CARBON REACTIVATION FURNACE RF-2 PERFORMANCE DEMONSTRATION TEST REPORT

PREPARED FOR:

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ACRONYMS AND ABBREVIATIONS

acfm	Actual cubic feet per minute
APC	Air pollution control
ASTM	American Society for Testing and Materials
AWFCO	Automatic waste feed cutoff
B.P.	Boiling point
Btu	British thermal unit
CAR	Corrective Action Request
CAA	Clean Air Act
CARB	California Air Resources Board
CEM or CEMS	Continuous emission monitor or Continuous emission monitoring system
CFR	Code of Federal Regulations
cm	Centimeters
CO	Carbon monoxide
COPCs	Compounds of potential concern
CRIT	Colorado River Indian Tribes
cu. ft.	Cubic foot
CVAAS	Cold vapor atomic absorption spectroscopy
DC	Direct current
DOT	Department of Transportation
DQO	Data Quality Objective
DRE	Destruction and removal efficiency
dscf	Dry standard cubic foot
dscfm	Dry standard cubic feet per minute
dscm	Dry standard cubic meters
EPA	United States Environmental Protection Agency
FID	Flame ionization detector
ft	Feet
g	Gram
GC/FID	Gas chromatography/flame ionization detector
GC/MS	Gas chromatography/mass spectrometry
gpm	U.S. Gallons per minute
gr	Grain (equals 1/7000 pound)
GRAV	Gravimetric
HAP	Hazardous air pollutant
HCl	Hydrogen chloride
HPLC	High performance liquid chromatography
hr	Hour
HRGC/HRMS	High resolution gas chromatography/high resolution mass spectrometry
HWC MACT	Hazardous Waste Combustor Maximum Achievable Control Technology regulations
ICP	Inductively coupled plasma spectroscopy
in	Inch
in w.c.	Inches of water column (pressure measurement)
kg	Kilogram
L	Liter
lb	Pound
lpm	Liters per minute
m	Meter
mg	Milligram
ml	Milliliter
MTEC	Maximum theoretical emission concentration
NDIR	Non-dispersive infrared

ng	Nanogram
NVOC	Nonvolatile organic compound
P&ID	Piping and instrumentation diagram
PAH	Polyaromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCDD/PCDF	Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo furans
PDT	Performance Demonstration Test
PDTP	Performance Demonstration Test Plan
PFD	Process flow diagram
PIC	Product of incomplete combustion
PLC	Programmable logic controller
POHC	Principal organic hazardous constituent
POTW	Publicly owned treatment works
ppm	Parts per million
ppmv	Parts per million by volume
ppmvd	Parts per million by volume, dry basis
psig	Pounds per square inch, gauge
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
RCRA	Resource Conservation and Recovery Act
RF	Reactivation Furnace
s	Second
scfm	Standard cubic feet per minute
SOP	Standard operating procedure
sq. ft.	Square feet
SQL	Sample quantitation limit
SVOC	Semivolatile organic compound
TCDD	Tetrachloro dibenzo-p-dioxin
TCO	Total chromatographable organics
TEQ	Toxicity equivalent (related to 2,3,7,8-TCDD)
THC	Total hydrocarbons
TIC	Tentatively identified compound
TOE	Total organic emissions
TSCA	Toxic Substances Control Act
ug	Microgram
VOA	Volatile organic analysis
VOC	Volatile organic compound
VOST	Volatile organic sampling train
WESP	Wet electrostatic precipitator
w.c.	Water column
XAD	Brand name for Amberlite XAD-2 adsorbent resin

1.0 EXECUTIVE SUMMARY

A Performance Demonstration Test (PDT) of the Carbon Reactivation Furnace RF-2 at the Siemens Water Technologies Corp. (formerly known as U.S. Filter Westates) Facility located in the Colorado River Indian Tribes (CRIT) Industrial Park near Parker, Arizona was conducted in March 2006.

The facility treats spent activated carbon that has been used by industry, state and federal government agencies, and municipalities for the removal of organic compounds from liquid and vapor phase process waste streams. Once the carbon has been used and is spent, it must be either disposed of or reactivated at a facility such as Siemens Water Technologies Corp.. A Carbon Reactivation Furnace (designated as RF-2) is used by Siemens Water Technologies Corp. to reactivate the spent carbon. Some of the carbon received at the Parker facility is designated as a hazardous waste under the Resource Conservation and Recovery Act (RCRA) regulations. Much of the carbon received at the facility is not a RCRA hazardous waste, as it is either not a characteristic or listed waste. The RF is not a hazardous waste incinerator. "Hazardous waste incinerator" is defined in 40 CFR Part 63, Subpart EEE as a "device defined as an incinerator in § 260.10 of this chapter and that burns hazardous waste at any time." (40 CFR 63.1201). "Incinerator" is defined in 40 CFR 260.10 as "any enclosed device that: (1) Uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer or <u>carbon regeneration unit</u>, nor is listed as an industrial furnace; or (2) Meets the definition of infrared incinerator or plasma arc incinerator. (emphasis supplied)" The RF-2 unit does not qualify as an incinerator and instead is designated by Subpart X of the RCRA regulations as a Miscellaneous Unit. According to 40 CFR 264.601 of the Subpart X regulations, permit terms and provisions for a Miscellaneous Unit must include appropriate requirements of 40 CFR Subparts I through O and Subparts AA through CC, 40 CFR 270, 40 CFR 63 Subpart EEE, and 40 CFR 146.

Based on 40 CFR 264.601, Siemens Water Technologies Corp. tested the RF-2 unit to demonstrate performance and to establish operating parameter limits in accordance with the standards of 40 CFR 63 Subpart EEE. The emission standards of 40 CFR 63 Subpart EEE are more stringent than the RCRA hazardous waste incinerator emission standards of 40 CFR 264 Subpart O. The regulations at 40 CFR 63 Subpart EEE are often referred to as the Hazardous Waste Combustor Maximum Achievable Control Technology (HWC MACT) standards. This terminology will be used in this document.

The testing was conducted in accordance with the requirements of the HWC MACT standards and the approved PDT plan. The testing consisted of a Performance Demonstration Test of the RF-2 unit and a Continuous Emissions Monitoring Systems (CEMS) test. The CEMS testing was conducted just prior to the RF-2 PDT. The formal PDT was conducted on March 27 through March 30, 2006.

The carbon reactivation process consists of a multiple hearth reactivation furnace, a natural gas fired afterburner used to destroy organic contaminants released from the carbon, a wet quench, venturi scrubber, packed bed scrubber, and wet electrostatic precipitator.

The purpose of the PDT was to:

1. Demonstrate Compliance with Applicable USEPA Regulatory Performance Standards (Based on HWC MACT Standards for Existing Hazardous Waste Incinerators):
   - Demonstrate a DRE of greater than or equal to 99.99% for the selected principal organic hazardous constituents (POHCs) chlorobenzene and tetrachloroethene.
   - Demonstrate stack gas carbon monoxide concentration less than or equal to 100 ppmv, dry basis, corrected to 7% oxygen.
   - Demonstrate stack gas hydrocarbon concentration of less than or equal to 10 ppmv, as propane, dry basis, corrected to 7% oxygen.
   - Demonstrate a stack gas particulate concentration less than or equal to 34 mg/dscm (0.015 gr/dscf) corrected to 7% oxygen.
   - Demonstrate that the stack gas concentration of hydrogen chloride (HCl) and chlorine (Cl_2) are no greater than 77 ppmv, dry basis, corrected to 7% oxygen, expressed as HCl equivalents.
   - Demonstrate that the stack gas mercury concentration is less than or equal to 130 μg/dscm, corrected to 7% oxygen.
   - Demonstrate that the stack gas concentration of semivolatile metals (cadmium and lead, combined) is less than or equal to 240 μg/dscm, corrected to 7% oxygen.
   - Demonstrate that the stack gas concentration of low volatility metals (arsenic, beryllium, and chromium, combined) is less than or equal to 97 μg/dscm, corrected to 7% oxygen.
   - Demonstrate that the stack gas concentration of dioxins and furans does not exceed 0.40 ng/dscm, corrected to 7% oxygen, expressed as toxic equivalents of 2,3,7,8-TCDD (TEQ). This is the applicable standard since the gas temperature entering the first particulate matter control device is less than 400°F.

2. Establish Permit Operating Limits
   - Demonstrate maximum feed rate for spent activated carbon.
   - Demonstrate minimum afterburner gas temperature
   - Demonstrate maximum combustion gas velocity (or a suitable surrogate indicator)
   - Demonstrate maximum total chlorine/chloride feed rate
   - Establish a Maximum Theoretical Emission Concentration (MTEC) limit for mercury
   - Demonstrate system removal efficiency (SRE) for semivolatile and low volatility metals so feed rate limits can be developed by extrapolation from test results.
   - Establish appropriate operating limits for the air pollution control system components.

3. Gather Information for Use in a Site-Specific Risk Assessment
   - Measure emissions of metals, including hexavalent chromium
   - Measure emissions of specific volatile and semivolatile products of incomplete combustion (PICs)
   - Measure emissions of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF)
   - Measure emissions of polychlorinated biphenyls (PCBs)
   - Measure emissions of specific organochlorine pesticides
   - Measure emissions of total volatile, semivolatile, and nonvolatile organics
   - Determine the stack gas particle size distribution.

A summary of the PDT performance and emission results is presented in Table 1-1. A summary of the process operating conditions for each run is presented in Table 1-2.

The PDT results indicate that the RF-2 unit meets the applicable performance requirements. Specific conclusions drawn from the PDT are as follows:

- The RF-2 system operated reliably during each PDT run, and was able to maintain operating conditions which were consistent with the target values stated in the PDT Plan. The test results are suitable for establishing operating parameter limits.
- DRE requirements of 99.99% or greater were met for both POHCs (monochlorobenzene and tetrachloroethene). Minimum temperature limits and maximum flue gas flow rate limits can be appropriately established from the test results.
- PCDD/PCDF emission standards were met.
- Particulate matter emission standards were met.
- Metal emission standards were met for mercury, semivolatile metals, and low volatility metals. Maximum metal feed rates can be reliably determined using the test results.
- Stack gas CO and THC concentration standards were met in all test runs.
- Stack gas HCl/Cl_2 emission requirements were met. Maximum total chlorine and chloride feed rate limits can be appropriately established from the test results.
- Emissions data to support the estimates of risk in a site-specific multi-pathway human health and ecological risk assessment were gathered successfully.

Continued operation of the Siemens Water Technologies Corp. Carbon Reactivation Furnace RF-2 under the conditions established by the PDT will result in effective destruction of organic compounds, and control of emissions in accordance with the applicable performance requirements.

2.0 TEST PROGRAM SUMMARY

2.1 SUMMARY OF TEST PLAN AND OBJECTIVES

In order to accomplish the PDT objectives, (i.e., demonstrating that the unit will meet all applicable environmental performance standards) a single test condition representing “worst case” operations of minimum temperature, maximum combustion gas velocity (minimum residence time), and maximum spent activated carbon feed rate was performed. The test consisted of three replicate sampling runs.

A summary description of the planned testing conditions, analytical parameters, and sampling methods follows:

Test Condition 1 (”Worst-Case” Operations)
Sampling and monitoring protocols that were planned for the performance test are summarized as follows:

- Spent Activated Carbon Feed - total chlorine/chloride, elemental (C, H, N, O, S, moisture), volatile organics, semivolatile organics, and total metals (Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, V, Zn)
- Makeup Water - volatile organics, semivolatile organics, and total metals (Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, V, Zn)
- Caustic feed to APC - volatile organics, semivolatile organics, and total metals (Al, Sb, As, Ba, Be, Cd, Cr, Cu, Co, Pb, Hg, Ag, Tl, Se, Ni, V, Zn)
- Scrubber Blowdown - volatile organics, semivolatile organics, and total metals (Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, V, Zn)
- Wastewater Discharge to POTW - volatile organics, semivolatile organics, and total metals (Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, V, Zn)
- Stack gas particulate, HCl, and Cl_2 using EPA Method 26A
- Stack gas target volatile organics using VOST, SW-846 Method 0030
- Stack gas target semivolatile organics and organochlorine pesticides using SW-846 Method 0010
- Stack gas PAHs and PCBs using a separate SW-846 Method 0010 sampling train
- Stack gas PCDD/PCDF using SW-846 Method 0023A
- Stack gas total volatile organics using SW-846 Method 0040
- Stack gas total semivolatile and nonvolatile organics using SW-846 Method 0010
- Stack gas metals (Al, Sb, As, Ba, Be, Cd, total Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, V, and Zn) using EPA Method 29
- Stack gas hexavalent chromium using SW-846 Method 0061
- Stack gas particle size distribution using a cascade impactor

- Stack gas CO and O_2 by permanently installed CEM according to the protocols in the Appendix to 40 CFR 63, Subpart EEE; Performance Specification 4B of 40 CFR 60, Appendix B.
- Stack gas total hydrocarbons (as propane) by temporary CEM according to EPA Method 25A and the protocols in the Appendix to 40 CFR 63, Subpart EEE.

Tables 2-1 and 2-2 present the planned PDT sampling and analytical protocol in greater detail. Figure 2-1 shows the location of sampling points in the RF-2 system.

2.2 DEVELOPMENT OF PERMIT LIMITS

Siemens Water Technologies Corp. is required to establish operating limits (applicable whenever hazardous waste is in the combustion chamber) in its permit to ensure that the RF-2 system complies with the applicable USEPA environmental performance standards at all times. Under the HWC MACT, the regulations establish a comprehensive list of regulated parameters at 40 CFR 63.1209 (j) through (p) which are used to ensure continuing regulatory compliance.

Considering the configuration of the RF-2 system and the characteristics of the spent activated carbon to be fed, Siemens Water Technologies Corp. anticipated establishing process operational limits on the following parameters, and operated the system accordingly during the PDT:

- Minimum afterburner gas temperature
- Maximum spent activated carbon feed rate
- Maximum total chlorine and chloride feed rate
- Maximum feed rate of mercury (based on MTEC)
- Maximum feed rate of semivolatile metals (total combined lead and cadmium)
- Maximum feed rate of low volatility metals (total combined arsenic, beryllium, and chromium)
- Minimum venturi scrubber pressure differential
- Minimum quench/venturi scrubber total liquid flow rate
- Minimum packed bed scrubber pH
- Minimum packed bed scrubber pressure differential
- Minimum packed bed scrubber liquid flow rate
- Minimum scrubber blowdown flow rate
- Minimum WESP secondary voltage
- Maximum stack gas flow rate (indicator of combustion gas velocity).

These operating limits have been established as described in the HWC MACT regulations and in the approved Performance Demonstration Test Plan, and are more fully described in Section 7.0 of this test report.

As part of EPA's approval of the PDT Plan, Siemens Water Technologies Corp. was also required to establish both a minimum and maximum temperature limit for Hearth #5 of the reactivation furnace. Since both a minimum and maximum temperature could not be demonstrated in the single test condition approved for the test, Siemens Water Technologies Corp. operated Hearth #5 at a maximum temperature during the PDT and will conduct a separate minimum temperature test outside of the formal PDT period.

2.3 TEST IMPLEMENTATION SUMMARY

Overall, the PDT was executed in substantial conformance with the approved protocols contained in the PDT Plan and Quality Assurance Project Plan (QAPP). This section presents an account of the PDT implementation.

The Performance Demonstration Test of the Siemens Water Technologies Corp. carbon reactivation furnace RF-2 located in the Colorado River Indian Tribes Industrial Park near Parker, Arizona was conducted during the week of March 27 - 31, 2006. Actual emissions sampling was conducted on March 28 through March 30. All planned testing for the PDT was completed.

All process operating conditions were within the operating envelope defined by the specifications provided in the PDT Plan. All sampling and analysis was performed as described in the PDT Plan and QAPP, with minor deviations as described in Section 2.3.2 below.

The PDT was conducted in compliance with the PDT Plan approved by the US Environmental Protection Agency (EPA) and CRIT. The PDT program was conducted under the overall direction of Siemens Water Technologies Corp. personnel. Mr. Monte McCue was the overall CPT Manager for Siemens Water Technologies Corp.. Mr. Willard (Drew) Bolyard of Siemens Water Technologies Corp. oversaw plant personnel and operations during the PDT. Ms. Mary Blevins, Ms. Stacy Braye, Mr. Steven Arman, Mr. Robert Fitzgerald, Mr. Michael Svizzero, and Ms. Karen Scheuerman of USEPA were on-site to observe portions of the PDT. Mr. Hector Duran observed the PDT as a representative of CRIT. Mr. Marty Jones and Mr. Chase McLaughlin of Arcadis also observed the PDT as consultants to CRIT. Process operations were conducted by Siemens Water Technologies Corp. personnel, with the assistance of Mr. Karl Monninger of Chavond Barry Engineering. Mr. Anthony Eicher, of Focus Environmental, Inc. (Focus), coordinated and oversaw all technical aspects of the test program, and acted as the PDT

Manager. Mr. Eicher was also responsible for the preparation of this report, and provided overall QA/QC for the project. Ms. Teresa White, of Focus, acted as the on-site sample coordinator for the test. She also served as the Quality Assurance Officer for the PDT analytical activities, and performed data validation of the process sample and emissions results. Process samples were collected by Focus and Siemens Water Technologies Corp. personnel, under the direction of Focus. A number of process samples were provided as split samples to Ms. Kathy Baylor of EPA, who was on site to coordinate the collection and packaging of the split samples. All stack gas samples were collected by Airtech Environmental Services, Inc. (Airtech), under the direction of Mr. Pat Clark. Waste feed spiking services were provided by Engineered Spiking Solutions, Inc. (ESS), under the direction of Dr. William Schofield, with field spiking services provided by Mr. Scott Neal. PDT sample analyses were performed by the following laboratories:

1. Airtech conducted the analysis of stack gas particulate matter samples and provided on-site analytical services for the determination of total volatile organics. Airtech also operated a temporary CEM systems for THC during the PDT.

2. Severn-Trent Laboratories of Knoxville, Tennessee, under the direction of Dr. William Anderson, performed the analyses for all process and stack gas samples, with the exception of the stack gas particulate matter and particle size distribution.

3. MVA, Inc. of Atlanta, Georgia, conducted the stack gas particle size determination, under sub-contract to Severn-Trent Laboratories.

2.3.1 Test Run Chronology

The test team arrived on-site and set up equipment for the test on March 27, 2006. Coordination meetings were held between the test team members to ensure that all were familiar with the test protocols and that operators understood the desired test conditions.

During the initial meetings with the test team, a number of minor modifications to the test plan were discussed based on comments received from EPA after approval of the plan, and based on input from the other test team members based on observations during preliminary testing and subsequent sample analysis. The majority of these items have been documented through the use of Corrective Action Requests (CARs) as provided for in the approved Quality Assurance Project Plan (QAPP) and are discussed in detail in later section of this report. CARs were reviewed and approved by appropriate members of the team during the course of the PDT.

The test team arrived on site at or before 07:00 on March 28, 2006. The RF-2 system was near the target operating conditions when the team arrived. POHC spiking was started at 07:30 and spiking of the organic surrogate mixture and metals started at 07:50. The entire RF-2 unit experienced a shutdown at

07:56 due to over-amperage of the ID fan. All spiking was stopped immediately. The plant recovered quickly from the shutdown and spiking operations were re-started at 08:59. Preliminary stack gas flow traverses were conducted and final preparations were made for the beginning of testing.

PDT Run 1 was started at 12:10 on March 28, 2006.

PDT Run 1 was completed at 16:44 on March 28, 2006, without interruption. All stack gas sampling trains were successfully leak checked prior to the start of sampling, during port changes, and upon completion of sampling and were recovered once the run was complete.

On March 29, 2006, the testing crew arrived on-site at 08:00 and began setting up for PDT Run 2. Spiking operations were started at 08:58. Plant personnel made a number of adjustments to the furnace in order to maintain the stack gas flow rate near the desired conditions.

PDT Run 2 was started at 11:15 on March 29, 2006.

As the Method 0023A sampling train was being moved to the last traverse point in the first half of the run, the glass probe liner broke. The sampling team and regulatory observers noticed the break immediately when it occurred, and the sampling team shut down the sample pump. Since it was known when the break occurred and sampling was immediately stopped, it was decided to recover both parts of the broken probe liner, replace the probe, and continue sampling. All parties were aware of the situation and approved of the action taken.

PDT Run 2 was completed at 17:00 on March 29, 2006, without further sampling difficulties. All stack gas sampling trains were successfully leak checked prior to the start of sampling, during port changes, and upon completion of sampling and were recovered once the run was complete. There were no process interruptions during the run.

On March 30, 2006, the testing team arrived at or before 08:00 and began setting up for PDT Run 3. All process conditions were at their target values, and spiking started at 08:50.

At 08:58 a weld on the nipple attached to the carbon feed chute used for spiking material injection was noticed to be cracked. Spiking was immediately stopped and the weld was repaired. Spiking resumed at 10:13 on March 30, 2006.

PDT Run 3 was started at 11:50 on March 30, 2006.

All sampling activities were placed on hold at 12:39 when it was noted that the organic surrogate mixture was not flowing correctly through the spiking system. The other spiking systems continued to operate and process conditions were maintained while the problem with the organic surrogate mixture spiking system was identified and corrected.

Organic surrogate spiking was resumed at 14:43 and all sampling was resumed at 15:30 on March 30, 2006.

PDT Run 3 was completed at 19:16 on March 30, 2006. As the PSD sampling train was being recovered it was noted that the filter had gotten wet, thus potentially compromising the sample. Another PSD sample was collected as quickly as possible and finished at 19:59. Since all other samples had finished at 19:16, all parties involved in testing decided to designate 19:16 as the official run completion time. All stack gas sampling trains were successfully leak checked prior to the start of sampling, during port changes, and upon completion of sampling and were recovered once the run was complete. There were no process interruptions during the run.

On March 31, 2006 the test team dismantled all testing and spiking equipment, packaged samples for shipment to the laboratory, and departed the site. Sample packaging and shipping were handled by Focus and Airtech personnel.

2.3.2 Deviations from the Test Plan

Siemens Water Technologies Corp. conducted preliminary testing prior to the formal PDT in order to ensure that all process, spiking, sampling, and analytical systems and procedures were appropriate, and that the test team could identify and resolve any major issues prior to the formal PDT. During the preliminary testing and subsequent planning activities, several items were identified and corrective actions were initiated. These were documented through Corrective Action Requests (CARs) as provided for in the QAPP. Additionally, EPA provided Siemens Water Technologies Corp. with certain data submittal requests in the test plan approval letter, and also required Siemens Water Technologies Corp. to establish additional operating parameters (Hearth #5 minimum and maximum temperature) that were not addressed in the approved test plan. Additionally, conditions during the test dictated that several field directives be given; some of which warranted documentation through the CAR process.

A total of eight CARs were generated during the PDT and are shown in Appendix C. Additional verbal directives were given in the field and to the laboratory during the course of the PDT program. Each corrective action and verbal directive is discussed fully in Section 5.0, and is summarized below:

1. The selected laboratory for the performance test has a slightly different target analyte list compared to those presented in the original test plan. Revised target analyte lists were presented to EPA and were approved for use in the test. This is documented as CAR-001.

2. The original test plan calls for an organic surrogate mixture to be added to the spent activated carbon feed. That mixture was specified to contain 1,1,1-Trichloroethane, however the compound is not available because it is an ozone depleting substance. Methylene chloride was substituted for 1,1,1-trichloroethane. This is documented as CAR-002.

3. Based on observations made during preliminary testing, it was believed that the high stack gas moisture content and low particulate matter concentration would not be conducive to the use of a Cascade Impactor, which was originally planned for collection of particle size distribution data. Therefore, a Method 5 train, employing a smooth filter media was used to collect particulate matter samples, followed by scanning electron microscope examination of the particles to determine the particle size distribution. This is documented as CAR-003.

4. Prior to the test, the analytical laboratory expressed concern that analytical surrogate compounds placed onto the adsorbent resin in some of the sampling trains might be stripped off unless sampling is conducted at very low sampling rates. In order to address this concern, all semivolatile organic sampling trains were operated for a nominal sampling run time of 4 hours instead of the planned nominal sampling time of three hours. The same nominal volume of sample was collected over the four hour period that would have been collected in three hours. This represents a very conservative approach to the issue, and is documented as CAR-004.

5. EPA indicated that a minimum temperature limit must be established for Hearth #5 in the reactivation furnace. This condition was not anticipated, nor was it addressed in the Performance Demonstration Test Plan. After discussions with EPA, it was decided that a separate test will be conducted outside the formal PDT test period where a minimum Hearth #5 temperature will be maintained and the resulting reactivated carbon will be analyzed for organics. This is documented as CAR-005.

6. Several modifications to the target operating conditions and anticipated permit limits were made after approval of the Performance Demonstration Test Plan. Most of these changes were made as a result of preliminary testing. Additionally, EPA included with their test plan approval letter a table of information and process data that they wanted included in the test report. Revised operating condition targets and the list of data requested by EPA are documented as CAR-006.

7. During Run 2 of the PDT, the glass probe liner on the M0023A train was broken due to high winds swinging the sampling train as it was being moved from one traverse point to another. The stack sampling crew and regulatory observers noted the break and immediately stopped sampling. Upon investigation, it was found that both pieces of the broken probe liner could be retrieved and that the sampling train leak-checked from the break through the remainder of the train. All parties agreed that there was no impact on sample integrity, so the broken probe liner pieces were caped, taken to the recovery area and rinsed. The probe liner was replaced and the train was used to complete the sampling run. The rinse of the broken probe liner pieces was combined with the final train rinse to capture the entire sample. This is documented as CAR-007.

8. In order to maximize the stack gas flow rate (minimize the gas residence time) for the performance test, a source of additional air was needed beyond what is normally supplied by the combustion air fan. The access door on Hearth #1 was opened to allow additional air to be drawn into the system and to pass through the combustion and air pollution control portions of the system. This is documented as CAR-008.

9. Makeup water samples were planned to be collected only once, at the beginning of the test. Siemens Water Technologies Corp. personnel were concerned however, that the quality of the makeup water could change significantly over time, thus makeup water samples were collected at the beginning of each test run. This modification increased the number and frequency of makeup water samples.

10. In order to keep any water droplets and particulate matter from entering the M0040 sampling train, a glass wool plug was inserted into the sample probe. This was not described in the test plan, but was deemed to be a good operating practice for this train.

11. At the end of Run 1, the Test Manager noticed that the silica gel in the M0061 train was quite wet. The sampling team was directed to add an additional silica gel impinger to the M0061 train to prevent this situation from occurring again. A check of the moisture determination from the M0061 train used in Run 1 was compared to the moisture determinations from the other Run 1 trains, and found to be consistent. Thus there was no adverse impact on the Run 1 M0061 sample.

12. It was noted that Siemens Water Technologies Corp.'s installed stack gas flow rate monitor was not corresponding with the Pitot tube readings of the stack sampling team. Further investigation indicated that some type of fault in the stack gas flow rate monitor was being experienced, however it was not able to be corrected during the course of the PDT. All parties were informed of the situation, and a decision was made to complete the PDT and to use the average of the stack gas sampling train flow rate determinations from each run to set the maximum stack gas flow rate operating limit for the system. Siemens Water Technologies Corp. will need to correct the fault in the stack gas flow rate monitoring system in order to demonstrate continuing compliance with the operating limit.

All other testing and process operations were conducted in conformance with the approved PDT Plan and QAPP. EPA also requested that split samples of the process feed materials and effluents be provided. Additional sample volume was collected accordingly, and samples were split with EPA.

A few analytical quality control determinations showed non-conformances with the target data quality objectives. However, none of these non-conformances are deemed to have had a significant negative impact on the PDT results or conclusions. These items are discussed in Section 5.0 of the report and in the Data Validation Report in Appendix H.

