IN-A	0.00433	0.30	1.44%			0.586%
14	Formaldehyde	4	SC1-IN-B	0.00397	0.30	1.32%			0.586%
14	Formaldehyde	6	SC1-IN-C	0.00173	0.30	0.577%	YES	U	0.586%
14	Formaldehyde	8	SC1-IN-D	0.00242	0.30	0.806%			0.586%
14	Formaldehyde	10	SC1-IN-E	0.00178	0.30	0.594%			0.586%
14	Formaldehyde	12	SC1-IN-F	0.00200	0.30	0.667%			0.586%
14	Formaldehyde	14	SC1-IN-G	0.00170	0.30	0.565%	YES	U	0.586%
14	Formaldehyde	16	SC1-IN-H	0.00153	0.30	0.509%	YES	U	0.586%
14	Formaldehyde	2	SC1-EF-A	0.00158	0.30	0.526%	YES	U	0.586%
14	Formaldehyde	4	SC1-EF-B	0.00162	0.30	0.540%	YES	U	0.586%
14	Formaldehyde	6	SC1-EF-C	0.00176	0.30	0.586%	YES	U	0.586%
14	Formaldehyde	8	SC1-EF-D	0.00163	0.30	0.544%	YES	U	0.586%
14	Formaldehyde	10	SC1-EF-E	0.00164	0.30	0.548%	YES	U	0.586%
14	Formaldehyde	12	SC1-EF-F	0.00168	0.30	0.559%	YES	U	0.586%
14	Formaldehyde	14	SC1-EF-G	0.00169	0.30	0.563%	YES	U	0.586%
14	Formaldehyde	16	SC1-EF-H	0.00157	0.30	0.524%	YES	U	0.586%
15	Acetaldehyde	2	SD1-IN-A	0.1430	25	0.572%			0.00458%
15	Acetaldehyde	4	SD1-IN-B	0.1326	25	0.530%			0.00458%
15	Acetaldehyde	6	SD1-IN-C	0.1318	25	0.527%			0.00458%
15	Acetaldehyde	8	SD1-IN-D	0.1222	25	0.489%			0.00458%
15	Acetaldehyde	10	SD1-IN-E	0.1147	25	0.459%			0.00458%
15	Acetaldehyde	12	SD1-IN-F	0.0927	25	0.371%			0.00458%
15	Acetaldehyde	14	SD1-IN-G	0.0857	25	0.343%			0.00458%
15	Acetaldehyde	16	SD1-IN-H	0.0637	25	0.255%			0.00458%
15	Acetaldehyde	2	SD1-EF-A	0.0299	25	0.120%			0.00458%
15	Acetaldehyde	4	SD1-EF-B	0.0657	25	0.263%			0.00458%
15	Acetaldehyde	6	SD1-EF-C	0.0569	25	0.228%			0.00458%
15	Acetaldehyde	8	SD1-EF-D	0.0685	25	0.274%			0.00458%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
15	Acetaldehyde	10	SD1-EF-E	0.0454	25	0.181%			0.00458%
15	Acetaldehyde	12	SD1-EF-F	0.0464	25	0.186%			0.00458%
15	Acetaldehyde	14	SD1-EF-G	0.0582	25	0.233%			0.00458%
15	Acetaldehyde	16	SD1-EF-H	0.0680	25	0.272%			0.00458%
15	Acetaldehyde	2	SC1-IN-A	0.0615	25	0.246%			0.00458%
15	Acetaldehyde	4	SC1-IN-B	0.0541	25	0.216%			0.00458%
15	Acetaldehyde	6	SC1-IN-C	0.0542	25	0.217%			0.00458%
15	Acetaldehyde	8	SC1-IN-D	0.0542	25	0.217%			0.00458%
15	Acetaldehyde	10	SC1-IN-E	0.0458	25	0.183%			0.00458%
15	Acetaldehyde	12	SC1-IN-F	0.0416	25	0.166%			0.00458%
15	Acetaldehyde	14	SC1-IN-G	0.0393	25	0.157%			0.00458%
15	Acetaldehyde	16	SC1-IN-H	0.0010	25	0.004%	YES	U	0.00458%
15	Acetaldehyde	2	SC1-EF-A	0.0082	25	0.033%			0.00458%
15	Acetaldehyde	4	SC1-EF-B	0.0152	25	0.061%			0.00458%
15	Acetaldehyde	6	SC1-EF-C	0.0132	25	0.053%			0.00458%
15	Acetaldehyde	8	SC1-EF-D	0.0154	25	0.061%			0.00458%
15	Acetaldehyde	10	SC1-EF-E	0.0170	25	0.068%			0.00458%
15	Acetaldehyde	12	SC1-EF-F	0.0011	25	0.005%	YES	U	0.00458%
15	Acetaldehyde	14	SC1-EF-G	0.0147	25	0.059%			0.00458%
15	Acetaldehyde	16	SC1-EF-H	0.0139	25	0.056%			0.00458%
16	Butanal/Butyraldehyde	2	SD1-IN-A	2.0E-03	25	0.008%			0.00109%
16	Butanal/Butyraldehyde	4	SD1-IN-B	1.6E-03	25	0.007%			0.00109%
16	Butanal/Butyraldehyde	6	SD1-IN-C	2.1E-03	25	0.009%			0.00109%
16	Butanal/Butyraldehyde	8	SD1-IN-D	2.1E-03	25	0.008%			0.00109%
16	Butanal/Butyraldehyde	10	SD1-IN-E	3.5E-03	25	0.014%			0.00109%
16	Butanal/Butyraldehyde	12	SD1-IN-F	2.6E-03	25	0.010%			0.00109%
16	Butanal/Butyraldehyde	14	SD1-IN-G	2.7E-03	25	0.011%			0.00109%
16	Butanal/Butyraldehyde	16	SD1-IN-H	2.4E-03	25	0.009%			0.00109%
16	Butanal/Butyraldehyde	2	SD1-EF-A	2.5E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	4	SD1-EF-B	2.5E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	6	SD1-EF-C	2.5E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	8	SD1-EF-D	2.6E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	10	SD1-EF-E	2.7E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	12	SD1-EF-F	2.6E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	14	SD1-EF-G	2.7E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	16	SD1-EF-H	2.7E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	2	SC1-IN-A	6.2E-04	25	0.002%		J	0.00109%
16	Butanal/Butyraldehyde	4	SC1-IN-B	8.6E-04	25	0.003%		J	0.00109%
16	Butanal/Butyraldehyde	6	SC1-IN-C	1.1E-03	25	0.004%			0.00109%
16	Butanal/Butyraldehyde	8	SC1-IN-D	1.9E-03	25	0.007%			0.00109%
16	Butanal/Butyraldehyde	10	SC1-IN-E	9.0E-04	25	0.004%			0.00109%
16	Butanal/Butyraldehyde	12	SC1-IN-F	1.7E-03	25	0.007%			0.00109%
16	Butanal/Butyraldehyde	14	SC1-IN-G	6.6E-04	25	0.003%		J	0.00109%
16	Butanal/Butyraldehyde	16	SC1-IN-H	1.1E-03	25	0.004%			0.00109%
16	Butanal/Butyraldehyde	2	SC1-EF-A	2.6E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	4	SC1-EF-B	2.7E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	6	SC1-EF-C	2.7E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	8	SC1-EF-D	2.6E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	10	SC1-EF-E	2.4E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	12	SC1-EF-F	2.4E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	14	SC1-EF-G	2.4E-04	25	0.001%	YES	U	0.00109%
16	Butanal/Butyraldehyde	16	SC1-EF-H	2.3E-04	25	0.001%	YES	U	0.00109%
19	2-Propenal/Acrolein	2	SD1-IN-A	0.0009	0.10	0.865%	YES	U	0.967%
19	2-Propenal/Acrolein	4	SD1-IN-B	0.0009	0.10	0.854%	YES	U	0.967%
19	2-Propenal/Acrolein	6	SD1-IN-C	0.0009	0.10	0.925%	YES	U	0.967%
19	2-Propenal/Acrolein	8	SD1-IN-D	0.0009	0.10	0.906%	YES	U	0.967%
19	2-Propenal/Acrolein	10	SD1-IN-E	0.0009	0.10	0.938%	YES	U	0.967%
19	2-Propenal/Acrolein	12	SD1-IN-F	0.0009	0.10	0.867%	YES	U	0.967%
19	2-Propenal/Acrolein	14	SD1-IN-G	0.0009	0.10	0.886%	YES	U	0.967%
19	2-Propenal/Acrolein	16	SD1-IN-H	0.0009	0.10	0.894%	YES	U	0.967%
19	2-Propenal/Acrolein	2	SD1-EF-A	0.0008	0.10	0.840%	YES	U	0.967%
19	2-Propenal/Acrolein	4	SD1-EF-B	0.0009	0.10	0.890%	YES	U	0.967%
19	2-Propenal/Acrolein	6	SD1-EF-C	0.0009	0.10	0.932%	YES	U	0.967%
19	2-Propenal/Acrolein	8	SD1-EF-D	0.0009	0.10	0.897%	YES	U	0.967%
19	2-Propenal/Acrolein	10	SD1-EF-E	0.0009	0.10	0.891%	YES	U	0.967%
19	2-Propenal/Acrolein	12	SD1-EF-F	0.0009	0.10	0.912%	YES	U	0.967%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
19	2-Propenal/Acrolein	14	SD1-EF-G	0.0009	0.10	0.915%	YES	U	0.967%
19	2-Propenal/Acrolein	16	SD1-EF-H	0.0009	0.10	0.921%	YES	U	0.967%
19	2-Propenal/Acrolein	2	SC1-IN-A	0.0010	0.10	0.967%	YES	U	0.967%
19	2-Propenal/Acrolein	4	SC1-IN-B	0.0009	0.10	0.886%	YES	U	0.967%
19	2-Propenal/Acrolein	6	SC1-IN-C	0.0009	0.10	0.927%	YES	U	0.967%
19	2-Propenal/Acrolein	8	SC1-IN-D	0.0009	0.10	0.925%	YES	U	0.967%
19	2-Propenal/Acrolein	10	SC1-IN-E	0.0009	0.10	0.900%	YES	U	0.967%
19	2-Propenal/Acrolein	12	SC1-IN-F	0.0009	0.10	0.908%	YES	U	0.967%
19	2-Propenal/Acrolein	14	SC1-IN-G	0.0009	0.10	0.908%	YES	U	0.967%
19	2-Propenal/Acrolein	16	SC1-IN-H	0.0008	0.10	0.818%	YES	U	0.967%
19	2-Propenal/Acrolein	2	SC1-EF-A	0.0008	0.10	0.845%	YES	U	0.967%
19	2-Propenal/Acrolein	4	SC1-EF-B	0.0009	0.10	0.868%	YES	U	0.967%
19	2-Propenal/Acrolein	6	SC1-EF-C	0.0009	0.10	0.941%	YES	U	0.967%
19	2-Propenal/Acrolein	8	SC1-EF-D	0.0009	0.10	0.874%	YES	U	0.967%
19	2-Propenal/Acrolein	10	SC1-EF-E	0.0009	0.10	0.881%	YES	U	0.967%
19	2-Propenal/Acrolein	12	SC1-EF-F	0.0009	0.10	0.899%	YES	U	0.967%
19	2-Propenal/Acrolein	14	SC1-EF-G	0.0009	0.10	0.905%	YES	U	0.967%
19	2-Propenal/Acrolein	16	SC1-EF-H	0.0008	0.10	0.842%	YES	U	0.967%
20	Furan	2	SD1-IN-A	9.2E-03	0.001	919.784%			15.2%
20	Furan	4	SD1-IN-B	0.0299	0.001	2994.512%			15.2%
20	Furan	6	SD1-IN-C	0.0169	0.001	1689.130%			15.2%
20	Furan	8	SD1-IN-D	0.0157	0.001	1571.928%			15.2%
20	Furan	10	SD1-IN-E	0.0127	0.001	1270.692%			15.2%
20	Furan	12	SD1-IN-F	0.0110	0.001	1098.068%			15.2%
20	Furan	14	SD1-IN-G	0.0163	0.001	1634.123%			15.2%
20	Furan	16	SD1-IN-H	0.0090	0.001	895.901%			15.2%
20	Furan	2	SD1-EF-A	0.0001	0.001	13.9%	YES	U	15.2%
20	Furan	4	SD1-EF-B	0.0001	0.001	14.0%	YES	U	15.2%
20	Furan	6	SD1-EF-C	0.0001	0.001	14.4%	YES	U	15.2%
20	Furan	8	SD1-EF-D	0.0001	0.001	14.7%	YES	U	15.2%
20	Furan	10	SD1-EF-E	0.0004	0.001	43.0%		J	15.2%
20	Furan	12	SD1-EF-F	0.0007	0.001	70.7%		J	15.2%
20	Furan	14	SD1-EF-G	0.0009	0.001	88.1%		J	15.2%
20	Furan	16	SD1-EF-H	0.0008	0.001	80.0%		J	15.2%
20	Furan	2	SC1-IN-A	0.0188	0.001	1882.762%			15.2%
20	Furan	4	SC1-IN-B	0.0101	0.001	1012.788%			15.2%
20	Furan	6	SC1-IN-C	0.0253	0.001	2532.891%			15.2%
20	Furan	8	SC1-IN-D	0.0113	0.001	1134.644%			15.2%
20	Furan	10	SC1-IN-E	0.0139	0.001	1386.976%			15.2%
20	Furan	12	SC1-IN-F	0.0087	0.001	871.128%			15.2%
20	Furan	14	SC1-IN-G	0.0044	0.001	437.168%			15.2%
20	Furan	16	SC1-IN-H	0.0054	0.001	542.153%			15.2%
20	Furan	2	SC1-EF-A	0.0001	0.001	14.8%	YES	U	15.2%
20	Furan	4	SC1-EF-B	0.0002	0.001	15.2%	YES	U	15.2%
20	Furan	6	SC1-EF-C	0.0002	0.001	15.2%	YES	U	15.2%
20	Furan	8	SC1-EF-D	0.0001	0.001	14.7%	YES	U	15.2%
20	Furan	10	SC1-EF-E	0.0001	0.001	13.7%	YES	U	15.2%
20	Furan	12	SC1-EF-F	0.0002	0.001	19.6%		J	15.2%
20	Furan	14	SC1-EF-G	0.0006	0.001	56.5%		J	15.2%
20	Furan	16	SC1-EF-H	0.0003	0.001	34.8%		J	15.2%
21	2,3-Dihydrofuran	2	SD1-IN-A	1.3E-05	0.001	1.34%	YES	U	1.45%
21	2,3-Dihydrofuran	4	SD1-IN-B	1.3E-05	0.001	1.33%	YES	U	1.45%
21	2,3-Dihydrofuran	6	SD1-IN-C	1.3E-05	0.001	1.33%	YES	U	1.45%
21	2,3-Dihydrofuran	8	SD1-IN-D	1.4E-05	0.001	1.35%	YES	U	1.45%
21	2,3-Dihydrofuran	10	SD1-IN-E	1.4E-05	0.001	1.37%	YES	U	1.45%
21	2,3-Dihydrofuran	12	SD1-IN-F	1.4E-05	0.001	1.36%	YES	U	1.45%
21	2,3-Dihydrofuran	14	SD1-IN-G	1.4E-05	0.001	1.39%	YES	U	1.45%
21	2,3-Dihydrofuran	16	SD1-IN-H	1.4E-05	0.001	1.39%	YES	U	1.45%
21	2,3-Dihydrofuran	2	SD1-EF-A	1.3E-05	0.001	1.31%	YES	U	1.45%
21	2,3-Dihydrofuran	4	SD1-EF-B	1.3E-05	0.001	1.31%	YES	U	1.45%
21	2,3-Dihydrofuran	6	SD1-EF-C	1.3E-05	0.001	1.34%	YES	U	1.45%
21	2,3-Dihydrofuran	8	SD1-EF-D	1.4E-05	0.001	1.36%	YES	U	1.45%
21	2,3-Dihydrofuran	10	SD1-EF-E	1.4E-05	0.001	1.37%	YES	U	1.45%
21	2,3-Dihydrofuran	12	SD1-EF-F	1.4E-05	0.001	1.45%	YES	U	1.45%
21	2,3-Dihydrofuran	14	SD1-EF-G	1.4E-05	0.001	1.38%	YES	U	1.45%
21	2,3-Dihydrofuran	16	SD1-EF-H	1.4E-05	0.001	1.39%	YES	U	1.45%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
21	2,3-Dihydrofuran	2	SC1-IN-A	1.1E-04	0.001	11.5%		J	1.45%
21	2,3-Dihydrofuran	4	SC1-IN-B	1.1E-04	0.001	10.6%		J	1.45%
21	2,3-Dihydrofuran	6	SC1-IN-C	1.4E-04	0.001	14.3%		J	1.45%
21	2,3-Dihydrofuran	8	SC1-IN-D	1.7E-04	0.001	16.8%		J	1.45%
21	2,3-Dihydrofuran	10	SC1-IN-E	1.2E-04	0.001	11.9%		J	1.45%
21	2,3-Dihydrofuran	12	SC1-IN-F	8.6E-05	0.001	8.57%		J	1.45%
21	2,3-Dihydrofuran	14	SC1-IN-G	1.9E-05	0.001	1.93%		J	1.45%
21	2,3-Dihydrofuran	16	SC1-IN-H	1.2E-05	0.001	1.22%	YES	U	1.45%
21	2,3-Dihydrofuran	2	SC1-EF-A		0.001				1.45%
21	2,3-Dihydrofuran	4	SC1-EF-B	1.4E-05	0.001	1.39%	YES	U	1.45%
21	2,3-Dihydrofuran	6	SC1-EF-C	1.3E-05	0.001	1.29%	YES	U	1.45%
21	2,3-Dihydrofuran	8	SC1-EF-D	1.3E-05	0.001	1.31%	YES	U	1.45%
21	2,3-Dihydrofuran	10	SC1-EF-E	1.3E-05	0.001	1.29%	YES	U	1.45%
21	2,3-Dihydrofuran	12	SC1-EF-F	1.3E-05	0.001	1.29%	YES	U	1.45%
21	2,3-Dihydrofuran	14	SC1-EF-G	1.3E-05	0.001	1.30%	YES	U	1.45%
21	2,3-Dihydrofuran	16	SC1-EF-H	1.4E-05	0.001	1.38%		J, S*	1.45%
22	2,5-Dihydrofuran	2	SD1-IN-A	0.00020	0.001	20.1%	YES	U	20.6%
22	2,5-Dihydrofuran	4	SD1-IN-B	0.00019	0.001	19.4%	YES	U	20.6%
22	2,5-Dihydrofuran	6	SD1-IN-C	0.00020	0.001	20.1%	YES	U	20.6%
22	2,5-Dihydrofuran	8	SD1-IN-D	0.00020	0.001	19.8%	YES	U	20.6%
22	2,5-Dihydrofuran	10	SD1-IN-E	0.00019	0.001	19.4%	YES	U	20.6%
22	2,5-Dihydrofuran	12	SD1-IN-F	0.00020	0.001	19.6%	YES	U	20.6%
22	2,5-Dihydrofuran	14	SD1-IN-G	0.00019	0.001	19.4%	YES	U	20.6%
22	2,5-Dihydrofuran	16	SD1-IN-H	0.00019	0.001	19.1%	YES	U	20.6%
22	2,5-Dihydrofuran	2	SD1-EF-A	0.00019	0.001	18.6%	YES	U	20.6%
22	2,5-Dihydrofuran	4	SD1-EF-B	0.00019	0.001	18.6%	YES	U	20.6%
22	2,5-Dihydrofuran	6	SD1-EF-C	0.00019	0.001	19.2%	YES	U	20.6%
22	2,5-Dihydrofuran	8	SD1-EF-D	0.00020	0.001	19.6%	YES	U	20.6%
22	2,5-Dihydrofuran	10	SD1-EF-E	0.00020	0.001	20.4%	YES	U	20.6%
22	2,5-Dihydrofuran	12	SD1-EF-F	0.00020	0.001	19.9%	YES	U	20.6%
22	2,5-Dihydrofuran	14	SD1-EF-G	0.00020	0.001	20.5%	YES	U	20.6%
22	2,5-Dihydrofuran	16	SD1-EF-H	0.00021	0.001	20.6%	YES	U	20.6%
22	2,5-Dihydrofuran	2	SC1-IN-A	0.00019	0.001	19.2%	YES	U	20.6%
22	2,5-Dihydrofuran	4	SC1-IN-B	0.00020	0.001	19.7%	YES	U	20.6%
22	2,5-Dihydrofuran	6	SC1-IN-C	0.00020	0.001	20.0%	YES	U	20.6%
22	2,5-Dihydrofuran	8	SC1-IN-D	0.00020	0.001	20.2%	YES	U	20.6%
22	2,5-Dihydrofuran	10	SC1-IN-E	0.00019	0.001	18.5%	YES	U	20.6%
22	2,5-Dihydrofuran	12	SC1-IN-F	0.00019	0.001	18.6%	YES	U	20.6%
22	2,5-Dihydrofuran	14	SC1-IN-G	0.00019	0.001	18.7%	YES	U	20.6%
22	2,5-Dihydrofuran	16	SC1-IN-H	0.00017	0.001	17.3%	YES	U	20.6%
22	2,5-Dihydrofuran	2	SC1-EF-A	0.00020	0.001	19.8%	YES	U	20.6%
22	2,5-Dihydrofuran	4	SC1-EF-B	0.00020	0.001	20.3%	YES	U	20.6%
22	2,5-Dihydrofuran	6	SC1-EF-C	0.00020	0.001	20.3%	YES	U	20.6%
22	2,5-Dihydrofuran	8	SC1-EF-D	0.00020	0.001	19.6%	YES	U	20.6%
22	2,5-Dihydrofuran	10	SC1-EF-E	0.00018	0.001	18.3%	YES	U	20.6%
22	2,5-Dihydrofuran	12	SC1-EF-F	0.00018	0.001	18.2%	YES	U	20.6%
22	2,5-Dihydrofuran	14	SC1-EF-G	0.00018	0.001	18.3%	YES	U	20.6%
22	2,5-Dihydrofuran	16	SC1-EF-H	0.00017	0.001	17.3%	YES	U	20.6%
23	2-Methylfuran	2	SD1-IN-A	0.00011	0.001	10.9%		J	10.4%
23	2-Methylfuran	4	SD1-IN-B	0.00011	0.001	11.3%		J	10.4%
23	2-Methylfuran	6	SD1-IN-C	0.00013	0.001	13.2%		J	10.4%
23	2-Methylfuran	8	SD1-IN-D	0.00014	0.001	13.8%		J	10.4%