3.0 PROCESS OPERATIONS

3.1 PROCESS OPERATING CONDITIONS

Key process operating parameters were continuously monitored and recorded during each test run by the process computer system. Process operating data were stored on magnetic disk at one-minute intervals during each test run. Appendix A presents complete printouts of the process operating data from each test run.

Manual logs were kept during the PDT to record the times when sampling runs were started, stopped, and/or interrupted. The PDT Manager's manual log is included in Appendix B. Tables 3-1 through 3-3 summarize key operating data collected during each PDT run.

Key process instruments were calibrated prior to the PDT. The CEM system underwent a Performance Specification Test prior to the PDT, and underwent daily calibration checks during the PDT. The Performance Specification Test and each daily calibration check showed the CEM system to be operating within specifications. A copy of the CEMS Performance Specification Test Report is included in Appendix K. Process instrument calibration data is presented in Appendix L.

3.2 FEED MATERIAL CHARACTERISTICS AND CONSTITUENT FEED RATES

The spent activated carbon feed to RF-2 was sampled at 15-minute intervals and composited during each PDT run. Makeup water samples were collected at the beginning of each run. Caustic used in the APC system was sampled once for the PDT program. Feed sampling logs, as well as other sampling information, are summarized in Appendix D. A list of samples is presented in Appendix E. Analyses of the feed samples, as well as summaries of all CPT analytical results are shown in Appendix F. Feed material physical/chemical characteristics are presented in Table 3-4. Constituent feed rate information (e.g., total chlorine/chloride, metals, and each POHC) is presented in Table 3-5. Table 3-6 presents volatile organic feed data. Semivolatile organic feed data are presented in Table 3-7. Example calculations are presented in Appendix G. (Note that the complete sampling report and full analytical data packages have been submitted as separate volumes.)

3.3 SPENT ACTIVATED CARBON FEED SPIKING

Monochlorobenzene and tetrachloroethene (perchloroethylene) were the designated POHCs, and were spiked onto the spent activated carbon feed in all PDT runs. Lead and chromium were spiked onto the spent activated carbon feed during each run to represent semivolatile, and low volatility metals, respectively. Additionally an organic surrogate mixture of methylene chloride, toluene, naphthalene, and ethylene glycol was added to the spent activated carbon to increase the organic loading and to provide a variety of compounds for the formation of a broad array of emission products. Spiking was conducted downstream of the feed sampling point, using metering pumps and mass flow meters, backed up by calibrated electronic scales. Spiking rates are summarized in Table 3-8. A complete spiking report is presented in Appendix J. The spiking report contains copies of all field data sheets, calibrations and spiking material composition certifications.

3.4 MAKEUP AND EFFLUENT CHARACTERISTICS

Makeup water and caustic solution are added to the scrubbing system. Effluent streams are the scrubber blowdown water and POTW discharge. Results of the makeup and effluent material analyses are summarized in Table 3-9. Summaries of all analyses are presented in Appendix F. Complete analytical data packages have been submitted as separate volumes.

4.0 COMPLIANCE RESULTS

Using the process operating data and analytical results from the PDT program, the performance of the Siemens Water Technologies Corp. Carbon Reactivation Furnace RF-2 system was determined and compared to the performance requirements specified for the facility. The PDT demonstrated the RF-2 unit's ability to meet all regulatory requirements. Table 4-1 presents performance results for each key parameter during the PDT, and compares the performance results with target criteria. Example calculations for each performance determination are shown in Appendix G.

Stack gas sampling was conducted by Airtech Environmental Services, Inc. Summaries of the sampling conditions are presented in each table of stack emission results. A complete report of Airtech's sampling results, including all field data sheets, calibration records, and calculations is presented in Appendix I. Example calculations for each PDT determination are presented in Appendix G. Analytical summaries are presented in Appendix F. Complete analytical data packages are presented in separate volumes.

4.1 POHC DESTRUCTION AND REMOVAL EFFICIENCY

Monochlorobenzene and tetrachloroethene were designated as the POHCs for the test. DRE results are summarized in Table 4-2. The PDT demonstrated that the RF-2 unit achieved a DRE of greater than 99.99% for each POHC in all runs.

4.2 DIOXIN AND FURAN EMISSIONS

Dioxin and furan sampling results and emission concentrations are presented in Tables 4-3 through 4-5. The data presented show the PCDD/PCDF emissions are in compliance with the HWC MACT standard of 0.40 ng TEQ/dscm corrected to 7% O_2 applicable to existing systems with a temperature at the entrance to the primary particulate matter control device of 400°F or less. [40 CFR 63.1203(a)(1)(ii)].

4.3 PARTICULATE EMISSIONS

Particulate matter sampling results and emission concentrations are shown in Tables 4-6 through 4-8. Particulate matter concentrations met the regulatory requirement for the PDT in all runs.

4.4 HYDROGEN CHLORIDE AND CHLORINE EMISSIONS

Tables 4-6 through 4-8 presents the results of HCl and Cl_2 emissions determinations during the PDT. HCl/Cl_2 emission concentrations were significantly below the performance criteria in all runs.

4.5 METALS EMISSIONS

Metal sampling and emissions results are presented in Tables 4-9 through 4-11. The results indicate that the system met the applicable emission standards for volatile metals (mercury), semivolatile metals (the sum of lead and cadmium emissions), and low volatility metals (the sum of arsenic, beryllium, and chromium emissions).

Further, data from the test were used to develop a system removal efficiency (SRE) for the low volatility metal group. These values are used along with the feed rates of spiked low volatility metal during the test to develop an extrapolated low volatility metals feed rate limit in accordance with 40 CFR 63.1209(n)(2)(ii) and the approved PDT Plan. The actual feed rate of mercury and semivolatile metals demonstrated during the test were used to establish feed rate limits for these metals, without extrapolation. Detailed information regarding the establishment of metals feed rate limits and other process operating limits is presented in Section 6.0 of the report.

4.6 STACK GAS OXYGEN, CARBON MONOXIDE, AND TOTAL HYDROCARBONS

Siemens Water Technologies Corp.'s CEM system was used to monitor the stack gas O_2, and CO concentrations during the PDT. A temporary CEM was operated by Airtech during the PDT for THC measurements. These CEM readings were used to demonstrate regulatory compliance and to make corrections to specific stack gas concentration values that are reported on a 7% O_2 corrected basis. Both the carbon monoxide and total hydrocarbon concentrations met the regulatory requirements in all test runs as indicated in Table 4-1. The CEM data are summarized with the process operating data in Tables 3-1 through 3-3, and in Appendix A. In addition, Airtech used CEM oxygen and carbon dioxide data to determine the stack gas molecular weight for use in emissions calculations. The oxygen and carbon dioxide data results are shown in the summary tables for each sampling train and are presented in Airtech's Stack Sampling Report in Appendix I.

5.0 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

The PDT QAPP specifies procedures to be followed to assure the quality of data generated from the test program. Target data quality objectives (DQOs) and specific QA/QC procedures are presented in the QAPP for the following:

- Sample collection
- Sample analysis
- Process instrument calibration
- Stack sampling equipment calibration
- Laboratory analytical instrument calibration.

This section presents an overview of the QA/QC activities implemented during the PDT to ensure and assess the quality of the data gathered. This section also presents the QA/QC results for the PDT, and an assessment of the quality of the data gathered.

5.1 QA/QC ACTIVITIES AND IMPLEMENTATION

Siemens Water Technologies Corp. personnel were involved in all phases of project planning including the development of Data Quality Objectives (DQOs), the selection of sampling and analysis methods, the selection of contractors, and the development and review of project controlling documents. Primary references for the selection of methods and setting DQOs included:

- USEPA SW-846, Test Methods for Evaluating Solid Waste
- 40 CFR 266 Appendix IX and the Appendix to 40 CRF 63, Subpart EEE, Performance Specifications for Continuous Emission Monitoring Systems
- USEPA QAMS-005/80, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans
- EPA/625/6-89/023, Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration
- EPA/600/4-77-027b, Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods
- 40 CFR 60 Appendix A, Test Methods and Procedures, New Source Performance Standards
- 40 CFR 61 Appendix B, Test Methods.

5.1.1 QA Surveillance

Part of the overall program QA/QC is the coordination of process operations and sampling activities during the test. This coordination effort is intended to identify potential operating upsets or sampling problems in the field, and to institute corrective actions as required. These field actions include holding, stopping, and/or repeating test runs as needed to ensure the collection of adequate and representative data. A log is kept by the PDT Manager to document performance test activities and noteworthy occurrences that may be beneficial to the reconstruction of events or to the evaluation of PDT results. Appendix B contains a copy of the PDT Manager's manual log.

During the PDT, there were no process-related interruptions to sampling activities. There were two interruptions in sampling which occurred due to other causes.

During Run 2 as the Method 0023A sampling train was being moved to the last traverse point in the first half of the run, the glass probe liner broke. The sampling team and regulatory observers noticed the break immediately when it occurred, and the sampling team shut down the sample pump. Since it was known when the break occurred and sampling was immediately stopped, it was decided to recover both parts of the broken probe liner, replace the probe, and continue sampling. All parties were aware of the situation and approved of the action taken.

During Run 3, a problem developed with the organic surrogate mixture spiking system. All sampling was placed on hold while the problem was corrected. All process operations and other spiking activities continued without interruption. Once the organic surrogate mixture spiking system was returned to service, all sampling was resumed, and the run finished without further interruption.

No negative impact on sampling or analysis occurred as a result of these interruptions, nor were there any other occurrences noted that would impact the PDT results or conclusions.

Several items were identified throughout the course of the PDT program (including preliminary testing conducted by Siemens Water Technologies Corp. in preparation for the formal PDT) which could either be classified as noncomformances with the test methods or specifications of the project controlling documents, or as potential areas for improvement. Where modifications to the protocols or field activities were necessary, they were implemented through field directives and/or the issuance of a Corrective Action Request (CAR). Copies of each CAR are included in Appendix C. The sections below discuss the PDT activities and include a description of any QA/QC observations, procedural modifications, or CARs issued.

5.1.2 Sample Collection

Feed, effluent, and stack gas samples were collected and analyzed as part of the PDT program. Sampling QA/QC objectives are considered to be met if sampling activities follow the standard methods described in the PDT Plan and QAPP. During this test, sampling activities followed the prescribed procedures of the PDT Plan and QAPP, with the following exceptions:

1. Based on observations made during preliminary testing, it was believed that the high stack gas moisture content and low particulate matter concentration would not be conducive to the use of a Cascade Impactor, which was originally planned for collection of particle size distribution data. Therefore, a Method 5 train, employing a smooth filter media was used to collect particulate matter samples, followed by scanning electron microscope examination of the particles to determine the particle size distribution. This is documented as CAR-003.

2. Prior to the test, the analytical laboratory expressed concern that analytical surrogate compounds placed onto the adsorbent resin in some of the sampling trains might be stripped off unless sampling is conducted at very low sampling rates. In order to address this concern, all semivolatile organic sampling trains were operated for a nominal sampling run time of 4 hours instead of the planned nominal sampling time of three hours. The same nominal volume of sample was collected over the four hour period that would have been collected in three hours. This represents a very conservative approach to the issue, and is documented as CAR-004.

3. During Run 2 of the PDT, the glass probe liner on the M0023A train was broken due to high winds swinging the sampling train as it was being moved from one traverse point to another. The stack sampling crew and regulatory observers noted the break and immediately stopped sampling. Upon investigation, it was found that both pieces of the broken probe liner could be retrieved and that the sampling train leak-checked from the break through the remainder of the train. All parties agreed that there was no impact on sample integrity, so the broken probe liner pieces were caped, taken to the recovery area and rinsed. The probe liner was replaced and the train was used to complete the sampling run. The rinse of the broken probe liner pieces was combined with the final train rinse to capture the entire sample. This is documented as CAR-007.

4. Makeup water samples were collected at the beginning of each run rather than being collected only once at the beginning of the test program. This change was made based on plant personnel's recommendations and concerns that the makeup water quality could potentially change over time. This modification is viewed as an improvement to the original test protocol.

5. In order to keep any water droplets and particulate matter from entering the M0040 sampling train, a glass wool plug was inserted into the sample probe. This was not described in the test plan, but was deemed to be a good operating practice for this train.

6. At the end of Run 1, the Test Manager noticed that the silica gel in the M0061 train was quite wet. The sampling team was directed to add an additional silica gel impinger to the M0061 train to prevent this situation from occurring again. A check of the moisture determination from the M0061 train used in Run 1 was compared to the moisture determinations from the other Run 1 trains, and found to be consistent. Thus there was no adverse impact on the Run 1 M0061 sample.

7. EPA requested that split samples of the process feed materials and effluents be provided. Additional sample volume was collected accordingly, and samples were split with EPA.

Prior to the CPT, a database of all expected field samples was developed and cross-referenced with the analyses planned for each sample. A master list of samples generated from the database was used as a field QC checklist to help ensure that all samples were collected and shipped to the laboratory. Sample collection activities were recorded on log sheets, samples were labeled, packaged, and shipped to the analytical laboratory using traceability procedures described in the QAPP. Included with the samples were request-for-analysis forms specifying the required analyses for each sample. Copies of the process sample collection logs are included in Appendix D. Copies of the chain-of-custody records, and an index of sample numbers and identifications are included in the analytical data packages. Stack gas sample collection sheets are included with the full stack sampling report in Appendix I of this report. A review of the sample collection log sheets indicates that samples were collected as required, all applicable data were recorded, and sampling equipment conditions and operating parameters (particularly applicable to stack sampling activities) were within the requirements of the applicable methods.

5.1.3 Sample Analysis

Analytical data quality was determined through the analysis of blanks, duplicates, spiked samples, and reference materials, as prescribed by the QAPP. In large measure, the analytical data quality objectives for the PDT program were met. Section 5.2, below, and the data validation report in Appendix H, present more detailed results for each analytical data quality determination. Other observations and notes regarding sample analysis are provided in the next several paragraphs.

1. The selected laboratory for the performance test has a slightly different target analyte list compared to those presented in the original test plan. Revised target analyte lists were presented to EPA and were approved for use in the test. This is documented as CAR-001.

2. Several analytical results for the POHCs in the stack gas were above the upper calibration range of the analytical instrument. Since these analyses totally consume the sample, there was no opportunity to conduct a dilution and reanalyze the samples. The laboratory therefore reported estimated values. When this situation came to the attention of the PDT Manager and QA Manager, the laboratory was asked if anything could be done to qualify these estimates to ensure that they were valid. The laboratory set up an extended calibration curve for the affected compounds and requantified the samples as discussed in the case narrative of the VOST analytical data package. The requantified results were all less than the original reported results, therefore the original results are considered to be biased high. In order to be conservative in the use of these data, the original high emission values were used for calculating Destruction and Removal Efficiency, thus resulting in a conservatively low DRE.

5.1.4 Operations and Process Instrumentation

Process monitoring systems were calibrated prior to the PDT. Calibration data is presented in Appendix L. All process instrumentation met the performance criteria, and were deemed to produce reliable data, with one exception. While the stack gas flow rate monitoring system showed acceptable calibration results prior to the test, it was noted during the course of the PDT, that Siemens Water Technologies Corp.'s installed stack gas flow rate monitor was not corresponding with the Pitot tube readings of the stack sampling team. Further investigation indicated that some type of fault in the stack gas flow rate monitor was being experienced, however it was not able to be corrected during the course of the PDT. All parties were informed of the situation, and a decision was made to complete the PDT and to use the average of the stack gas sampling train flow rate determinations from each run to set the maximum stack gas flow rate operating limit for the system. Siemens Water Technologies Corp. will need to correct the fault in the stack gas flow rate monitoring system in order to demonstrate continuing compliance with the operating limit.

A CEMS Performance Specification Test was conducted prior to the PDT, and the emissions monitors met the applicable performance requirements. A CEMS Performance Specification Test Report is presented in Appendix K. Daily calibration of stack gas continuous emissions monitoring systems was conducted during the PDT. Each monitor met the calibration criteria during each day of testing.

The original test plan calls for an organic surrogate mixture to be added to the spent activated carbon feed. That mixture was specified to contain 1,1,1-Trichloroethane, however the compound is not available because it is an ozone depleting substance. Methylene chloride was substituted for 1,1,1-trichloroethane. This is documented as CAR-002.

Several modifications to the target operating conditions and anticipated permit limits were made after approval of the Performance Demonstration Test Plan. Most of these changes were made as a result of preliminary testing. Additionally, EPA included with their test plan approval letter a table of information and process data that they wanted included in the test report. Revised operating condition targets and the list of data requested by EPA are documented as CAR-006.

In order to maximize the stack gas flow rate (minimize the gas residence time) for the performance test, a source of additional air was needed beyond what is normally supplied by the combustion air fan. The access door on Hearth #1 was opened to allow additional air to be drawn into the system and to pass through the combustion and air pollution control portions of the system. This is documented as CAR-008.

5.1.5 Stack Sampling Equipment

All stack sampling equipment was calibrated according to the protocols given in the applicable sampling methods. Each sampling system passed the calibration criteria. Stack sampling equipment calibration records are included in the Stack Sampling Report in Appendix I, of this report.

5.1.6 Laboratory Analytical Instrumentation

QA/QC procedures, as specified by the analytical methods and summarized in the PDT Plan and QAPP, were conducted and documented during the test. Analytical instrument calibration records and all raw analytical data are presented in the analytical data packages, submitted as separate volumes. No calibration problems were identified by the laboratories.

5.2 AUDITS AND DATA VALIDATION

The following audits were provided for in the QAPP:

- Field audits
- Performance Evaluations
- Office Audits
- Laboratory Audits.

A field audit was used to ensure that work was performed in accordance with the various project controlling documents and associated standard operating procedures. This audit was conducted throughout the test by the PDT Manager through observation of process operations and sample collection. It is the opinion of the PDT Manager, based on field observations, that all work was performed in substantial compliance with the specifications contained in the PDT Plan and QAPP.

VOST audit samples (spiked Tenax resin) were provided by the regulatory agencies. An initial set of VOST audit tubes were received from EPA's contract laboratory and were analyzed with the samples from the PDT. These initial audit samples, however were received without proper documentation and preservation, and were thus deemed to be of suspect validity. EPA was informed of the issue and another set of VOST audit tubes were received from EPA's contract laboratory (this time with proper documentation and preservation). These audit samples were submitted to the laboratory for analysis, but the timing was such that they were not analyzed with the actual PDT samples. Results for all of the audit sample received are presented in Table 5-1. The test team participants do not know the true value of the audit samples, so the analytical results are reported here for review by the regulatory agencies.

The preparation of this report was conducted under the office QA/QC program in place at Focus. All records, correspondence, calculations, data, and reports are maintained in designated files for future reference. Reports, numerical tabulations, drawings, and calculations are checked for completeness and technical correctness, and documented prior to release in final form to the client.

Laboratory audits were provided for in the PDT Plan and the QAPP as an option to be exercised, if necessary, during the test program. No situations arose through the course of the test program which suggested the need for a laboratory audit.

Data validation consisted of a thorough check of all calculations involved in reducing sampling and analysis data. Subsequently, the data were compared to expected values and were investigated for consistency within and between test runs. For example, comparisons were made of stack gas flow rates, process operating temperatures, and sampling equipment operating conditions. Analytical data were reviewed to identify variations between duplicate measurements of the same parameter, either from multiple analyses of the same sample or from analyses between replicate test runs. Finally, QA/QC results were compared to the target data quality objectives defined in the QAPP and in the laboratory standard operating procedures (SOPs). During the project, 12,491 analytical data quality indicators were evaluated. Over 93 percent of the data quality objectives were completed and met. The data compare well within and between runs, and the measurements agree well with the expected values. The data are technically sound and are usable for their intended purpose. A data validation report is presented in Appendix H.

5.3 CALCULATIONS

Where applicable, the RF-2 system's performance and/or emissions were calculated using formulas presented in appropriate regulations. Other calculations followed generally accepted practice for thermal treatment process operations and performance test reporting. Many calculations were made using spreadsheets specifically designed by Focus for performance test data reduction and reporting, while other calculations were made by hand. Appendix G documents how all calculations were made for performance determination during this test program.

5.4 CONCLUSIONS

Overall, the PDT was executed in substantial conformance to the requirements and specifications of the project controlling documents. Any anomalies observed have been documented and corrective actions have been implemented as necessary. The impact of these anomalies has been thoroughly reviewed and assessed. In the judgment of the PDT Manager, those anomalies do not have a discernible negative impact on data quality or the utility of the data gathered to serve their intended purpose as defined in the PDT Plan and QAPP.

6.0 OPERATING PARAMETER LIMITS

The Siemens Water Technologies Corp. Carbon Reactivation Furnace RF-2 system demonstrated compliance with all applicable regulatory requirements during the PDT program. Operating parameter limits and associated automatic waste feed cutoff setpoints (as applicable) will be established as described in the approved PDT Plan and in the appropriate regulations of 40 CFR 63 Subpart EEE. Most operating parameter limits are based on demonstrations made during the PDT. For some parameters, such as maximum stack gas CO concentration, and minimum packed bed scrubber pressure differential, either regulation, guidance, or equipment manufacturer's recommendations (rather than the PDT demonstrated values) are used as the basis for the limit.

6.1 DEVELOPMENT OF OPERATING LIMITS

Limits on a number of operational control parameters must be maintained as an indication that the RF-2 system continues to operate in compliance with the applicable emission standards. Table 6-1 summarizes the discussion of the operational parameter limits for the RF-2 unit. To facilitate review, the operating parameters are grouped into the following categories:

- Group A1 parameters are continuously monitored and recorded, and are interlocked with the automatic waste feed cutoff system. Group A1 parameter limits are established from test operating data, and are used to ensure that system operating conditions are equal to or are more rigorous than those demonstrated during the test.
- Group A2 parameters are continuously monitored and recorded, and are interlocked with the automatic waste feed cutoff system. Group A2 parameter limits are established based on regulatory requirements rather than on the test operating conditions, e.g., the maximum stack CO concentration.
- Group B parameters are continuously monitored and recorded, but are not required to be interlocked with the automatic waste feed cutoff system. Operating records are required to ensure that established limits for these parameters are not exceeded. The Group B parameter limits are established based on the operation of the system during the test.
- Group C parameters are continuously monitored and recorded, but are not required to be interlocked with the automatic waste feed cutoff system. Group C parameter limits are based on manufacturer's recommendations, operational safety, and good operating practice considerations rather than on the test operating conditions, e.g., the minimum packed bed scrubber pressure differential.

6.2 SPECIFIC OPERATING PARAMETERS

Operating parameter limits for each of the control parameters have been established as specified in the HWC MACT regulations given in 40 CFR 63.1209 and the approved PDT plan. The following sections describe how each operating parameter limit has been established.

In addition to establishing specific operating limits, Siemens Water Technologies Corp. anticipates having limits on the types of waste that can be treated in RF-2. Since Siemens Water Technologies Corp. has demonstrated greater than 99.99% DRE during the PDT while treating chlorobenzene, a Class 1 (most thermally stable) compound, it is expected that Siemens Water Technologies Corp. will be permitted to treat all of the materials represented by the waste codes in the facility's most recent RCRA Part A permit application. Specific prohibitions are anticipated in the site's permit, for feed materials containing greater than 50 ppm of PCBs and those listed with the waste codes F020, F021, F022, F023, F026 or F027.

6.2.1 Parameters Demonstrated During the Test (Group A1 Limits)

Group A1 parameter limits are based on the results of the testing. The following operating parameters will be established as Group A1 parameters for the RF-2 system.

6.2.1.1 Maximum Spent Carbon Feed Rate

The PDT was conducted in order to demonstrate the maximum feed rate of spent carbon. The spent carbon feed rate is monitored on a continuous basis. The maximum allowable spent carbon feed rate has been established as a block hour average limit from the average of feed rates demonstrated during each of the three runs of the PDT.

6.2.1.2 Minimum Afterburner Temperature

The PDT was conducted at the minimum afterburner temperature with maximized combustion gas flow rate (minimum residence time), since these are the conditions least favorable for DRE. Organic emissions were also measured under these conditions for risk assessment purposes. Based on successful demonstration of DRE during the PDT, the minimum temperature limit has been established as an hourly rolling average equal to the average of the demonstrated test run average values.

6.2.1.3 Minimum and Maximum Hearth #5 Temperature

As part of EPA's approval of the PDT Plan, Siemens Water Technologies Corp. was required to establish both a minimum and maximum temperature limit for Hearth #5 of the reactivation furnace. Since both a minimum and maximum temperature could not be demonstrated in the single test condition approved for the test, Siemens Water Technologies Corp. operated Hearth #5 at a maximum temperature during the PDT and will conduct a separate minimum temperature test outside of the formal PDT period.

The maximum Hearth #5 temperature limit has been established as an hourly rolling average equal to the average of the demonstrated test run averages.

6.2.1.4 Minimum Venturi Scrubber Differential Pressure

The performance test was conducted to demonstrate the minimum venturi scrubber differential pressure. Venturi scrubber differential pressure is monitored on a continuous basis. Based on successful demonstration of particulate and metals control during the performance test, the minimum venturi scrubber differential pressure limit has been established as the average of the hourly rolling average values demonstrated during each run of the performance test. The permit limit is also expected to be an hourly rolling average value.

6.2.1.5 Minimum Quench/Venturi Scrubber Recycle Liquid Flow Rate

The performance test was conducted to demonstrate the minimum quench/venturi scrubber recycle flow and maximum stack gas flow, thus establishing a *de facto* minimum liquid to gas ratio. Quench/Venturi scrubber flow and stack gas flow are both monitored on a continuous basis. Based on successful demonstration during the performance test, the minimum quench/venturi scrubber recycle liquid flow rate limit has been established based on the average of the hourly rolling average values demonstrated during each run of the performance test. This limit will be established as an hourly rolling average.

6.2.1.6 Minimum Packed Bed Scrubber pH

The performance test was conducted to demonstrate the minimum packed bed scrubber pH at maximum total chlorine/chloride feed rate. Scrubber pH is monitored on a continuous basis. Based on successful demonstration of HCl and Cl_2 control during the performance test, the minimum packed bed scrubber pH limit has been established as the average of the hourly rolling average pH values demonstrated during each run of the performance test. The permit limit will be administered as an hourly rolling average.

6.2.1.7 Minimum Packed Bed Scrubber Recycle Liquid Flow Rate

The performance test was conducted to demonstrate the minimum packed bed scrubber recycle flow rate and maximum stack gas flow, thus establishing a *de facto* minimum liquid to gas ratio. Packed bed scrubber recycle flow and stack gas flow are both monitored on a continuous basis. Based on successful demonstration of HCl and Cl_2 control during the performance test, the minimum packed bed scrubber recycle liquid flow rate limit has been established as the average of the hourly rolling average values demonstrated during each run of the performance test. This limit will also be administered on an hourly rolling average basis.

6.2.1.8 Minimum Scrubber Blowdown Flow Rate

The performance test demonstrated a minimum scrubber blowdown flow rate, in order to demonstrate worst case conditions for solids buildup in the scrubbing system. In order to conserve water, Siemens Water Technologies Corp. recycles most of the liquid from the air pollution control system. However, in order to prevent the buildup of dissolved solids in the recycled water, a certain amount of the water must be purged (or blown down) from the system. As water is purged from the system, fresh makeup water is added. The minimum scrubber blowdown flow rate limit has been based on the average of the hourly rolling average values demonstrated during each run of the performance test. This limit will be administered as an hourly rolling average.

6.2.1.9 Minimum WESP Secondary Voltage

Although the HWC MACT regulations do not require any indicator of performance in an electrically enhanced emissions control device, Siemens Water Technologies Corp. believes that it is appropriate to establish a performance indicator. Accordingly, WESP secondary voltage (expressed as KVDC) is used as the indicator of continuing WESP performance. The minimum value has been established as the average of the minimum hourly rolling average secondary voltage values demonstrated during each run of the performance test. The secondary voltage limit will be based on an hourly rolling average.

6.2.1.10 Maximum Combustion Gas Velocity (Stack Gas Flow Rate)

The stack gas flow rate (expressed as actual cubic feet per minute) is used as the indicator of combustion gas velocity. The maximum stack gas flow rate was planned to be established from the mean of the maximum hourly rolling average stack gas flow rates measured by Siemens Water Technologies Corp.'s stack gas flow rate monitor during each run of the performance test. As stated in earlier sections of this report, the stack gas flow rate monitor experienced difficulties during the PDT such that the measurements were not reliable. Each isokinetic sampling system used for stack gas emissions measurements during the PDT also included the measurement of stack gas flow rate. Thus, the average stack gas flow rate determinations for each run, derived from the stack gas sampling systems, has been used to establish a maximum stack gas flow rate limit. The maximum stack gas flow rate limit will be administered as an hourly rolling average.

6.2.2 Group A2 Parameters

6.2.2.1 Maximum Stack Gas CO Concentration

The maximum hourly rolling average stack gas CO concentration was maintained at or below 100 ppmv corrected to 7% oxygen (dry basis) during the test. An operating parameter limit for maximum stack gas carbon monoxide concentration of 100 ppmv hourly rolling average corrected to 7% oxygen will be established.

6.2.2.2 Fugitive Emissions Control

The HWC MACT regulations require controlling combustion system leaks. By design (no open feed systems), the combustion chamber constitutes a sealed system. There are no locations for combustion system leaks to occur. Therefore, the RF-2 system is in compliance with 40 CFR 63.1206(c)(5)(i)(A).

6.2.3 Group B Parameters

6.2.3.1 Maximum Total Chlorine/Chloride Feed Rate

During the PDT, Siemens Water Technologies Corp. maximized the feed rate of total chlorine/chloride through the spiking of tetrachloroethene and other chlorinated organic compounds. Since the HCl and Cl_2 emissions measured during the PDT were less than the applicable standard, the limit for total chlorine/chloride feed rate has been set as a 12-hour rolling average, equal to the average of the average total chlorine/chloride feed rate during the three runs of the PDT. Total chlorine/chloride includes the native chlorine/chloride in the spent activated carbon feed plus the spiked chlorine/chloride. Records of feed analyses, and the calculated 12-hour rolling average total chlorine/chloride feed rate values will be maintained to demonstrate compliance with the chlorine/chloride feed rate limit.

6.2.3.2 Maximum Mercury Feed Rate

Due to the low amounts of mercury expected in the spent activated carbon, Siemens Water Technologies Corp. has elected to comply with the mercury standard by calculating and complying with a 12-hour rolling average Maximum Theoretical Emission Concentration (MTEC), conservatively assuming no mercury removal across the APC system. The MTEC is complied with as a maximum mercury feed rate limit. This limit has been calculated from the performance test data by using the stack gas flow rate and oxygen concentration, and the maximum allowable stack gas mercury concentration based on the HWC MACT regulations. The feed rate limit is determined assuming that all mercury is emitted, and is complied with as a maximum 12-hour rolling average mercury feed rate limit.

6.2.3.3 Maximum Semivolatile Metals Feed Rate

Siemens Water Technologies Corp. demonstrated compliance with the semivolatile metal emission standard while spiking lead during the test. Therefore, the permitted feed rate limit for semivolatile metals (total cadmium plus lead) has been set as a 12-hour rolling average value equal to the average semivolatile metal feed rate demonstrated during the three runs of the PDT. Records of feed analyses, and the calculated 12-hour rolling average semivolatile metal feed rate values will be maintained to demonstrate compliance with the semivolatile metal feed rate limit.

6.2.3.4 Maximum Low Volatility Metals Feed Rate

Siemens Water Technologies Corp. demonstrated compliance with the low volatility metal emission standard while spiking chromium during the test. The emissions measured during the test were significantly lower than the allowable limit. Therefore, the permitted feed rate limit for low volatility metals (total arsenic, plus beryllium, plus chromium) will be set as a 12-hour rolling average extrapolated upward to the HWC MACT standard based on the average low volatility metal feed rate and the average low volatility metal System removal Efficiency (SRE) during the three runs of the CPT. Extrapolation has been conducted as described in the approved PDT Plan. Records of feed analyses, and the calculated 12-hour rolling average low volatility metal feed rate values will be maintained to demonstrate compliance with the low volatility metal feed rate limit.

6.2.4 Group C3 Parameters

Group C parameter limits are based on manufacturer's recommendations, operational safety and good operating practice considerations. The following parameters are proposed as Group C parameters.

6.2.4.1 Minimum Packed bed Scrubber Pressure Differential

The minimum packed bed scrubber pressure differential is based on past operating experience. This limit has been established as an hourly rolling average limit.

6.3 EXTRAPOLATION OF METALS FEED RATE LIMITS

Siemens Water Technologies Corp. spiked lead and chromium into RF-2 during the PDT. Lead and chromium are representative of the semivolatile and low volatility metal groups, respectively. Since the lead emissions were very close to the applicable standard during the PDT, Siemens Water Technologies Corp. has established the maximum semivolatile metal feed rate as the average feed rate that was demonstrated during the three runs of the PDT. The emissions of low volatility metals however, were substantially below the standard during the PDT, thus Siemens Water Technologies Corp. has extrapolated the test results upward to establish a low volatility metals feed rate limit. PDT data has been used to calculate a system removal efficiency (SRE) for chromium, which can then be applied to the LVM metal volatility group. System removal efficiency is shown in Table 6-2, and was calculated using the following equation:

$$SRE_i = \left[1 - \frac{\dot{m}_{i,out}}{\dot{m}_{i,in}}\right] \times 100\%$$

where:

$\dot{m}_{i,in}$ = mass feed rate of metal i.

$\dot{m}_{i,out}$ = mass emission rate of metal i.

SRE_i = demonstrated system removal efficiency of metal i.

The demonstrated system removal efficiency for chromium can be used to establish a mass feed rate limit for low volatility metals using the following equation:

$$\dot{m}_{g,in,\max} = \frac{\dot{m}_{g,out,MACT}}{\left(1 - \frac{SRE_i}{100}\right)}$$

where:

$\dot{m}_{g,in,\max}$ = maximum allowable mass feed rate of metal group g

$\dot{m}_{g,out,MACT}$ = maximum allowable mass emission rate of metal group g based on the MTEC analysis

SRE_i = demonstrated system removal efficiency of metal i designated to be the metal representative of metal group g.

7.0 EMISSIONS DATA TO SUPPORT THE SITE SPECIFIC RISK ASSESSMENT

Siemens Water Technologies Corp. collected emissions data to support the site specific risk assessment under "worst-case" conditions rather than conducting a separate "risk burn" under less aggressive "typical" conditions. Siemens Water Technologies Corp. therefore believes that the emissions presented represent conservative values which are higher than during typical operation. The following section presents the emission data and discusses interpretation of the data where appropriate.

7.1 DETECTION LIMITS

Method detection limits (MDLs) were determined for each of the stack gas analyses conducted. MDLs were determined statistically for non-isotope dilution methods following the requirements of 40 CFR Part 136, Appendix B. MDLs for isotope dilution methods were determined following the promulgated method requirements. Isotope dilution method MDLs were calculated based on 2.5 times the background noise. All reported MDLs, including condensate analyses, are matrix specific and reflect any dilutions, splits, or concentrations applied during the extraction or analysis of the samples. As such, laboratory-supplied MDL's for these stack gas analyses appear to meet the definition of sample quantitation limit (SQL) referenced in several sources of risk assessment guidance.

7.2 METALS

EPA Method 29 was used to sample stack gas multiple-metals emissions during the PDT. Metals emission data were collected in addition to the metals feed rate data, and are presented with the compliance data in Section 4.0. Emission results for the multiple-metals trains are repeated here in Tables 7-1 through 7-3. Mercury speciation data for the risk assessment are presented in Table 7-4.

A separate SW-846 Method 0061 sampling train was operated during each run of the PDT to determine the emission of hexavalent chromium. Sampling conditions and emission results for hexavalent chromium are presented in Tables 7-5 through 7-7.

7.3 HYDROGEN CHLORIDE AND CHLORINE

HCl and Cl_2 emissions were determined using EPA Method 26A during the PDT and are presented with the compliance results in Section 4.0. They are repeated here in Tables 7-8 through 7-10.

7.4 PARTICLE SIZE DISTRIBUTION

Particle size distribution data were collected using EPA Method 5 followed by scanning electron microscope evaluation of the particles collected on the filters. Particle size distribution results are presented in Table 7-11.

7.5 SPECIATED VOLATILE ORGANICS

Stack gas volatile organic samples were collected using SW-846 Method 0030, and analyzed for a list of target analytes, as specified in the PDT Plan, as well as for tentatively identified compounds (TICs). Sampling conditions and results are presented in Tables 7-12 through 7-14.

7.6 SPECIATED SEMIVOLATILE ORGANICS

An SW-846 Method 0010 sampling train was used to sample the stack gases for a list of target semivolatile organics, as specified in the PDT Plan, as well as for tentatively identified compounds (TICs). The sampling conditions and results are summarized in Tables 7-15 through 7-17.

7.7 TOTAL VOLATILE ORGANICS, SEMIVOLATILE ORGANICS, AND NONVOLATILE ORGANICS

Determination of these emissions was conducted according to the procedures presented in EPA/600/R-96/036, and are reported in three fractions:

1 Total volatile organics, expressed as total mass of C_1 through C_7 n-alkanes (Tables 7-18 through 7-20).

2 Total chromatographable organics (TCO), representing compounds with a boiling point range of 100°C to 300°C (Tables 7-21 through 7-23).

3 Total nonvolatile organics (GRAV), representing compounds with a boiling point above 300°C (Tables 7-21 through 7-23).

7.8 DIOXINS AND FURANS

Stack gases were sampled using SW-846 Method 0023A for PCDD/PCDF emissions during each PDT run. Analyses were performed to identify the total mass of the tetra- through octa-chlorinated PCDD and

PCDF congeners, as well as the mass of each individual 2,3,7,8-substituted PCDD and PCDF congener. In order to evaluate the potential risk posed by emissions of a variety of PCDD/PCDF compounds, each 2,3,7,8-substituted isomer is assigned a "toxic equivalence factor" which is used to equate the toxicity of that compound to the toxicity of 2,3,7,8-TCDD. A summary of the sampling conditions and emission results is provided with the compliance results in Section 4.0, and are repeated here as Tables 7-24 through 7-26. Analytical results for each of the 2,3,7,8-substituted PCDD and PCDF isomers, and their corresponding emissions, expressed as 2,3,7,8-TCDD toxic equivalents are presented in Tables 7-27 through 7-29.

7.9 SPECIATED PAHS

Polyaromatic hydrocarbons were analyzed on the same sampling train used for speciated semivolatile organic compound determinations. Analyses for PAHs followed CARB Method 429. Sampling conditions and emission results are presented in Tables 7-30 through 7-32.

7.10 POLYCHLORINATED BIPHENYLS (PCBS)

PCBs were analyzed on the same sampling train used for speciated semivolatile organic compound determinations. Analyses for PCBs followed EPA Method 1668. Sampling conditions and emission results are presented in Tables 7-33 through 7-35.

7.11 ORGANOCHLORINE PESTICIDES

Organochlorine pesticide compounds were sampled using SW-846 Method 0010. Sampling conditions and emission results are presented in Tables 7-36 through 7-38.

TABLES

Analytical Notation Legend

Notation	Meaning
B	Method blank contamination. The associated method blank contains the analyte at a reportable level.
C	Co-eluting isomer
COL	Greater than 40% RPD between primary and confirmatory column. Reported lower value.
E	Estimated – Exceeds calibration range
J	Estimated result. Result is less than the reporting limit.
M	Result measured against nearest internal standard, assuming a response factor of 1.
N	Estimated. Tentatively identified compound.
NA	Not analyzed or Not applicable
ND or U	Not detected
Q	Estimated maximum possible concentration (EMPC)

Table 1-1. Regulatory Compliance Performance and Emissions Summary

Parameter	Units	Test Objective	Run 1	Run 2	Run 3	Test Average
DRE - Chlorobenzene	%	> 99.99	> 99.9914	> 99.9970	99.9940	> 99.9941
DRE - Tetrachloroethene	%	> 99.99	> 99.9951	> 99.9982	> 99.9976	> 99.9970
Stack gas filterable particulate matter concentration (b)	mg/dscm (gr/dscf)	< 34 < 0.015	21 0.0090	10 0.0046	18 0.0079	16 0.0072
Stack gas PCDD/PCDF (b)	ng TEQ/dscm	< 0.40	0.065	0.052	0.062	0.060
Stack gas mercury (b)	ug/dscm	< 130	< 6.1	< 5.8	< 7.5	< 6.5
Stack gas semivolatile metals (Cd + Pb) concentration (b)	ug/dscm	< 240	210	130	360	230
Stack gas low volatility metals (As + Be + Cr) concentration (b)	ug/dscm	< 97	< 35	< 12	< 21	< 23
Stack gas HCl/Cl_2 (b)	ppmv as HCl	< 77	5.4	3.2	3.0	3.9
Stack gas carbon monoxide concentration (b)	ppmv	< 100	11.5	10.4	15.6	12.5
Stack gas total hydrocarbon concentration (b)	ppmv, as propane	< 10	< 0.6	< 0.6	< 0.6	< 0.6
Stack gas oxygen concentration	vol%, dry	NA	9.8	8.9	9.3	9.3

(a) Stack gas THC and O_2 data were obtained using Airtech's temporary CEMS.

(b) Corrected to 7% oxygen, dry basis.

Note: Compliance with regulatory standards is based on the arithmetic average of the three test runs, except for DRE, where each run must meet the specified criteria [see 40 CFR 63.1206(b)(12)(ii)]. All values are reported to two significant figures.

Table 1-2. Summary of Process Operating Conditions [a]

		PDT	Actual			
Parameter	Units	Target	Run 1	Run 2	Run 3	Average
Spent carbon feed rate (1-min avg)	lb/hr	3000	3071	3022	3053	3049
Total chlorine/chloride feed rate	lb/hr	75 – 80	59.5	62.0	58.6	60.0
Mercury feed rate	lb/hr	3.0E-04	4.0E-05	4.2E-05	7.0E-05	5.1E-05
Total semivolatile metals feed rate (Cd+Pb)	lb/hr	1.1E-01	1.0E-01	1.0E-01	1.0E-01	1.0E-01
Total low volatility metals feed rate (As+Be+Cr)	lb/hr	3.9E-01	3.6E-01	3.8E-01	3.7E-01	3.7E-01
Monochlorobenzene feed rate	lb/hr	33 – 37	34.8	35.0	35.0	35.0
Tetrachloroethene feed rate	lb/hr	33 – 37	35.0	35.0	34.8	35.0
Organic surrogate mixture feed rate	lb/hr	40 – 42	40.9	40.9	40.7	40.8
Hearth #5 temperature	ºF	1650	1650	1650	1650	1650
Afterburner temperature	ºF	1750	1763	1767	1751	1760
Venturi scrubber pressure differential	in w.c.	≥ 15	19.2	17.7	18.0	18.3
Quench/venturi scrubber total liquid flow rate	gpm	70 – 75	74.6	77.0	73.2	74.9
Packed bed scrubber pH	pH	≥ 4	4.82	4.62	3.68	4.37
Packed bed scrubber liquid flow rate	gpm	≥ 60	63.6	63.1	62.9	63.2
Wet scrubber bowdown flow rate	gpm	60	59.8	57.2	56.9	58.0
WESP secondary voltage	kVDC	≥ 14	24.3	22.1	21.7	22.7
Stack gas flow rate	acfm	9,000	11,297	8,506	8,846	9,550
Stack gas carbon monoxide [b]	ppmv	≤ 100	11.5	10.4	15.6	12.5
Stack gas total hydrocarbons (as propane) [c]	ppmv	≤ 10	< 0.6	< 0.6	< 0.6	< 0.6
Stack gas oxygen [d]	vol %	NA	10.1	9.2	9.4	9.6

Note: HRA = Hourly rolling average.
(a) All values are averages. All but constituent feed rates and stack gas flow rates are taken from control room instruments. Spiking rates have been added to spent activated carbon feed rates, since spiking occurred downstream of the spent activated carbon mass feed rate measurement system. Stack gas flow rates are the average from all isokinetic sampling trains from each run. Stack gas flow monitor was not working properly during the test.
(b) 60-minute rolling average, corrected to 7% O_2, dry basis.
(c) Corrected to 7% O_2, dry basis.
(d) Dry basis.

Table 2-1. Summary of Planned Sampling Locations, Equipment, and Methods

Location[a]	Sample Name (Number)	Access	Equipment	Sample Size	General Procedure/Frequency	Reference Method[b]
1	Spent Activated Carbon (1-Volatiles) (1-Semivolatiles) (1 – Metals) (1 - Properties) (1-Archive)	Conveyor	Teflon scoop 4L glass jug, 250 ml jar (VOA) 1L glass bottles with teflon lined lids	1 scoop per grab; 250 ml volatiles 1L semivolatiles 1L properties 1L metals 1L archive	Collect a grab sample at each 15-minute interval during each test run. Grab samples will be combined in a glass jug to build run composite. Collect four 1-lter samples and one 250 ml VOA jar of the homogenized composite at the end of the test run.	SW-846, Vol. II, Chapter 9, Section 9.3
2	Makeup water (2-Volatiles) (1-Semivolatiles) (1 – Metals) (1-Archive)	Tap	40 ml vials; 4L glass jug, 1L glass bottles with teflon lined lids	40 ml VOA 1L semivolatiles 1L metals 1L archive	Collect one pair of 40 ml VOA vials at the beginning of the test; Fill 4L bottle at beginning of test. Fill three 1-liter samples from the 4L bottle.	SW-846, Vol. II, Chapter 9, Section 9.2
3	Caustic (2-Volatiles) (1-Semivolatiles) (1 – Metals) (1-Archive)	Tap	40 ml vials; 4L glass jug, 1L glass bottles with teflon lined lids	40 ml VOA 1L semivolatiles 1L metals 1L archive	Collect one pair of 40 ml VOA vials at the beginning of the test; Fill 4L bottle at beginning of test. Fill three 1-liter samples from the 4L bottle.	SW-846, Vol. II, Chapter 9, Section 9.2
4	Scrubber Blowdown (2-Volatiles) (1-Semivolatiles) (1 – Metals) (1-Archive)	Tap	40 ml vials; 4L glass jug, 1L glass bottles with teflon lined lids	40 ml VOA ~200 ml per grab; 1L semivolatiles 1L metals 1L archive	Collect one pair of 40 ml VOA vials at each 30 minute interval; Collect a ~200 ml grab sample at each 30-minute interval during each test run. Grab samples will be combined in a glass jug to build run composite. Collect three 1-liter samples of the homogenized composite at the end of the test run.	SW-846, Vol. II, Chapter 9, Section 9.2

Table 2-1. Summary of Planned Sampling Locations, Equipment, and Methods

Location[a]	Sample Name (Number)	Access	Equipment	Sample Size	General Procedure/Frequency	Reference Method[b]
5	POTW Discharge (2-Volatiles) (1-Semivolatiles) (1 – Metals) (1-Archive)	Tap	40 ml vials; 4L glass jug, 1L glass bottles with teflon lined lids	40 ml VOA ~200 ml per grab; 1L semivolatiles 1L metals 1L archive	Collect one pair of 40 ml VOA vials at each 30 minute interval; Collect a ~200 ml grab sample at each 30-minute interval during each test run. Grab samples will be combined in a glass jug to build run composite. Collect three 1-liter samples of the homogenized composite at the end of the test run.	SW-846, Vol. II, Chapter 9, Section 9.2
Stack (6)	Stack gas M29	Port	EPA Method 29 multiple metals sampling train	Minimum 120 minutes[c,d]	Collect integrated sample for metals and moisture. Measure stack gas velocity, pressure, and temperature. Collect bag samples or use CEM for oxygen and carbon dioxide.	EPA Methods 1 through 5, and 29.
Stack (6)	Stack gas M0061	Port	SW-846 Method 0061 hexavalent chromium sampling train	Minimum 120 minutes[c,d]	Collect integrated samples for hexavalent chromium and moisture. Measure stack gas velocity, pressure, and temperature. Collect bag samples or use CEM for oxygen and carbon dioxide.	EPA Methods 1 through 5; SW846-0061
Stack (6)	Stack gas M26A	Port	EPA Method 26A sampling train	Minimum 120 minutes[c,d]	Collect integrated sample for particulate, hydrogen chloride, and chlorine. Measure stack gas velocity, pressure, and temperature. Collect bag samples or use CEM for oxygen and carbon dioxide.	EPA Methods 1 through 5, and 26A
Stack (6)	Stack gas M0010-SV	Port	SW-846 Method 0010 sampling train	Minimum 3 dry standard cubic meters[c,d]	Collect integrated sample for semivolatile organics, organochlorine pesticides, and moisture. Measure stack gas velocity, pressure, and temperature. Collect bag samples or use CEM for oxygen and carbon dioxide.	EPA Methods 1 through 5; SW846-0010.

Table 2-1. Summary of Planned Sampling Locations, Equipment, and Methods

Location[a]	Sample Name (Number)	Access	Equipment	Sample Size	General Procedure/Frequency	Reference Method[b]
Stack (6)	Stack gas M0010-P	Port	Combined SW-846 Method 0010, EPA CARB Method 429 sampling train	Minimum 3 dry standard cubic meters[c,d]	Collect integrated sample for PAHs, PCBs, and moisture. Measure stack gas velocity, pressure, and temperature. Collect bag samples or use CEM for oxygen and carbon dioxide.	EPA Methods 1 through 5; SW846-0010; CARB Method 429.
Stack (6)	Stack gas M0010-TOE	Port	SW-846 Method 0010 sampling train	Minimum 3 dry standard cubic meters[c,d]	Collect integrated samples for total semivolatile organics, total nonvolatile organics, and moisture. Measure stack gas velocity, pressure, and temperature. Collect bag samples or use CEM for oxygen and carbon dioxide.	EPA Methods 1 through 5; SW846-0010; EPA TOE Guidance
Stack (6)	Stack gas M0023A	Port	SW-846 Method 0023A sampling train	Minimum 3 hours and 2.5 dry standard cubic meters[c,d]	Collect integrated sample for PCDD/PCDFs, and moisture. Measure stack gas velocity, pressure, and temperature. Collect bag samples or use CEM for oxygen and carbon dioxide.	EPA Methods 1 through 5; SW846-0023A.
Stack (6)	Stack gas M0030	Port	SW-846 Method 0030 volatile organic sampling train	4 tube pairs per run; 40 minutes per tube pair. Up to 20 liters of stack gas per tube pair	Collect four pairs of sorbent tubes and stack gas condensate for volatile organcs during each run.	SW846-0030 (VOST)
Stack (6)	Stack gas M0040	Port	SW-846 Method 0040 sampling train	25 – 50 liters	Collect representative sample through a heated sample probe and filter; through a condenser and into a Tedlar bag. Transport dried sample and condensate to GC/FID.	EPA Methods 1 through 5; SW846-0040; EPA TOE Guidance.
Stack (6)	Stack gas PSD	Port	Cascade impactor	As required	Collect particle size distribution samples on multiple substrates	Cascade impactor mfgr. instructions
Stack (6)	Stack gas CEMS	Port	Temporary CEMS THC	Continuous	Continuously monitor stack gas for total hydrocarbons during each run	EPA Method 25A

Table 2-1. Summary of Planned Sampling Locations, Equipment, and Methods

Location[a]	Sample Name (Number)	Access	Equipment	Sample Size	General Procedure/Frequency	Reference Method[b]
Stack (7)	Stack gas CEMS	Port	Installed CEMS CO	Continuous	Continuously monitor stack gas carbon monoxide during each run.	40 CFR 63 Subpart EEE Appendix; PS 4B
Stack (7)	Stack gas CEMS	Port	Installed CEMS O_2	Continuous	Continuously monitor stack gas oxygen during each run.	40 CFR 63 Subpart EEE Appendix; PS 4B

a Refer to Figure 2-1.

b "SW846" refers to Test Methods for Evaluating Solid Waste, Third Edition, November 1986, and Updates.
"EPA Method" refers to New Source Performance Standards, Test Methods and Procedures, Appendix A, 40 CFR 60.
"CARB" refers to California Air Resources Board Methods.
"PS 4B" refers to Performance Specification 4B, 40 CFR 60.

c The exact volume of gas sampled will depend on the isokinetic sampling rate.

d Isokinetic sampling trains include:

- Collecting one set of bag samples (or using CEM) for oxygen and carbon dioxide analysis to determine stack gas molecular weight (EPA Method 3)
- Performing stack gas velocity, pressure, and temperature profile measurement for each sampling location (EPA Method 2)
- Determining the moisture content of the stack gas for each sampling train (EPA Method 4)

Table 2-2. Summary of Planned Performance Test Analytical Procedures and Methods

Sample Name	Analysis	Samples per Run	Total Field Samples for Analysis	Preparation Method (See Note 1)	Analytical Method (See Note 1)
Spent Activated Carbon	Volatile Organics	1	3	Purge & Trap (SW846-5035)	GC/MS (SW846-8260)
	Organics	1	3	Solvent extraction (SW846-3542)	GC/MS (SW846-8270)
	Chloride	1	3	SW846-5050	Ion chromatography (SW846-9056)
	Total metals	1	3	Acid digestion (SW846-3050)	ICP (SW846-6020) & CVAAS (SW846-7470 for Hg)
Semivolatile	Elemental	1	3	NA	(ASTM D5373) with (ASTM D3176) as an alternate
Makeup Water	Volatile Organics	1	3	Purge & Trap (SW846-5035)	GC/MS (SW846-8260)
	Organics	1	3	Solvent extraction (SW846-3542)	GC/MS (SW846-8270)
	Total metals	1	3	Acid digestion (SW846-3020)	ICP (SW846-6020) & CVAAS (SW846-7470 for Hg)
Caustic	Volatile Organics	1	3	Purge & Trap (SW846-5035)	GC/MS (SW846-8260)
Semivolatile	Organics	1	3	Solvent extraction (SW846-3542)	GC/MS (SW846-8270)
	Total metals	1	3	Acid digestion (SW846-3020)	ICP (SW846-6020) & CVAAS (SW846-7470 for Hg)
Scrubber Blowdown	Volatile Organics	1	3	Purge & Trap (SW846-5035)	GC/MS (SW846-8260)
Semivolatile	Organics	1	3	Solvent extraction (SW846-3542)	GC/MS (SW846-8270)
	Total metals	1	3	Acid digestion (SW846-3020)	ICP (SW846-6020) & CVAAS (SW846-7470 for Hg)

Semivolatile

Table 2-2. Summary of Planned Performance Test Analytical Procedures and Methods

Sample Name	Analysis	Samples per Run	Total Field Samples for Analysis	Preparation Method (See Note 1)	Analytical Method (See Note 1)
POTW Discharge	Volatile Organics	1	3	Purge & Trap (SW846-5035)	GC/MS (SW846-8260)
	Organics	1	3	Solvent extraction (SW846-3542)	GC/MS (SW846-8270)
	Total metals	1	3	Acid digestion (SW846-3020)	ICP (SW846-6020) & CVAAS (SW846-7470 for Hg)
Stack gas M0030 Semivolatile	VOCs + TICs (tenax + tenax/charcoal tubes) (Note 2)	(Note 3)	(Note 3)	Thermal desorption, trap (SW846-5041A)	GC/MS (SW846-8260)
	VOCs + TICs (condensate) (Note 2)	1	3	Purge and trap	GC/MS (SW846-8260)
Stack gas M0040	Total VOCs	1	3	Purge and trap for condensate Direct injection for gas	GC/FID (Guidance for Total Organics, App. A and E)
Stack gas M0010-SV (low res analysis)	Semivolatile Organics & TICs (Note 4)	1	3	Solvent extraction (SW846-3542)	GC/MS (SW846-8270)
	OCP (Note 5)	1	3	Solvent extraction (SW846-3542)	GC (SW-846-8081)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Velocity	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)

Table 2-2. Summary of Planned Performance Test Analytical Procedures and Methods

Sample Name	Analysis	Samples per Run	Total Field Samples for Analysis	Preparation Method (See Note 1)	Analytical Method (See Note 1)
Stack gas M0010-P (high res analysis)	PCB (Note 7)	1	3	Solvent extraction (SW846-3542)	GC/MS (EPA Method 1668)
	PAH (Note 8)	1	3	Solvent extraction (CARB 429)	GC/MS (CARB 429)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Velocity	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)
Stack gas M0010-TOE	Total SVOCs	1	3	Solvent extraction (SW846-3542)	TOC GC/FID (Guidance for Total Organics, Appendix C)
	Total NVOCs	1	3	Solvent extraction (SW846-3542)	Gravimetric Method (Guidance for Total Organics, Appendix D)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Velocity	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)
Stack gas M0023A	PCDD/PDCF	1	3	Solvent extraction (SW846-3500)	GC/MS (SW-846 Method 8290)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Velocity	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)

Table 2-2. Summary of Planned Performance Test Analytical Procedures and Methods

Sample Name	Analysis	Samples per Run	Total Field Samples for Analysis	Preparation Method (See Note 1)	Analytical Method (See Note 1)
Stack gas M29	Metals (Note 9)	1	3	Acid digestion (SW846-3050)	ICP (SW846-6020) & CVAAS (SW846-7470 for Hg)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Velocity	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)
Stack gas M0061	Hexavalent chromium	1	3	NA	Ion chromatography, post-column reactor (SW846-7199)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Velocity	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)
Stack gas M26A	Hydrogen chloride/Chlorine	1	3	NA	Ion chromatography (SW846-9057)
	Particulate	1	1	NA	Gravimetric (EPA Method 5)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Velocity	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)
Stack gas M00023A	PCDD/PCDF	1	3	Solvent extraction (SW846-8290)	GC/MS (SW846-8290; & SW846-0023A)
	Moisture	1	3	NA	Gravimetric (EPA Method 4)
	Temperature	1	3	NA	Thermocouple (EPA Method 2)
	Flow rate	NA	NA	NA	Pitot tube (EPA Method 2)
	Oxygen, Carbon dioxide	(Note 6)	(Note 6)	NA	Orsat or CEM (EPA Method 3)
Stack gas PSD	Particle size distribution	NA	NA	NA	Cascade impactor manufacturer's instructions

Table 2-2. Summary of Planned Performance Test Analytical Procedures and Methods

Sample Name	Analysis	Samples per Run	Total Field Samples for Analysis	Preparation Method (See Note 1)	Analytical Method (See Note 1)
Stack gas temporary CEMS	Total hydrocarbons	(Note 10)	(Note 10)	NA	Extractive Analyzers, EPA Method 25A
Stack gas Installed CEMs	Carbon Monoxide	(Note 10)	(Note 10)	NA	Extractive Analyzers, 40CFR 63 Appendix
	Oxygen	(Note 10)	(Note 10)	NA	Extractive Gas Analyzers, 40 CFR 63 Appendix

Note 1: “ASTM” refers to American Society for Testing and Materials, Annual Book of ASTM Standards, Annual Series.
“SW846” refers to Test Methods for Evaluating Solid Waste, Third Edition, November 1986, and updates.
“EPA Methods” (Methods 1 through 5 and 23) refer to New Source Performance Standards, Test Methods and Procedures,, App. A, 40CFR 60.
“CARB” refers to California Air Resources Board methodology adopted January 27, 1987.
“Guidance for Total Organics” refers to EPA/600/R-96/036, March, 1996.