23	2-Methylfuran	10	SD1-IN-E	0.00013	0.001	12.8%		J	10.4%
23	2-Methylfuran	12	SD1-IN-F	0.00013	0.001	12.9%		J	10.4%
23	2-Methylfuran	14	SD1-IN-G	0.00014	0.001	13.5%		J	10.4%
23	2-Methylfuran	16	SD1-IN-H	0.00011	0.001	11.1%		J	10.4%
23	2-Methylfuran	2	SD1-EF-A	0.00009	0.001	9.38%	YES	U	10.4%
23	2-Methylfuran	4	SD1-EF-B	0.00009	0.001	9.40%	YES	U	10.4%
23	2-Methylfuran	6	SD1-EF-C	0.00010	0.001	9.67%	YES	U	10.4%
23	2-Methylfuran	8	SD1-EF-D	0.00010	0.001	9.88%	YES	U	10.4%
23	2-Methylfuran	10	SD1-EF-E	0.00010	0.001	10.3%	YES	U	10.4%
23	2-Methylfuran	12	SD1-EF-F	0.00010	0.001	10.0%	YES	U	10.4%
23	2-Methylfuran	14	SD1-EF-G	0.00010	0.001	10.3%	YES	U	10.4%
23	2-Methylfuran	16	SD1-EF-H	0.00010	0.001	10.4%	YES	U	10.4%
23	2-Methylfuran	2	SC1-IN-A	0.00010	0.001	9.66%	YES	U	10.4%
23	2-Methylfuran	4	SC1-IN-B	0.00011	0.001	11.5%		J	10.4%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
23	2-Methylfuran	6	SC1-IN-C	0.00010	0.001	10.1%	YES	U	10.4%
23	2-Methylfuran	8	SC1-IN-D	0.00010	0.001	10.2%	YES	U	10.4%
23	2-Methylfuran	10	SC1-IN-E	0.00009	0.001	9.34%	YES	U	10.4%
23	2-Methylfuran	12	SC1-IN-F	0.00009	0.001	9.39%	YES	U	10.4%
23	2-Methylfuran	14	SC1-IN-G	0.00009	0.001	9.42%	YES	U	10.4%
23	2-Methylfuran	16	SC1-IN-H	0.00009	0.001	8.72%	YES	U	10.4%
23	2-Methylfuran	2	SC1-EF-A	0.00010	0.001	9.99%	YES	U	10.4%
23	2-Methylfuran	4	SC1-EF-B	0.00010	0.001	10.2%	YES	U	10.4%
23	2-Methylfuran	6	SC1-EF-C	0.00010	0.001	10.2%	YES	U	10.4%
23	2-Methylfuran	8	SC1-EF-D	0.00010	0.001	9.88%	YES	U	10.4%
23	2-Methylfuran	10	SC1-EF-E	0.00009	0.001	9.25%	YES	U	10.4%
23	2-Methylfuran	12	SC1-EF-F	0.00009	0.001	9.17%	YES	U	10.4%
23	2-Methylfuran	14	SC1-EF-G	0.00009	0.001	9.23%	YES	U	10.4%
23	2-Methylfuran	16	SC1-EF-H	0.00009	0.001	8.73%	YES	U	10.4%
24	2,5-Dimethylfuran	2	SD1-IN-A	3.2E-05	0.001	3.19%	YES	U	3.49%
24	2,5-Dimethylfuran	4	SD1-IN-B	3.2E-05	0.001	3.16%	YES	U	3.49%
24	2,5-Dimethylfuran	6	SD1-IN-C	3.2E-05	0.001	3.17%	YES	U	3.49%
24	2,5-Dimethylfuran	8	SD1-IN-D	3.2E-05	0.001	3.22%	YES	U	3.49%
24	2,5-Dimethylfuran	10	SD1-IN-E	3.3E-05	0.001	3.27%	YES	U	3.49%
24	2,5-Dimethylfuran	12	SD1-IN-F	3.2E-05	0.001	3.24%	YES	U	3.49%
24	2,5-Dimethylfuran	14	SD1-IN-G	3.3E-05	0.001	3.31%	YES	U	3.49%
24	2,5-Dimethylfuran	16	SD1-IN-H	3.3E-05	0.001	3.31%	YES	U	3.49%
24	2,5-Dimethylfuran	2	SD1-EF-A	3.1E-05	0.001	3.13%	YES	U	3.49%
24	2,5-Dimethylfuran	4	SD1-EF-B	3.1E-05	0.001	3.10%	YES	U	3.49%
24	2,5-Dimethylfuran	6	SD1-EF-C	3.2E-05	0.001	3.17%	YES	U	3.49%
24	2,5-Dimethylfuran	8	SD1-EF-D	3.2E-05	0.001	3.23%	YES	U	3.49%
24	2,5-Dimethylfuran	10	SD1-EF-E	3.3E-05	0.001	3.25%	YES	U	3.49%
24	2,5-Dimethylfuran	12	SD1-EF-F	3.4E-05	0.001	3.44%	YES	U	3.49%
24	2,5-Dimethylfuran	14	SD1-EF-G	3.3E-05	0.001	3.28%	YES	U	3.49%
24	2,5-Dimethylfuran	16	SD1-EF-H	3.3E-05	0.001	3.29%	YES	U	3.49%
24	2,5-Dimethylfuran	2	SC1-IN-A	3.5E-05	0.001	3.49%	YES	U	3.49%
24	2,5-Dimethylfuran	4	SC1-IN-B	3.2E-05	0.001	3.21%	YES	U	3.49%
24	2,5-Dimethylfuran	6	SC1-IN-C	3.3E-05	0.001	3.26%	YES	U	3.49%
24	2,5-Dimethylfuran	8	SC1-IN-D	3.3E-05	0.001	3.28%	YES	U	3.49%
24	2,5-Dimethylfuran	10	SC1-IN-E	3.1E-05	0.001	3.11%	YES	U	3.49%
24	2,5-Dimethylfuran	12	SC1-IN-F	3.1E-05	0.001	3.12%	YES	U	3.49%
24	2,5-Dimethylfuran	14	SC1-IN-G	3.1E-05	0.001	3.11%	YES	U	3.49%
24	2,5-Dimethylfuran	16	SC1-IN-H	2.9E-05	0.001	2.89%	YES	U	3.49%
24	2,5-Dimethylfuran	2	SC1-EF-A		0.001				3.49%
24	2,5-Dimethylfuran	4	SC1-EF-B	3.3E-05	0.001	3.31%	YES	U	3.49%
24	2,5-Dimethylfuran	6	SC1-EF-C	3.1E-05	0.001	3.07%	YES	U	3.49%
24	2,5-Dimethylfuran	8	SC1-EF-D	3.1E-05	0.001	3.11%	YES	U	3.49%
24	2,5-Dimethylfuran	10	SC1-EF-E	3.1E-05	0.001	3.06%	YES	U	3.49%
24	2,5-Dimethylfuran	12	SC1-EF-F	3.1E-05	0.001	3.06%	YES	U	3.49%
24	2,5-Dimethylfuran	14	SC1-EF-G	3.1E-05	0.001	3.09%	YES	U	3.49%
24	2,5-Dimethylfuran	16	SC1-EF-H	2.4E-05	0.001	2.44%	YES	U, S*	3.49%
28	2-Pentylfuran	2	SD1-IN-A	0.00003	0.001	2.66%	YES	U	2.87%
28	2-Pentylfuran	4	SD1-IN-B	0.00003	0.001	2.64%	YES	U	2.87%
28	2-Pentylfuran	6	SD1-IN-C	0.00003	0.001	2.64%	YES	U	2.87%
28	2-Pentylfuran	8	SD1-IN-D	0.00003	0.001	2.69%	YES	U	2.87%
28	2-Pentylfuran	10	SD1-IN-E	0.00003	0.001	2.73%	YES	U	2.87%
28	2-Pentylfuran	12	SD1-IN-F	0.00003	0.001	2.71%	YES	U	2.87%
28	2-Pentylfuran	14	SD1-IN-G	0.00003	0.001	2.76%	YES	U	2.87%
28	2-Pentylfuran	16	SD1-IN-H	0.00003	0.001	2.76%	YES	U	2.87%
28	2-Pentylfuran	2	SD1-EF-A	0.00003	0.001	2.61%	YES	U	2.87%
28	2-Pentylfuran	4	SD1-EF-B	0.00003	0.001	2.59%	YES	U	2.87%
28	2-Pentylfuran	6	SD1-EF-C	0.00003	0.001	2.65%	YES	U	2.87%
28	2-Pentylfuran	8	SD1-EF-D	0.00003	0.001	2.69%	YES	U	2.87%
28	2-Pentylfuran	10	SD1-EF-E	0.00003	0.001	2.71%	YES	U	2.87%
28	2-Pentylfuran	12	SD1-EF-F	0.00003	0.001	2.87%	YES	U	2.87%
28	2-Pentylfuran	14	SD1-EF-G	0.00003	0.001	2.73%	YES	U	2.87%
28	2-Pentylfuran	16	SD1-EF-H	0.00003	0.001	2.75%	YES	U	2.87%
28	2-Pentylfuran	2	SC1-IN-A	0.00007	0.001	6.80%		J	2.87%
28	2-Pentylfuran	4	SC1-IN-B	0.00003	0.001	2.68%	YES	U	2.87%
28	2-Pentylfuran	6	SC1-IN-C	0.00003	0.001	2.72%	YES	U	2.87%
28	2-Pentylfuran	8	SC1-IN-D	0.00003	0.001	2.74%	YES	U	2.87%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
28	2-Pentylfuran	10	SC1-IN-E	0.00003	0.001	3.17%		J	2.87%
28	2-Pentylfuran	12	SC1-IN-F	0.00003	0.001	2.61%	YES	U	2.87%
28	2-Pentylfuran	14	SC1-IN-G	0.00003	0.001	2.60%	YES	U	2.87%
28	2-Pentylfuran	16	SC1-IN-H	0.00002	0.001	2.41%	YES	U	2.87%
28	2-Pentylfuran	2	SC1-EF-A		0.001				2.87%
28	2-Pentylfuran	4	SC1-EF-B	0.00003	0.001	2.76%	YES	U	2.87%
28	2-Pentylfuran	6	SC1-EF-C	0.00003	0.001	2.56%	YES	U	2.87%
28	2-Pentylfuran	8	SC1-EF-D	0.00003	0.001	2.60%	YES	U	2.87%
28	2-Pentylfuran	10	SC1-EF-E	0.00003	0.001	2.55%	YES	U	2.87%
28	2-Pentylfuran	12	SC1-EF-F	0.00003	0.001	2.56%	YES	U	2.87%
28	2-Pentylfuran	14	SC1-EF-G	0.00003	0.001	2.58%	YES	U	2.87%
28	2-Pentylfuran	16	SC1-EF-H	0.00002	0.001	2.03%	YES	U, S*	2.87%
29	2-Heptylfuran	2	SD1-IN-A	2.1E-05	0.001	2.11%	YES	U	2.32%
29	2-Heptylfuran	4	SD1-IN-B	2.1E-05	0.001	2.10%	YES	U	2.32%
29	2-Heptylfuran	6	SD1-IN-C	2.1E-05	0.001	2.10%	YES	U	2.32%
29	2-Heptylfuran	8	SD1-IN-D	2.1E-05	0.001	2.13%	YES	U	2.32%
29	2-Heptylfuran	10	SD1-IN-E	2.2E-05	0.001	2.17%	YES	U	2.32%
29	2-Heptylfuran	12	SD1-IN-F	2.2E-05	0.001	2.15%	YES	U	2.32%
29	2-Heptylfuran	14	SD1-IN-G	2.2E-05	0.001	2.19%	YES	U	2.32%
29	2-Heptylfuran	16	SD1-IN-H	2.2E-05	0.001	2.20%	YES	U	2.32%
29	2-Heptylfuran	2	SD1-EF-A	2.1E-05	0.001	2.07%	YES	U	2.32%
29	2-Heptylfuran	4	SD1-EF-B	2.1E-05	0.001	2.06%	YES	U	2.32%
29	2-Heptylfuran	6	SD1-EF-C	2.1E-05	0.001	2.10%	YES	U	2.32%
29	2-Heptylfuran	8	SD1-EF-D	2.1E-05	0.001	2.14%	YES	U	2.32%
29	2-Heptylfuran	10	SD1-EF-E	2.2E-05	0.001	2.16%	YES	U	2.32%
29	2-Heptylfuran	12	SD1-EF-F	2.3E-05	0.001	2.28%	YES	U	2.32%
29	2-Heptylfuran	14	SD1-EF-G	2.2E-05	0.001	2.17%	YES	U	2.32%
29	2-Heptylfuran	16	SD1-EF-H	2.2E-05	0.001	2.18%	YES	U	2.32%
29	2-Heptylfuran	2	SC1-IN-A	2.3E-05	0.001	2.32%	YES	U	2.32%
29	2-Heptylfuran	4	SC1-IN-B	2.1E-05	0.001	2.13%	YES	U	2.32%
29	2-Heptylfuran	6	SC1-IN-C	2.2E-05	0.001	2.16%	YES	U	2.32%
29	2-Heptylfuran	8	SC1-IN-D	2.2E-05	0.001	2.18%	YES	U	2.32%
29	2-Heptylfuran	10	SC1-IN-E	2.1E-05	0.001	2.06%	YES	U	2.32%
29	2-Heptylfuran	12	SC1-IN-F	2.1E-05	0.001	2.07%	YES	U	2.32%
29	2-Heptylfuran	14	SC1-IN-G	2.1E-05	0.001	2.06%	YES	U	2.32%
29	2-Heptylfuran	16	SC1-IN-H	1.9E-05	0.001	1.92%	YES	U	2.32%
29	2-Heptylfuran	2	SC1-EF-A		0.001				2.32%
29	2-Heptylfuran	4	SC1-EF-B	2.2E-05	0.001	2.19%	YES	U	2.32%
29	2-Heptylfuran	6	SC1-EF-C	2.0E-05	0.001	2.04%	YES	U	2.32%
29	2-Heptylfuran	8	SC1-EF-D	2.1E-05	0.001	2.06%	YES	U	2.32%
29	2-Heptylfuran	10	SC1-EF-E	2.0E-05	0.001	2.03%	YES	U	2.32%
29	2-Heptylfuran	12	SC1-EF-F	2.0E-05	0.001	2.03%	YES	U	2.32%
29	2-Heptylfuran	14	SC1-EF-G	2.1E-05	0.001	2.05%	YES	U	2.32%
29	2-Heptylfuran	16	SC1-EF-H	1.6E-05	0.001	1.62%	YES	U, S*	2.32%
30	2-Propylfuran	2	SD1-IN-A	2.3E-05	0.001	2.30%	YES	U	2.52%
30	2-Propylfuran	4	SD1-IN-B	2.3E-05	0.001	2.28%	YES	U	2.52%
30	2-Propylfuran	6	SD1-IN-C	2.3E-05	0.001	2.28%	YES	U	2.52%
30	2-Propylfuran	8	SD1-IN-D	2.3E-05	0.001	2.32%	YES	U	2.52%
30	2-Propylfuran	10	SD1-IN-E	2.4E-05	0.001	2.36%	YES	U	2.52%
30	2-Propylfuran	12	SD1-IN-F	2.3E-05	0.001	2.34%	YES	U	2.52%
30	2-Propylfuran	14	SD1-IN-G	2.4E-05	0.001	2.39%	YES	U	2.52%
30	2-Propylfuran	16	SD1-IN-H	2.4E-05	0.001	2.39%	YES	U	2.52%
30	2-Propylfuran	2	SD1-EF-A	2.3E-05	0.001	2.25%	YES	U	2.52%
30	2-Propylfuran	4	SD1-EF-B	2.2E-05	0.001	2.24%	YES	U	2.52%
30	2-Propylfuran	6	SD1-EF-C	2.3E-05	0.001	2.29%	YES	U	2.52%
30	2-Propylfuran	8	SD1-EF-D	2.3E-05	0.001	2.33%	YES	U	2.52%
30	2-Propylfuran	10	SD1-EF-E	2.3E-05	0.001	2.35%	YES	U	2.52%
30	2-Propylfuran	12	SD1-EF-F	2.5E-05	0.001	2.48%	YES	U	2.52%
30	2-Propylfuran	14	SD1-EF-G	2.4E-05	0.001	2.36%	YES	U	2.52%
30	2-Propylfuran	16	SD1-EF-H	2.4E-05	0.001	2.38%	YES	U	2.52%
30	2-Propylfuran	2	SC1-IN-A	2.5E-05	0.001	2.52%	YES	U	2.52%
30	2-Propylfuran	4	SC1-IN-B	2.3E-05	0.001	2.31%	YES	U	2.52%
30	2-Propylfuran	6	SC1-IN-C	2.4E-05	0.001	2.35%	YES	U	2.52%
30	2-Propylfuran	8	SC1-IN-D	2.4E-05	0.001	2.37%	YES	U	2.52%
30	2-Propylfuran	10	SC1-IN-E	2.2E-05	0.001	2.24%	YES	U	2.52%
30	2-Propylfuran	12	SC1-IN-F	2.3E-05	0.001	2.25%	YES	U	2.52%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
30	2-Propylfuran	14	SC1-IN-G	2.2E-05	0.001	2.24%	YES	U	2.52%
30	2-Propylfuran	16	SC1-IN-H	2.1E-05	0.001	2.09%	YES	U	2.52%
30	2-Propylfuran	2	SC1-EF-A		0.001				2.52%
30	2-Propylfuran	4	SC1-EF-B	2.4E-05	0.001	2.39%	YES	U	2.52%
30	2-Propylfuran	6	SC1-EF-C	2.2E-05	0.001	2.22%	YES	U	2.52%
30	2-Propylfuran	8	SC1-EF-D	2.2E-05	0.001	2.25%	YES	U	2.52%
30	2-Propylfuran	10	SC1-EF-E	2.2E-05	0.001	2.21%	YES	U	2.52%
30	2-Propylfuran	12	SC1-EF-F	2.2E-05	0.001	2.21%	YES	U	2.52%
30	2-Propylfuran	14	SC1-EF-G	2.2E-05	0.001	2.23%	YES	U	2.52%
30	2-Propylfuran	16	SC1-EF-H	1.8E-05	0.001	1.76%	YES	U, S*	2.52%
34	Diethylphthalate	2	SD1-IN-A	2.0E-04	0.54	0.036%	YES	U	0.0480%
34	Diethylphthalate	4	SD1-IN-B	2.0E-04	0.54	0.036%	YES	U	0.0480%
34	Diethylphthalate	6	SD1-IN-C	1.9E-04	0.54	0.034%	YES	U	0.0480%
34	Diethylphthalate	8	SD1-IN-D		0.54				0.0480%
34	Diethylphthalate	10	SD1-IN-E	2.0E-04	0.54	0.037%	YES	U	0.0480%
34	Diethylphthalate	12	SD1-IN-F	2.1E-04	0.54	0.039%	YES	U, S*	0.0480%
34	Diethylphthalate	14	SD1-IN-G	2.1E-04	0.54	0.040%	YES	U	0.0480%
34	Diethylphthalate	16	SD1-IN-H	2.1E-04	0.54	0.039%	YES	U	0.0480%
34	Diethylphthalate	2	SD1-EF-A		0.54				0.0480%
34	Diethylphthalate	4	SD1-EF-B	1.8E-04	0.54	0.034%	YES	U	0.0480%
34	Diethylphthalate	6	SD1-EF-C	2.0E-04	0.54	0.037%	YES	U	0.0480%
34	Diethylphthalate	8	SD1-EF-D	1.9E-04	0.54	0.035%	YES	U	0.0480%
34	Diethylphthalate	10	SD1-EF-E		0.54				0.0480%
34	Diethylphthalate	12	SD1-EF-F	2.0E-04	0.54	0.037%	YES	U	0.0480%
34	Diethylphthalate	14	SD1-EF-G	2.0E-04	0.54	0.037%	YES	UY	0.0480%
34	Diethylphthalate	16	SD1-EF-H	1.9E-04	0.54	0.036%	YES	U	0.0480%
34	Diethylphthalate	2	SC1-IN-A	1.9E-04	0.54	0.035%	YES	U	0.0480%
34	Diethylphthalate	4	SC1-IN-B	2.0E-04	0.54	0.037%	YES	U	0.0480%
34	Diethylphthalate	6	SC1-IN-C	1.9E-04	0.54	0.036%	YES	U	0.0480%
34	Diethylphthalate	8	SC1-IN-D	1.9E-04	0.54	0.035%	YES	U	0.0480%
34	Diethylphthalate	10	SC1-IN-E	1.9E-04	0.54	0.035%	YES	U	0.0480%
34	Diethylphthalate	12	SC1-IN-F	1.8E-04	0.54	0.034%	YES		0.0480%
34	Diethylphthalate	14	SC1-IN-G	1.8E-04	0.54	0.034%	YES	U	0.0480%
34	Diethylphthalate	16	SC1-IN-H	1.7E-04	0.54	0.032%	YES	U	0.0480%
34	Diethylphthalate	2	SC1-EF-A	2.6E-04	0.54	0.048%	YES	U, S*	0.0480%
34	Diethylphthalate	4	SC1-EF-B	2.6E-04	0.54	0.047%	YES	U, S*	0.0480%
34	Diethylphthalate	6	SC1-EF-C	1.8E-04	0.54	0.034%	YES	U	0.0480%
34	Diethylphthalate	8	SC1-EF-D	1.9E-04	0.54	0.035%	YES	U	0.0480%
34	Diethylphthalate	10	SC1-EF-E	1.8E-04	0.54	0.034%	YES	U	0.0480%
34	Diethylphthalate	12	SC1-EF-F	1.8E-04	0.54	0.034%	YES	U, S*	0.0480%
34	Diethylphthalate	14	SC1-EF-G	1.9E-04	0.54	0.036%	YES	U	0.0480%
34	Diethylphthalate	16	SC1-EF-H	1.8E-04	0.54	0.033%	YES	U	0.0480%
35	Acetonitrile	2	SD1-IN-A	0.0187	20	0.093%			0.00128%
35	Acetonitrile	4	SD1-IN-B	0.0196	20	0.098%			0.00128%
35	Acetonitrile	6	SD1-IN-C	0.1089	20	0.545%		E	0.00128%
35	Acetonitrile	8	SD1-IN-D	0.0153	20	0.077%			0.00128%
35	Acetonitrile	10	SD1-IN-E	0.0181	20	0.090%			0.00128%
35	Acetonitrile	12	SD1-IN-F	0.0197	20	0.099%			0.00128%
35	Acetonitrile	14	SD1-IN-G	0.0271	20	0.135%			0.00128%
35	Acetonitrile	16	SD1-IN-H	0.0178	20	0.089%			0.00128%
35	Acetonitrile	2	SD1-EF-A	0.0049	20	0.025%			0.00128%
35	Acetonitrile	4	SD1-EF-B	0.0116	20	0.058%			0.00128%
35	Acetonitrile	6	SD1-EF-C	0.0031	20	0.016%			0.00128%
35	Acetonitrile	8	SD1-EF-D	0.0076	20	0.038%			0.00128%
35	Acetonitrile	10	SD1-EF-E	0.0114	20	0.057%			0.00128%
35	Acetonitrile	12	SD1-EF-F	0.0185	20	0.093%			0.00128%
35	Acetonitrile	14	SD1-EF-G	0.0159	20	0.079%			0.00128%
35	Acetonitrile	16	SD1-EF-H	0.0139	20	0.069%			0.00128%
35	Acetonitrile	2	SC1-IN-A	0.0117	20	0.059%			0.00128%
35	Acetonitrile	4	SC1-IN-B	0.0049	20	0.024%			0.00128%
35	Acetonitrile	6	SC1-IN-C	0.1229	20	0.614%		E	0.00128%
35	Acetonitrile	8	SC1-IN-D	0.0086	20	0.043%			0.00128%
35	Acetonitrile	10	SC1-IN-E	0.0069	20	0.034%			0.00128%
35	Acetonitrile	12	SC1-IN-F	0.0144	20	0.072%			0.00128%
35	Acetonitrile	14	SC1-IN-G	0.0059	20	0.030%			0.00128%
35	Acetonitrile	16	SC1-IN-H	0.0134	20	0.067%			0.00128%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