Note 2: Volatile Target Compounds as listed in this Test Plan, plus tentatively identified compounds.

Note 3: During each sampling run, 4 pairs of VOST tubes (8 samples) will be collected, but only 3 pairs (6 samples) will be analyzed. The extra tube pair provides a contingency in case of breakage or other event that could require analysis of the extra tube pair. Analysis of each tube in each tube pair will be conducted separately.

Note 4: Semivolatile Target Compounds as listed in this Test Plan, plus tentatively identified compounds.

Note 5: Organochlorinated pesticide (OCP) target compounds as listed in this Test Plan.

Note 6: One set of gas bag samples collected during each stack traverse for Orsat analysis, or CEM.

Note 7: Polychlorinated Biphenyl (PCB) target compounds target compounds as listed in the Plan

Note:8 Polycyclic Aromatic Hydrocarbon (PAH) target compounds as listed in this Plan

Note 9: Metal Target Compounds as listed in this Test Plan.

Note 10: Installed CEMs sampling and analysis is continuous during each run.

Table 3-1. Process Operating Data Summary - Run 1[a]

Parameter	Units	No. of Readings	Mean	Minimum	Maximum	Std. Dev.
Spent carbon feed rate (1-min avg)	lb/hr	274	3071	0	3555	706
Hearth #5 temperature	ºF	274	1650	1649	1650	0.4
Afterburner temperature	ºF	274	1763	1762	1764	0.5
Venturi scrubber pressure differential	in w.c.	274	19.2	17.3	19.9	0.8
Quench/venturi scrubber total liquid flow rate	gpm	274	74.6	74.3	74.8	0.1
Packed bed scrubber pH	pH	274	4.82	4.42	5.22	0.2
Packed bed scrubber liquid flow rate	gpm	274	63.6	63.2	63.9	0.2
Wet scrubber bowdown flow rate	gpm	274	59.8	58.0	61.8	1.0
WESP secondary voltage	kVDC	274	24.3	24.2	24.5	0.1
Stack gas flow rate	acfm	274	8626	8182	8894	204
Stack gas carbon monoxide [b]	ppmv	274	11.5	9.8	12.7	0.8
Stack gas oxygen (1-min avg) [c]	vol %	274	10.1	9.0	11.1	0.4

a All values are taken from process instrument logs presented in Appendix A, and are 60-minure rolling averages, except as noted.
b 60-minute rolling average, corrected to 7% O_2, dry basis.
c Dry basis.

Table 3-2. Process Operating Data Summary - Run 2[a]

Parameter	Units	No. of Readings	Mean	Minimum	Maximum	Std. Dev.
Spent carbon feed rate (1-min avg)	lb/hr	345	3022	47	3583	573
Hearth #5 temperature	ºF	345	1650	1648	1652	0.6
Afterburner temperature	ºF	345	1767	1765	1770	1.3
Venturi scrubber pressure differential	in w.c.	345	17.7	16.5	18.7	0.6
Quench/venturi scrubber total liquid flow rate	gpm	345	77.0	76.7	77.7	0.4
Packed bed scrubber pH	pH	345	4.62	4.23	4.98	0.2
Packed bed scrubber liquid flow rate	gpm	345	63.1	62.9	63.2	0.1
Wet scrubber bowdown flow rate	gpm	345	57.2	56.6	58.6	0.4
WESP secondary voltage	kVDC	345	22.1	21.8	22.3	0.1
Stack gas flow rate	acfm	345	7101	6935	7415	128
Stack gas carbon monoxide [b]	ppmv	345	10.4	8.3	12.9	1.3
Stack gas oxygen (1-min avg) [c]	vol %	345	9.2	8.6	10.7	0.4

a All values are taken from process instrument logs presented in Appendix A, and are 60-minure rolling averages, except as noted.
b 60-minute rolling average, corrected to 7% O_2, dry basis.
c Dry basis.

Table 3-3. Process Operating Data Summary - Run 3[a]

Parameter	Units	No. of Readings	Mean	Minimum	Maximum	Std. Dev.
Spent carbon feed rate (1-min avg)	lb/hr	275	3053	109	4211	744
Hearth #5 temperature	ºF	275	1650	1648	1652	0.8
Afterburner temperature	ºF	275	1751	1750	1754	0.6
Venturi scrubber pressure differential	in w.c.	275	18.0	17.3	19.2	0.5
Quench/venturi scrubber total liquid flow rate	gpm	275	73.2	72.4	75.9	0.7
Packed bed scrubber pH	pH	275	3.68	3.46	4.16	0.2
Packed bed scrubber liquid flow rate	gpm	275	62.9	62.7	63.9	0.2
Wet scrubber bowdown flow rate	gpm	275	56.9	55.4	58.5	0.7
WESP secondary voltage	kVDC	275	21.7	21.3	22.8	0.4
Stack gas flow rate	acfm	275	7049	6832	7380	109
Stack gas carbon monoxide [b]	ppmv	275	15.6	12.0	19.5	1.7
Stack gas oxygen (1-min avg) [c]	vol %	275	9.4	7.6	10.9	0.6

a All values are taken from process instrument logs presented in Appendix A, and are 60-minure rolling averages, except as noted.
b 60-minute rolling average, corrected to 7% O_2, dry basis.
c Dry basis.

Table 3-4. Feed Material Physical/Chemical Characteristics

		Spent Activated Carbon			
Characteristics	Units	Run 1	Run 2	Run 3	Average
Carbon content	wt%	61.3	67.6	60.2	63.0
Hydrogen content [a]	wt%	4.1	2.9	3.9	3.6
Oxygen content [a]	wt%	33.9	28.8	35.2	32.6
Nitrogen content	wt%	< 0.5	< 0.5	< 0.5	< 0.5
Sulfur content	wt%	< 0.2	< 0.2	< 0.2	< 0.2

(a) Hydrogen and oxygen content includes moisture. Oxygen determined by difference. Oxygen could not be analyzed due to a matrix interferrence.

Table 3-5. Feed Composition and Constituent Feed Rates (Chloride, Metals, POHCs)

Stream Name	Feed Rate (lb/hr)			
	Run 1	Run 2	Run 3	Average
Spent Activated Carbon	3071	3022	3053	3049
Monochlorobenzene Spike	34.82	35.05	35.05	34.97
Tetrachloroethene Spike	35.05	35.03	34.85	34.98
Lead Spike	19.83	20.15	19.88	19.95
Chrome Spike	19.83	20.15	19.88	19.95
Organic Surrogate Mixture Spike	40.87	40.88	40.73	40.83

Table 3-5. Feed Composition and Constituent Feed Rates (Chloride, Metals, POHCs), continued

Properties/Constituents	Units	Analytical Result: Spent Activated Carbon			Monochlorobenzene Spike			Tetrachloroethene Spike		
		Run 1	Run 2	Run 3	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3
Chlorine/chloride	mg/kg	3860 J	4740 J	3650 J	315548	315548	315548	855199	855199	855199
Metals										
Aluminum	mg/kg	4.33E+02	8.32E+02	7.85E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony	mg/kg	6.00E+00 ND	6.00E+00 ND	6.00E+00 ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	mg/kg	1.40E+00 B	1.40E+00 B	1.60E+00 B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium	mg/kg	2.11E+01	3.50E+01	3.73E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beryllium	mg/kg	2.20E-01 B	4.20E-01 B	5.40E-01 B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	mg/kg	1.60E-01 B	1.40E-01 B	2.40E-01 B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromium	mg/kg	3.70E+00	5.90E+00	5.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt	mg/kg	1.60E+00 B	1.80E+00 B	2.00E+00 B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	mg/kg	1.11E+01	1.74E+01	1.24E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	mg/kg	7.50E-01 B	8.80E-01 B	1.10E+00 B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	mg/kg	2.78E+02	2.70E+02	1.79E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	mg/kg	1.30E-02 B	1.40E-02 B	2.30E-02 B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	mg/kg	9.50E+00	5.08E+01	2.89E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	mg/kg	6.10E-01 B	5.50E-01 B	4.80E-01 B	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	mg/kg	3.00E+00 ND	3.00E+00 ND	3.00E+00 ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium	mg/kg	3.50E+00 ND	3.50E+00 ND	3.50E+00 ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	mg/kg	2.70E+00	2.90E+00	6.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	mg/kg	1.44E+01 J	1.68E+01 J	1.68E+01 J	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POHCs										
Monochlorobenzene	mg/kg	0	0	0	999976	999976	999976	0	0	0
Tetrachloroethene	mg/kg	0	0	0	0	0	0	999740	999740	999740

Properties/Constituents	Units	Analytical Result: Lead Spike			Chrome Spike			Organic Surrogate Mixture Spike		
		Run 1	Run 2	Run 3	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3
Chlorine/chloride	mg/kg	0	0	0	0	0	0	162966	162966	162966
Metals										
Aluminum	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beryllium	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromium	mg/kg	0.00E+00	0.00E+00	0.00E+00	1.75E+04	1.75E+04	1.75E+04	0.00E+00	0.00E+00	0.00E+00
Cobalt	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	mg/kg	5.00E+03	5.00E+03	5.00E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POHCs										
Monochlorobenzene	mg/kg	0	0	0	0	0	0	0	0	0
Tetrachloroethene	mg/kg	0	0	0	0	0	0	0	0	0

Table 3-5. Feed Composition and Constituent Feed Rates (Chloride, Metals, POHCs), continued

Resultant Feed Rates (lb/hr)												
	Spent Activated Carbon				Monochlorobenzene Spike				Tetrachloroethene Spike			
	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Chlorine/chloride	1.19E+01	1.43E+01	1.11E+01	1.24E+01	1.10E+01	1.11E+01	1.11E+01	1.10E+01	3.00E+01	3.00E+01	2.98E+01	2.99E+01
Metals												
Aluminum	1.33E+00	2.51E+00	2.40E+00	2.08E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony	< 1.84E-02	< 1.81E-02	< 1.83E-02	1.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	4.30E-03	4.23E-03	4.88E-03	4.47E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium	6.48E-02	1.06E-01	1.14E-01	9.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beryllium	6.76E-04	1.27E-03	1.65E-03	1.20E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	4.91E-04	4.23E-04	7.33E-04	5.49E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromium	1.14E-02	1.78E-02	1.74E-02	1.55E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt	4.91E-03	5.44E-03	6.11E-03	5.49E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	3.41E-02	5.26E-02	3.79E-02	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	2.30E-03	2.66E-03	3.36E-03	2.77E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	8.54E-01	8.16E-01	5.46E-01	7.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	3.99E-05	4.23E-05	7.02E-05	5.08E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	2.92E-02	1.54E-01	8.82E-02	9.03E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	1.87E-03	1.66E-03	1.47E-03	1.67E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	< 9.21E-03	< 9.07E-03	< 9.16E-03	9.15E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium	< 1.07E-02	< 1.06E-02	< 1.07E-02	1.07E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	8.29E-03	8.76E-03	1.89E-02	1.20E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	4.42E-02	5.08E-02	5.13E-02	4.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POHCs												
Monochlorobenzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.48E+01	3.50E+01	3.50E+01	3.50E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.50E+01	3.50E+01	3.48E+01	3.50E+01

Resultant Feed Rates (lb/hr)												
	Lead Spike				Chrome Spike				Organic Surrogate Mixture Spike			
	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Chlorine/chloride	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.66E+00	6.66E+00	6.64E+00	6.65E+00
Metals												
Aluminum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.48E-01	3.53E-01	3.48E-01	3.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	9.91E-02	1.01E-01	9.94E-02	9.97E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POHCs												
Monochlorobenzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3-5. Feed Composition and Constituent Feed Rates (Chloride, Metals, POHCs), continued

Resultant Feed Rates (lb/hr)				
	Grand Total			
	Run 1	Run 2	Run 3	Average
Chlorine/chloride	5.95E+01	6.20E+01	5.86E+01	6.00E+01
Metals				
Aluminum	1.33E+00	2.51E+00	2.40E+00	2.08E+00
Antimony	1.84E-02	1.81E-02	1.83E-02	1.83E-02
Arsenic	4.30E-03	4.23E-03	4.88E-03	4.47E-03
Barium	6.48E-02	1.06E-01	1.14E-01	9.48E-02
Beryllium	6.76E-04	1.27E-03	1.65E-03	1.20E-03
Cadmium	4.91E-04	4.23E-04	7.33E-04	5.49E-04
Chromium	3.59E-01	3.71E-01	3.66E-01	3.65E-01
Cobalt	4.91E-03	5.44E-03	6.11E-03	5.49E-03
Copper	3.41E-02	5.26E-02	3.79E-02	4.15E-02
Lead	1.01E-01	1.03E-01	1.03E-01	1.03E-01
Manganese	8.54E-01	8.16E-01	5.46E-01	7.39E-01
Mercury	3.99E-05	4.23E-05	7.02E-05	5.08E-05
Nickel	2.92E-02	1.54E-01	8.82E-02	9.03E-02
Selenium	1.87E-03	1.66E-03	1.47E-03	1.67E-03
Silver	9.21E-03	9.07E-03	9.16E-03	9.15E-03
Thallium	1.07E-02	1.06E-02	1.07E-02	1.07E-02
Vanadium	8.29E-03	8.76E-03	1.89E-02	1.20E-02
Zinc	4.42E-02	5.08E-02	5.13E-02	4.88E-02
POHCs				
Monochlorobenzene	3.48E+01	3.50E+01	3.50E+01	3.50E+01
Tetrachloroethene	3.50E+01	3.50E+01	3.48E+01	3.50E+01
Metal Volatility Groups				
SVM	1.02E-01	1.04E-01	1.03E-01	1.03E-01
LVM	3.64E-01	3.77E-01	3.72E-01	3.71E-01

Note: If not detected, metals, ash, and chlorine are considered to be present at their detection limit, for purposes of determining constituent feed rate.

Table 3-6. Waste Feed Volatile Organic Compound Concentration

Constituent	Units	Spent Activated Carbon Feed			
		Run 1	Run 2	Run 3	Average
Acetone	ug/kg	3.50E+03	3.60E+03	2.40E+03	3.17E+03
Acrylonitrile	ug/kg	< 3.80E+03	< 3.80E+03	< 3.80E+03	< 3.80E+03
Benzene	ug/kg	3.80E+03	1.70E+03	1.00E+03	2.17E+03
Bromobenzene	ug/kg	< 2.60E+02	< 2.60E+02	< 2.60E+02	< 2.60E+02
Bromochloromethane	ug/kg	< 1.70E+02	< 1.70E+02	< 1.70E+02	< 1.70E+02
Bromodichloromethane	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
Bromoform	ug/kg	< 2.10E+02	< 2.10E+02	< 2.10E+02	< 2.10E+02
Bromomethane	ug/kg	7.40E+02	7.50E+02	< 1.70E+02	< 5.53E+02
2-Butanone (MEK)	ug/kg	1.40E+04	3.20E+03	1.20E+03	6.13E+03
n-Buytlbenzene	ug/kg	< 3.80E+02	< 3.80E+02	< 3.80E+02	< 3.80E+02
sec-Butylbenzene	ug/kg	< 3.80E+02	< 3.80E+02	< 3.80E+02	< 3.80E+02
tert-Butylbenzene	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
Carbon disulfide	ug/kg	< 1.50E+02	< 1.50E+02	< 1.50E+02	< 1.50E+02
Carbon tetrachloride	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
Chlorobenzene	ug/kg	< 1.30E+02	< 1.30E+02	< 1.30E+02	< 1.30E+02
Chlorodibromomethane	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
Chloroethane	ug/kg	< 2.80E+02	< 2.80E+02	< 2.80E+02	< 2.80E+02
Chloroform	ug/kg	1.90E+03	1.30E+03	1.10E+03	1.43E+03
Chloromethane	ug/kg	< 1.00E+03	2.30E+03	< 1.00E+03	< 1.43E+03
2-Chlorotoluene	ug/kg	< 3.00E+02	< 3.00E+02	< 3.00E+02	< 3.00E+02
4-Chlorotoluene	ug/kg	< 3.00E+02	< 3.00E+02	< 3.00E+02	< 3.00E+02
1,2-Dibromo-3-chloropropane	ug/kg	< 1.40E+02	< 1.40E+02	< 1.40E+02	< 1.40E+02
1,2-Dibromoethane	ug/kg	< 1.80E+02	< 1.80E+02	< 1.80E+02	< 1.80E+02
Dibromomethane	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
1,2-Dichlorobenzene	ug/kg	< 3.20E+02	< 3.20E+02	< 3.20E+02	< 3.20E+02
1,3-Dichlorobenzene	ug/kg	< 3.30E+02	< 3.30E+02	< 3.30E+02	< 3.30E+02
1,4-Dichlorobenzene	ug/kg	< 3.30E+02	< 3.30E+02	< 3.30E+02	< 3.30E+02
Dichlorodifluoromethane	ug/kg	< 1.60E+02	< 1.60E+02	< 1.60E+02	< 1.60E+02
1,1-Dichloroethane	ug/kg	1.50E+02	3.60E+02	2.60E+02	2.57E+02
1,2-Dichloroethane	ug/kg	6.00E+02	1.50E+02	2.10E+02	3.20E+02
cis-1,2-Dichloroethene	ug/kg	3.20E+02	1.70E+02	1.50E+02	2.13E+02
trans-1,2-Dichloroethene	ug/kg	< 1.90E+02	< 1.90E+02	< 1.90E+02	< 1.90E+02
1,1-Dichloroethene	ug/kg	5.00E+02	6.70E+02	8.40E+02	6.70E+02
1,2-Dichloropropane	ug/kg	< 1.80E+02	< 1.80E+02	< 1.80E+02	< 1.80E+02
1,3-Dichloropropane	ug/kg	< 2.20E+02	< 2.20E+02	< 2.20E+02	< 2.20E+02
2,2-Dichloropropane	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
cis-1,3-Dichloropropene	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
trans-1,3-Dichloropropene	ug/kg	< 1.50E+02	< 1.50E+02	< 1.50E+02	< 1.50E+02
1,1-Dichloropropene	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
Ethylbenzene	ug/kg	< 2.40E+02	< 2.40E+02	< 2.40E+02	< 2.40E+02
Hexachlorobutadiene	ug/kg	< 5.50E+02	< 5.50E+02	< 5.50E+02	< 5.50E+02
2-Hexanone	ug/kg	< 8.00E+02	< 8.00E+02	< 8.00E+02	< 8.00E+02
Iodomethane	ug/kg	5.50E+02	5.50E+02	5.50E+02	5.50E+02
Isopropylbenzene	ug/kg	< 2.80E+02	< 2.80E+02	< 2.80E+02	< 2.80E+02
p-Isopropyltoluene	ug/kg	< 4.20E+02	< 4.20E+02	< 4.20E+02	< 4.20E+02
Methylene chloride	ug/kg	< 4.20E+02	< 4.20E+02	< 4.20E+02	< 4.20E+02
4-Methyl-2-pentanone	ug/kg	< 8.00E+02	< 8.00E+02	< 8.00E+02	< 8.00E+02
Naphthalene	ug/kg	< 2.40E+02	< 2.40E+02	6.00E+02	< 3.60E+02
n-Propylbenzene	ug/kg	< 3.60E+02	< 3.60E+02	< 3.60E+02	< 3.60E+02
Styrene	ug/kg	< 2.40E+02	< 2.40E+02	< 2.40E+02	< 2.40E+02
1,1,1,2-Tetrachloroethane	ug/kg	< 1.60E+02	< 1.60E+02	< 1.60E+02	< 1.60E+02
1,1,2,2,-Tetrachloroethane	ug/kg	< 2.10E+02	< 2.10E+02	< 2.10E+02	< 2.10E+02
Tetrachloroethene	ug/kg	1.60E+03	2.30E+03	1.10E+03	1.67E+03
Tetrahydrofuran	ug/kg	2.70E+03	1.10E+03	< 1.00E+03	< 1.60E+03
Toluene	ug/kg	3.20E+02	7.70E+02	2.10E+02	4.33E+02
1,2,3-Trichlorobenzene	ug/kg	< 3.60E+02	< 3.60E+02	< 3.60E+02	< 3.60E+02
1,2,4-Trichlorobenzene	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
1,1,1-Trichloroethane	ug/kg	5.60E+03	1.40E+04	1.10E+04	1.02E+04
1,1,2-Trichloroethane	ug/kg	< 1.80E+02	< 1.80E+02	< 1.80E+02	< 1.80E+02
Trichloroethene	ug/kg	4.30E+04	3.20E+04	2.00E+04	3.17E+04
Trichlorofluoromethane	ug/kg	< 3.20E+02	< 3.20E+02	< 3.20E+02	< 3.20E+02
1,2,3-Trichloropropane	ug/kg	< 2.70E+02	< 2.70E+02	< 2.70E+02	< 2.70E+02
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	1.70E+03	1.60E+03	1.10E+03	1.47E+03
1,2,4-Trimethylbenzene	ug/kg	< 3.20E+02	< 3.20E+02	< 3.20E+02	< 3.20E+02
1,2,5-Trimethylbenzene	ug/kg	< 3.10E+02	< 3.10E+02	< 3.10E+02	< 3.10E+02
Vinyl acetate	ug/kg	< 6.00E+02	< 6.00E+02	< 6.00E+02	< 6.00E+02
Vinyl chloride	ug/kg	< 1.40E+02	< 1.40E+02	< 1.40E+02	< 1.40E+02
m- & p- Xylene	ug/kg	< 4.80E+02	< 4.80E+02	< 4.80E+02	< 4.80E+02
o-Xylene	ug/kg	< 2.10E+02	< 2.10E+02	< 2.10E+02	< 2.10E+02
Total xylenes	ug/kg	< 7.00E+02	< 7.00E+02	< 7.00E+02	< 7.00E+02