35	Acetonitrile	2	SC1-EF-A	0.0028	20	0.014%			0.00128%
35	Acetonitrile	4	SC1-EF-B	0.0049	20	0.024%			0.00128%
35	Acetonitrile	6	SC1-EF-C	0.0061	20	0.031%			0.00128%
35	Acetonitrile	8	SC1-EF-D	0.0055	20	0.027%			0.00128%
35	Acetonitrile	10	SC1-EF-E	0.0053	20	0.026%			0.00128%
35	Acetonitrile	12	SC1-EF-F	0.5505	20	2.75%		E	0.00128%
35	Acetonitrile	14	SC1-EF-G	0.0072	20	0.036%			0.00128%
35	Acetonitrile	16	SC1-EF-H	0.0134	20	0.067%			0.00128%
36	Propanenitrile	2	SD1-IN-A	2.1E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	4	SD1-IN-B	1.5E-03	6.0	0.024%			0.00355%
36	Propanenitrile	6	SD1-IN-C	2.1E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	8	SD1-IN-D	2.1E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	10	SD1-IN-E	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	12	SD1-IN-F	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	14	SD1-IN-G	1.9E-03	6.0	0.032%			0.00355%
36	Propanenitrile	16	SD1-IN-H	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	2	SD1-EF-A	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	4	SD1-EF-B	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	6	SD1-EF-C	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	8	SD1-EF-D	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	10	SD1-EF-E	2.1E-04	6.0	0.004%	YES	U	0.00355%
36	Propanenitrile	12	SD1-EF-F	2.1E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	14	SD1-EF-G	2.1E-04	6.0	0.004%	YES	U	0.00355%
36	Propanenitrile	16	SD1-EF-H	3.0E-04	6.0	0.005%		J	0.00355%
36	Propanenitrile	2	SC1-IN-A	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	4	SC1-IN-B	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	6	SC1-IN-C	2.1E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	8	SC1-IN-D	1.2E-03	6.0	0.019%		J	0.00355%
36	Propanenitrile	10	SC1-IN-E	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	12	SC1-IN-F	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	14	SC1-IN-G	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	16	SC1-IN-H	1.8E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	2	SC1-EF-A	2.1E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	4	SC1-EF-B	2.1E-04	6.0	0.004%	YES	U	0.00355%
36	Propanenitrile	6	SC1-EF-C	2.1E-04	6.0	0.004%	YES	U	0.00355%
36	Propanenitrile	8	SC1-EF-D	2.0E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	10	SC1-EF-E	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	12	SC1-EF-F	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	14	SC1-EF-G	1.9E-04	6.0	0.003%	YES	U	0.00355%
36	Propanenitrile	16	SC1-EF-H	1.8E-04	6.0	0.003%	YES	U	0.00355%
37	Butanenitrile	2	SD1-IN-A	1.5E-03	8.0	0.018%			0.00249%
37	Butanenitrile	4	SD1-IN-B	1.3E-03	8.0	0.017%			0.00249%
37	Butanenitrile	6	SD1-IN-C	1.5E-03	8.0	0.018%			0.00249%
37	Butanenitrile	8	SD1-IN-D	1.6E-03	8.0	0.020%			0.00249%
37	Butanenitrile	10	SD1-IN-E	1.2E-03	8.0	0.015%			0.00249%
37	Butanenitrile	12	SD1-IN-F	1.2E-03	8.0	0.015%			0.00249%
37	Butanenitrile	14	SD1-IN-G	1.2E-03	8.0	0.015%			0.00249%
37	Butanenitrile	16	SD1-IN-H	9.7E-04	8.0	0.012%		J	0.00249%
37	Butanenitrile	2	SD1-EF-A	1.8E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	4	SD1-EF-B	1.8E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	6	SD1-EF-C	1.9E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	8	SD1-EF-D	1.9E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	10	SD1-EF-E	2.0E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	12	SD1-EF-F	1.9E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	14	SD1-EF-G	2.0E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	16	SD1-EF-H	2.0E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	2	SC1-IN-A	7.3E-04	8.0	0.009%		J	0.00249%
37	Butanenitrile	4	SC1-IN-B	1.0E-03	8.0	0.012%		J	0.00249%
37	Butanenitrile	6	SC1-IN-C	7.6E-04	8.0	0.009%		J	0.00249%
37	Butanenitrile	8	SC1-IN-D	1.0E-03	8.0	0.013%		J	0.00249%
37	Butanenitrile	10	SC1-IN-E	7.9E-04	8.0	0.010%		J	0.00249%
37	Butanenitrile	12	SC1-IN-F	9.4E-04	8.0	0.012%		J	0.00249%
37	Butanenitrile	14	SC1-IN-G	4.5E-04	8.0	0.006%		J	0.00249%
37	Butanenitrile	16	SC1-IN-H	2.9E-04	8.0	0.004%		J	0.00249%
37	Butanenitrile	2	SC1-EF-A	1.9E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	4	SC1-EF-B	2.0E-04	8.0	0.002%	YES	U	0.00249%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
37	Butanenitrile	6	SC1-EF-C	2.0E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	8	SC1-EF-D	1.9E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	10	SC1-EF-E	1.8E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	12	SC1-EF-F	1.8E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	14	SC1-EF-G	1.8E-04	8.0	0.002%	YES	U	0.00249%
37	Butanenitrile	16	SC1-EF-H	1.7E-04	8.0	0.002%	YES	U	0.00249%
38	Pentanenitrile	2	SD1-IN-A	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	4	SD1-IN-B	1.9E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	6	SD1-IN-C	2.5E-04	6.0	0.004%		J	0.00342%
38	Pentanenitrile	8	SD1-IN-D	3.1E-04	6.0	0.005%		J	0.00342%
38	Pentanenitrile	10	SD1-IN-E	3.2E-04	6.0	0.005%		J	0.00342%
38	Pentanenitrile	12	SD1-IN-F	5.5E-04	6.0	0.009%		J	0.00342%
38	Pentanenitrile	14	SD1-IN-G	2.9E-04	6.0	0.005%		J	0.00342%
38	Pentanenitrile	16	SD1-IN-H	2.2E-04	6.0	0.004%		J	0.00342%
38	Pentanenitrile	2	SD1-EF-A	1.9E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	4	SD1-EF-B	1.9E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	6	SD1-EF-C	1.9E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	8	SD1-EF-D	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	10	SD1-EF-E	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	12	SD1-EF-F	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	14	SD1-EF-G	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	16	SD1-EF-H	2.1E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	2	SC1-IN-A	1.9E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	4	SC1-IN-B	3.5E-04	6.0	0.006%		J	0.00342%
38	Pentanenitrile	6	SC1-IN-C	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	8	SC1-IN-D	2.4E-04	6.0	0.004%		J	0.00342%
38	Pentanenitrile	10	SC1-IN-E	2.8E-04	6.0	0.005%		J	0.00342%
38	Pentanenitrile	12	SC1-IN-F	2.2E-04	6.0	0.004%		J	0.00342%
38	Pentanenitrile	14	SC1-IN-G	1.9E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	16	SC1-IN-H	1.7E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	2	SC1-EF-A	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	4	SC1-EF-B	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	6	SC1-EF-C	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	8	SC1-EF-D	2.0E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	10	SC1-EF-E	1.8E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	12	SC1-EF-F	1.8E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	14	SC1-EF-G	1.8E-04	6.0	0.003%	YES	U	0.00342%
38	Pentanenitrile	16	SC1-EF-H	1.7E-04	6.0	0.003%	YES	U	0.00342%
39	Hexanenitrile	2	SD1-IN-A	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	4	SD1-IN-B	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	6	SD1-IN-C	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	8	SD1-IN-D	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	10	SD1-IN-E	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	12	SD1-IN-F	0.00017	6.0	0.003%		J	0.00292%
39	Hexanenitrile	14	SD1-IN-G	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	16	SD1-IN-H	0.00017	6.0	0.003%		J	0.00292%
39	Hexanenitrile	2	SD1-EF-A	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	4	SD1-EF-B	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	6	SD1-EF-C	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	8	SD1-EF-D	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	10	SD1-EF-E	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	12	SD1-EF-F	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	14	SD1-EF-G	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	16	SD1-EF-H	0.00018	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	2	SC1-IN-A	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	4	SC1-IN-B	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	6	SC1-IN-C	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	8	SC1-IN-D	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	10	SC1-IN-E	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	12	SC1-IN-F	0.00022	6.0	0.004%		J	0.00292%
39	Hexanenitrile	14	SC1-IN-G	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	16	SC1-IN-H	0.00015	6.0	0.002%	YES	U	0.00292%
39	Hexanenitrile	2	SC1-EF-A	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	4	SC1-EF-B	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	6	SC1-EF-C	0.00017	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	8	SC1-EF-D	0.00017	6.0	0.003%	YES	U	0.00292%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
39	Hexanenitrile	10	SC1-EF-E	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	12	SC1-EF-F	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	14	SC1-EF-G	0.00016	6.0	0.003%	YES	U	0.00292%
39	Hexanenitrile	16	SC1-EF-H	0.00015	6.0	0.002%	YES	U	0.00292%
43	Ethylamine	2	SD1-IN-A	4.3E-03	5.0	0.086%	YES	U	0.0948%
43	Ethylamine	4	SD1-IN-B	4.3E-03	5.0	0.087%	YES	U	0.0948%
43	Ethylamine	6	SD1-IN-C	4.6E-03	5.0	0.091%	YES	U	0.0948%
43	Ethylamine	8	SD1-IN-D	4.5E-03	5.0	0.090%	YES	U	0.0948%
43	Ethylamine	10	SD1-IN-E	4.6E-03	5.0	0.091%	YES	U	0.0948%
43	Ethylamine	12	SD1-IN-F	4.6E-03	5.0	0.092%	YES	U	0.0948%
43	Ethylamine	14	SD1-IN-G	4.6E-03	5.0	0.092%	YES	U	0.0948%
43	Ethylamine	16	SD1-IN-H	4.6E-03	5.0	0.093%	YES	U	0.0948%
43	Ethylamine	2	SD1-EF-A	4.5E-03	5.0	0.089%	YES	U	0.0948%
43	Ethylamine	4	SD1-EF-B	4.5E-03	5.0	0.090%	YES	U	0.0948%
43	Ethylamine	6	SD1-EF-C	4.6E-03	5.0	0.091%	YES	U	0.0948%
43	Ethylamine	8	SD1-EF-D	4.6E-03	5.0	0.091%	YES	U	0.0948%
43	Ethylamine	10	SD1-EF-E	4.6E-03	5.0	0.092%	YES	U	0.0948%
43	Ethylamine	12	SD1-EF-F	4.7E-03	5.0	0.094%	YES	U	0.0948%
43	Ethylamine	14	SD1-EF-G	4.7E-03	5.0	0.095%	YES	U	0.0948%
43	Ethylamine	16	SD1-EF-H	4.7E-03	5.0	0.094%	YES	U	0.0948%
43	Ethylamine	2	SC1-IN-A	4.7E-03	5.0	0.094%	YES	U	0.0948%
43	Ethylamine	4	SC1-IN-B	1.5E-02	5.0	0.308%		, S*	0.0948%
43	Ethylamine	6	SC1-IN-C	2.0E-02	5.0	0.396%			0.0948%
43	Ethylamine	8	SC1-IN-D	4.6E-03	5.0	0.093%	YES	U	0.0948%
43	Ethylamine	10	SC1-IN-E	1.7E-02	5.0	0.337%			0.0948%
43	Ethylamine	12	SC1-IN-F	4.4E-03	5.0	0.088%	YES	U	0.0948%
43	Ethylamine	14	SC1-IN-G	1.9E-02	5.0	0.390%			0.0948%
43	Ethylamine	16	SC1-IN-H	9.5E-03	5.0	0.189%			0.0948%
43	Ethylamine	2	SC1-EF-A	7.0E-03	5.0	0.141%			0.0948%
43	Ethylamine	4	SC1-EF-B	4.6E-03	5.0	0.091%	YES	U	0.0948%
43	Ethylamine	6	SC1-EF-C	5.6E-03	5.0	0.112%			0.0948%
43	Ethylamine	8	SC1-EF-D	4.5E-03	5.0	0.090%	YES	U	0.0948%
43	Ethylamine	10	SC1-EF-E	4.2E-03	5.0	0.084%	YES	U	0.0948%
43	Ethylamine	12	SC1-EF-F	4.2E-03	5.0	0.084%	YES	U	0.0948%
43	Ethylamine	14	SC1-EF-G	4.2E-03	5.0	0.084%	YES	U	0.0948%
43	Ethylamine	16	SC1-EF-H	4.1E-03	5.0	0.082%	YES	U	0.0948%
44	N-Nitrosodimethylamine	2	SD1-IN-A	3.51E-03	0.0003	1171.045%		D	8.90%
44	N-Nitrosodimethylamine	4	SD1-IN-B	4.46E-03	0.0003	1487.141%		D	8.90%
44	N-Nitrosodimethylamine	6	SD1-IN-C	4.01E-03	0.0003	1336.067%		D	8.90%
44	N-Nitrosodimethylamine	8	SD1-IN-D	3.59E-03	0.0003	1196.716%		D	8.90%
44	N-Nitrosodimethylamine	10	SD1-IN-E	3.55E-03	0.0003	1183.949%		D	8.90%
44	N-Nitrosodimethylamine	12	SD1-IN-F	3.92E-03	0.0003	1308.292%		D	8.90%
44	N-Nitrosodimethylamine	14	SD1-IN-G	3.67E-03	0.0003	1224.622%		D	8.90%
44	N-Nitrosodimethylamine	16	SD1-IN-H	3.39E-03	0.0003	1129.698%		D	8.90%
44	N-Nitrosodimethylamine	2	SD1-EF-A	1.39E-05	0.0003	4.63%	YES		8.90%
44	N-Nitrosodimethylamine	4	SD1-EF-B	1.38E-05	0.0003	4.61%	YES		8.90%
44	N-Nitrosodimethylamine	6	SD1-EF-C	1.37E-05	0.0003	4.58%	YES		8.90%
44	N-Nitrosodimethylamine	8	SD1-EF-D	1.37E-05	0.0003	4.57%	YES		8.90%
44	N-Nitrosodimethylamine	10	SD1-EF-E	1.92E-05	0.0003	6.40%		X	8.90%
44	N-Nitrosodimethylamine	12	SD1-EF-F	1.39E-05	0.0003	4.65%	YES		8.90%
44	N-Nitrosodimethylamine	14	SD1-EF-G	1.38E-05	0.0003	4.58%	YES		8.90%
44	N-Nitrosodimethylamine	16	SD1-EF-H	1.38E-05	0.0003	4.61%	YES		8.90%
44	N-Nitrosodimethylamine	2	SC1-IN-A	3.97E-03	0.0003	1324.733%		D	8.90%
44	N-Nitrosodimethylamine	4	SC1-IN-B	4.57E-03	0.0003	1524.695%		D	8.90%
44	N-Nitrosodimethylamine	6	SC1-IN-C	4.25E-03	0.0003	1415.334%		D	8.90%
44	N-Nitrosodimethylamine	8	SC1-IN-D	4.73E-03	0.0003	1577.673%		D	8.90%
44	N-Nitrosodimethylamine	10	SC1-IN-E	3.59E-03	0.0003	1197.457%		D	8.90%
44	N-Nitrosodimethylamine	12	SC1-IN-F	3.81E-03	0.0003	1270.944%		D	8.90%
44	N-Nitrosodimethylamine	14	SC1-IN-G	3.40E-03	0.0003	1131.955%		D	8.90%
44	N-Nitrosodimethylamine	16	SC1-IN-H	3.02E-03	0.0003	1005.583%		D	8.90%
44	N-Nitrosodimethylamine	2	SC1-EF-A	1.32E-05	0.0003	4.39%	YES		8.90%
44	N-Nitrosodimethylamine	4	SC1-EF-B	1.40E-05	0.0003	4.68%	YES		8.90%
44	N-Nitrosodimethylamine	6	SC1-EF-C	1.35E-05	0.0003	4.50%	YES		8.90%
44	N-Nitrosodimethylamine	8	SC1-EF-D	2.67E-05	0.0003	8.90%	YES		8.90%
44	N-Nitrosodimethylamine	10	SC1-EF-E	1.29E-05	0.0003	4.31%	YES		8.90%
44	N-Nitrosodimethylamine	12	SC1-EF-F	1.30E-05	0.0003	4.34%	YES		8.90%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
44	N-Nitrosodimethylamine	14	SC1-EF-G	1.30E-05	0.0003	4.32%	YES		8.90%
44	N-Nitrosodimethylamine	16	SC1-EF-H	1.30E-05	0.0003	4.35%	YES		8.90%