Table 3-7. Waste Feed Semivolatile Organic Compound Concentration

Constituent	Units	Spent Activated Carbon Feed			
		Run 1	Run 2	Run 3	Average
Acenaphthene	ug/kg	5.70E+02	5.60E+02	7.80E+02	6.37E+02
Acenaphthylene	ug/kg	1.30E+03	1.20E+03	1.60E+03	1.37E+03
Aniline	ug/kg	< 1.60E+02	< 1.60E+02	< 1.60E+02	< 1.60E+02
Anthracene	ug/kg	2.00E+02	2.40E+02	2.40E+02	2.27E+02
Benz(a)anthracene	ug/kg	< 1.00E+02	< 1.00E+02	< 1.00E+02	< 1.00E+02
Benzidine	ug/kg	< 4.20E+03	< 4.20E+03	< 4.20E+03	< 4.20E+03
Benzo(b)fluoranthene	ug/kg	< 2.60E+02	< 2.60E+02	< 2.60E+02	< 2.60E+02
Benzo(k)fluoranthene	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
Benzoic acid	ug/kg	< 8.50E+02	< 8.50E+02	< 8.50E+02	< 8.50E+02
Benzo(g,h,i)perylene	ug/kg	< 1.00E+02	< 1.00E+02	< 1.00E+02	< 1.00E+02
Benzo(a)pyrene	ug/kg	< 2.00E+02	< 2.00E+02	< 2.00E+02	< 2.00E+02
Benzyl alcohol	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
bis(2-Chloroethoxy)methane	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
bis(2-Chloroethyl)ether	ug/kg	< 9.50E+01	< 9.50E+01	< 9.50E+01	< 9.50E+01
bis(2-Ethylhexyl)phthalate	ug/kg	< 3.20E+02	< 3.20E+02	4.10E+02	< 3.50E+02
4-Bromophenyl-phenylether	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
Butyl benzyl phthalate	ug/kg	< 1.40E+02	< 1.40E+02	< 1.40E+02	< 1.40E+02
Carbazole	ug/kg	< 1.40E+02	< 1.40E+02	< 1.40E+02	< 1.40E+02
4-Chloroaniline	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
4-Chloro-3-Methylphenol	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
2-Chloronaphthalene	ug/kg	< 9.50E+01	< 9.50E+01	< 9.50E+01	< 9.50E+01
2-Chlorophenol	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
4-Chlorophenyl-phenylether	ug/kg	< 1.30E+02	< 1.30E+02	< 1.30E+02	< 1.30E+02
Chrysene	ug/kg	< 1.00E+02	< 1.00E+02	< 1.00E+02	< 1.00E+02
Dibenz(a,h)anthracene	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
Dibenzofuran	ug/kg	< 1.10E+02	< 1.10E+02	< 1.10E+02	< 1.10E+02
Di-n-butylphthalate	ug/kg	< 1.60E+02	< 1.60E+02	< 1.60E+02	< 1.60E+02
1,2-Dichlorobenzene	ug/kg	2.60E+04	2.30E+04	2.70E+04	2.53E+04
1,3-Dichlorobenzene	ug/kg	< 8.50E+01	< 8.50E+01	< 8.50E+01	< 8.50E+01
1,4-Dichlorobenzene	ug/kg	1.90E+03	1.70E+03	2.10E+03	1.90E+03
3,3'-Dichlorobenzidine	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
2,4-Dichlorophenol	ug/kg	< 9.50E+01	< 9.50E+01	< 9.50E+01	< 9.50E+01
Diethylphthalate	ug/kg	< 8.50E+01	< 8.50E+01	< 8.50E+01	< 8.50E+01
2,4-Dimethylphenol	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
Dimethylphthalate	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
1,3-Dinitrobenzene	ug/kg	< 9.50E+01	< 9.50E+01	< 9.50E+01	< 9.50E+01
4,6-Dinitro-2-methylphenol	ug/kg	< 8.50E+02	< 8.50E+02	< 8.50E+02	< 8.50E+02
2,4-Dinitrophenol	ug/kg	< 8.00E+02	< 8.00E+02	< 8.00E+02	< 8.00E+02
2,4-Dinitrotoluene	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
2,6-Dinitrotoluene	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
Di-n-octyl phthalate	ug/kg	< 1.50E+02	< 1.50E+02	< 1.50E+02	< 1.50E+02
Diphenylamine	ug/kg	< 1.50E+02	< 1.50E+02	< 1.50E+02	< 1.50E+02
1,2-Diphenylhydrazine	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
Fluoranthene	ug/kg	1.40E+02	1.60E+02	1.30E+02	1.43E+02
Fluorene	ug/kg	7.30E+02	7.10E+02	1.00E+03	8.13E+02
Hexachlorobenzene	ug/kg	< 9.00E+01	< 9.00E+01	< 9.00E+01	< 9.00E+01
Hexachlorobutadiene	ug/kg	< 8.50E+01	< 8.50E+01	< 8.50E+01	< 8.50E+01
Hexachlorocyclopentadiene	ug/kg	< 8.50E+02	< 8.50E+02	< 8.50E+02	< 8.50E+02
Hexachloroethane	ug/kg	< 1.10E+02	< 1.10E+02	< 1.10E+02	< 1.10E+02
Indeno(1,2,3-c,d)pyrene	ug/kg	< 9.00E+01	< 9.00E+01	< 9.00E+01	< 9.00E+01
Isophorone	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
2-Methylnaphthalene	ug/kg	7.70E+03	7.60E+03	1.10E+04	8.77E+03
2-Methylphenol	ug/kg	< 1.00E+02	< 1.00E+02	< 1.00E+02	< 1.00E+02
3 & 4-Methylphenol	ug/kg	< 2.20E+02	3.10E+02	< 2.20E+02	< 2.50E+02
Naphthalene	ug/kg	6.50E+03	5.90E+03	8.70E+03	7.03E+03
2-Nitroaniline	ug/kg	< 1.60E+02	< 1.60E+02	< 1.60E+02	< 1.60E+02
3-Nitroaniline	ug/kg	< 9.50E+01	< 9.50E+01	< 9.50E+01	< 9.50E+01
4-Nitroaniline	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
Nitrobenzene	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
2-Nitrophenol	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
4-Nitrophenol	ug/kg	< 8.50E+02	< 8.50E+02	< 8.50E+02	< 8.50E+02
N-Nitrosodimethylamine	ug/kg	< 8.50E+01	< 8.50E+01	< 8.50E+01	< 8.50E+01
N-Nitrosodiphenylamine	ug/kg	< 1.20E+02	< 1.20E+02	< 1.20E+02	< 1.20E+02
N-Nitroso-di-n-propylamine	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
Pentachlorophenol	ug/kg	< 8.50E+02	< 8.50E+02	< 8.50E+02	< 8.50E+02
Phenanthrene	ug/kg	9.20E+02	1.00E+03	1.10E+03	1.01E+03
Phenol	ug/kg	2.00E+03	7.10E+02	4.50E+02	1.05E+03
2,2'-oxybis(1-Chloropropane)	ug/kg	< 8.50E+01	< 8.50E+01	< 8.50E+01	< 8.50E+01
Pyrene	ug/kg	2.10E+02	2.50E+02	2.20E+02	2.27E+02
Pyridine	ug/kg	< 8.50E+01	< 8.50E+01	< 8.50E+01	< 8.50E+01
1,2,4-Trichlorobenzene	ug/kg	2.00E+03	2.00E+03	3.00E+03	2.33E+03
2,4,5-Trichlorophenol	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02
2,4,6-Trichlorophenol	ug/kg	< 3.40E+02	< 3.40E+02	< 3.40E+02	< 3.40E+02

Table 3-8. Summary of Spiking Materials and Rates

Run 1						
Constituent	Compound	Constituent	Spike Material wt % Constituent	Spike Material Feed Rate (lb/hr)	Constituent Feed Rate (lb/hr)	Constituent Feed Rate (g/hr)
Lead	$Pb(NO_3)_2$	Pb	0.4998%	19.83	9.91E-02	4.50E+01
Chromium	$Cr(NO_3)_3 \cdot 9H_2O$	Cr	1.753%	19.83	3.48E-01	1.58E+02
Monochlorobenzene	C_6H_5Cl	C_6H_5Cl	99.9976%	34.82	34.82	1.58E+04
Tetrachloroethene	C_2Cl_4	C_2Cl_4	99.974%	35.05	35.04	1.59E+04
Organic Surrogate Mixture						
Methylene chloride	CH_2Cl_2	CH_2Cl_2	19.51%	40.87	7.97	3.62E+03
Ethylene glycol	$C_2H_6O_2$	$C_2H_6O_2$	19.51%	40.87	7.97	3.62E+03
Toluene	$C_6H_5CH_3$	$C_6H_5CH_3$	41.44%	40.87	16.94	7.68E+03
Naphthalene	$C_{10}H_8$	$C_{10}H_8$	19.50%	40.87	7.97	3.62E+03

Run 2						
Constituent	Compound	Constituent	Spike Material wt % Constituent	Spike Material Feed Rate (lb/hr)	Constituent Feed Rate (lb/hr)	Constituent Feed Rate (g/hr)
Lead	$Pb(NO_3)_2$	Pb	0.4998%	20.15	1.01E-01	4.57E+01
Chromium	$Cr(NO_3)_3 \cdot 9H_2O$	Cr	1.753%	20.15	3.53E-01	1.60E+02
Monochlorobenzene	C_6H_5Cl	C_6H_5Cl	99.9976%	35.05	35.05	1.59E+04
Tetrachloroethene	C_2Cl_4	C_2Cl_4	99.974%	35.03	35.02	1.59E+04
Organic Surrogate Mixture						
Methylene chloride	CH_2Cl_2	CH_2Cl_2	19.51%	40.88	7.98	3.62E+03
Ethylene glycol	$C_2H_6O_2$	$C_2H_6O_2$	19.51%	40.88	7.98	3.62E+03
Toluene	$C_6H_5CH_3$	$C_6H_5CH_3$	41.44%	40.88	16.94	7.68E+03
Naphthalene	$C_{10}H_8$	$C_{10}H_8$	19.50%	40.88	7.97	3.62E+03

Run 3						
Constituent	Compound	Constituent	Spike Material wt % Constituent	Spike Material Feed Rate (lb/hr)	Constituent Feed Rate (lb/hr)	Constituent Feed Rate (g/hr)
Lead	$Pb(NO_3)_2$	Pb	0.4998%	19.88	9.94E-02	4.51E+01
Chromium	$Cr(NO_3)_3 \cdot 9H_2O$	Cr	1.753%	19.88	3.48E-01	1.58E+02
Monochlorobenzene	C_6H_5Cl	C_6H_5Cl	99.9976%	35.05	35.05	1.59E+04
Tetrachloroethene	C_2Cl_4	C_2Cl_4	99.974%	34.86	34.85	1.58E+04
Organic Surrogate Mixture						
Methylene chloride	CH_2Cl_2	CH_2Cl_2	19.51%	40.73	7.95	3.60E+03
Ethylene glycol	$C_2H_6O_2$	$C_2H_6O_2$	19.51%	40.73	7.95	3.60E+03
Toluene	$C_6H_5CH_3$	$C_6H_5CH_3$	41.44%	40.73	16.88	7.66E+03
Naphthalene	$C_{10}H_8$	$C_{10}H_8$	19.50%	40.73	7.94	3.60E+03

Table 3-9. Makeup Water, Caustic, and Scrubber Purge POHC Concentration

Constituent	Makeup Water (ug/L)				Caustic (ug/L)				Scrubber Blowdown (ug/L)				POTW Discharge (ug/L)			
	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Metals																
Aluminum	< 1.10E+02	< 1.10E+02	< 1.10E+02	< 1.10E+02	< 4.40E+02	NA	NA	< 4.40E+02	1.37E+04	1.17E+04	1.76E+04	1.43E+04	1.14E+02	< 1.10E+02	1.48E+02	< 1.24E+02
Antimony	< 1.40E+01	< 1.40E+01	< 1.40E+01	< 1.40E+01	< 5.60E+01	NA	NA	< 5.60E+01	< 1.40E+01	< 1.40E+01	1.77E+01	< 1.52E+01	< 1.40E+01	< 1.40E+01	< 1.40E+01	< 1.40E+01
Arsenic	< 5.10E+00	5.90E+00	< 5.10E+00	< 5.37E+00	< 2.04E+01	NA	NA	< 2.04E+01	3.67E+01	2.61E+01	3.93E+01	3.40E+01	1.37E+01	1.26E+01	1.19E+01	1.27E+01
Barium	5.12E+01	5.19E+01	4.92E+01	5.08E+01	3.63E+02	NA	NA	3.63E+02	8.74E+02	7.65E+02	1.13E+03	9.23E+02	2.47E+02	2.26E+02	2.38E+02	2.37E+02
Beryllium	< 1.80E+00	< 1.80E+00	< 1.80E+00	< 1.80E+00	< 7.20E+00	NA	NA	< 7.20E+00	3.80E+00	3.70E+00	5.40E+00	4.30E+00	< 1.80E+00	< 1.80E+00	< 1.80E+00	< 1.80E+00
Cadmium	< 8.20E-01	< 8.20E-01	< 8.20E-01	< 8.20E-01	< 3.30E+00	NA	NA	< 3.30E+00	1.13E+01	1.17E+01	1.37E+01	1.22E+01	< 8.20E-01	< 8.20E-01	2.40E+00	< 1.35E+00
Chromium	< 3.90E+00	< 3.90E+00	< 3.90E+00	< 3.90E+00	3.64E+02	NA	NA	3.64E+02	1.72E+03	1.75E+03	2.90E+03	2.12E+03	2.46E+01	1.30E+01	2.51E+01	2.09E+01
Cobalt	< 2.20E+00	< 2.20E+00	< 2.20E+00	< 2.20E+00	< 8.80E+00	NA	NA	< 8.80E+00	3.15E+01	2.64E+01	4.05E+01	3.28E+01	< 2.20E+00	< 2.20E+00	< 2.20E+00	< 2.20E+00
Copper	< 7.00E+00	< 7.00E+00	< 7.00E+00	< 7.00E+00	< 2.80E+01	NA	NA	< 2.80E+01	1.78E+03	9.65E+02	6.69E+02	1.14E+03	< 7.00E+00	< 7.00E+00	< 7.00E+00	< 7.00E+00
Lead	< 3.70E+00	< 3.70E+00	< 3.70E+00	< 3.70E+00	9.75E+01	NA	NA	9.75E+01	7.21E+02	5.92E+02	1.51E+03	9.41E+02	< 3.70E+00	< 3.70E+00	< 3.70E+00	< 3.70E+00
Manganese	1.54E+01	1.85E+01	1.40E+01	1.60E+01	7.48E+01	NA	NA	7.48E+01	3.38E+03	3.10E+03	4.32E+03	3.60E+03	1.15E+02	6.12E+01	8.59E+01	8.74E+01
Mercury	< 6.00E-02	< 6.00E-02	< 6.00E-02	< 6.00E-02	3.50E+00	NA	NA	3.50E+00	3.50E-01	4.20E-01	4.50E-01	4.07E-01	< 6.00E-02	< 6.00E-02	< 6.00E-02	< 6.00E-02
Nickel	< 3.80E+00	< 3.80E+00	< 3.80E+00	< 3.80E+00	1.50E+02	NA	NA	1.50E+02	4.33E+02	3.97E+02	4.05E+02	4.12E+02	< 3.80E+00	< 3.80E+00	4.80E+00	< 4.13E+00
Selenium	< 4.30E+00	< 4.30E+00	< 4.30E+00	< 4.30E+00	< 1.72E+01	NA	NA	< 1.72E+01	1.19E+01	8.80E+00	1.21E+01	1.09E+01	1.10E+01	1.00E+01	9.00E+00	1.00E+01
Silver	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	5.30E+01	NA	NA	5.30E+01	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00
Thallium	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 4.00E+01	NA	NA	< 4.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01
Vanadium	< 5.00E+00	< 5.00E+00	< 5.00E+00	< 5.00E+00	< 2.00E+01	NA	NA	< 2.00E+01	8.43E+01	5.81E+01	1.09E+02	8.38E+01	2.56E+01	1.66E+01	2.10E+01	2.11E+01
Zinc	< 3.80E+00	< 3.80E+00	< 3.80E+00	< 3.80E+00	2.04E+02	NA	NA	2.04E+02	7.65E+02	5.64E+02	6.45E+02	6.58E+02	< 3.80E+00	< 3.80E+00	< 3.80E+00	< 3.80E+00
Volatile Organics																
Acetone	4.40E+00	3.80E+00	4.50E+00	4.23E+00	4.50E+00	NA	NA	4.50E+00	ND	4.10E+00	3.60E+00	3.85E+00	3.70E+00	3.70E+00	4.80E+00	4.07E+00
Bromobenzene	ND	ND	ND	ND	1.80E-01	NA	NA	1.80E-01	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	3.20E+00	4.10E+00	2.50E+00	3.27E+00	8.60E-01	NA	NA	8.60E-01	ND	ND	ND	ND	ND	8.90E-01	1.00E+00	9.45E-01
Bromoform	4.00E+01	3.20E+01	2.80E+01	3.33E+01	2.80E+00	NA	NA	ND	9.90E-01	9.20E-01	1.00E+00	9.70E-01	2.00E+00	2.00E+00	2.10E+00	2.03E+00
Carbon disulfide	ND	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	1.60E-01	1.60E-01
Chlorodibromomethane	1.30E+01	1.30E+01	8.90E+00	1.16E+01	1.00E+00	NA	NA	1.00E+00	9.20E-01	8.70E-01	8.90E-01	8.93E-01	1.40E+00	1.30E+00	1.40E+00	1.37E+00
Chloroform	5.60E-01	6.40E-01	6.20E-01	6.07E-01	1.70E-01	NA	NA	1.70E-01	ND	ND	ND	ND	1.40E-01	1.50E-01	1.40E-01	1.43E-01
1,2-Dichloroethane	ND	1.30E-01	1.20E-01	1.25E-01	1.30E-01	NA	NA	1.30E-01	ND	ND	ND	ND	ND	ND	ND	ND
Iodomethane	ND	ND	ND	ND	ND	NA	NA	ND	5.50E-01	ND	ND	5.50E-01	ND	ND	ND	ND
Methylene chloride	5.50E-01	2.40E+00	2.00E+00	1.65E+00	5.30E-01	NA	NA	ND	ND	2.30E+00	8.40E-01	1.57E+00	3.50E-01	2.00E+00	6.50E-01	1.00E+00
Tetrachloroethene	3.30E-01	3.10E-01	4.50E-01	3.63E-01	2.40E-01	NA	NA	2.40E-01	ND	ND	ND	ND	1.30E-01	ND	ND	1.30E-01
Toluene	ND	4.10E-01	3.10E-01	3.60E-01	ND	NA	NA	ND	ND	4.10E-01	ND	4.10E-01	ND	4.30E-01	1.20E-01	2.75E-01
Seimvolatile Organics																
bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.10E+01	NA	NA		ND	ND	ND	ND	ND	ND	ND	ND

Note: Only detected organics shown on this table.

Table 4-1. Regulatory Compliance Summary

Parameter	Units	Test Objective	Run 1	Run 2	Run 3	Test Average
DRE - Chlorobenzene	%	> 99.99	> 99.9914	> 99.9970	99.9940	> 99.9941
DRE - Tetrachloroethene	%	> 99.99	> 99.9951	> 99.9982	> 99.9976	> 99.9970
Stack gas filterable particulate matter concentration (b)	mg/dscm (gr/dscf)	< 34 < 0.015	21 0.0090	10 0.0046	18 0.0079	16 0.0072
Stack gas PCDD/PCDF (b)	ng TEQ/dscm	< 0.40	0.065	0.052	0.062	0.060
Stack gas mercury (b)	ug/dscm	< 130	< 6.1	< 5.8	< 7.5	< 6.5
Stack gas semivolatile metals (Cd + Pb) concentration (b)	ug/dscm	< 240	210	130	360	230
Stack gas low volatility metals (As + Be + Cr) concentration (b)	ug/dscm	< 97	< 35	< 12	< 21	< 23
Stack gas HCl/Cl_2 (b)	ppmv as HCl	< 77	5.4	3.2	3.0	3.9
Stack gas carbon monoxide concentration (b)	ppmv	< 100	11.5	10.4	15.6	12.5
Stack gas total hydrocarbon concentration (b)	ppmv, as propane	< 10	< 0.6	< 0.6	< 0.6	< 0.6
Stack gas oxygen concentration	vol%, dry	NA	9.8	8.9	9.3	9.3

(a) Stack gas THC and O_2 data were obtained using Airtech's temporary CEMS.

(b) Corrected to 7% oxygen, dry basis.

Note: Compliance with regulatory standards is based on the arithmetic average of the three test runs, except for DRE, where each run must meet the specified criteria [see 40 CFR 63.1206(b)(12)(ii)]. All values are reported to two significant figures.

Table 4-2. POHC Feed Rates, Emissions Rates, and DREs

		Test Results			
Parameter	Units	Run 1	Run 2	Run 3	Average
Monochlorobenzene feed rate	lb/hr	34.81	35.05	35.05	34.97
Tetrachloroethene feed rate	lb/hr	35.04	35.02	34.84	34.97
Monochlorobenzene emission rate	lb/hr	< 2.99E-03	< 1.05E-03	2.09E-03	< 2.04E-03
Tetrachloroethene emission rate	lb/hr	< 1.73E-03	< 6.26E-04	< 8.35E-04	< 1.06E-03
Monochlorobenzene DRE	%	> 99.9914	> 99.9970	99.9940	> 99.9941
Tetrachloroethene DRE	%	> 99.9951	> 99.9982	> 99.9976	> 99.9970

Table 4-3. PCDD/PCDF Emission Summary – Run 1

Parameter	Units	Measured Value	
Stack Sampling Parameters			
Net sampling time	minutes		240
Stack gas flow rate	dscfm		5,290
	acfm		11,760
Stack gas temperature	°F		176
Stack gas velocity	ft/min		3,744
Stack gas sample volume	dscf		139.210
	dscm		3.943
Isokinetic	%		101.2
Stack gas moisture content	vol%		45.2
Stack gas carbon dioxide	vol %, dry		6.4
Stack gas oxygen	vol %, dry		9.8
PCDD/PCDF			
Total PCDD/PCDF	pg/sample	<	12288
Stack gas PCDD/PCDF concentration	ng/dscm	<	3.12E+00
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	3.90E+00
PCDD/PCDF emission rate	g/s	<	7.78E-09
PCDD/PCDF Toxic Equivalents as 2,3,7,8-TCDD			
Stack gas PCDD/PCDF concentration	ng/dscm	<	5.23E-02
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	6.53E-02
PCDD/PCDF emission rate	g/s	<	1.30E-10

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-4. PCDD/PCDF Emission Summary – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	240
Stack gas flow rate	dscfm	3,780
	acfm	8,320
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,646
Stack gas sample volume	dscf	119.220
	dscm	3.376
Isokinetic	%	100.9
Stack gas moisture content	vol%	44.4
Stack gas carbon dioxide	vol %, dry	7.2
Stack gas oxygen	vol %, dry	8.9
PCDD/PCDF		
Total PCDD/PCDF	pg/sample	< 7223.8
Stack gas PCDD/PCDF concentration	ng/dscm	< 2.12E+00
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	< 2.45E+00
PCDD/PCDF emission rate	g/s	< 3.78E-09
PCDD/PCDF Toxic Equivalents as 2,3,7,8-TCDD		
Stack gas PCDD/PCDF concentration	ng/dscm	< 4.52E-02
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	< 5.23E-02
PCDD/PCDF emission rate	g/s	< 8.07E-11

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-5. PCDD/PCDF Emission Summary – Run 3

Parameter	Units		Measured Value
Stack Sampling Parameters			
Net sampling time	minutes		240
Stack gas flow rate	dscfm		4,040
	acfm		8,850
Stack gas temperature	°F		175
Stack gas velocity	ft/min		2,820
Stack gas sample volume	dscf		126.180
	dscm		3.573
Isokinetic	%		99.9
Stack gas moisture content	vol%		44.5
Stack gas carbon dioxide	vol %, dry		7.1
Stack gas oxygen	vol %, dry		9.3
PCDD/PCDF			
Total PCDD/PCDF	pg/sample	<	9067.1
Stack gas PCDD/PCDF concentration	ng/dscm	<	2.49E+00
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	2.98E+00
PCDD/PCDF emission rate	g/s	<	4.75E-09
PCDD/PCDF Toxic Equivalents as 2,3,7,8-TCDD			
Stack gas PCDD/PCDF concentration	ng/dscm	<	5.23E-02
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	6.25E-02
PCDD/PCDF emission rate	g/s	<	9.96E-11

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-6. Particulate Matter, Hydrogen Chloride, and Chlorine Emissions Summary – Run 1

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	5,030
	acfm	11,320
	dscm/min	142.45
Stack gas temperature	°F	175
Stack gas velocity	ft/min	3,606
Stack gas sample volume	dscf	72.660
	dscm	2.058
Isokinetic	%	93.7
Stack gas moisture content	vol %	45.9
Stack gas carbon dioxide content	vol %, dry	6.3
Stack gas oxygen content	vol %, dry	9.6
Hydrogen chloride and chlorine		
HCl collected	mg	11.8
Cl_2 collected	mg	1.95
Stack gas HCl concentration	mg/dscm	5.73E+00
	mg/dscm @7% O_2	7.04E+00
Stack gas HCl emission rate	lb/h	1.08E-01
	kg/h	4.90E-02
	g/s	1.36E-02
Stack gas Cl_2 concentration	mg/dscm	9.48E-01
	mg/dscm @7% O_2	1.16E+00
Stack gas Cl_2 emission rate	lb/h	1.79E-02
	kg/h	8.10E-03
	g/s	2.25E-03
Stack gas HCl+Cl_2 concentration expressed as HCl equivalents	ppmv, dry	4.42E+00
	ppmv, dry @7% O_2	5.43E+00
Particulate		
Particulate matter collected	mg	34.3
Particulate concentration	gr/dscf	7.29E-03
	gr/dscf @ 7% O_2	8.95E-03
	mg/dscm	1.67E+01
	mg/dscm @ 7% O_2	2.05E+01
Particulate emission rate	lb/h	3.14E-01
	kg/h	1.42E-01
	g/s	3.96E-02

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-7. Particulate Matter, Hydrogen Chloride, and Chlorine Emissions Summary – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	3,850
	acfm	8,580
	dscm/min	109.03
Stack gas temperature	°F	174
Stack gas velocity	ft/min	2,730
Stack gas sample volume	dscf	74.990
	dscm	2.124
Isokinetic	%	96.0
Stack gas moisture content	vol %	45.1
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	8.9
Hydrogen chloride and chlorine		
HCl collected	mg	6.95
Cl_2 collected	mg	2.01
Stack gas HCl concentration	mg/dscm	3.27E+00
	mg/dscm @7% O_2	3.79E+00
Stack gas HCl emission rate	lb/h	4.72E-02
	kg/h	2.14E-02
	g/s	5.95E-03
Stack gas Cl_2 concentration	mg/dscm	9.46E-01
	mg/dscm @7% O_2	1.10E+00
Stack gas Cl_2 emission rate	lb/h	1.37E-02
	kg/h	6.19E-03
	g/s	1.72E-03
Stack gas HCl+Cl_2 concentration expressed as HCl equivalents	ppmv, dry	2.80E+00
	ppmv, dry @7% O_2	3.24E+00
Particulate		
Particulate matter collected	mg	19.4
Particulate concentration	gr/dscf	3.99E-03
	gr/dscf @ 7% O_2	4.62E-03
	mg/dscm	9.13E+00
	mg/dscm @ 7% O_2	1.06E+01
Particulate emission rate	lb/h	1.32E-01
	kg/h	5.98E-02
	g/s	1.66E-02

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-8. Particulate Matter, Hydrogen Chloride, and Chlorine Emissions Summary – Run 3

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	4,090
	acfm	8,970
	dscm/min	115.83
Stack gas temperature	°F	174
Stack gas velocity	ft/min	2,856
Stack gas sample volume	dscf	79.290
	dscm	2.246
Isokinetic	%	95.7
Stack gas moisture content	vol %	44.8
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	9.3
Hydrogen chloride and chlorine		
HCl collected	mg	6.49
Cl_2 collected	mg	1.94
Stack gas HCl concentration	mg/dscm	2.89E+00
	mg/dscm @7% O_2	3.46E+00
Stack gas HCl emission rate	lb/h	4.43E-02
	kg/h	2.01E-02
	g/s	5.58E-03
Stack gas Cl_2 concentration	mg/dscm	8.64E-01
	mg/dscm @7% O_2	1.03E+00
Stack gas Cl_2 emission rate	lb/h	1.32E-02
	kg/h	6.00E-03
	g/s	1.67E-03
Stack gas HCl+Cl_2 concentration expressed as HCl equivalents	ppmv, dry	2.49E+00
	ppmv, dry @7% O_2	2.98E+00
Particulate		
Particulate matter collected	mg	33.6
Particulate concentration	gr/dscf	6.54E-03
	gr/dscf @ 7% O_2	7.83E-03
	mg/dscm	1.50E+01
	mg/dscm @ 7% O_2	1.79E+01
Particulate emission rate	lb/h	2.29E-01
	kg/h	1.04E-01
	g/s	2.89E-02

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-9. Metals Emission Summary – Run 1