45	N-Nitrosodiethylamine	2	SD1-IN-A	4.0E-04	0.0001	396.981%		C	19.4%
45	N-Nitrosodiethylamine	4	SD1-IN-B	4.0E-04	0.0001	397.933%		C	19.4%
45	N-Nitrosodiethylamine	6	SD1-IN-C	3.1E-04	0.0001	312.190%		C	19.4%
45	N-Nitrosodiethylamine	8	SD1-IN-D	2.7E-04	0.0001	270.190%		C	19.4%
45	N-Nitrosodiethylamine	10	SD1-IN-E	2.8E-04	0.0001	276.195%		C	19.4%
45	N-Nitrosodiethylamine	12	SD1-IN-F	2.8E-04	0.0001	278.852%		C	19.4%
45	N-Nitrosodiethylamine	14	SD1-IN-G	2.6E-04	0.0001	264.953%		C	19.4%
45	N-Nitrosodiethylamine	16	SD1-IN-H	2.3E-04	0.0001	233.139%		C	19.4%
45	N-Nitrosodiethylamine	2	SD1-EF-A	1.0E-05	0.0001	10.1%	YES		19.4%
45	N-Nitrosodiethylamine	4	SD1-EF-B	1.0E-05	0.0001	10.0%	YES		19.4%
45	N-Nitrosodiethylamine	6	SD1-EF-C	1.0E-05	0.0001	9.97%	YES		19.4%
45	N-Nitrosodiethylamine	8	SD1-EF-D	9.9E-06	0.0001	9.95%	YES		19.4%
45	N-Nitrosodiethylamine	10	SD1-EF-E	9.9E-06	0.0001	9.95%	YES		19.4%
45	N-Nitrosodiethylamine	12	SD1-EF-F	1.0E-05	0.0001	10.1%	YES		19.4%
45	N-Nitrosodiethylamine	14	SD1-EF-G	1.0E-05	0.0001	9.97%	YES		19.4%
45	N-Nitrosodiethylamine	16	SD1-EF-H	1.0E-05	0.0001	10.0%	YES		19.4%
45	N-Nitrosodiethylamine	2	SC1-IN-A	1.5E-05	0.0001	15.4%		C	19.4%
45	N-Nitrosodiethylamine	4	SC1-IN-B	4.5E-05	0.0001	44.9%		C	19.4%
45	N-Nitrosodiethylamine	6	SC1-IN-C	1.7E-05	0.0001	17.4%		C	19.4%
45	N-Nitrosodiethylamine	8	SC1-IN-D	1.7E-05	0.0001	17.2%		C	19.4%
45	N-Nitrosodiethylamine	10	SC1-IN-E	1.5E-05	0.0001	14.9%		C	19.4%
45	N-Nitrosodiethylamine	12	SC1-IN-F	1.4E-05	0.0001	13.8%		C	19.4%
45	N-Nitrosodiethylamine	14	SC1-IN-G	1.4E-05	0.0001	13.8%		C	19.4%
45	N-Nitrosodiethylamine	16	SC1-IN-H	1.0E-05	0.0001	10.3%		C	19.4%
45	N-Nitrosodiethylamine	2	SC1-EF-A	9.6E-06	0.0001	9.56%	YES		19.4%
45	N-Nitrosodiethylamine	4	SC1-EF-B	1.0E-05	0.0001	10.2%	YES		19.4%
45	N-Nitrosodiethylamine	6	SC1-EF-C	9.8E-06	0.0001	9.80%	YES		19.4%
45	N-Nitrosodiethylamine	8	SC1-EF-D	1.9E-05	0.0001	19.4%	YES		19.4%
45	N-Nitrosodiethylamine	10	SC1-EF-E	9.4E-06	0.0001	9.38%	YES		19.4%
45	N-Nitrosodiethylamine	12	SC1-EF-F	9.4E-06	0.0001	9.43%	YES		19.4%
45	N-Nitrosodiethylamine	14	SC1-EF-G	9.4E-06	0.0001	9.41%	YES		19.4%
45	N-Nitrosodiethylamine	16	SC1-EF-H	9.5E-06	0.0001	9.46%	YES		19.4%
46	N-Nitrosomethylethylamine	2	SD1-IN-A	7.5E-05	0.0003	25.0%		C	8.23%
46	N-Nitrosomethylethylamine	4	SD1-IN-B	7.8E-05	0.0003	26.1%			8.23%
46	N-Nitrosomethylethylamine	6	SD1-IN-C	6.7E-05	0.0003	22.3%			8.23%
46	N-Nitrosomethylethylamine	8	SD1-IN-D	6.3E-05	0.0003	21.0%			8.23%
46	N-Nitrosomethylethylamine	10	SD1-IN-E	6.2E-05	0.0003	20.6%			8.23%
46	N-Nitrosomethylethylamine	12	SD1-IN-F	6.5E-05	0.0003	21.7%			8.23%
46	N-Nitrosomethylethylamine	14	SD1-IN-G	6.1E-05	0.0003	20.2%			8.23%
46	N-Nitrosomethylethylamine	16	SD1-IN-H	5.9E-05	0.0003	19.6%			8.23%
46	N-Nitrosomethylethylamine	2	SD1-EF-A	1.2E-05	0.0003	3.89%	YES		8.23%
46	N-Nitrosomethylethylamine	4	SD1-EF-B	1.2E-05	0.0003	3.87%	YES		8.23%
46	N-Nitrosomethylethylamine	6	SD1-EF-C	1.2E-05	0.0003	3.85%	YES		8.23%
46	N-Nitrosomethylethylamine	8	SD1-EF-D	1.2E-05	0.0003	3.84%	YES		8.23%
46	N-Nitrosomethylethylamine	10	SD1-EF-E	1.2E-05	0.0003	3.84%	YES		8.23%
46	N-Nitrosomethylethylamine	12	SD1-EF-F	1.2E-05	0.0003	3.91%	YES		8.23%
46	N-Nitrosomethylethylamine	14	SD1-EF-G	1.2E-05	0.0003	3.85%	YES		8.23%
46	N-Nitrosomethylethylamine	16	SD1-EF-H	1.2E-05	0.0003	3.87%	YES		8.23%
46	N-Nitrosomethylethylamine	2	SC1-IN-A	4.4E-05	0.0003	14.7%		C	8.23%
46	N-Nitrosomethylethylamine	4	SC1-IN-B	5.0E-05	0.0003	16.6%		C	8.23%
46	N-Nitrosomethylethylamine	6	SC1-IN-C	5.1E-05	0.0003	17.0%		C	8.23%
46	N-Nitrosomethylethylamine	8	SC1-IN-D	5.6E-05	0.0003	18.8%		C	8.23%
46	N-Nitrosomethylethylamine	10	SC1-IN-E	4.4E-05	0.0003	14.6%			8.23%
46	N-Nitrosomethylethylamine	12	SC1-IN-F	4.0E-05	0.0003	13.4%			8.23%
46	N-Nitrosomethylethylamine	14	SC1-IN-G	3.7E-05	0.0003	12.2%			8.23%
46	N-Nitrosomethylethylamine	16	SC1-IN-H	3.3E-05	0.0003	10.8%			8.23%
46	N-Nitrosomethylethylamine	2	SC1-EF-A	1.2E-05	0.0003	4.06%	YES		8.23%
46	N-Nitrosomethylethylamine	4	SC1-EF-B	1.3E-05	0.0003	4.33%	YES		8.23%
46	N-Nitrosomethylethylamine	6	SC1-EF-C	1.2E-05	0.0003	4.16%	YES		8.23%
46	N-Nitrosomethylethylamine	8	SC1-EF-D	2.5E-05	0.0003	8.23%	YES		8.23%
46	N-Nitrosomethylethylamine	10	SC1-EF-E	1.2E-05	0.0003	3.99%	YES		8.23%
46	N-Nitrosomethylethylamine	12	SC1-EF-F	1.2E-05	0.0003	4.01%	YES		8.23%
46	N-Nitrosomethylethylamine	14	SC1-EF-G	1.2E-05	0.0003	4.00%	YES		8.23%
46	N-Nitrosomethylethylamine	16	SC1-EF-H	1.2E-05	0.0003	4.02%	YES		8.23%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
47	N-Nitrosomorpholine	2	SD1-IN-A	9.02E-06	0.001	1.50%	YES	*	2.84%
47	N-Nitrosomorpholine	4	SD1-IN-B	8.86E-06	0.001	1.48%	YES	*	2.84%
47	N-Nitrosomorpholine	6	SD1-IN-C	9.21E-06	0.001	1.54%			2.84%
47	N-Nitrosomorpholine	8	SD1-IN-D	8.71E-06	0.001	1.45%	YES	*	2.84%
47	N-Nitrosomorpholine	10	SD1-IN-E	8.83E-06	0.001	1.47%		X	2.84%
47	N-Nitrosomorpholine	12	SD1-IN-F	8.82E-06	0.001	1.47%	YES		2.84%
47	N-Nitrosomorpholine	14	SD1-IN-G	8.86E-06	0.001	1.48%	YES	*	2.84%
47	N-Nitrosomorpholine	16	SD1-IN-H	8.92E-06	0.001	1.49%	YES	*	2.84%
47	N-Nitrosomorpholine	2	SD1-EF-A	8.86E-06	0.001	1.48%	YES		2.84%
47	N-Nitrosomorpholine	4	SD1-EF-B	8.82E-06	0.001	1.47%	YES		2.84%
47	N-Nitrosomorpholine	6	SD1-EF-C	8.77E-06	0.001	1.46%	YES		2.84%
47	N-Nitrosomorpholine	8	SD1-EF-D	8.75E-06	0.001	1.46%	YES		2.84%
47	N-Nitrosomorpholine	10	SD1-EF-E	8.75E-06	0.001	1.46%	YES		2.84%
47	N-Nitrosomorpholine	12	SD1-EF-F	8.90E-06	0.001	1.48%	YES		2.84%
47	N-Nitrosomorpholine	14	SD1-EF-G	8.77E-06	0.001	1.46%	YES		2.84%
47	N-Nitrosomorpholine	16	SD1-EF-H	8.82E-06	0.001	1.47%	YES		2.84%
47	N-Nitrosomorpholine	2	SC1-IN-A	1.99E-05	0.001	3.31%			2.84%
47	N-Nitrosomorpholine	4	SC1-IN-B	2.24E-05	0.001	3.74%		X	2.84%
47	N-Nitrosomorpholine	6	SC1-IN-C	1.98E-05	0.001	3.30%		X	2.84%
47	N-Nitrosomorpholine	8	SC1-IN-D	9.80E-06	0.001	1.63%		X	2.84%
47	N-Nitrosomorpholine	10	SC1-IN-E	8.72E-06	0.001	1.45%	YES		2.84%
47	N-Nitrosomorpholine	12	SC1-IN-F	8.70E-06	0.001	1.45%	YES		2.84%
47	N-Nitrosomorpholine	14	SC1-IN-G	8.69E-06	0.001	1.45%	YES		2.84%
47	N-Nitrosomorpholine	16	SC1-IN-H	8.22E-06	0.001	1.37%	YES		2.84%
47	N-Nitrosomorpholine	2	SC1-EF-A	8.41E-06	0.001	1.40%	YES		2.84%
47	N-Nitrosomorpholine	4	SC1-EF-B	8.95E-06	0.001	1.49%	YES		2.84%
47	N-Nitrosomorpholine	6	SC1-EF-C	8.62E-06	0.001	1.44%	YES		2.84%
47	N-Nitrosomorpholine	8	SC1-EF-D	1.70E-05	0.001	2.84%	YES		2.84%
47	N-Nitrosomorpholine	10	SC1-EF-E	8.25E-06	0.001	1.37%	YES		2.84%
47	N-Nitrosomorpholine	12	SC1-EF-F	8.30E-06	0.001	1.38%	YES		2.84%
47	N-Nitrosomorpholine	14	SC1-EF-G	8.27E-06	0.001	1.38%	YES		2.84%
47	N-Nitrosomorpholine	16	SC1-EF-H	8.32E-06	0.001	1.39%	YES		2.84%
48	Tributyl phosphate	2	SD1-IN-A	1.3E-04	0.20	0.066%	YES	U	0.0870%
48	Tributyl phosphate	4	SD1-IN-B	1.3E-04	0.20	0.066%	YES	U	0.0870%
48	Tributyl phosphate	6	SD1-IN-C	1.2E-04	0.20	0.062%	YES	U	0.0870%
48	Tributyl phosphate	8	SD1-IN-D		0.20				0.0870%
48	Tributyl phosphate	10	SD1-IN-E	1.3E-04	0.20	0.067%	YES	U	0.0870%
48	Tributyl phosphate	12	SD1-IN-F	1.4E-04	0.20	0.070%	YES	U, S*	0.0870%
48	Tributyl phosphate	14	SD1-IN-G	1.4E-04	0.20	0.072%	YES	U	0.0870%
48	Tributyl phosphate	16	SD1-IN-H	1.4E-04	0.20	0.070%	YES	U	0.0870%
48	Tributyl phosphate	2	SD1-EF-A		0.20				0.0870%
48	Tributyl phosphate	4	SD1-EF-B	1.2E-04	0.20	0.062%	YES	U	0.0870%
48	Tributyl phosphate	6	SD1-EF-C	1.3E-04	0.20	0.067%	YES	U	0.0870%
48	Tributyl phosphate	8	SD1-EF-D	1.3E-04	0.20	0.064%	YES	U	0.0870%
48	Tributyl phosphate	10	SD1-EF-E		0.20				0.0870%
48	Tributyl phosphate	12	SD1-EF-F	1.3E-04	0.20	0.067%	YES	U	0.0870%
48	Tributyl phosphate	14	SD1-EF-G	1.3E-04	0.20	0.067%	YES	UY	0.0870%
48	Tributyl phosphate	16	SD1-EF-H	1.3E-04	0.20	0.065%	YES	U	0.0870%
48	Tributyl phosphate	2	SC1-IN-A	1.3E-04	0.20	0.064%	YES	U	0.0870%
48	Tributyl phosphate	4	SC1-IN-B	1.3E-04	0.20	0.067%	YES	U	0.0870%
48	Tributyl phosphate	6	SC1-IN-C	1.3E-04	0.20	0.065%	YES	U	0.0870%
48	Tributyl phosphate	8	SC1-IN-D	1.3E-04	0.20	0.064%	YES	U	0.0870%
48	Tributyl phosphate	10	SC1-IN-E	1.3E-04	0.20	0.064%	YES	U	0.0870%
48	Tributyl phosphate	12	SC1-IN-F	1.2E-04	0.20	0.061%	YES		0.0870%
48	Tributyl phosphate	14	SC1-IN-G	1.2E-04	0.20	0.061%	YES	U	0.0870%
48	Tributyl phosphate	16	SC1-IN-H	1.2E-04	0.20	0.058%	YES	U	0.0870%
48	Tributyl phosphate	2	SC1-EF-A	1.7E-04	0.20	0.087%	YES	U, S*	0.0870%
48	Tributyl phosphate	4	SC1-EF-B	1.7E-04	0.20	0.086%	YES	U, S*	0.0870%
48	Tributyl phosphate	6	SC1-EF-C	1.2E-04	0.20	0.061%	YES	U	0.0870%
48	Tributyl phosphate	8	SC1-EF-D	1.3E-04	0.20	0.063%	YES	U	0.0870%
48	Tributyl phosphate	10	SC1-EF-E	1.2E-04	0.20	0.061%	YES	U	0.0870%
48	Tributyl phosphate	12	SC1-EF-F	1.2E-04	0.20	0.061%	YES	U, S*	0.0870%
48	Tributyl phosphate	14	SC1-EF-G	1.3E-04	0.20	0.064%	YES	U	0.0870%
48	Tributyl phosphate	16	SC1-EF-H	1.2E-04	0.20	0.061%	YES	U	0.0870%
49	Dibutyl butylphosphonate	2	SD1-IN-A	9.0E-05	0.007	1.28%	YES	U	1.70%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
49	Dibutyl butylphosphonate	4	SD1-IN-B	9.0E-05	0.007	1.29%	YES	U	1.70%
49	Dibutyl butylphosphonate	6	SD1-IN-C	8.5E-05	0.007	1.22%	YES	U	1.70%
49	Dibutyl butylphosphonate	8	SD1-IN-D		0.007				1.70%
49	Dibutyl butylphosphonate	10	SD1-IN-E	9.2E-05	0.007	1.31%	YES	U	1.70%
49	Dibutyl butylphosphonate	12	SD1-IN-F	9.6E-05	0.007	1.37%	YES	U, S*	1.70%
49	Dibutyl butylphosphonate	14	SD1-IN-G	9.8E-05	0.007	1.40%	YES	U	1.70%
49	Dibutyl butylphosphonate	16	SD1-IN-H	9.6E-05	0.007	1.37%	YES	U	1.70%
49	Dibutyl butylphosphonate	2	SD1-EF-A		0.007				1.70%
49	Dibutyl butylphosphonate	4	SD1-EF-B	8.4E-05	0.007	1.20%	YES	U	1.70%
49	Dibutyl butylphosphonate	6	SD1-EF-C	9.2E-05	0.007	1.31%	YES	U	1.70%
49	Dibutyl butylphosphonate	8	SD1-EF-D	8.8E-05	0.007	1.25%	YES	U	1.70%
49	Dibutyl butylphosphonate	10	SD1-EF-E		0.007				1.70%
49	Dibutyl butylphosphonate	12	SD1-EF-F	9.2E-05	0.007	1.31%	YES	U	1.70%
49	Dibutyl butylphosphonate	14	SD1-EF-G	9.2E-05	0.007	1.32%	YES	UY	1.70%
49	Dibutyl butylphosphonate	16	SD1-EF-H	8.9E-05	0.007	1.27%	YES	U	1.70%
49	Dibutyl butylphosphonate	2	SC1-IN-A	8.8E-05	0.007	1.26%	YES	U	1.70%
49	Dibutyl butylphosphonate	4	SC1-IN-B	9.1E-05	0.007	1.31%	YES	U	1.70%
49	Dibutyl butylphosphonate	6	SC1-IN-C	8.8E-05	0.007	1.26%	YES	U	1.70%
49	Dibutyl butylphosphonate	8	SC1-IN-D	8.8E-05	0.007	1.25%	YES	U	1.70%
49	Dibutyl butylphosphonate	10	SC1-IN-E	8.8E-05	0.007	1.25%	YES	U	1.70%
49	Dibutyl butylphosphonate	12	SC1-IN-F	8.4E-05	0.007	1.19%	YES		1.70%
49	Dibutyl butylphosphonate	14	SC1-IN-G	8.4E-05	0.007	1.19%	YES	U	1.70%
49	Dibutyl butylphosphonate	16	SC1-IN-H	7.9E-05	0.007	1.12%	YES	U	1.70%
49	Dibutyl butylphosphonate	2	SC1-EF-A	1.2E-04	0.007	1.70%	YES	U, S*	1.70%
49	Dibutyl butylphosphonate	4	SC1-EF-B	1.2E-04	0.007	1.68%	YES	U, S*	1.70%
49	Dibutyl butylphosphonate	6	SC1-EF-C	8.3E-05	0.007	1.19%	YES	U	1.70%
49	Dibutyl butylphosphonate	8	SC1-EF-D	8.6E-05	0.007	1.23%	YES	U	1.70%
49	Dibutyl butylphosphonate	10	SC1-EF-E	8.4E-05	0.007	1.19%	YES	U	1.70%
49	Dibutyl butylphosphonate	12	SC1-EF-F	8.3E-05	0.007	1.19%	YES	U, S*	1.70%
49	Dibutyl butylphosphonate	14	SC1-EF-G	8.8E-05	0.007	1.26%	YES	U	1.70%
49	Dibutyl butylphosphonate	16	SC1-EF-H	8.3E-05	0.007	1.18%	YES	U	1.70%
52	Pyridine	2	SD1-IN-A	7.1E-04	1.0	0.071%		J	0.0232%
52	Pyridine	4	SD1-IN-B	9.4E-04	1.0	0.094%		J	0.0232%
52	Pyridine	6	SD1-IN-C	1.0E-03	1.0	0.105%			0.0232%
52	Pyridine	8	SD1-IN-D	1.2E-03	1.0	0.119%			0.0232%
52	Pyridine	10	SD1-IN-E	6.6E-04	1.0	0.066%		J	0.0232%
52	Pyridine	12	SD1-IN-F	7.8E-04	1.0	0.078%		J	0.0232%
52	Pyridine	14	SD1-IN-G	7.4E-04	1.0	0.074%		J	0.0232%
52	Pyridine	16	SD1-IN-H	7.3E-04	1.0	0.073%		J	0.0232%
52	Pyridine	2	SD1-EF-A	2.1E-04	1.0	0.021%	YES	U	0.0232%
52	Pyridine	4	SD1-EF-B	2.1E-04	1.0	0.021%	YES	U	0.0232%
52	Pyridine	6	SD1-EF-C	2.2E-04	1.0	0.022%	YES	U	0.0232%
52	Pyridine	8	SD1-EF-D	2.2E-04	1.0	0.022%	YES	U	0.0232%
52	Pyridine	10	SD1-EF-E	2.3E-04	1.0	0.023%	YES	U	0.0232%
52	Pyridine	12	SD1-EF-F	2.2E-04	1.0	0.022%	YES	U	0.0232%
52	Pyridine	14	SD1-EF-G	2.3E-04	1.0	0.023%	YES	U	0.0232%
52	Pyridine	16	SD1-EF-H	2.3E-04	1.0	0.023%	YES	U	0.0232%
52	Pyridine	2	SC1-IN-A	7.3E-04	1.0	0.073%		J	0.0232%
52	Pyridine	4	SC1-IN-B	1.4E-03	1.0	0.143%			0.0232%
52	Pyridine	6	SC1-IN-C	7.1E-04	1.0	0.071%		J	0.0232%
52	Pyridine	8	SC1-IN-D	8.1E-04	1.0	0.081%		J	0.0232%
52	Pyridine	10	SC1-IN-E	7.3E-04	1.0	0.073%		J	0.0232%
52	Pyridine	12	SC1-IN-F	9.0E-04	1.0	0.090%			0.0232%
52	Pyridine	14	SC1-IN-G	4.7E-04	1.0	0.047%		J	0.0232%
52	Pyridine	16	SC1-IN-H	3.9E-04	1.0	0.039%		J	0.0232%
52	Pyridine	2	SC1-EF-A	2.2E-04	1.0	0.022%	YES	U	0.0232%
52	Pyridine	4	SC1-EF-B	2.3E-04	1.0	0.023%	YES	U	0.0232%
52	Pyridine	6	SC1-EF-C	2.3E-04	1.0	0.023%	YES	U	0.0232%
52	Pyridine	8	SC1-EF-D	2.2E-04	1.0	0.022%	YES	U	0.0232%
52	Pyridine	10	SC1-EF-E	2.1E-04	1.0	0.021%	YES	U	0.0232%
52	Pyridine	12	SC1-EF-F	2.1E-04	1.0	0.021%	YES	U	0.0232%
52	Pyridine	14	SC1-EF-G	2.1E-04	1.0	0.021%	YES	U	0.0232%
52	Pyridine	16	SC1-EF-H	2.0E-04	1.0	0.020%	YES	U	0.0232%
53	2,4-Dimethylpyridine	2	SD1-IN-A	2.44E-04	0.50	0.049%	YES	U	0.0502%
53	2,4-Dimethylpyridine	4	SD1-IN-B	2.36E-04	0.50	0.047%	YES	U	0.0502%
53	2,4-Dimethylpyridine	6	SD1-IN-C	2.44E-04	0.50	0.049%	YES	U	0.0502%