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	4,970
	acfm	11,260
	dscm/min	140.75
Stack gas temperature	°F	176
Stack gas velocity	ft/min	3,582
Stack gas sample volume	dscf	76.790
	dscm	2.175
Isokinetic	%	98.2
Stack gas moisture content	vol %	46.2
Stack gas carbon dioxide content	vol %, dry	6.3
Stack gas oxygen content	vol %, dry	9.6
Aluminum		
Metal collected	ug	132.3
Metal concentration	ug/dscm	6.08E+01
	ug/dscm @ 7% O_2	7.47E+01
Metal emission rate	lb/h	1.13E-03
	g/s	1.43E-04
Antimony		
Metal collected	ug	< 5.3
Metal concentration	ug/dscm	< 2.44E+00
	ug/dscm @ 7% O_2	< 2.99E+00
Metal emission rate	lb/h	< 4.54E-05
	g/s	< 5.72E-06
Arsenic		
Metal collected	ug	< 5.9
Metal concentration	ug/dscm	< 2.73E+00
	ug/dscm @ 7% O_2	< 3.35E+00
Metal emission rate	lb/h	< 5.08E-05
	g/s	< 6.40E-06
Barium		
Metal collected	ug	10.2
Metal concentration	ug/dscm	4.69E+00
	ug/dscm @ 7% O_2	5.76E+00
Metal emission rate	lb/h	8.73E-05
	g/s	1.10E-05
Beryllium		
Metal collected	ug	< 0.4
Metal concentration	ug/dscm	< 1.75E-01
	ug/dscm @ 7% O_2	< 2.15E-01
Metal emission rate	lb/h	< 3.25E-06
	g/s	< 4.10E-07
Cadmium		
Metal collected	ug	12.1
Metal concentration	ug/dscm	5.56E+00
	ug/dscm @ 7% O_2	6.83E+00
Metal emission rate	lb/h	1.04E-04
	g/s	1.31E-05
Chromium		
Metal collected	ug	56.0
Metal concentration	ug/dscm	2.58E+01
	ug/dscm @ 7% O_2	3.16E+01
Metal emission rate	lb/h	4.79E-04
	g/s	6.04E-05
Cobalt		
Metal collected	ug	< 1.1
Metal concentration	ug/dscm	< 5.15E-01
	ug/dscm @ 7% O_2	< 6.32E-01
Metal emission rate	lb/h	< 9.59E-06
	g/s	< 1.21E-06
Copper		
Metal collected	ug	167.1
Metal concentration	ug/dscm	7.68E+01
	ug/dscm @ 7% O_2	9.44E+01
Metal emission rate	lb/h	1.43E-03
	g/s	1.80E-04
Lead		
Metal collected	ug	356.8
Metal concentration	ug/dscm	1.64E+02
	ug/dscm @ 7% O_2	2.01E+02
Metal emission rate	lb/h	3.05E-03
	g/s	3.85E-04
Manganese		
Metal collected	ug	65.8
Metal concentration	ug/dscm	3.03E+01
	ug/dscm @ 7% O_2	3.72E+01
Metal emission rate	lb/h	5.63E-04
	g/s	7.10E-05
Mercury		
Metal collected	ug	< 10.8
Metal concentration	ug/dscm	< 4.98E+00
	ug/dscm @ 7% O_2	< 6.11E+00
Metal emission rate	lb/h	< 9.26E-05
	g/s	< 1.17E-05
Nickel		
Metal collected	ug	12.0
Metal concentration	ug/dscm	5.52E+00
	ug/dscm @ 7% O_2	6.78E+00
Metal emission rate	lb/h	1.03E-04
	g/s	1.29E-05
Selenium		
Metal collected	ug	4.5
Metal concentration	ug/dscm	2.07E+00
	ug/dscm @ 7% O_2	2.54E+00
Metal emission rate	lb/h	3.85E-05
	g/s	4.85E-06
Silver		
Metal collected	ug	2.6
Metal concentration	ug/dscm	1.20E+00
	ug/dscm @ 7% O_2	1.47E+00
Metal emission rate	lb/h	2.23E-05
	g/s	2.80E-06
Thallium		
Metal collected	ug	< 11.0
Metal concentration	ug/dscm	< 5.06E+00
	ug/dscm @ 7% O_2	< 6.21E+00
Metal emission rate	lb/h	< 9.42E-05
	g/s	< 1.19E-05
Vanadium		
Metal collected	ug	< 3.0
Metal concentration	ug/dscm	< 1.38E+00
	ug/dscm @ 7% O_2	< 1.69E+00
Metal emission rate	lb/h	< 2.57E-05
	g/s	< 3.24E-06
Zinc		
Metal collected	ug	218.4
Metal concentration	ug/dscm	1.00E+02
	ug/dscm @ 7% O_2	1.23E+02
Metal emission rate	lb/h	1.87E-03
	g/s	2.36E-04

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-10. Metals Emission Summary – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	3,860
	acfm	8,600
	dscm/min	109.32
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,736
Stack gas sample volume	dscf	79.370
	dscm	2.248
Isokinetic	%	102.9
Stack gas moisture content	vol %	45.1
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	8.9
Aluminum		
Metal collected	ug	123.2
Metal concentration	ug/dscm	5.48E+01
	ug/dscm @ 7% O_2	6.34E+01
Metal emission rate	lb/h	7.93E-04
	g/s	9.99E-05
Antimony		
Metal collected	ug	< 4.8
Metal concentration	ug/dscm	< 2.14E+00
	ug/dscm @ 7% O_2	< 2.47E+00
Metal emission rate	lb/h	< 3.09E-05
	g/s	< 3.89E-06
Arsenic		
Metal collected	ug	< 2.7
Metal concentration	ug/dscm	< 1.21E+00
	ug/dscm @ 7% O_2	< 1.41E+00
Metal emission rate	lb/h	< 1.76E-05
	g/s	< 2.21E-06
Barium		
Metal collected	ug	9.0
Metal concentration	ug/dscm	4.00E+00
	ug/dscm @ 7% O_2	4.63E+00
Metal emission rate	lb/h	5.79E-05
	g/s	7.30E-06
Beryllium		
Metal collected	ug	< 0.4 ND
Metal concentration	ug/dscm	< 1.60E-01 ND
	ug/dscm @ 7% O_2	< 1.85E-01 ND
Metal emission rate	lb/h	< 2.32E-06 ND
	g/s	< 2.92E-07 ND
Cadmium		
Metal collected	ug	7.9
Metal concentration	ug/dscm	3.51E+00
	ug/dscm @ 7% O_2	4.07E+00
Metal emission rate	lb/h	5.08E-05
	g/s	6.40E-06
Chromium		
Metal collected	ug	20.2
Metal concentration	ug/dscm	8.99E+00
	ug/dscm @ 7% O_2	1.04E+01
Metal emission rate	lb/h	1.30E-04
	g/s	1.64E-05
Cobalt		
Metal collected	ug	< 1.0 ND
Metal concentration	ug/dscm	< 4.45E-01 ND
	ug/dscm @ 7% O_2	< 5.15E-01 ND
Metal emission rate	lb/h	< 6.43E-06 ND
	g/s	< 8.11E-07 ND
Copper		
Metal collected	ug	108.1
Metal concentration	ug/dscm	4.81E+01
	ug/dscm @ 7% O_2	5.56E+01
Metal emission rate	lb/h	6.95E-04
	g/s	8.76E-05

Lead		
Metal collected	ug	250.4
Metal concentration	ug/dscm	1.11E+02
	ug/dscm @ 7% O_2	1.29E+02
Metal emission rate	lb/h	1.61E-03
	g/s	2.03E-04
Manganese		
Metal collected	ug	42.0
Metal concentration	ug/dscm	1.87E+01
	ug/dscm @ 7% O_2	2.16E+01
Metal emission rate	lb/h	2.70E-04
	g/s	3.40E-05
Mercury		
Metal collected	ug	< 11.3
Metal concentration	ug/dscm	< 5.02E+00
	ug/dscm @ 7% O_2	< 5.81E+00
Metal emission rate	lb/h	< 7.26E-05
	g/s	< 9.15E-06
Nickel		
Metal collected	ug	11.4
Metal concentration	ug/dscm	5.07E+00
	ug/dscm @ 7% O_2	5.87E+00
Metal emission rate	lb/h	7.33E-05
	g/s	9.24E-06
Selenium		
Metal collected	ug	4.0
Metal concentration	ug/dscm	1.78E+00
	ug/dscm @ 7% O_2	2.06E+00
Metal emission rate	lb/h	2.57E-05
	g/s	3.24E-06
Silver		
Metal collected	ug	5.7
Metal concentration	ug/dscm	2.54E+00
	ug/dscm @ 7% O_2	2.93E+00
Metal emission rate	lb/h	3.67E-05
	g/s	4.62E-06
Thallium		
Metal collected	ug	< 10.6
Metal concentration	ug/dscm	< 4.72E+00
	ug/dscm @ 7% O_2	< 5.46E+00
Metal emission rate	lb/h	< 6.82E-05
	g/s	< 8.59E-06
Vanadium		
Metal collected	ug	< 1.6
Metal concentration	ug/dscm	< 7.12E-01
	ug/dscm @ 7% O_2	< 8.24E-01
Metal emission rate	lb/h	< 1.03E-05
	g/s	< 1.30E-06
Zinc		
Metal collected	ug	136.2
Metal concentration	ug/dscm	6.06E+01
	ug/dscm @ 7% O_2	7.01E+01
Metal emission rate	lb/h	8.76E-04
	g/s	1.10E-04

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 4-11. Metals Emission Summary – Run 3

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	4,000
	acfm	8,920
	dscm/min	113.28
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,838
Stack gas sample volume	dscf	82.610
	dscm	2.340
Isokinetic	%	103.2
Stack gas moisture content	vol %	45.5
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	9.3
Aluminum		
Metal collected	ug	125.2
Metal concentration	ug/dscm	5.35E+01
	ug/dscm @ 7% O_2	6.40E+01
Metal emission rate	lb/h	8.02E-04
	g/s	1.01E-04
Antimony		
Metal collected	ug	< 4.9
Metal concentration	ug/dscm	< 2.09E+00
	ug/dscm @ 7% O_2	< 2.51E+00
Metal emission rate	lb/h	< 3.14E-05
	g/s	< 3.95E-06
Arsenic		
Metal collected	ug	< 3.7
Metal concentration	ug/dscm	< 1.59E+00
	ug/dscm @ 7% O_2	< 1.91E+00
Metal emission rate	lb/h	< 2.39E-05
	g/s	< 3.01E-06
Barium		
Metal collected	ug	10.8
Metal concentration	ug/dscm	4.62E+00
	ug/dscm @ 7% O_2	5.52E+00
Metal emission rate	lb/h	6.92E-05
	g/s	8.72E-06
Beryllium		
Metal collected	ug	< 0.4 ND
Metal concentration	ug/dscm	< 1.54E-01 ND
	ug/dscm @ 7% O_2	< 1.84E-01 ND
Metal emission rate	lb/h	< 2.31E-06 ND
	g/s	< 2.91E-07 ND
Cadmium		
Metal collected	ug	9.7
Metal concentration	ug/dscm	4.15E+00
	ug/dscm @ 7% O_2	4.97E+00
Metal emission rate	lb/h	6.22E-05
	g/s	7.84E-06
Chromium		
Metal collected	ug	36.5
Metal concentration	ug/dscm	1.56E+01
	ug/dscm @ 7% O_2	1.87E+01
Metal emission rate	lb/h	2.34E-04
	g/s	2.95E-05
Cobalt		
Metal collected	ug	< 1.0 ND
Metal concentration	ug/dscm	< 4.27E-01 ND
	ug/dscm @ 7% O_2	< 5.11E-01 ND
Metal emission rate	lb/h	< 6.40E-06 ND
	g/s	< 8.07E-07 ND
Copper		
Metal collected	ug	112.4
Metal concentration	ug/dscm	4.80E+01
	ug/dscm @ 7% O_2	5.75E+01
Metal emission rate	lb/h	7.20E-04
	g/s	9.07E-05
Lead		
Metal collected	ug	694.2
Metal concentration	ug/dscm	2.97E+02
	ug/dscm @ 7% O_2	3.55E+02
Metal emission rate	lb/h	4.45E-03
	g/s	5.60E-04
Manganese		
Metal collected	ug	41.4
Metal concentration	ug/dscm	1.77E+01
	ug/dscm @ 7% O_2	2.12E+01
Metal emission rate	lb/h	2.65E-04
	g/s	3.34E-05
Mercury		
Metal collected	ug	< 14.7
Metal concentration	ug/dscm	< 6.28E+00
	ug/dscm @ 7% O_2	< 7.52E+00
Metal emission rate	lb/h	< 9.42E-05
	g/s	< 1.19E-05
Nickel		
Metal collected	ug	9.4
Metal concentration	ug/dscm	4.02E+00
	ug/dscm @ 7% O_2	4.81E+00
Metal emission rate	lb/h	6.02E-05
	g/s	7.59E-06
Selenium		
Metal collected	ug	3.9
Metal concentration	ug/dscm	1.68E+00
	ug/dscm @ 7% O_2	2.02E+00
Metal emission rate	lb/h	2.52E-05
	g/s	3.18E-06
Silver		
Metal collected	ug	< 1.9 ND
Metal concentration	ug/dscm	< 8.29E-01 ND
	ug/dscm @ 7% O_2	< 9.92E-01 ND
Metal emission rate	lb/h	< 1.24E-05 ND
	g/s	< 1.57E-06 ND
Thallium		
Metal collected	ug	< 10.7
Metal concentration	ug/dscm	< 4.57E+00
	ug/dscm @ 7% O_2	< 5.47E+00
Metal emission rate	lb/h	< 6.85E-05
	g/s	< 8.64E-06
Vanadium		
Metal collected	ug	< 2.0
Metal concentration	ug/dscm	< 8.55E-01
	ug/dscm @ 7% O_2	< 1.02E+00
Metal emission rate	lb/h	< 1.28E-05
	g/s	< 1.61E-06
Zinc		
Metal collected	ug	133.3
Metal concentration	ug/dscm	5.70E+01
	ug/dscm @ 7% O_2	6.82E+01
Metal emission rate	lb/h	8.54E-04
	g/s	1.08E-04

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 5-1. VOST Audit Sample Results

Compound	Units	Original Audit Samples (No Ice)						Final Audit Samples (Ice)		
		#1	#2	#3	#4	#5	#6	#1	#2	#3
Acetone	ug	0.31	0.39	0.39	0.26	0.18	ND	0.22 B	0.24 B	0.17 B
Benzene	ug	0.054	0.058	0.057	0.058	0.063	0.059	0.064	0.069	0.068
2-Butanone	ug	0.082 J	0.091 J	0.084 J	0.068 J	0.046 J	ND	0.044 J	0.053 J	ND
Carbon Disulfide	ug	0.015	0.016	0.016	0.016	0.015	0.016	0.017	0.018	0.018
Carbon Tetrachloride	ug	0.041	0.046	0.045	0.046	0.047	0.049	0.049	0.053	0.052
Chlorobenzene	ug	ND	ND	0.0013 J	0.0016 J	0.0029 J	0.0044 J	ND	ND	ND
Chloroform	ug	0.065	0.074	0.069	0.072	0.076	0.074	0.078	0.086	0.089
Methylene Chloride	ug	0.075	0.077	0.072	0.075	0.076	0.075	0.099	0.12	0.12
Tetrachloroethene	ug	0.14	0.16	0.16	0.16	0.14	0.16	0.15	0.15	0.14
Tetrahydrofuran	ug	ND	ND	ND	ND	0.034 J	ND	ND	0.036 J	0.054 J
Toluene	ug	0.0032 J	0.0035 J	0.0033 J	0.0033 J	0.003 J	0.0034 J	0.0036 J	0.0034 J	0.0032 J

Table 6-1. Proposed Operating Parameter Limits

Control Parameters[a]	Anticipated Permit Limit	Comments[b]
GROUP A1 PARAMETERS		
Maximum spent carbon feed rate (lb/hr)	3049	Block hour AWFCO
Minimum afterburner temperature (^oF)	1760	Hourly rolling average AWFCO
Maximum hearth #5 temperature (^oF)	1650	Hourly rolling average AWFCO
Minimum hearth #5 temperature (^oF)	TBD	Hourly rolling average AWFCO
Minimum venturi scrubber pressure differential (in. w.c.)	18	Hourly rolling average AWFCO
Minimum quench/venturi scrubber total liquid flow rate (gpm)	75	Hourly rolling average AWFCO
Minimum packed bed scrubber pH	4.4	Hourly rolling average AWFCO
Minimum packed bed scrubber liquid flow rate (gpm)	63	Hourly rolling average AWFCO
Minimum wet scrubber blowdown flow rate (gpm)	58	Hourly rolling average AWFCO
Minimum WESP secondary voltage (kVDC)	22	Hourly rolling average AWFCO
Maximum stack gas flow rate acfm	9,550	Hourly rolling average AWFCO
GROUP A2 PARAMETERS		
Maximum stack gas carbon monoxide (ppmvd, @7% oxygen)[c]	100	Hourly rolling average AWFCO
GROUP B PARAMETERS		
Allowable hazardous constituents	All except dioxin wastes and TSCA PCBs	Class 1 POHC demonstrated
Maximum total chlorine and chloride feed rate (lb/hr)	60	12-hour rolling average
Maximum mercury feed rate (lb/hr)	1.8E-03	12-hour rolling average
Maximum semivolatile metal (Cd + Pb) feed rate (lb/hr)	1.0E-01	12-hour rolling average
Maximum low volatility metal (As + Be + Cr) feed rate (lb/hr)	1.5E+00	12-hour rolling average
GROUP C PARAMETERS		
Minimum packed bed scrubber pressure differential (in. w.c.)	0.1	Hourly rolling average

(a) Group A1 parameters are continuously monitored and recorded, and are interlocked with the automatic waste feed cutoff system. The values for the Group A1 parameters are based on the performance demonstration test operating conditions.

Group A2 parameters are continuously monitored and recorded, and are interlocked with the automatic waste feed cutoff system. The values for the Group A2 parameters are based on regulatory standards or good operating practice rather than performance demonstration test operating conditions.

Group B parameters are continuously monitored and recorded, but are not interlocked with the automatic waste feed cutoff system. Values for the group B parameters are based on the performance demonstration test operating conditions.

Group C parameters are continuously monitoring and recording, but are not interlocked with the automatic waste feed cutoff system. The values for the Group C parameters are based on manufacturer's specifications and/or operational and safety considerations rather than performance demonstration test operating conditions.

(b) AWFCO = Automatic waste feed cutoff.

(c) AWFCO interlock will not be active during the daily CEM cal bration period.

Table 6-2. Metals System Removal Efficiency

Run 1

Metal	Feed Rate (lb/hr)	Feed Rate (g/hr)	Emission Rate (lb/hr)	Emission Rate (g/hr)	SRE (%)
Chromium	3.59E-01	1.63E+02	4.79E-04	2.17E-01	99.87%

Run 2

Metal	Feed Rate (lb/hr)	Feed Rate (g/hr)	Emission Rate (lb/hr)	Emission Rate (g/hr)	SRE (%)
Chromium	3.71E-01	1.68E+02	1.30E-04	5.90E-02	99.96%

Run 3

Metal	Feed Rate (lb/hr)	Feed Rate (g/hr)	Emission Rate (lb/hr)	Emission Rate (g/hr)	SRE (%)
Chromium	3.66E-01	1.66E+02	2.34E-04	1.06E-01	99.94%

Table 7-1. Metals Emission Summary – Run 1

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	4,970
	acfm	11,260
	dscm/min	140.75
Stack gas temperature	°F	176
Stack gas velocity	ft/min	3,582
Stack gas sample volume	dscf	76.790
	dscm	2.175
Isokinetic	%	98.2
Stack gas moisture content	vol %	46.2
Stack gas carbon dioxide content	vol %, dry	6.3
Stack gas oxygen content	vol %, dry	9.6
Aluminum		
Metal collected	ug	132.3
Metal concentration	ug/dscm	6.08E+01
	ug/dscm @ 7% O_2	7.47E+01
Metal emission rate	lb/h	1.13E-03
	g/s	1.43E-04
Antimony		
Metal collected	ug	< 5.3
Metal concentration	ug/dscm	< 2.44E+00
	ug/dscm @ 7% O_2	< 2.99E+00
Metal emission rate	lb/h	< 4.54E-05
	g/s	< 5.72E-06
Arsenic		
Metal collected	ug	< 5.9
Metal concentration	ug/dscm	< 2.73E+00
	ug/dscm @ 7% O_2	< 3.35E+00
Metal emission rate	lb/h	< 5.08E-05
	g/s	< 6.40E-06
Barium		
Metal collected	ug	10.2
Metal concentration	ug/dscm	4.69E+00
	ug/dscm @ 7% O_2	5.76E+00
Metal emission rate	lb/h	8.73E-05
	g/s	1.10E-05
Beryllium		
Metal collected	ug	< 0.4
Metal concentration	ug/dscm	< 1.75E-01
	ug/dscm @ 7% O_2	< 2.15E-01
Metal emission rate	lb/h	< 3.25E-06
	g/s	< 4.10E-07
Cadmium		
Metal collected	ug	12.1
Metal concentration	ug/dscm	5.56E+00
	ug/dscm @ 7% O_2	6.83E+00
Metal emission rate	lb/h	1.04E-04
	g/s	1.31E-05
Chromium		
Metal collected	ug	56.0
Metal concentration	ug/dscm	2.58E+01
	ug/dscm @ 7% O_2	3.16E+01
Metal emission rate	lb/h	4.79E-04
	g/s	6.04E-05
Cobalt		
Metal collected	ug	< 1.1
Metal concentration	ug/dscm	< 5.15E-01
	ug/dscm @ 7% O_2	< 6.32E-01
Metal emission rate	lb/h	< 9.59E-06
	g/s	< 1.21E-06
Copper		
Metal collected	ug	167.1
Metal concentration	ug/dscm	7.68E+01
	ug/dscm @ 7% O_2	9.44E+01
Metal emission rate	lb/h	1.43E-03
	g/s	1.80E-04
Lead		
Metal collected	ug	356.8
Metal concentration	ug/dscm	1.64E+02
	ug/dscm @ 7% O_2	2.01E+02
Metal emission rate	lb/h	3.05E-03
	g/s	3.85E-04
Manganese		
Metal collected	ug	65.8
Metal concentration	ug/dscm	3.03E+01
	ug/dscm @ 7% O_2	3.72E+01
Metal emission rate	lb/h	5.63E-04
	g/s	7.10E-05
Mercury		
Metal collected	ug	< 10.8
Metal concentration	ug/dscm	< 4.98E+00
	ug/dscm @ 7% O_2	< 6.11E+00
Metal emission rate	lb/h	< 9.26E-05
	g/s	< 1.17E-05
Nickel		
Metal collected	ug	12.0
Metal concentration	ug/dscm	5.52E+00
	ug/dscm @ 7% O_2	6.78E+00
Metal emission rate	lb/h	1.03E-04
	g/s	1.29E-05
Selenium		
Metal collected	ug	4.5
Metal concentration	ug/dscm	2.07E+00
	ug/dscm @ 7% O_2	2.54E+00
Metal emission rate	lb/h	3.85E-05
	g/s	4.85E-06
Silver		
Metal collected	ug	2.6
Metal concentration	ug/dscm	1.20E+00
	ug/dscm @ 7% O_2	1.47E+00
Metal emission rate	lb/h	2.23E-05
	g/s	2.80E-06
Thallium		
Metal collected	ug	< 11.0
Metal concentration	ug/dscm	< 5.06E+00
	ug/dscm @ 7% O_2	< 6.21E+00
Metal emission rate	lb/h	< 9.42E-05
	g/s	< 1.19E-05
Vanadium		
Metal collected	ug	< 3.0
Metal concentration	ug/dscm	< 1.38E+00
	ug/dscm @ 7% O_2	< 1.69E+00
Metal emission rate	lb/h	< 2.57E-05
	g/s	< 3.24E-06
Zinc		
Metal collected	ug	218.4
Metal concentration	ug/dscm	1.00E+02
	ug/dscm @ 7% O_2	1.23E+02
Metal emission rate	lb/h	1.87E-03
	g/s	2.36E-04

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-2. Metals Emission Summary – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	3,860
	acfm	8,600
	dscm/min	109.32
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,736
Stack gas sample volume	dscf	79.370
	dscm	2.248
Isokinetic	%	102.9
Stack gas moisture content	vol %	45.1
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	8.9
Aluminum		
Metal collected	ug	123.2
Metal concentration	ug/dscm	5.48E+01
	ug/dscm @ 7% O_2	6.34E+01
Metal emission rate	lb/h	7.93E-04
	g/s	9.99E-05
Antimony		
Metal collected	ug	< 4.8
Metal concentration	ug/dscm	< 2.14E+00
	ug/dscm @ 7% O_2	< 2.47E+00
Metal emission rate	lb/h	< 3.09E-05
	g/s	< 3.89E-06
Arsenic		
Metal collected	ug	< 2.7
Metal concentration	ug/dscm	< 1.21E+00
	ug/dscm @ 7% O_2	< 1.41E+00
Metal emission rate	lb/h	< 1.76E-05
	g/s	< 2.21E-06
Barium		
Metal collected	ug	9.0
Metal concentration	ug/dscm	4.00E+00
	ug/dscm @ 7% O_2	4.63E+00
Metal emission rate	lb/h	5.79E-05
	g/s	7.30E-06
Beryllium		
Metal collected	ug	< 0.4 ND
Metal concentration	ug/dscm	< 1.60E-01 ND
	ug/dscm @ 7% O_2	< 1.85E-01 ND
Metal emission rate	lb/h	< 2.32E-06 ND
	g/s	< 2.92E-07 ND
Cadmium		
Metal collected	ug	7.9
Metal concentration	ug/dscm	3.51E+00
	ug/dscm @ 7% O_2	4.07E+00
Metal emission rate	lb/h	5.08E-05
	g/s	6.40E-06
Chromium		
Metal collected	ug	20.2
Metal concentration	ug/dscm	8.99E+00
	ug/dscm @ 7% O_2	1.04E+01
Metal emission rate	lb/h	1.30E-04
	g/s	1.64E-05
Cobalt		
Metal collected	ug	< 1.0 ND
Metal concentration	ug/dscm	< 4.45E-01 ND
	ug/dscm @ 7% O_2	< 5.15E-01 ND
Metal emission rate	lb/h	< 6.43E-06 ND
	g/s	< 8.11E-07 ND
Copper		
Metal collected	ug	108.1
Metal concentration	ug/dscm	4.81E+01
	ug/dscm @ 7% O_2	5.56E+01
Metal emission rate	lb/h	6.95E-04
	g/s	8.76E-05
Lead		
Metal collected	ug	250.4
Metal concentration	ug/dscm	1.11E+02
	ug/dscm @ 7% O_2	1.29E+02
Metal emission rate	lb/h	1.61E-03
	g/s	2.03E-04
Manganese		
Metal collected	ug	42.0
Metal concentration	ug/dscm	1.87E+01
	ug/dscm @ 7% O_2	2.16E+01
Metal emission rate	lb/h	2.70E-04
	g/s	3.40E-05
Mercury		
Metal collected	ug	< 11.3
Metal concentration	ug/dscm	< 5.02E+00
	ug/dscm @ 7% O_2	< 5.81E+00
Metal emission rate	lb/h	< 7.26E-05
	g/s	< 9.15E-06
Nickel		
Metal collected	ug	11.4
Metal concentration	ug/dscm	5.07E+00
	ug/dscm @ 7% O_2	5.87E+00
Metal emission rate	lb/h	7.33E-05
	g/s	9.24E-06
Selenium		
Metal collected	ug	4.0
Metal concentration	ug/dscm	1.78E+00
	ug/dscm @ 7% O_2	2.06E+00
Metal emission rate	lb/h	2.57E-05
	g/s	3.24E-06
Silver		
Metal collected	ug	5.7
Metal concentration	ug/dscm	2.54E+00
	ug/dscm @ 7% O_2	2.93E+00
Metal emission rate	lb/h	3.67E-05
	g/s	4.62E-06
Thallium		
Metal collected	ug	< 10.6
Metal concentration	ug/dscm	< 4.72E+00
	ug/dscm @ 7% O_2	< 5.46E+00
Metal emission rate	lb/h	< 6.82E-05
	g/s	< 8.59E-06
Vanadium		
Metal collected	ug	< 1.6
Metal concentration	ug/dscm	< 7.12E-01
	ug/dscm @ 7% O_2	< 8.24E-01
Metal emission rate	lb/h	< 1.03E-05
	g/s	< 1.30E-06
Zinc		
Metal collected	ug	136.2
Metal concentration	ug/dscm	6.06E+01
	ug/dscm @ 7% O_2	7.01E+01
Metal emission rate	lb/h	8.76E-04
	g/s	1.10E-04

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-3. Metals Emission Summary – Run 3

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	4,000
	acfm	8,920
	dscm/min	113.28
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,838
Stack gas sample volume	dscf	82.610
	dscm	2.340
Isokinetic	%	103.2
Stack gas moisture content	vol %	45.5
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	9.3
Aluminum		
Metal collected	ug	125.2
Metal concentration	ug/dscm	5.35E+01
	ug/dscm @ 7% O_2	6.40E+01
Metal emission rate	lb/h	8.02E-04
	g/s	1.01E-04
Antimony		
Metal collected	ug	< 4.9
Metal concentration	ug/dscm	< 2.09E+00
	ug/dscm @ 7% O_2	< 2.51E+00
Metal emission rate	lb/h	< 3.14E-05
	g/s	< 3.95E-06
Arsenic		
Metal collected	ug	< 3.7
Metal concentration	ug/dscm	< 1.59E+00
	ug/dscm @ 7% O_2	< 1.91E+00
Metal emission rate	lb/h	< 2.39E-05
	g/s	< 3.01E-06
Barium		
Metal collected	ug	10.8
Metal concentration	ug/dscm	4.62E+00
	ug/dscm @ 7% O_2	5.52E+00
Metal emission rate	lb/h	6.92E-05
	g/s	8.72E-06
Beryllium		
Metal collected	ug	< 0.4 ND
Metal concentration	ug/dscm	< 1.54E-01 ND
	ug/dscm @ 7% O_2	< 1.84E-01 ND
Metal emission rate	lb/h	< 2.31E-06 ND
	g/s	< 2.91E-07 ND
Cadmium		
Metal collected	ug	9.7
Metal concentration	ug/dscm	4.15E+00
	ug/dscm @ 7% O_2	4.97E+00
Metal emission rate	lb/h	6.22E-05
	g/s	7.84E-06
Chromium		
Metal collected	ug	36.5
Metal concentration	ug/dscm	1.56E+01
	ug/dscm @ 7% O_2	1.87E+01
Metal emission rate	lb/h	2.34E-04
	g/s	2.95E-05
Cobalt		
Metal collected	ug	< 1.0 ND
Metal concentration	ug/dscm	< 4.27E-01 ND
	ug/dscm @ 7% O_2	< 5.11E-01 ND
Metal emission rate	lb/h	< 6.40E-06 ND
	g/s	< 8.07E-07 ND
Copper		
Metal collected	ug	112.4
Metal concentration	ug/dscm	4.80E+01
	ug/dscm @ 7% O_2	5.75E+01
Metal emission rate	lb/h	7.20E-04
	g/s	9.07E-05
Lead		
Metal collected	ug	694.2
Metal concentration	ug/dscm	2.97E+02
	ug/dscm @ 7% O_2	3.55E+02
Metal emission rate	lb/h	4.45E-03
	g/s	5.60E-04
Manganese		
Metal collected	ug	41.4
Metal concentration	ug/dscm	1.77E+01
	ug/dscm @ 7% O_2	2.12E+01
Metal emission rate	lb/h	2.65E-04
	g/s	3.34E-05
Mercury		
Metal collected	ug	< 14.7
Metal concentration	ug/dscm	< 6.28E+00
	ug/dscm @ 7% O_2	< 7.52E+00
Metal emission rate	lb/h	< 9.42E-05
	g/s	< 1.19E-05
Nickel		
Metal collected	ug	9.4
Metal concentration	ug/dscm	4.02E+00
	ug/dscm @ 7% O_2	4.81E+00
Metal emission rate	lb/h	6.02E-05
	g/s	7.59E-06
Selenium		
Metal collected	ug	3.9
Metal concentration	ug/dscm	1.68E+00
	ug/dscm @ 7% O_2	2.02E+00
Metal emission rate	lb/h	2.52E-05
	g/s	3.18E-06
Silver		
Metal collected	ug	< 1.9 ND
Metal concentration	ug/dscm	< 8.29E-01 ND
	ug/dscm @ 7% O_2	< 9.92E-01 ND
Metal emission rate	lb/h	< 1.24E-05 ND
	g/s	< 1.57E-06 ND
Thallium		
Metal collected	ug	< 10.7
Metal concentration	ug/dscm	< 4.57E+00
	ug/dscm @ 7% O_2	< 5.47E+00
Metal emission rate	lb/h	< 6.85E-05
	g/s	< 8.64E-06
Vanadium		
Metal collected	ug	< 2.0
Metal concentration	ug/dscm	< 8.55E-01
	ug/dscm @ 7% O_2	< 1.02E+00
Metal emission rate	lb/h	< 1.28E-05
	g/s	< 1.61E-06
Zinc		
Metal collected	ug	133.3
Metal concentration	ug/dscm	5.70E+01
	ug/dscm @ 7% O_2	6.82E+01
Metal emission rate	lb/h	8.54E-04
	g/s	1.08E-04

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-4. Mercury Speciation

	Sample results					Speciation Calculations			
	Vapor Phase Ionic Mercury (ug)	Particulate Phase Ionic Mercury (ug)	Total Ionic Mercury (ug)	Elemental Mercury (ug)	Total Mercury (ug)	Vapor phase Ionic Mercury (%)	Particulate Phase Ionic Merciry (%)	Total Ionic Mercury (%)	Elemental Mercury (%)
Run 1	1.30	0.06	1.36	9.46	10.82	12.01%	0.55%	12.57%	87.43%
Run 2	1.70	0.06	1.76	9.53	11.29	15.06%	0.53%	15.59%	84.41%
Run 3	4.30	0.06	4.36	10.34	14.70	29.25%	0.41%	29.66%	70.34%
Average	2.43	0.06	2.49	9.78	12.27	19.83%	0.49%	20.32%	79.68%

Vapor Phase Ionic Mercury (Acidified Peroxide Liquid)
Particulate Phase Ionic Mercury (Filter and Front Half Rinse)
Elemental Mercury (Components Downstrean of Peroxide Impinger, includes Permanganate Liquid and Rinse)

Table 7-5. Hexavalent Chromium Emission Summary – Run 1

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	5,120
	acfm	11,160
	dscm/min	145.00
Stack gas temperature	°F	176
Stack gas velocity	ft/min	3,552
Stack gas sample volume	dscf	76.040
	dscm	2.153
Isokinetic	%	93.6
Stack gas moisture content	vol %	44.0
Stack gas carbon dioxide content	vol %, dry	6.3
Stack gas oxygen content	vol %, dry	9.6
Hexavalent chromium		
Metal collected	ug	5.6
Metal concentration	ug/dscm	2.60E+00
	ug/dscm @ 7% O_2	3.19E+00
Metal emission rate	lb/h	4.99E-05
	g/s	6.28E-06

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-6. Hexavalent Chromium Emission Summary – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	3,780
	acfm	8,470
	dscm/min	107.05
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,694
Stack gas sample volume	dscf	75.030
	dscm	2.125
Isokinetic	%	101.1
Stack gas moisture content	vol %	45.3
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	8.9
Hexavalent chromium		
Metal collected	ug	5.9
Metal concentration	ug/dscm	2.78E+00
	ug/dscm @ 7% O_2	3.21E+00
Metal emission rate	lb/h	3.93E-05
	g/s	4.95E-06

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-7. Hexavalent Chromium Emission Summary – Run 3

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	3,890
	acfm	8,770
	dscm/min	110.17
Stack gas temperature	°F	176
Stack gas velocity	ft/min	2,796
Stack gas sample volume	dscf	78.620
	dscm	2.227
Isokinetic	%	103.1
Stack gas moisture content	vol %	46.1
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	9.3
Hexavalent chromium		
Metal collected	ug	7.5
Metal concentration	ug/dscm	3.37E+00
	ug/dscm @ 7% O_2	4.03E+00
Metal emission rate	lb/h	4.91E-05
	g/s	6.18E-06

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-8. Particulate Matter, Hydrogen Chloride, and Chlorine Emissions Summary – Run 1

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	5,030
	acfm	11,320
	dscm/min	142.45
Stack gas temperature	°F	175
Stack gas velocity	ft/min	3,606
Stack gas sample volume	dscf	72.660
	dscm	2.058
Isokinetic	%	93.7
Stack gas moisture content	vol %	45.9
Stack gas carbon dioxide content	vol %, dry	6.3
Stack gas oxygen content	vol %, dry	9.6
Hydrogen chloride and chlorine		
HCl collected	mg	11.8
Cl_2 collected	mg	1.95
Stack gas HCl concentration	mg/dscm	5.73E+00
	mg/dscm @7% O_2	7.04E+00
Stack gas HCl emission rate	lb/h	1.08E-01
	kg/h	4.90E-02
	g/s	1.36E-02
Stack gas Cl_2 concentration	mg/dscm	9.48E-01
	mg/dscm @7% O_2	1.16E+00
Stack gas Cl_2 emission rate	lb/h	1.79E-02
	kg/h	8.10E-03
	g/s	2.25E-03
Stack gas HCl+Cl_2 concentration expressed as HCl equivalents	ppmv, dry	4.42E+00
	ppmv, dry @7% O_2	5.43E+00
Particulate		
Particulate matter collected	mg	34.3
Particulate concentration	gr/dscf	7.29E-03
	gr/dscf @ 7% O_2	8.95E-03
	mg/dscm	1.67E+01
	mg/dscm @ 7% O_2	2.05E+01
Particulate emission rate	lb/h	3.14E-01
	kg/h	1.42E-01
	g/s	3.96E-02

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-9. Particulate Matter, Hydrogen Chloride, and Chlorine Emissions Summary – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	3,850
	acfm	8,580
	dscm/min	109.03
Stack gas temperature	°F	174
Stack gas velocity	ft/min	2,730
Stack gas sample volume	dscf	74.990
	dscm	2.124
Isokinetic	%	96.0
Stack gas moisture content	vol %	45.1
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	8.9
Hydrogen chloride and chlorine		
HCl collected	mg	6.95
Cl_2 collected	mg	2.01
Stack gas HCl concentration	mg/dscm	3.27E+00
	mg/dscm @7% O_2	3.79E+00
Stack gas HCl emission rate	lb/h	4.72E-02
	kg/h	2.14E-02
	g/s	5.95E-03
Stack gas Cl_2 concentration	mg/dscm	9.46E-01
	mg/dscm @7% O_2	1.10E+00
Stack gas Cl_2 emission rate	lb/h	1.37E-02
	kg/h	6.19E-03
	g/s	1.72E-03
Stack gas HCl+Cl_2 concentration expressed as HCl equivalents	ppmv, dry	2.80E+00
	ppmv, dry @7% O_2	3.24E+00
Particulate		
Particulate matter collected	mg	19.4
Particulate concentration	gr/dscf	3.99E-03
	gr/dscf @ 7% O_2	4.62E-03
	mg/dscm	9.13E+00
	mg/dscm @ 7% O_2	1.06E+01
Particulate emission rate	lb/h	1.32E-01
	kg/h	5.98E-02
	g/s	1.66E-02

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-10. Particulate Matter, Hydrogen Chloride, and Chlorine Emissions Summary – Run 3

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	120
Stack gas flow rate	dscfm	4,090
	acfm	8,970
	dscm/min	115.83
Stack gas temperature	°F	174
Stack gas velocity	ft/min	2,856
Stack gas sample volume	dscf	79.290
	dscm	2.246
Isokinetic	%	95.7
Stack gas moisture content	vol %	44.8
Stack gas carbon dioxide content	vol %, dry	7.0
Stack gas oxygen content	vol %, dry	9.3
Hydrogen chloride and chlorine		
HCl collected	mg	6.49
Cl_2 collected	mg	1.94
Stack gas HCl concentration	mg/dscm	2.89E+00
	mg/dscm @7% O_2	3.46E+00
Stack gas HCl emission rate	lb/h	4.43E-02
	kg/h	2.01E-02
	g/s	5.58E-03
Stack gas Cl_2 concentration	mg/dscm	8.64E-01
	mg/dscm @7% O_2	1.03E+00
Stack gas Cl_2 emission rate	lb/h	1.32E-02
	kg/h	6.00E-03
	g/s	1.67E-03
Stack gas HCl+Cl_2 concentration expressed as HCl equivalents	ppmv, dry	2.49E+00
	ppmv, dry @7% O_2	2.98E+00
Particulate		
Particulate matter collected	mg	33.6
Particulate concentration	gr/dscf	6.54E-03
	gr/dscf @ 7% O_2	7.83E-03
	mg/dscm	1.50E+01
	mg/dscm @ 7% O_2	1.79E+01
Particulate emission rate	lb/h	2.29E-01
	kg/h	1.04E-01
	g/s	2.89E-02

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-11. Particle Size Distribution

Particle Size (um)	Wt%
0.1 - 0.5	6.9
0.5 – 1.0	2.4
1.0 – 5.0	34.8
5.0 – 10.0	17.9
10.0 – 100.0	38.0
>100.0	0.0
Total	100.0

Average particle size distribution. Values calculated as the weighted average of the filter and acetone probe rinse particles for each run.

Table 7-12. Speciated Volatile Organic Compound Emissions – Run 1

Parameter	Units	Tube Set A	Tube Set B	Tube Set C	Tube Set D
Net sampling time	min	40	40	40	40
Corrected sample volume	liters,dry std.	19.6512	19.521	18.9404	18.9631
Corrected sample volume	dscf	0.694	0.689	0.669	0.670
Corrected sample volume	dscm	0.0197	0.0195	0.0189	0.0190
Analyzed (Y/N)	-	N	Y	Y	Y

Total volume sampled	dscf	2.722
Total volume sampled	dscm	0.0771
Number of tube pairs analyzed	-	3
Total condensate volume	ml	84
Stack gas flow rate	acfm	10,770
Stack gas flow rate	dscfm	4,870

VOST Compound	Mass VOC Compound (ug)					Mass VOC Compound (ug)	Stack Conc. (a,c) (ug/dscm)	Mass Emission Rate (a,b,c) (lb/hr)	Mass Emission Rate (a,b,c) (g/s)
	Tube Set A	Tube Set B	Tube Set C	Tube Set D	Condensate (ug/L)				
Standard Target Analytes									
Acetone	0	< 0.183 J,B	0.55 B	0.554 J,B	4.8 J	< 1.69E+00	< 2.76E+01	< 5.04E-04	< 6.35E-05
Acrylonitrile	0	< 0.152 ND	< 0.152 ND	< 0.152 ND	< 2.7 ND	< 6.83E-01 ND	< 1.09E+01	< 1.99E-04	< 2.50E-05
Benzene	0	0.0139 J	0.0552 J	< 0.0064 ND	< 0.1 ND	< 8.39E-02	< 1.42E+00	< 2.60E-05	< 3.27E-06
Bromodichloromethane	0	0.05	< 0.0246	< 0.0032 ND	2.2	< 2.63E-01	< 3.75E+00	< 6.85E-05	< 8.63E-06
Bromoform	0	< 0.1366	0.115 J	< 0.0145 J	< 0.14 ND	< 2.78E-01	< 4.79E+00	< 8.73E-05	< 1.10E-05
Bromomethane	0	< 0.064 J,B	< 0.065 J,B	< 0.052 J,B	< 0.38 ND	< 2.13E-01	< 3.57E+00	< 6.51E-05	< 8.20E-06
2-Butanone	0	< 0.07 ND	< 0.07 ND	< 0.07 ND	< 0.75 ND	< 2.73E-01 ND	< 4.47E+00	< 8.16E-05	< 1.03E-05
Carbon Disulfide	0	0.0091 J	< 0.0087 J	< 0.0028 J	< 0.1 ND	< 2.90E-02	< 4.68E-01	< 8.53E-06	< 1.08E-06
Carbon Tetrachloride	0	0.0127 J	< 0.0045 J	< 0.0022 ND	< 0.12 ND	< 2.95E-02	< 4.69E-01	< 8.55E-06	< 1.08E-06
Chlorobenzene	0	5.818 E	3.556 E	0.0323 J	< 0.1 ND	< 9.41E+00	< 1.64E+02	< 2.99E-03	< 3.77E-04
Chlorodibromomethane	0	< 0.096	< 0.073	< 0.02 ND	1	< 2.73E-01	< 4.38E+00	< 7.99E-05	< 1.01E-05
Chloroethane	0	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.24 ND	< 8.02E-02 ND	< 1.31E+00	< 2.38E-05	< 3.00E-06
Chloroform	0	0.023 J	0.0183 J	0.0542 J	6.1	6.08E-01	8.31E+00	1.52E-04	1.91E-05
Chloromethane	0	0.4087 J	< 0.5132	< 0.3032	< 0.12 ND	< 1.24E+00	< 2.15E+01	< 3.92E-04	< 4.93E-05
Dibromomethane	0	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.21 ND	< 7.76E-02 ND	< 1.27E+00	< 2.32E-05	< 2.93E-06
Dichlorodifluoromethane	0	< 0.0131 J	< 0.015 J	< 0.195	< 0.15 ND	< 2.36E-01	< 4.05E+00	< 7.39E-05	< 9.31E-06
1,1-Dichloroethane	0	< 0.0038 ND	< 0.0038 ND	< 0.0038 ND	< 0.1 ND	< 1.98E-02 ND	< 3.08E-01	< 5.61E-06	< 7.07E-07
1,2-Dichloroethane	0	< 0.0044 ND	< 0.0044 ND	< 0.0044 ND	0.14 J	< 2.50E-02	< 3.82E-01	< 6.98E-06	< 8.79E-07
1,1-Dichloroethene	0	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.1 ND	< 2.22E-02 ND	< 3.49E-01	< 6.37E-06	< 8.03E-07
cis-1,2-Dichloroethene	0	< 0.005 ND	< 0.005 ND	< 0.0054 J	< 0.12 ND	< 2.55E-02	< 3.99E-01	< 7.28E-06	< 9.17E-07
trans-1,2-Dichloroethene	0	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.1 ND	< 1.86E-02 ND	< 2.87E-01	< 5.23E-06	< 6.59E-07
1,2-Dichloropropane	0	< 0.0054 ND	< 0.0054 ND	< 0.0054 ND	< 0.1 ND	< 2.46E-02 ND	< 3.91E-01	< 7.13E-06	< 8.99E-07
cis-1,3-Dichloropropene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.1 ND	< 2.64E-02 ND	< 4.22E-01	< 7.71E-06	< 9.71E-07
trans-1,3-Dichloropropene	0	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.11 ND	< 2.12E-02 ND	< 3.29E-01	< 6.00E-06	< 7.56E-07
Ethylbenzene	0	< 0.0026 ND	< 0.0026 ND	< 0.0062 J	< 0.1 ND	< 1.98E-02	< 3.08E-01	< 5.61E-06	< 7.07E-07
2-Hexanone	0	< 0.0198 ND	< 0.0198 ND	< 0.0198 ND	< 0.76 ND	< 1.23E-01 ND	< 1.86E+00	< 3.40E-05	< 4.28E-06
Iodomethane	0	< 0.0156 J,B	< 0.0166 J,B	< 0.0166 J,B	< 0.12 ND	< 5.89E-02	< 9.81E-01	< 1.79E-05	< 2.25E-06
Methylene Chloride	0	0.084 J	< 0.039	0.146	2.3	< 4.62E-01	< 7.19E+00	< 1.31E-04	< 1.65E-05
4-Methyl-2-pentanone (MIBK)	0	< 0.047	< 0.028 ND	< 0.028 ND	< 0.4 ND	< 1.37E-01	< 2.23E+00	< 4.07E-05	< 5.13E-06
Styrene	0	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.1 ND	< 1.86E-02 ND	< 2.87E-01	< 5.23E-06	< 6.59E-07
1,1,2,2-Tetrachloroethane	0	< 0.022 ND	< 0.022 ND	< 0.022 ND	< 0.15 ND	< 7.86E-02 ND	< 1.31E+00	< 2.40E-05	< 3.02E-06
Tetrachloroethene	0	4.733 E	0.696	< 0.008 J	< 0.1 ND	< 5.45E+00	< 9.48E+01	< 1.73E-03	< 2.18E-04
Toluene	0	0.0847 J	0.0936 J	< 0.0302	0.19 J	< 2.24E-01	< 3.84E+00	< 7.00E-05	< 8.82E-06
1,1,1-Trichloroethane	0	< 0.0032 ND	< 0.0032 ND	< 0.0032 ND	< 0.1 ND	< 1.80E-02 ND	< 2.76E-01	< 5.04E-06	< 6.35E-07
1,1,2-Trichloroethane	0	< 0.01 ND	< 0.01 ND	< 0.01 ND	< 0.25 ND	< 5.10E-02 ND	< 7.95E-01	< 1.45E-05	< 1.83E-06
Trichloroethene	0	0.0231 J	0.02 J	0.043	0.57 J	1.34E-01	2.12E+00	3.87E-05	4.87E-06
Trichlorofluoromethane	0	< 0.0098 ND	< 0.0098 ND	0.052 J	< 0.12 ND	< 8.17E-02	< 1.38E+00	< 2.51E-05	< 3.17E-06
1,2,3-Trichloropropane	0	< 0.0162 ND	< 0.0162 ND	< 0.0162 ND	< 0.36 ND	< 7.88E-02 ND	< 1.24E+00	< 2.26E-05	< 2.85E-06
Vinyl Acetate	0	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.24 ND	< 9.22E-02 ND	< 1.52E+00	< 2.76E-05	< 3.48E-06
Vinyl Chloride	0	< 0.0064 ND	< 0.0064 ND	< 0.0097 J	< 0.24 ND	< 4.27E-02	< 6.53E-01	< 1.19E-05	< 1.50E-06
Xylenes (total)	0	< 0.0097 J	< 0.0096 ND	< 0.0238 J	< 0.3 ND	< 6.83E-02	< 1.08E+00	< 1.97E-05	< 2.48E-06
Special Target Analytes									
Bromobenzene	0	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.11 ND	< 3.08E-02 ND	< 4.96E-01	< 9.05E-06	< 1.14E-06
Bromochloromethane	0	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.24 ND	< 9.22E-02 ND	< 1.52E+00	< 2.76E-05	< 3.48E-06
n-Butylbenzene	0	< 0.0094 ND	< 0.0094 ND	< 0.0094 ND	< 0.1 ND	< 3.66E-02 ND	< 6.00E-01	< 1.09E-05	< 1.38E-06
sec-Butylbenzene	0	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.1 ND	< 3.00E-02 ND	< 4.86E-01	< 8.86E-06	< 1.12E-06
tert-Butylbenzene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.24 ND	< 3.82E-02 ND	< 5.75E-01	< 1.05E-05	< 1.32E-06
2-Chlorotoluene	0	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.24 ND	< 3.40E-02 ND	< 5.02E-01	< 9.16E-06	< 1.15E-06
4-Chlorotoluene	0	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.21 ND	< 2.96E-02 ND	< 4.38E-01	< 7.99E-06	< 1.01E-06
1,2-Dibromo-3-chloropropane	0	< 0.04 ND	< 0.04 ND	< 0.04 ND	< 0.45 ND	< 1.58E-01 ND	< 2.58E+00	< 4.71E-05	< 5.93E-06
1,2-Dibromoethane	0	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.24 ND	< 8.02E-02 ND	< 1.31E+00	< 2.38E-05	< 3.00E-06
1,2-Dichlorobenzene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.1 ND	< 2.64E-02 ND	< 4.22E-01	< 7.71E-06	< 9.71E-07
1,3-Dichlorobenzene	0	< 0.0062 ND	< 0.0062 ND	< 0.0062 ND	< 0.1 ND	< 2.70E-02 ND	< 4.33E-01	< 7.90E-06	< 9.95E-07
1,4-Dichlorobenzene	0	< 0.0086 ND	< 0.0086 ND	< 0.0086 ND	< 0.12 ND	< 3.59E-02 ND	< 5.80E-01	< 1.06E-05	< 1.33E-06
1,3-Dichloropropane	0	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.17 ND	< 2.51E-02 ND	< 3.73E-01	< 6.81E-06	< 8.58E-07
2,2-Dichloropropane	0	< 0.003 ND	< 0.003 ND	< 0.003 ND	< 0.11 ND	< 1.82E-02 ND	< 2.77E-01	< 5.05E-06	< 6.36E-07
1,1-Dichloropropene	0	< 0.002 ND	< 0.002 ND	< 0.002 ND	< 0.1 ND	< 1.44E-02 ND	< 2.13E-01	< 3.89E-06	< 4.91E-07
Hexachlorobutadiene	0	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.12 ND	< 3.89E-02 ND	< 6.32E-01	< 1.15E-05	< 1.45E-06
Isopropyl benzene	0	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.1 ND	< 2.22E-02 ND	< 3.49E-01	< 6.37E-06	< 8.03E-07
p-Isopropyltoluene	0	< 0.0076 ND	< 0.0076 ND	< 0.0076 ND	< 0.1 ND	< 3.12E-02 ND	< 5.06E-01	< 9.23E-06	< 1.16E-06
Naphthalene	0	< 0.02 ND	< 0.02 ND	< 0.021 J	< 0.17 ND	< 7.53E-02	< 1.25E+00	< 2.28E-05	< 2.87E-06
n-Propylbenzene	0	< 0.0058 ND	< 0.0058 ND	< 0.0058 ND	< 0.1 ND	< 2.58E-02 ND	< 4.12E-01	< 7.52E-06	< 9.47E-07
1,1,1,2-Tetrachloroethane	0	< 0.0038 J	< 0.002 ND	< 0.002 ND	< 0.12 ND	< 1.79E-02	< 2.67E-01	< 4.86E-06	< 6.13E-07
Tetrahydrofuran	0	< 0.062 ND	< 0.062 ND	< 0.062 ND	< 1.2 ND	< 2.87E-01 ND	< 4.55E+00	< 8.30E-05	< 1.05E-05
1,2,3-Trichlorobenzene	0	< 0.028 ND	< 0.028 ND	< 0.028 ND	< 0.23 ND	< 1.03E-01 ND	< 1.71E+00	< 3.13E-05	< 3.94E-06
1,2,4-Trichlorobenzene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.15 ND	< 3.06E-02 ND	< 4.77E-01	< 8.70E-06	< 1.10E-06
1,1,2-Trichloro-1,2,2-trifluoroethane	0	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.13 ND	< 2.17E-02 ND	< 3.30E-01	< 6.02E-06	< 7.58E-07
1,2,4-Trimethylbenzene	0	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.11 ND	< 3.80E-02 ND	< 6.21E-01	< 1.13E-05	< 1.43E-06
1,3,5-Trimethylbenzene	0	< 0.0056 ND	< 0.0056 ND	< 0.0056 ND	< 0.1 ND	< 2.52E-02 ND	< 4.02E-01	< 7.33E-06	< 9.23E-07
m- & p-Xylene	0	< 0.0083 J	< 0.008 J	< 0.0184 J	< 0.2 ND	< 5.15E-02	< 8.22E-01	< 1.50E-05	< 1.89E-06
o-Xylene	0	< 0.0034 ND	< 0.0034 ND	< 0.0053 J	< 0.14 ND	< 2.39E-02	< 3.63E-01	< 6.63E-06	< 8.35E-07
Tentatively Identified Compounds (TICs)									
Unknown	0	0.068 NJ	0.051 NJ	0	0	1.19E-01	2.07E+00	3.78E-05	4.76E-06
Benzaldehyde	0	0	0.087 NJ	0.078 NJ	0	1.65E-01	2.87E+00	5.24E-05	6.60E-06