COPC #	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Fraction of OEL	Measurement < DL|RL?	Quality Code	Approx. DL|RL (%OEL)
53	2,4-Dimethylpyridine	8	SD1-IN-D	2.41E-04	0.50	0.048%	YES	U	0.0502%
53	2,4-Dimethylpyridine	10	SD1-IN-E	2.36E-04	0.50	0.047%	YES	U	0.0502%
53	2,4-Dimethylpyridine	12	SD1-IN-F	2.38E-04	0.50	0.048%	YES	U	0.0502%
53	2,4-Dimethylpyridine	14	SD1-IN-G	2.36E-04	0.50	0.047%	YES	U	0.0502%
53	2,4-Dimethylpyridine	16	SD1-IN-H	2.33E-04	0.50	0.047%	YES	U	0.0502%
53	2,4-Dimethylpyridine	2	SD1-EF-A	2.27E-04	0.50	0.045%	YES	U	0.0502%
53	2,4-Dimethylpyridine	4	SD1-EF-B	2.27E-04	0.50	0.045%	YES	U	0.0502%
53	2,4-Dimethylpyridine	6	SD1-EF-C	2.34E-04	0.50	0.047%	YES	U	0.0502%
53	2,4-Dimethylpyridine	8	SD1-EF-D	2.39E-04	0.50	0.048%	YES	U	0.0502%
53	2,4-Dimethylpyridine	10	SD1-EF-E	2.49E-04	0.50	0.050%	YES	U	0.0502%
53	2,4-Dimethylpyridine	12	SD1-EF-F	2.42E-04	0.50	0.048%	YES	U	0.0502%
53	2,4-Dimethylpyridine	14	SD1-EF-G	2.49E-04	0.50	0.050%	YES	U	0.0502%
53	2,4-Dimethylpyridine	16	SD1-EF-H	2.51E-04	0.50	0.050%	YES	U	0.0502%
53	2,4-Dimethylpyridine	2	SC1-IN-A	3.76E-04	0.50	0.075%		J	0.0502%
53	2,4-Dimethylpyridine	4	SC1-IN-B	2.92E-04	0.50	0.058%		J	0.0502%
53	2,4-Dimethylpyridine	6	SC1-IN-C	2.44E-04	0.50	0.049%	YES	U	0.0502%
53	2,4-Dimethylpyridine	8	SC1-IN-D	2.46E-04	0.50	0.049%	YES	U	0.0502%
53	2,4-Dimethylpyridine	10	SC1-IN-E	2.26E-04	0.50	0.045%	YES	U	0.0502%
53	2,4-Dimethylpyridine	12	SC1-IN-F	2.44E-04	0.50	0.049%		J	0.0502%
53	2,4-Dimethylpyridine	14	SC1-IN-G	2.28E-04	0.50	0.046%	YES	U	0.0502%
53	2,4-Dimethylpyridine	16	SC1-IN-H	2.11E-04	0.50	0.042%	YES	U	0.0502%
53	2,4-Dimethylpyridine	2	SC1-EF-A	2.41E-04	0.50	0.048%	YES	U	0.0502%
53	2,4-Dimethylpyridine	4	SC1-EF-B	2.47E-04	0.50	0.049%	YES	U	0.0502%
53	2,4-Dimethylpyridine	6	SC1-EF-C	2.47E-04	0.50	0.049%	YES	U	0.0502%
53	2,4-Dimethylpyridine	8	SC1-EF-D	2.39E-04	0.50	0.048%	YES	U	0.0502%
53	2,4-Dimethylpyridine	10	SC1-EF-E	2.24E-04	0.50	0.045%	YES	U	0.0502%
53	2,4-Dimethylpyridine	12	SC1-EF-F	2.22E-04	0.50	0.044%	YES	U	0.0502%
53	2,4-Dimethylpyridine	14	SC1-EF-G	2.23E-04	0.50	0.045%	YES	U	0.0502%
53	2,4-Dimethylpyridine	16	SC1-EF-H	2.11E-04	0.50	0.042%	YES	U	0.0502%

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

Methanol *(see Figure E.1)* – The detection limit (DL) for methanol corresponds to ~0.129% of the Occupational Exposure Limit (OEL). All inlet concentrations measured throughout the testing period for both cartridges were scattered and are higher than the analytical DL, but <10% of the OEL. Prior tank tests did not include methanol so it is unknown whether the observed scatter in concentration values are due to analytical variations or tank conditions. All outlet concentrations were <10% of the OEL, indicating no evidence of breakthrough over the measured time period for either cartridge tested.

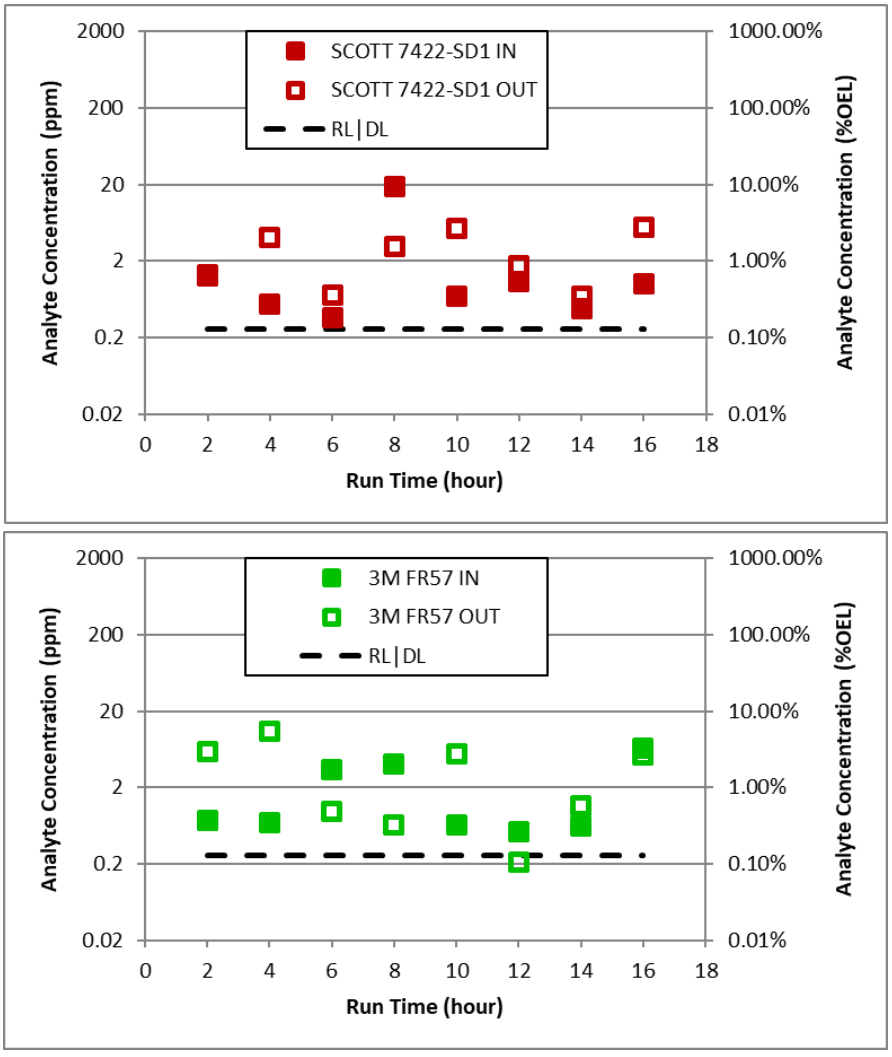

Figure E.1. Plot of Measured Methanol Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL. Outlet data points not visible are obscured by the inlet data points.

Formaldehyde *(see Figure E.2)* – The DL for formaldehyde corresponds to ~0.6% of its OEL. All inlet and outlet values measured for both respirator cartridges were <10% of the OEL, and specifically <2.0% of the OEL, except for the last outlet sample from SCOTT 7422-SD1 that was 2.1% of the OEL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

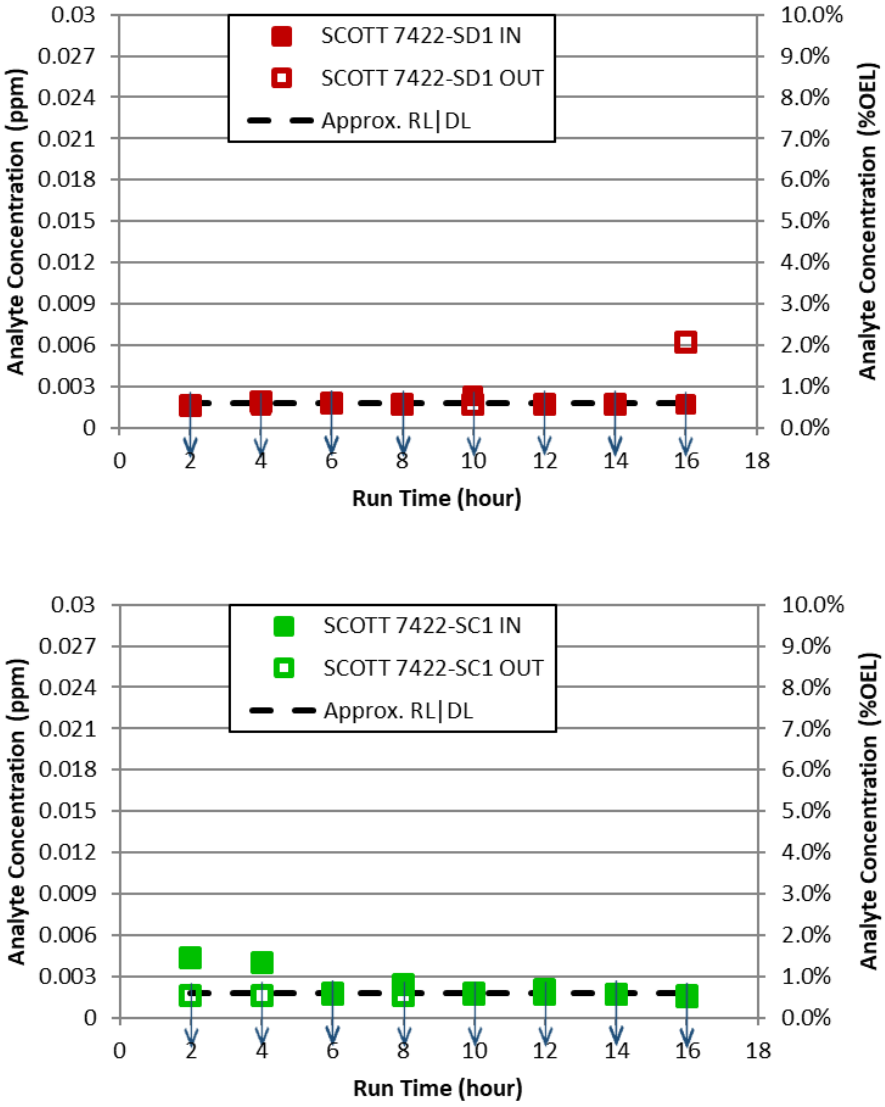

Figure E.2. Plot of Measured Formaldehyde Concentrations before the Inlets and after the Outlets of the two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL. Outlet data points not visible are obscured by the inlet data points.

Furan and Substituted Furans. Eight furan COPCs are measured and quantified during cartridge testing using calibration standards and two different sorbent tube methods. The volatile organic analyte Carbotrap 300 TDU tube is used to sample three of the lower boiling point calibrated furans including furan, 2,5-dihydrofuran, and 2-methylfuran. The Furans TENAX TA TDU tube is used to sample the remaining non-Tentatively Identified Compound substituted furans, including 2,3-dihydrofuran, 2,5-dimethylfuran, 2-heptylfuran, and 2-propylfuran. The DLs for all eight furan COPCs were >2% of the OEL. In the 702-AZ primary exhauster, concentrations of furan, 2,3-dihydrofuran, and 2-methylfuran were measured above the DLs and >10% of the OELs. These results were discussed in Section 5.2. Only 2-pentylfuran was measured in at least one inlet or outlet sample at concentrations above the DL, and those results are described and plotted below. For the other four COPCs, 2,5-dihydrofuran, 2,5-dimethylfuran, 2-heptylfuran, and 2-propylfuran, all measured inlet and outlet concentrations from cartridge testing were less than the DLs and the reporting limits (RL), and were, therefore, not plotted here. The specific DL and RL values for each COPC are identified in Tables 1 and 2, and DL values range from ~1.5–3.5% of the OELs for those substituted furans measured using the TENAX TA sorbent tube, and from ~10 to 21% of OEL for furan and substituted furans measured using the Carbotrap 300 sorbent tube.

2-Pentylfuran *(see Figure E.3)* – The DL for 2-pentylfuran corresponds to ~2.9% of its OEL, and the RL corresponds to ~10% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than the RL, <10% of the OEL, and specifically <6.8% of the OEL. All outlet measurements were less than or equal to analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

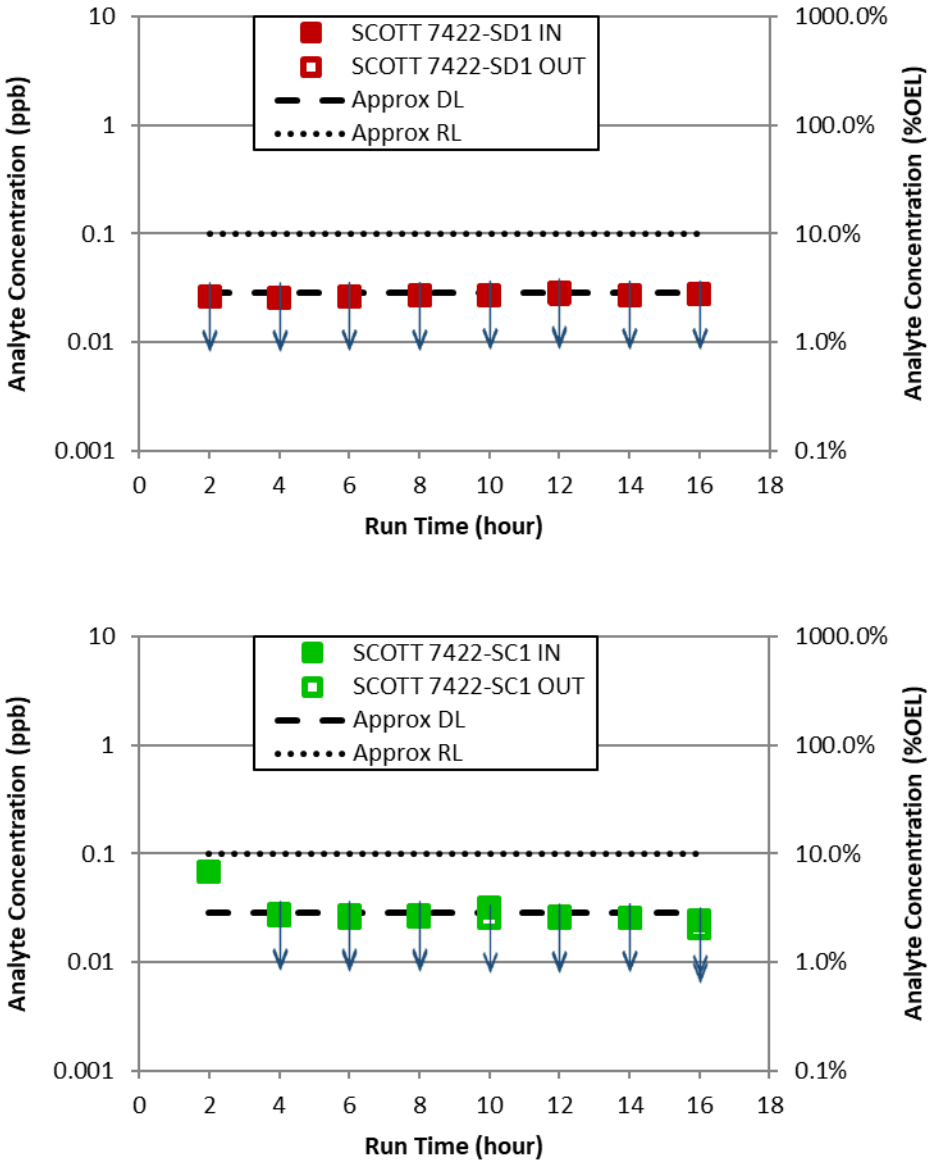

Figure E.3. Plot of Measured 2-Pentylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL. Outlet data points not visible are obscured by the inlet data points.

Acetonitrile (*see Figure E.4)* – The DL for acetonitrile corresponds to ~0.001% of its OEL. Inlet acetonitrile concentrations for both cartridges were greater than the DL but <10% of the OEL, specifically <2.8% of the OEL. Based in the data collected there is no evidence of breakthrough for either cartridge.

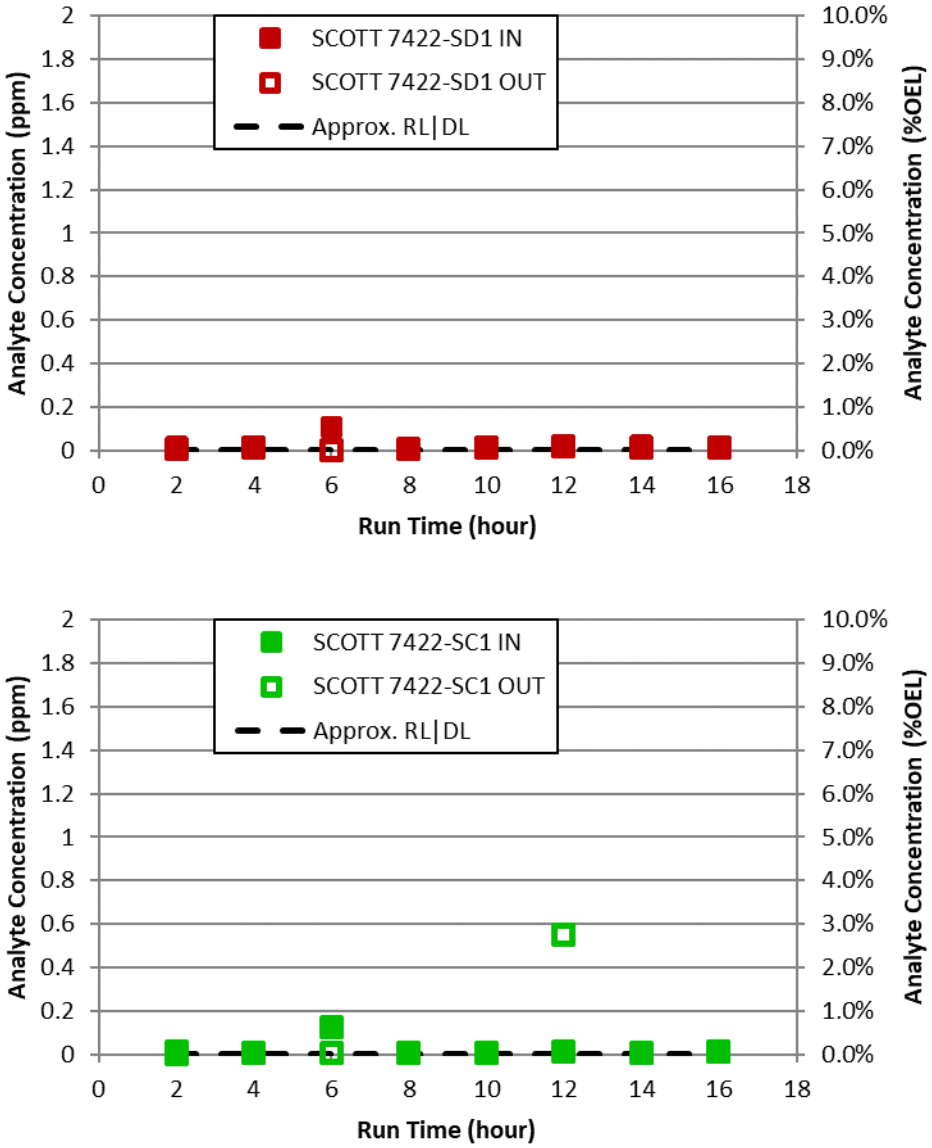

Figure E.4. Plot of Measured Acetonitrile Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL. Outlet data points not visible are obscured by the inlet data points.

N-nitrosomorpholine (*see Figure E.5****)*** – The DL for N-nitrosomorpholine corresponds to ~2.8% of its OEL. The inlet N-nitrosomorpholine concentrations measured for the SCOTT 7422-SD1 cartridge were relatively constant but lower than that for the SCOTT 7422-SC1. The higher initial inlet concentrations for SCOTT 7422-SC1 early in the test could be associated with the waste-disturbing event. The decline in inlet concentrations appears to correlate with the end of the waste transfer into AY-101. The respirator cartridge inlet N-nitrosomorpholine concentrations for both cartridges were <10% of the OEL, specifically <3.7% of the OEL. All outlet concentrations were less than or equal to analytical RL, indicating no breakthrough for either cartridge.

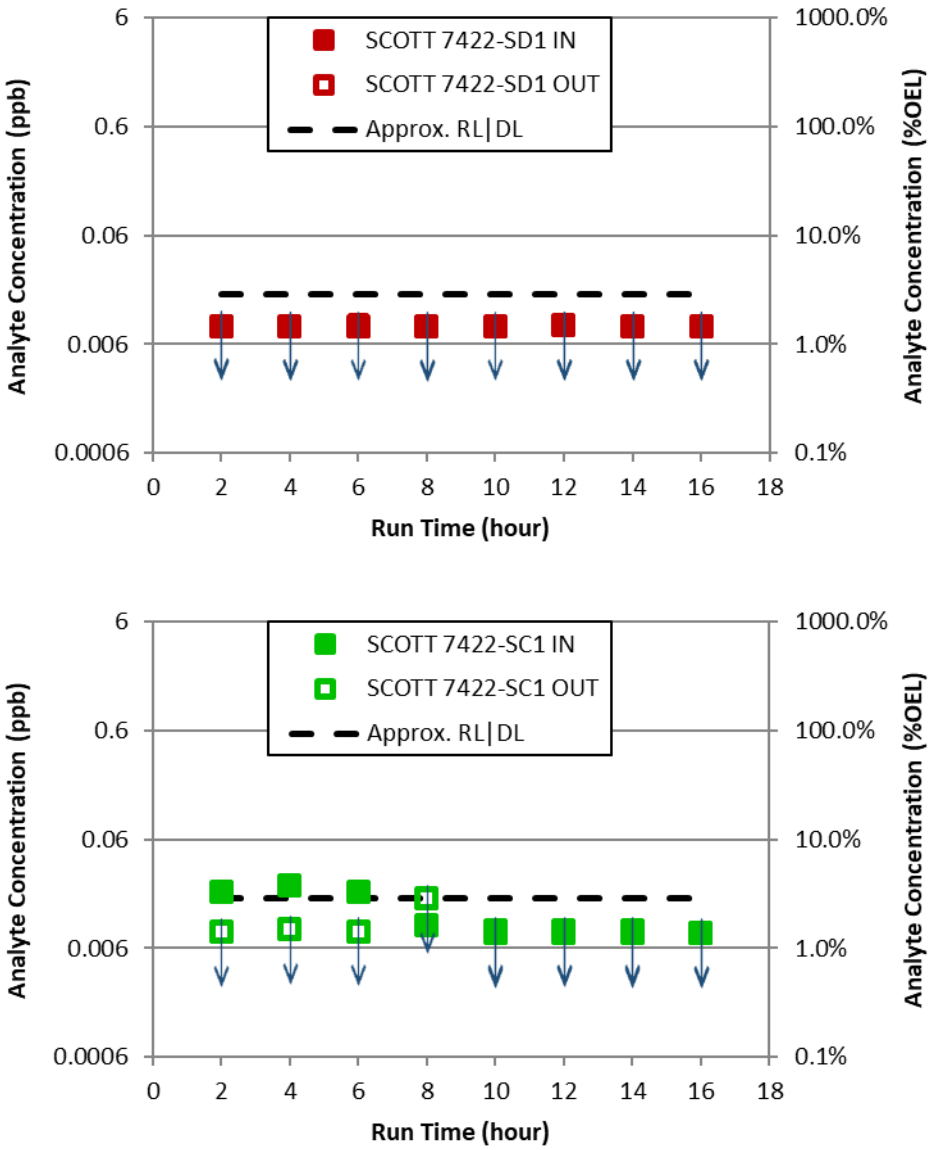

Figure E.5. Plot of Measured N-nitrosomorpholine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL. Outlet data points not visible are obscured by the inlet data points.

Appendix F

Historical Data Comparison

Appendix F

Historical Data Comparison

F.1 Data Sources

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 the 702-AZ exhaust were obtained via a TWINS query on June 20, 2016, for TWINS HS,[13] and another query on December 21, 2016, for TWINS IH. More recent headspace data also were obtained from the Site-Wide Industrial Hygiene Database (SWIHD) by a query on December 21, 2016. That query obtained all headspace data present as of that date, and the resulting data are 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 for which the 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

[13] 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/m^3 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, 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 702-AZ Stack, only exhaust measurements were appropriate. The TWINS HS database contained data identified as having the location "AY/AZ Vent Sys", which were included as part of this analysis. The SWIHD HS database contained no data for the 702-AZ stack. The TWINS IH database required sorting, as described below, so that only exhaust data were used.

The 702-AZ Farm data in the TWINS IH database gave 702-AZ as the farm and listed several different locations: "Stack," "Primary Stack," "Ventilation System," and "Building." Of these, data from the first three locations were used in analysis, but data with a "Building" location were not used. The unused data were from survey 13-01781, which was titled "AY Recirc Stack Baseline."

Maximum and average[14] exhaust concentrations were found for each analyte for the combined TWINS IH and SWIHD HS databases.[15] These maxima and averages are given in Table F.1,[16] 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 to be not as 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. When this was the case, the 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 italics. The two criteria for tabulating this extra information were 1) that at least one concentration for the chemical exceeded the OEL and 2) that there was a significant difference between the value obtained from the two-database combination and that from the three-database combination. The significant difference could be either that there were data for the three-database set but no data for the two-database set (i.e., data only in TWINS HS), or that there was a 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.

[14] Arithmetic average.

[15] Because the SWIHD HS database contained no stack data, TWINS IH data were the only concentrations present in the two-database combination.

[16] All %OEL values were calculated from concentration data that had been rounded to a minimum of three significant figures.

Because the reporting limits on concentrations in the historical database were generally higher than the reporting limits or detection limits in the cartridge tests, it was necessary to analyze data in a way that would let the effect of < 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 702-AZ Exhauster Measurements

	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point (°C)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]				Measurements in this study			
							Number of Values	Maximum Value (in OEL units)	Average Value (in OEL units)	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[12] (%OEL)
Inorganic															
1	Ammonia	7664-41-7	-28	-33	Poling et al., 2007[2]	25 ppm	25	169	22.5	676%	90%	310%	245%	369%	2.46% (RL)
2	Nitrous Oxide	10024-97-2	-127	-88	Poling et al., 2007	50 ppm	1	<RL	<RL	<RL	<RL	Not Measured			
							3	<RL	<RL	<RL	<RL				
3	Mercury	7439-97-6	674	357	Poling et al., 2007	0.025 mg/m^3	24	0.117	0.0201	468%	80%	52.9%	42.1%	28.3%	7.01% (RL)
Hydrocarbons															
4	1,3-Butadiene	106-99-0	24	-5	Poling et al., 2007	1 ppm	34	0.109	0.0374*	11%	3.7%*	<RL	<RL	<RL	1.96% (RL)
5	Benzene	71-43-2	176	80	Poling et al., 2007	0.5 ppm	25	<RL	0.00418	<RL	0.84%	1.80%	1.17%	0.07%	0.025%
6	Biphenyl	92-52-4	491	255	Poling et al., 2007	0.2 ppm	17	<RL	<RL	<RL	<RL	<DL	<DL	<DL	0.11%
Alcohols															
7	1-Butanol	71-36-3	243	117	NIOSH[3]	20 ppm	22	0.107	0.0268	0.54%	0.13%	0.35%	0.26%	0.008%	0.002%
8	Methanol	67-56-1	148	65	Poling et al., 2007	200 ppm	17	<RL	1.06*	<RL	0.53%*	9.35%	1.29%	5.45%	0.129%
Ketones															
9	2-Hexanone	591-78-6	262	128	NIOSH	5 ppm	25	<RL	0.00316*	<RL	0.06%*	0.12%	0.08%	<DL	0.003%
10	3-Methyl-3-butene-2-one	814-78-8	208	98	CRC Handbook 1989[4]	0.02 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC[11]			
11	4-Methyl-2-hexanone	105-42-0	282	139	Predicted ACD/Labs[5]	0.5 ppm	9	<RL	<RL	<RL	<RL	0.09%	0.06%	<DL	0.030%
12	6-Methyl-2-heptanone	928-68-7	333	167	Predicted ACD/Labs	8 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
13	3-Buten-2-one	78-94-4	179	81	CRC Handbook 1989	0.2 ppm	20	<RL	0.00246	<RL	1.2%	0.10%	<DL	1.21%	0.088%
Aldehydes															
14	Formaldehyde	50-00-0	-6	-21	NIOSH	0.3 ppm	27	<RL	0.0177*	<RL	5.9%*	1.44%	0.70%	2.06%	0.59% (RL)
15	Acetaldehyde	75-07-0	69	21	NIOSH	25 ppm	19	<RL	0.078*	<RL	0.31%*	0.27%	0.31%	0.27%	0.005% (RL)
16	Butanal	123-72-8	167	75	Oxford safety data[6]	25 ppm	37	<RL	0.0228*	<RL	0.09%*	0.01%	0.007%	<DL	0.001%
17	2-Methyl-2-butenal	1115-11-3	244	118	United Nations[7]	0.03 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC[11]			
18	2-Ethyl-hex-2-enal	645-62-5	347	175	Predicted ACD/Labs	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
New[15]	2-Propenal	107-02-8	127	53	NIOSH	0.1 ppm						<DL	<DL	<DL	0.97%

Table F.1. (continued)

	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point (°C)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]					Measurements in this study			
							Number of Values	Maximum Value (in OEL units)	Average Value (in OEL units)	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[12] (%OEL)
Furans															
19	Furan	110-00-9	88	31	Poling et al., 2007	1 ppb	27	<RL	631*	<RL	631%*	2995%	1367%	88.10%	DL | RL[12] 15.2% | 116%[13]
20	2,3-Dihydrofuran	1191-99-7	130	55	Alfa Aesar[8]	1 ppb	17	<RL	0.14	<RL	14%	16.80%	5.48%	<DL	1.45% | 19.8%
21	2,5-Dihydrofuran	1708-29-8	152	67	Aldrich[9]	1 ppb	26	<RL	<RL	<RL	<RL	20.2%	<DL	<DL	20.6% | 112%[13]
22	2-Methylfuran	534-22-5	147	64	Oxford safety data	1 ppb	26	<RL	<RL	<RL	<RL	13.8%	11.1%	<DL	10.4% | 95.8%[13]
23	2,5-Dimethylfuran	625-86-5	199	93	Alfa Aesar	1 ppb	16	<RL	<RL	<RL	<RL	3.49%	<DL	<DL	3.49% | 14.4%
24	2-Ethyl-5-methylfuran	1703-52-2	246	119	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
25	4-(1-Methylpropyl)-2,3-dihydrofuran	34379-54-9	328	165	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
26	3-(1,1-Dimethylethyl)-2,3-dihydrofuran	34314-82-4	306	152	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
27	2-Pentylfuran	3777-69-3	333	167	Alfa Aesar	1 ppb	16	<RL	<RL	<RL	<RL	6.80%	2.96%	<DL	2.87% | 10.0%
28	2-Heptylfuran	3777-71-7	410	210	Alfa Aesar	1 ppb	16	<RL	<RL	<RL	<RL	<DL	<DL	<DL	2.32% | 8.35%
29	2-Propylfuran	4229-91-8	231	111	Alfa Aesar	1 ppb	16	<RL	<RL	<RL	<RL	<DL	<DL	<DL	2.52% | 12.6%
30	2-Octylfuran	4179-38-8	452	233	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
31	2-(3-Oxo-3-phenylprop-1-enyl)furan	717-21-5	605	318	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
32	2-(2-Methyl-6-oxoheptyl)furan	51595-87-0	Not available	Not available	Not available	1 ppb	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Phthalates															
33	Diethylphthalate	84-66-2	563	295	NIOSH	5 mg/m^3	16	<RL	0.0049	<RL	0.10%	<DL	<DL	<DL	0.048%

Table F.1. (continued)

COPC Number and Name		CAS Number	Boiling Point (°F)	Boiling Point (°C)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]					Measurements in this study			
							Number of Values	Maximum Value (in OEL units)	Average Value (in OEL units)	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[12] (%OEL)
Nitriles															
34	Acetonitrile	75-05-8	179	82	NIOSH	20 ppm	23	0.551	0.11	2.8%	0.55%	0.61%	0.14%	2.75%	0.001%
35	Propanenitrile	107-12-0	207	97	NIOSH	6 ppm	21	<RL	0.00433*	<RL	0.07%*	0.032%	0.007%	0.005%	0.004%
36	Butanenitrile	109-74-0	244	118	NIOSH	8 ppm	20	<RL	0.00486*	<RL	0.06%*	0.02%	0.013%	0.002%	0.002%
37	Pentanenitrile	110-59-8	284	140	Alfa Aesar	6 ppm	20	<RL	<RL	<RL	<RL	0.009%	0.004%	<DL	0.003%
38	Hexanenitrile	628-73-9	328	165	Predicted ACD/Labs	6 ppm	20	<RL	<RL	<RL	<RL	0.004%	<DL	<DL	0.003%
39	Heptanenitrile	629-08-3	368	187	Alfa Aesar	6 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
40	2-Methylene butanenitrile	1647-11-6	Not available	Not available	Not available	0.3 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
41	2,4-Pentadienenitrile	1615-70-9	278	137	Predicted ACD/Labs	0.3 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Amines															
42	Ethylamine	75-04-7	62	17	Poling et al., 2007	5 ppm	20	<RL	<RL	<RL	<RL	0.40%	0.16%	0.14%	0.095% (RL)
Nitrosamines															
43	N-Nitrosodimethylamine	62-75-9	306	152	NIOSH	0.3 ppb	28	2.46	0.961	820%	320%	1578%	1280%	<RL	8.90% (RL)
44	N-Nitrosodiethylamine	55-18-5	351	177	Oxford safety data	0.1 ppb	27	<RL	0.0858	<RL	86%	398%	161%	<RL	19.4% (RL)
45	N-Nitrosomethylethylamine	10595-95-6	310	154	Predicted ACD/Labs	0.3 ppb	28	<RL	0.0978*	<RL	33%*	26.1%	18.4%	<RL	8.23% (RL)
46	N-Nitrosomorpholine	59-89-2	435	224	Oxford safety data	0.6 ppb	27	<RL	0.0749*	<RL	12%*	3.74%	<RL	<RL	2.84% (RL)
Organophosphates															
47	Tributyl phosphate	126-73-8	552	289	NIOSH	0.2 ppm	17	<RL	<RL	<RL	<RL	<DL	<DL	<DL	0.087%
48	Dibutyl butylphosphonate	78-46-6	602	317	Predicted ACD/Labs	0.007 ppm	17	<RL	<RL	<RL	<RL	<DL	<DL	<DL	1.70%
Halogenated															
49	Chlorinated Biphenyls	Varies	Varies	Varies	Varies	1 mg/m^3	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
50	2-Fluoropropene	1184-60-7	-11	-24	SynQuest[10]	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			

Table F.1. (continued)

	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point (°C)	Boiling Point Source	Occupational Exposure Limit (OEL)	Historical Measurements[1]					Measurements in this study			
							Number of Values	Maximum Value (in OEL units)	Average Value (in OEL units)	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL[12] (%OEL)
Pyridines															
51	Pyridine	110-86-1	240	116	NIOSH	1 ppm	26	<RL	0.0104*	<RL	1.0%*	0.14%	0.081%	<RL	0.023% (RL)
52	2,4-Dimethylpyridine	108-47-4	318	159	Alfa Aesar	0.5 ppm	26	<RL	<RL	<RL	<RL	0.075%	<RL	<RL	0.050% (RL)
Organonitrites															
53	Methyl nitrite	624-91-9	10	-12	Oxford safety data	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
54	Butyl nitrite	544-16-1	172	78	Alfa Aesar	0.1 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Organonitrates															
55	Butyl nitrate	928-45-0	276	135	Predicted ACD/Labs	2.5 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
56	1,4-Butanediol, dinitrate	3457-91-8	499	260	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
57	2-Nitro-2-methylpropane	594-70-7	260	127	Alfa Aesar	0.3 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
58	1,2,3-Propanetriol, 1,3-dinitrate	623-87-0	338	170	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	n/a	n/a	Not Detected - TIC			
Isocyanates															
59	Methyl Isocyanate	624-83-9	103	39	NIOSH	0.02 ppm	1	<RL	<RL	<RL	<RL	Not Detected - TIC			
Organometallic															
New[15]	Dimethylmercury	593-74-8	200	94	NIOSH	0.010 mg/m^3 (as Hg)	0	n/a	n/a	n/a	n/a	Not Measured			

[1] Historical data from TWINS industrial hygiene vapor database and SWIH database, as applicable; see text for links and dates of queries.

Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene, as applicable) were included. Italics, if present, mean that the pre-2006 TWINS headspace data were also included.

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

Values in parenthesis "( )", if present, indicate the maximum or average reported (detected) value >RL or >DL.

"!", if present, indicates a maximum RL that came from a sample with a volume less than 0.5 L or from a sample whose RL, for undiscernible reasons, was a factor of 5 or more high compared to other samples measured using the same analytical method.

"<RL", "<DL", or "<" indicates that all pertinent measurements of the analyte were less than the reporting or detection limit

[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] SynQuest: http://synquestlabs.com/product/id/8330.html

[11] TIC: Tentatively Identified Compounds that were not observed in this study using the specified analytical methods.

[12] 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. For Furans, both DL and RL values are reported as "DL / RL".

[13] Furans measured using VOA (Volatile Organic Analysis) method.

[14] TIC (see footnote 11) do not have analytical calibration standards or quantified detection limits. Mass and concentration are estimates only.

[15] 2-Propenal and Dimethyl Mercury were added to the COPC List in September, 2017.

F.2 702-AZ (2017 Tests): Comparison with Historical Data

The maximum and average COPC concentrations measured during cartridge testing were compared to the maximum and average historical concentrations, and where differences were found, the historical data were examined for explanations in the type or circumstances of sampling. Two sets of cartridge tests were carried out. In 2017, the cartridge tests were performed during a waste transfer.

Generally speaking, the AY and AZ Farm tanks with headspaces upstream of the 702-AZ stack have been active over the whole period of record. A number of waste transfers or exchanges have occurred between 2000, when TWINS HS data were taken, and February 10, 2017, when the 2017 cartridge testing began. These changes in waste contents have included receipts from SY-101, C-106, AN-106, and numerous interchanges within the A complex. Nearly 397,000 gallons of tank waste from 241-AP-103 were pumped into 241-AY-101, beginning on the evening of February 9, 2017, approximately 13 hours before SCOTT 7422-SD1 cartridge testing was initiated on February 10, 2017. The transfer ended on the evening of February 11, 2017, approximately 11 hours before the SCOTT 7422-SC1 cartridge testing was completed on the morning of February 12, 2017.

The larger discrepancies, or apparent discrepancies, between cartridge inlet and historical concentrations are discussed in the following sections. The 2017 cartridge-inlet maxima are compared only to historical maxima whether or not the samples were taken during disturbances such as waste transfers.

F.2.1 Ammonia

The maximum cartridge inlet concentration of 310% of the OEL in 2017 is low compared to the historical maximum concentration of 169 ppm (676% of the OEL). The overall maximum in historical data was measured on January 6, 2011, during a disturbance (an exhauster restart). The 2017 cartridge maximum is low by comparison to the historical maximum but is >20%[17] of this disturbance-affected historical maximum and, therefore, is not considered significantly different.[18]

F.2.2 Nitrous Oxide

Nitrous oxide was not measured in cartridge testing. There were two measurements in historical data on August 14, 2000, both below-reports with an RL of 50 ppm (<100% of the OEL), found in the TWINS HS database. One more below-report concentration TWINS IH was measured on June 16, 2005. This measurement had an RL of 1 ppm (2% of the OEL). The last preceding waste transfer had been on May 22, 2005, so the sample is considered to have been taken during non-disturbance conditions.

F.2.3 Mercury

The maximum cartridge inlet concentration of 52.9% of the OEL is low compared to the historical maximum concentration of 0.117 mg/m^3 (468% of the OEL).

[17] In Freeman et.al. [19], a 20% threshold was established for the comparison of historic to current concentrations to be considered as significant.

[18] This section uses the thresholds from Appendix C in Freeman et.al. [19]. Discrepancies are discussed if the maximum historical concentration of a compound was >10% of the OEL and the maximum cartridge inlet concentration was <50% of the historical value. However, discrepancies are considered significant only if the maximum historical concentration was >10% of the OEL and the maximum cartridge inlet concentration is <20% of the historical value.

This maximum in historical data, 468% of the OEL, was measured on August 14, 2013, during a waste-disturbing AY-101 recirculation activity. The Best Basis Inventory (BBI)[19] database shows no tank-to-tank transfer at or near this date. The 2017 cartridge-inlet maximum of 52.9% of the OEL is <20% of the historical maximum and is considered significantly different.

F.2.4 1,3-Butadiene

The maximum 2017 cartridge inlet concentrations was below the sample RL. The 2017 cartridge maximum was <1.95% of the OEL, which is low compared to the historical maximum concentration of 0.109 ppm (11% of the OEL) measured on September 8, 2015. The survey title did not indicate a disturbance; however, the BBI activity database shows the survey was made during a waste transfer from AZ-102 to AW-102 during September 4–9, 2015.

The 2017 cartridge-inlet maximum (<1.95% of the OEL) is compared to the known maximum over all the historical data (11%). Its RL, the upper bound of the concentration, is barely >20% of the historical maximum. The 2017 cartridge-inlet maximum is considered significantly lower than the historical data.

F.2.5 Formaldehyde

The maximum cartridge inlet concentrations of 1.44% of the OEL for 2017 is low compared to the historical maximum concentration, a below-report datum that had an RL of 0.069 ppm (<23% of the OEL). The maximum above-report concentration in historical data was 0.015 ppm (4.9% of the OEL). It was measured on December 17, 2006, with no disturbance indicated in the survey title. However, the BBI activity database shows the survey was made during a waste transfer from AY-102 to AN-106 on December 16–19, 2006.

The 2017 cartridge maximum is lower than the maximum above-report historical concentration. Because it is >20% of the above-report historical maximum, it is not considered to be significantly low.

F.2.6 Furan

The maximum cartridge inlet concentration measured by the Carbotrap 300 TDU method was 2995% of the OEL in 2017 (disturbed conditions). This was low compared to the historical maximum concentration, a below-report datum that had an RL of 145 ppb (<14,500% of the OEL). This historical maximum came from a December 17, 2006, Carbotrap 300 TDU sample in TWINS IH that had a volume of 0.35 L, which is a small volume compared to other 702-AZ samples in which furan was measured; this explains the high RL. The second highest RL was 10 ppb (<1000% of the OEL), and all other RLs were 4.3 ppb (<430% of the OEL), with many being less than 1 ppb (<100% of the OEL).

There was only one above-report furan concentration in the historical data (0.79 ppb, which is 79% of the OEL). It was measured on June 18, 2015, with a survey title that did not indicate disturbance. The BBI tank activity database shows no waste transfer or other waste disturbance in the AY/AZ farms for months before the sample was taken. The 2017 cartridge inlet maximum inlet concentration is greater than the single historical undisturbed above-report concentration and greater than most of the historical RL values.

[19] The BBI establishes the inventory of the underground waste storage tanks at Hanford by using sample data, process knowledge, surveillance data, and waste stream composition information from the Hanford Defined Waste (HDW) computer model (Agnew SF, J. Boyer, RA Corbin, TB Duran, JR FitzPatrick, KA Jurgensen, TP Ortiz, and BL Young. 1997. *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4*. LA-UR-96-3860, Los Alamos National Laboratory, Los Alamos, New Mexico).

F.2.7 2,3-Dihydrofuran

The maximum cartridge inlet concentration was 16.8% of the OEL. The historical maximum concentration was a below-report datum that had an RL of 0.356 ppb (<36% of the OEL). There was a single maximum above-report concentration of 0.228 ppb (23% of the OEL) that was measured on June 19, 2014, during an exhauster restart. The 2017 cartridge-inlet maximum, 16.8% of the OEL, was >50% of the historical above-report maximum and was not significantly different from the historical maximum.

F.2.8 2,5-Dihydrofuran, 2-Methylfuran

The maximum historical concentration comes from a below-report measurement made from the same 0.35 L Carbotrap 300 TDU sample (taken on December 17, 2006) that dominated the historical furan concentration. There are no above-report historical data for these chemicals so no conclusion can be drawn about where their cartridge inlet concentrations lie with respect to historical data.

F.2.9 2,5-Dimethylfuran, 2-Pentylfuran, 2-Heptylfuran, 2-Propylfuran

The maximum and average cartridge inlet concentrations appear to be low compared to the historical maximum concentrations, which in all cases are below-report data. There are no above-report historical data for these chemicals, so no conclusion can be drawn about where their cartridge inlet concentrations lie with respect to historical data.

F.2.10 N-nitrosodiethylamine

The maximum cartridge inlet concentration was 398% of the OEL in 2017 during waste disturbance. The historical maximum concentration was a below-report datum that had an RL of 0.209 ppb (<209% of the OEL). This value came from the TWINS IH database. It is not unusually high although many other historical below-reports in TWINS IH had RLs of 0.1 ppb (<100% of the OEL) or less. There was a single above-report concentration in historical data (0.066 ppm, which is 66% of the OEL), which was measured during an exhauster restart on June 19, 2014. The 2017 cartridge-inlet maximum was greater than the historical above-report maximum so it is not considered to be significantly different.

F.2.11 N-nitrosomethylethylamine

The maximum cartridge inlet concentration was 26.1% of the OEL in 2017 during waste disturbance. The historical maximum concentration was a below-report datum that had an RL of 0.242 ppb (<81% of the OEL). This historical RL was not unusually high in the TWINS IH database. There were six above-report concentrations in historical data, ranging from 0.020–0.031 ppb (7–10% of the OEL). Of these, the three highest were measured during exhauster restarts on June 19, 2014, (two measurements) and January 6, 2011. The three lower values were all about 0.02 ppb (7% of the OEL); at least one value was both labeled “baseline” in the survey title and was free of waste disturbance in the BBI tank activity database.

The 2017 cartridge inlet maximum exceeds the above-report historical maximum so it is not considered to be significantly different.

F.2.12 N-nitrosomorpholine

The maximum cartridge inlet concentration was 3.74% of the OEL (above the RL) in 2017. The cartridge maximum is low compared to the historical maximum concentration, a below-report datum that had an RL of 0.167 ppb (<28% of the OEL). This historical RL was not unusually high in TWINS IH. There was a single above-report concentration in the historical data (0.025 ppm, which is 4% of the OEL), which was measured during an exhauster restart on June 19, 2014. The 2017 cartridge maximum is about equal to the single above-report historical concentration, so there is no evidence of a significant different in concentration.

F.2.13 Dibutyl butylphosphonate (DBBP)

The maximum historical concentration comes from a below-report measurement made on the same 0.35 L Carbotrap 300 TDU sample (taken on December 17, 2006) that dominated the furan concentration data. There are no above-report historical data for this chemical so no conclusion can be drawn about where its cartridge inlet concentrations lie with respect to historical data.

F.2.14 Pyridine

The maximum cartridge inlet concentration in 2017was 0.14% of the OEL (an above-report datum). The concentration is low compared to the historical maximum concentration, a below-report datum that had an RL of 0.238 ppm (<24% of the OEL). The historical measurement came from a December 17, 2006, Carbotrap 300 TDU sample with a volume of 0.35 L, which is a small volume compared to other 702-AZ samples in which pyridine was measured; this explains the high RL. The second-highest RL was 0.00625 ppm (<0.6% of the OEL). The unusually high less than RL maximum accounts for the high average pyridine concentration as well. There were two above-report concentrations in the historical data, 0.00050 ppm and 0.00088 ppm (0.05% and 0.09% of the OEL), respectively. Both were measured during exhauster restarts that occurred on June 19, 2014. The 2017 cartridge-inlet maximum is considered consistent with historical maxima.

F.2.15 2,4-Dimethylpyridine

As for pyridine, the maximum and average historical concentrations are controlled by the RL from the 0.35 L Carbotrap 300 TDU sample. Because this substituted pyridine has no above-report historical data, no conclusion can be drawn about where its cartridge inlet concentration lies with respect to historical data.

F.2.16 Methyl isocyanate

This chemical was a tentatively identified compound at the inlet in both series of cartridge testing. There is only one historical concentration, a below-report datum that had an RL of 0.00714 ppm (<36% of the OEL). Given the scarcity of data, no conclusion can be drawn about where this chemical's cartridge inlet concentration lies with respect to historical data.

F.2.17 Summary of Historical Data for 702-AZ (2017 Tests With Disturbance)

In summary, the cartridge inlet maxima for the 2017 702-AZ tests that were substantially lower than historical data can be described as follows:

- Differences arose from using RLs of below-report data for the historical maximum: formaldehyde.
- Differences arose from using data for vapor produced by a no-longer-existing inventory for the historical maximum: none.
- Differences could not be resolved because of the scarcity of above-report data: 2,5-dihydrofuran, 2-methylfuran, 2,5-dimethylfuran, 2-pentylfuran, 2-heptylfuran, 2-propylfuran, dibutyl butylphosphonate, 2,4-dimethylpyridine, methyl isocyanate.
- Cartridge inlet concentrations were determined to be significantly lower than above-report historical concentrations: mercury, 1,3-butadiene.



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