(a) Stack gas sample volume (analyzed tubes only) 2.0277 dry std cubic feet
0.05743 dry std cubic meters

(b) Stack gas flow rate 10770 actual cubic feet per minute
5.08355 actual cubic meters per second
4870 dry std cubic feet per minute
2.29869 dry std cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-13. Speciated Volatile Organic Compound Emissions – Run 2

Parameter	Units	Tube Set A	Tube Set B	Tube Set C	Tube Set D
Net sampling time	min	40	40	40	40
Corrected sample volume	liters,dry std.	19.453	20.2233	19.3709	19.3709
Corrected sample volume	dscf	0.687	0.714	0.684	0.684
Corrected sample volume	dscm	0.0195	0.0202	0.0194	0.0194
Analyzed (Y/N)	-	N	Y	Y	Y

Total volume sampled	dscf	2.769
Total volume sampled	dscm	0.0784
Number of tube pairs analyzed	-	3
Total condensate volume	ml	84
Stack gas flow rate	acfm	8,580
Stack gas flow rate	dscfm	3,880

VOST Compound	Mass VOC Compound (ug)					Mass VOC Compound (ug)	Stack Conc. (a,c) (ug/dscm)	Mass Emission Rate (a,b,c) (lb/hr)	Mass Emission Rate (a,b,c) (g/s)
	Tube Set A	Tube Set B	Tube Set C	Tube Set D	Condensate (ug/L)				
Standard Target Analytes									
Acetone	0	0.697 J,B	0.56 B	0.444 J,B	4.7 J	2.10E+00	3.39E+01	4.92E-04	6.21E-05
Acrylonitrile	0	< 0.152 ND	< 0.152 ND	< 0.152 ND	< 2.7 ND	< 6.83E-01 ND	< 1.06E+01	< 1.54E-04	< 1.95E-05
Benzene	0	< 0.0094 J	< 0.0126 J	< 0.0312	< 0.1 ND	< 6.16E-02	< 1.01E+00	< 1.47E-05	< 1.85E-06
Bromodichloromethane	0	< 0.0416	< 0.0346	< 0.0406	< 0.1 ND	< 1.25E-01	< 2.09E+00	< 3.03E-05	< 3.82E-06
Bromoform	0	< 0.1766	< 0.1466	0.194 J	< 0.14 ND	< 5.29E-01	< 8.92E+00	< 1.30E-04	< 1.63E-05
Bromomethane	0	< 0.05 J,B	< 0.052 J,B	< 0.046 J,B	< 0.38 ND	< 1.80E-01	< 2.92E+00	< 4.24E-05	< 5.34E-06
2-Butanone	0	< 0.07 ND	< 0.07 ND	< 0.07 ND	< 0.75 ND	< 2.73E-01 ND	< 4.36E+00	< 6.34E-05	< 7.99E-06
Carbon Disulfide	0	< 0.0106 J	< 0.009 J	0.0171 J	< 0.1 ND	< 4.51E-02	< 7.30E-01	< 1.06E-05	< 1.34E-06
Carbon Tetrachloride	0	< 0.006 J	< 0.0056 J	< 0.006 J	< 0.12 ND	< 2.77E-02	< 4.27E-01	< 6.21E-06	< 7.82E-07
Chlorobenzene	0	1.6028 J	< 0.6613	2.012	< 0.1 ND	< 4.27E+00	< 7.25E+01	< 1.05E-03	< 1.33E-04
Chlorodibromomethane	0	< 0.13	< 0.106	0.131 J	< 0.2 ND	< 3.84E-01	< 6.44E+00	< 9.36E-05	< 1.18E-05
Chloroethane	0	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.24 ND	< 8.02E-02 ND	< 1.27E+00	< 1.85E-05	< 2.33E-06
Chloroform	0	0.0349 J	< 0.0239	< 0.0289	< 0.1 ND	< 9.61E-02	< 1.59E+00	< 2.32E-05	< 2.92E-06
Chloromethane	0	< 0.0642	< 0.3232	< 0.0212 J	< 0.12 ND	< 4.19E-01	< 7.06E+00	< 1.03E-04	< 1.29E-05
Dibromomethane	0	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.21 ND	< 7.76E-02 ND	< 1.24E+00	< 1.81E-05	< 2.28E-06
Dichlorodifluoromethane	0	< 0.023 J	< 0.0113 J	< 0.015 J	< 0.15 ND	< 6.19E-02	< 9.97E-01	< 1.45E-05	< 1.83E-06
1,1-Dichloroethane	0	< 0.0038 ND	< 0.0038 ND	< 0.0038 ND	< 0.1 ND	< 1.98E-02 ND	< 3.00E-01	< 4.37E-06	< 5.50E-07
1,2-Dichloroethane	0	< 0.0044 ND	< 0.0044 ND	< 0.0044 ND	0.12 J	< 2.33E-02	< 3.52E-01	< 5.12E-06	< 6.45E-07
1,1-Dichloroethene	0	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.1 ND	< 2.22E-02 ND	< 3.41E-01	< 4.96E-06	< 6.25E-07
cis-1,2-Dichloroethene	0	< 0.005 ND	< 0.005 ND	< 0.005 ND	< 0.12 ND	< 2.51E-02 ND	< 3.83E-01	< 5.57E-06	< 7.01E-07
trans-1,2-Dichloroethene	0	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.1 ND	< 1.86E-02 ND	< 2.80E-01	< 4.07E-06	< 5.13E-07
1,2-Dichloropropane	0	< 0.0054 ND	< 0.0054 ND	< 0.0054 ND	< 0.1 ND	< 2.46E-02 ND	< 3.82E-01	< 5.55E-06	< 6.99E-07
cis-1,3-Dichloropropene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.1 ND	< 2.64E-02 ND	< 4.12E-01	< 5.99E-06	< 7.55E-07
trans-1,3-Dichloropropene	0	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.11 ND	< 2.12E-02 ND	< 3.21E-01	< 4.67E-06	< 5.88E-07
Ethylbenzene	0	< 0.0026 ND	< 0.0026 ND	< 0.0026 ND	< 0.1 ND	< 1.62E-02 ND	< 2.39E-01	< 3.48E-06	< 4.38E-07
2-Hexanone	0	< 0.0198 ND	< 0.0198 ND	< 0.0198 ND	< 0.76 ND	< 1.23E-01 ND	< 1.82E+00	< 2.65E-05	< 3.34E-06
Iodomethane	0	< 0.0156 J,B	< 0.0166 J,B	< 0.0156 J,B	< 0.12 ND	< 5.79E-02	< 9.39E-01	< 1.37E-05	< 1.72E-06
Methylene Chloride	0	0.059 J	< 0.026 ND	< 0.026 ND	1.1 J	< 2.03E-01	< 3.06E+00	< 4.45E-05	< 5.61E-06
4-Methyl-2-pentanone (MIBK)	0	< 0.028 ND	< 0.028 ND	< 0.028 ND	< 0.4 ND	< 1.18E-01 ND	< 1.85E+00	< 2.69E-05	< 3.39E-06
Styrene	0	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.1 ND	< 1.86E-02 ND	< 2.80E-01	< 4.07E-06	< 5.13E-07
1,1,2,2-Tetrachloroethane	0	< 0.022 ND	< 0.022 ND	< 0.022 ND	< 0.15 ND	< 7.86E-02 ND	< 1.28E+00	< 1.86E-05	< 2.34E-06
Tetrachloroethene	0	< 0.2321	< 0.0891	< 0.1421	< 0.1 ND	< 4.72E-01	< 7.96E+00	< 1.16E-04	< 1.46E-05
Toluene	0	0.1734 J	0.0158 J	< 0.0232	0.15 J	< 2.25E-01	< 3.76E+00	< 5.47E-05	< 6.89E-06
1,1,1-Trichloroethane	0	< 0.0032 ND	< 0.0032 ND	< 0.0032 ND	< 0.1 ND	< 1.80E-02 ND	< 2.70E-01	< 3.92E-06	< 4.94E-07
1,1,2-Trichloroethane	0	< 0.01 ND	< 0.01 ND	< 0.01 ND	< 0.25 ND	< 5.10E-02 ND	< 7.77E-01	< 1.13E-05	< 1.42E-06
Trichloroethene	0	0.0146 J	< 0.016	0.0135 J	< 0.1 ND	< 5.25E-02	< 8.55E-01	< 1.24E-05	< 1.57E-06
Trichlorofluoromethane	0	< 0.0098 ND	< 0.0098 ND	< 0.0098 ND	< 0.12 ND	< 3.95E-02 ND	< 6.27E-01	< 9.12E-06	< 1.15E-06
1,2,3-Trichloropropane	0	< 0.0162 ND	< 0.0162 ND	< 0.0162 ND	< 0.36 ND	< 7.88E-02 ND	< 1.21E+00	< 1.76E-05	< 2.22E-06
Vinyl Acetate	0	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.24 ND	< 9.22E-02 ND	< 1.48E+00	< 2.15E-05	< 2.71E-06
Vinyl Chloride	0	< 0.0064 ND	< 0.0064 ND	< 0.0064 ND	< 0.24 ND	< 3.94E-02 ND	< 5.83E-01	< 8.47E-06	< 1.07E-06
Xylenes (total)	0	< 0.0121 J	< 0.0102 J	< 0.0116 J	< 0.3 ND	< 5.91E-02	< 8.96E-01	< 1.30E-05	< 1.64E-06
Special Target Analytes									
Bromobenzene	0	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.11 ND	< 3.08E-02 ND	< 4.84E-01	< 7.04E-06	< 8.87E-07
Bromochloromethane	0	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.24 ND	< 9.22E-02 ND	< 1.48E+00	< 2.15E-05	< 2.71E-06
n-Butylbenzene	0	< 0.0094 ND	< 0.0094 ND	< 0.0094 ND	< 0.1 ND	< 3.66E-02 ND	< 5.85E-01	< 8.51E-06	< 1.07E-06
sec-Butylbenzene	0	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.1 ND	< 3.00E-02 ND	< 4.73E-01	< 6.88E-06	< 8.67E-07
tert-Butylbenzene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.24 ND	< 3.82E-02 ND	< 5.62E-01	< 8.17E-06	< 1.03E-06
2-Chlorotoluene	0	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.24 ND	< 3.40E-02 ND	< 4.91E-01	< 7.14E-06	< 8.99E-07
4-Chlorotoluene	0	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.21 ND	< 2.96E-02 ND	< 4.28E-01	< 6.23E-06	< 7.85E-07
1,2-Dibromo-3-chloropropane	0	< 0.04 ND	< 0.04 ND	< 0.04 ND	< 0.45 ND	< 1.58E-01 ND	< 2.52E+00	< 3.66E-05	< 4.61E-06
1,2-Dibromoethane	0	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.24 ND	< 8.02E-02 ND	< 1.27E+00	< 1.85E-05	< 2.33E-06
1,2-Dichlorobenzene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.1 ND	< 2.64E-02 ND	< 4.12E-01	< 5.99E-06	< 7.55E-07
1,3-Dichlorobenzene	0	< 0.0062 ND	< 0.0062 ND	< 0.0062 ND	< 0.1 ND	< 2.70E-02 ND	< 4.23E-01	< 6.14E-06	< 7.74E-07
1,4-Dichlorobenzene	0	< 0.0086 ND	< 0.0086 ND	< 0.0086 ND	< 0.12 ND	< 3.59E-02 ND	< 5.66E-01	< 8.23E-06	< 1.04E-06
1,3-Dichloropropane	0	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.17 ND	< 2.51E-02 ND	< 3.65E-01	< 5.31E-06	< 6.69E-07
2,2-Dichloropropane	0	< 0.003 ND	< 0.003 ND	< 0.003 ND	< 0.11 ND	< 1.82E-02 ND	< 2.70E-01	< 3.93E-06	< 4.95E-07
1,1-Dichloropropene	0	< 0.002 ND	< 0.002 ND	< 0.002 ND	< 0.1 ND	< 1.44E-02 ND	< 2.09E-01	< 3.04E-06	< 3.83E-07
Hexachlorobutadiene	0	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.12 ND	< 3.89E-02 ND	< 6.17E-01	< 8.97E-06	< 1.13E-06
Isopropyl benzene	0	< 0.0046 ND	< 0.0046 ND	< 0.0046 J	< 0.1 ND	< 2.22E-02	< 3.41E-01	< 4.96E-06	< 6.25E-07
p-Isopropyltoluene	0	< 0.0076 ND	< 0.0076 ND	< 0.0076 ND	< 0.1 ND	< 3.12E-02 ND	< 4.94E-01	< 7.18E-06	< 9.04E-07
Naphthalene	0	< 0.02 ND	< 0.028 J	< 0.02 J	< 0.17 ND	< 8.23E-02	< 1.34E+00	< 1.94E-05	< 2.45E-06
n-Propylbenzene	0	< 0.0058 ND	< 0.0058 ND	< 0.0058 ND	< 0.1 ND	< 2.58E-02 ND	< 4.02E-01	< 5.85E-06	< 7.37E-07
1,1,1,2-Tetrachloroethane	0	< 0.002 ND	< 0.002 ND	< 0.002 ND	< 0.12 ND	< 1.61E-02 ND	< 2.30E-01	< 3.35E-06	< 4.22E-07
Tetrahydrofuran	0	< 0.062 ND	< 0.062 ND	< 0.062 ND	< 1.2 ND	< 2.87E-01 ND	< 4.44E+00	< 6.45E-05	< 8.13E-06
1,2,3-Trichlorobenzene	0	< 0.028 ND	< 0.028 ND	< 0.028 ND	< 0.23 ND	< 1.03E-01 ND	< 1.67E+00	< 2.43E-05	< 3.06E-06
1,2,4-Trichlorobenzene	0	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.15 ND	< 3.06E-02 ND	< 4.66E-01	< 6.77E-06	< 8.53E-07
1,1,2-Trichloro-1,2,2-trifluoroethane	0	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.13 ND	< 2.17E-02 ND	< 3.22E-01	< 4.69E-06	< 5.90E-07
1,2,4-Trimethylbenzene	0	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.11 ND	< 3.80E-02 ND	< 6.06E-01	< 8.81E-06	< 1.11E-06
1,3,5-Trimethylbenzene	0	< 0.0056 ND	< 0.0056 ND	< 0.0056 ND	< 0.1 ND	< 2.52E-02 ND	< 3.92E-01	< 5.70E-06	< 7.18E-07
m- & p-Xylene	0	< 0.0107 J	< 0.0088 J	< 0.0102 J	< 0.2 ND	< 4.65E-02	< 7.18E-01	< 1.04E-05	< 1.31E-06
o-Xylene	0	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.14 ND	< 2.20E-02 ND	< 3.23E-01	< 4.69E-06	< 5.91E-07
Tentatively Identified Compounds (TICs)									
Benzaldehyde	0	0	0.04 NJ	0	0	4.00E-02	6.78E-01	9.86E-06	1.24E-06

(a) Stack gas sample volume (analyzed tubes only) — 2.0821 dry std cubic feet; 0.05897 dry std cubic meters

(b) Stack gas flow rate — 8580 actual cubic feet per minute; 4.04984 actual cubic meters per second; 3880 dry std cubic feet per minute; 1.8314 dry std cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-14. Speciated Volatile Organic Compound Emissions – Run 3

Parameter	Units	Tube Set A	Tube Set B	Tube Set C	Tube Set D
Net sampling time	min	40	40	40	40
Corrected sample volume	liters,dry std.	20.1214	18.4533	18.3004	18.4533
Corrected sample volume	dscf	0.711	0.652	0.646	0.652
Corrected sample volume	dscm	0.0201	0.0185	0.0183	0.0185
Analyzed (Y/N)	-	Y	Y	Y	Y

Total volume sampled	dscf	2.660
Total volume sampled	dscm	0.0753
Number of tube pairs analyzed	-	4
Total condensate volume	ml	84
Stack gas flow rate	acfm	8,850
Stack gas flow rate	dscfm	4,080

VOST Compound	Mass VOC Compound (ug) Tube Set A	Tube Set B	Tube Set C	Tube Set D	Condensate (ug/L)	Mass VOC Compound (ug)	Stack Conc. (a,c) (ug/dscm)	Mass Emission Rate (a,b,c) (lb/hr)	Mass Emission Rate (a,b,c) (g/s)
Standard Target Analytes									
Acetone	< 0.245	0.56 B	0.64 B	0.458 J,B	5.9 J	< 2.40E+00	< 3.18E+01	< 4.87E-04	< 6.13E-05
Acrylonitrile	< 0.152 ND	< 0.152 ND	< 0.152 ND	< 0.152 ND	< 2.7 ND	< 8.35E-01 ND	< 1.11E+01	< 1.69E-04	< 2.13E-05
Benzene	0.0135 J	< 0.0115 J	< 0.0086 J	< 0.0101 J	< 0.1 ND	< 5.21E-02	< 6.92E-01	< 1.06E-05	< 1.33E-06
Bromodichloromethane	< 0.0396	< 0.0426	< 0.0376	< 0.0416	< 0.1 ND	< 1.70E-01	< 2.25E+00	< 3.45E-05	< 4.34E-06
Bromoform	< 0.1266	< 0.1666	< 0.1566	< 0.1366	< 0.14 ND	< 5.98E-01	< 7.94E+00	< 1.21E-04	< 1.53E-05
Bromomethane	< 0.044 ND	< 0.047 J,B	< 0.048 J,B	< 0.049 J,B	< 0.38 ND	< 2.20E-01	< 2.92E+00	< 4.46E-05	< 5.62E-06
2-Butanone	< 0.07 ND	< 0.07 ND	< 0.07 ND	< 0.07 ND	< 0.75 ND	< 3.43E-01 ND	< 4.55E+00	< 6.96E-05	< 8.77E-06
Carbon Disulfide	0.0124 J	0.0151 J	0.0128 J	0.0187 J	< 0.1 ND	< 6.74E-02	< 8.95E-01	< 1.37E-05	< 1.72E-06
Carbon Tetrachloride	< 0.0049 J	< 0.005 J	< 0.0042 J	< 0.0048 J	< 0.12 ND	< 2.90E-02	< 3.85E-01	< 5.88E-06	< 7.41E-07
Chlorobenzene	2.349 E	3.409 E,J	3.1048 E,J	1.4077 J	< 0.1 ND	< 1.03E+01	< 1.36E+02	< 2.09E-03	< 2.63E-04
Chlorodibromomethane	< 0.11	< 0.13	< 0.11	0.121 J	< 0.2 ND	< 4.88E-01	< 6.48E+00	< 9.90E-05	< 1.25E-05
Chloroethane	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.24 ND	< 1.00E-01 ND	< 1.33E+00	< 2.03E-05	< 2.56E-06
Chloroform	< 0.0289	< 0.0299	0.0244 J	< 0.0269	< 0.1 ND	< 1.19E-01	< 1.57E+00	< 2.40E-05	< 3.03E-06
Chloromethane	< 0.2532	< 0.0862	< 0.0242 J	< 0.0542	< 0.12 ND	< 4.28E-01	< 5.68E+00	< 8.68E-05	< 1.09E-05
Dibromomethane	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.21 ND	< 9.76E-02 ND	< 1.30E+00	< 1.98E-05	< 2.50E-06
Dichlorodifluoromethane	< 0.0127 J	< 0.0126 J	< 0.0114 J	< 0.0149 J	< 0.15 ND	< 6.42E-02	< 8.52E-01	< 1.30E-05	< 1.64E-06
1,1-Dichloroethane	< 0.0038 ND	< 0.0038 ND	< 0.0038 ND	< 0.0038 ND	< 0.1 ND	< 2.36E-02 ND	< 3.13E-01	< 4.79E-06	< 6.03E-07
1,2-Dichloroethane	< 0.0044 ND	< 0.0044 ND	< 0.0044 ND	< 0.0044 ND	0.11 J	< 2.68E-02	< 3.56E-01	< 5.45E-06	< 6.86E-07
1,1-Dichloroethene	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.1 ND	< 2.68E-02 ND	< 3.56E-01	< 5.44E-06	< 6.85E-07
cis-1,2-Dichloroethene	< 0.005 ND	< 0.005 ND	< 0.005 ND	< 0.005 ND	< 0.12 ND	< 3.01E-02 ND	< 3.99E-01	< 6.10E-06	< 7.69E-07
trans-1,2-Dichloroethene	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.1 ND	< 2.20E-02 ND	< 2.92E-01	< 4.46E-06	< 5.62E-07
1,2-Dichloropropane	< 0.0054 ND	< 0.0054 ND	< 0.0054 ND	< 0.0054 ND	< 0.1 ND	< 3.00E-02 ND	< 3.98E-01	< 6.09E-06	< 7.67E-07
cis-1,3-Dichloropropene	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.1 ND	< 3.24E-02 ND	< 4.30E-01	< 6.57E-06	< 8.28E-07
trans-1,3-Dichloropropene	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.11 ND	< 2.52E-02 ND	< 3.35E-01	< 5.12E-06	< 6.45E-07
Ethylbenzene	< 0.0031 J	< 0.0026 ND	< 0.0026 ND	< 0.0026 ND	< 0.1 ND	< 1.93E-02	< 2.56E-01	< 3.92E-06	< 4.93E-07
2-Hexanone	< 0.0198 ND	< 0.0198 ND	< 0.0198 ND	< 0.0198 ND	< 0.76 ND	< 1.43E-01 ND	< 1.90E+00	< 2.90E-05	< 3.66E-06
Iodomethane	< 0.0032 ND	< 0.0156 J,B	< 0.0156 J,B	< 0.0156 J,B	0.56 J,B	< 9.70E-02	< 1.29E+00	< 1.97E-05	< 2.48E-06
Methylene Chloride	0.183 J	0.48	0.161	0.295	1.2 J	1.22E+00	1.62E+01	2.47E-04	3.12E-05
4-Methyl-2-pentanone (MIBK)	< 0.028 ND	< 0.028 ND	< 0.028 ND	< 0.028 ND	< 0.4 ND	< 1.46E-01 ND	< 1.93E+00	< 2.96E-05	< 3.72E-06
Styrene	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.1 ND	< 2.20E-02 ND	< 2.92E-01	< 4.46E-06	< 5.62E-07
1,1,2,2-Tetrachloroethane	< 0.022 ND	< 0.022 ND	< 0.022 ND	< 0.022 ND	< 0.15 ND	< 1.01E-01 ND	< 1.34E+00	< 2.04E-05	< 2.57E-06
Tetrachloroethene	0.2332 J	< 2.4021 E	1.1097 J	0.3624 J	< 0.1 ND	< 4.12E+00	< 5.46E+01	< 8.35E-04	< 1.05E-04
Toluene	0.072 J	0.3743 J	0.1233 J	0.1925 J	0.12 J	7.72E-01	1.03E+01	1.57E-04	1.97E-05
1,1,1-Trichloroethane	< 0.0032 ND	< 0.0032 ND	< 0.0032 ND	< 0.0032 ND	< 0.1 ND	< 2.12E-02 ND	< 2.81E-01	< 4.30E-06	< 5.42E-07
1,1,2-Trichloroethane	< 0.01 ND	< 0.01 ND	< 0.01 ND	< 0.01 ND	< 0.25 ND	< 6.10E-02 ND	< 8.10E-01	< 1.24E-05	< 1.56E-06
Trichloroethene	0.0189 J	0.0217 J	< 0.0122 J	< 0.0117 J	< 0.1 ND	< 7.29E-02	< 9.68E-01	< 1.48E-05	< 1.86E-06
Trichlorofluoromethane	< 0.0098 ND	< 0.0098 ND	< 0.0098 ND	< 0.0098 ND	< 0.12 ND	< 4.93E-02 ND	< 6.54E-01	< 1.00E-05	< 1.26E-06
1,2,3-Trichloropropane	< 0.0162 ND	< 0.0162 ND	< 0.0162 ND	< 0.0162 ND	< 0.36 ND	< 9.50E-02 ND	< 1.26E+00	< 1.93E-05	< 2.43E-06
Vinyl Acetate	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.24 ND	< 1.16E-01 ND	< 1.54E+00	< 2.36E-05	< 2.97E-06
Vinyl Chloride	< 0.0064 ND	< 0.0064 ND	< 0.0064 ND	< 0.0064 ND	< 0.24 ND	< 4.58E-02 ND	< 6.07E-01	< 9.28E-06	< 1.17E-06
Xylenes (total)	< 0.0148 J	< 0.0113 J	< 0.0109 J	< 0.0097 J	< 0.3 ND	< 7.19E-02	< 9.54E-01	< 1.46E-05	< 1.84E-06
Special Target Analytes									
Bromobenzene	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.11 ND	< 3.80E-02 ND	< 5.05E-01	< 7.72E-06	< 9.72E-07
Bromochloromethane	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.024 ND	< 0.24 ND	< 1.16E-01 ND	< 1.54E+00	< 2.36E-05	< 2.97E-06
n-Butylbenzene	< 0.0094 ND	< 0.0094 ND	< 0.0094 ND	< 0.0094 ND	< 0.1 ND	< 4.60E-02 ND	< 6.11E-01	< 9.33E-06	< 1.18E-06
sec-Butylbenzene	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.0072 ND	< 0.1 ND	< 3.72E-02 ND	< 4.94E-01	< 7.55E-06	< 9.51E-07
tert-Butylbenzene	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.24 ND	< 4.42E-02 ND	< 5.86E-01	< 8.96E-06	< 1.13E-06
2-Chlorotoluene	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.24 ND	< 3.86E-02 ND	< 5.12E-01	< 7.82E-06	< 9.86E-07
4-Chlorotoluene	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.004 ND	< 0.21 ND	< 3.36E-02 ND	< 4.47E-01	< 6.83E-06	< 8.60E-07
1,2-Dibromo-3-chloropropane	< 0.04 ND	< 0.04 ND	< 0.04 ND	< 0.04 ND	< 0.45 ND	< 1.98E-01 ND	< 2.63E+00	< 4.01E-05	< 5.06E-06
1,2-Dibromoethane	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.02 ND	< 0.24 ND	< 1.00E-01 ND	< 1.33E+00	< 2.03E-05	< 2.56E-06
1,2-Dichlorobenzene	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.1 ND	< 3.24E-02 ND	< 4.30E-01	< 6.57E-06	< 8.28E-07
1,3-Dichlorobenzene	< 0.0062 ND	< 0.0062 ND	< 0.0062 ND	< 0.0062 ND	< 0.1 ND	< 3.32E-02 ND	< 4.41E-01	< 6.74E-06	< 8.49E-07
1,4-Dichlorobenzene	< 0.0086 ND	< 0.0086 ND	< 0.0086 ND	< 0.0086 ND	< 0.12 ND	< 4.45E-02 ND	< 5.90E-01	< 9.03E-06	< 1.14E-06
1,3-Dichloropropane	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.17 ND	< 2.07E-02 ND	< 3.81E-01	< 5.82E-06	< 7.33E-07
2,2-Dichloropropane	< 0.003 ND	< 0.003 ND	< 0.003 ND	< 0.003 ND	< 0.11 ND	< 2.12E-02 ND	< 2.82E-01	< 4.31E-06	< 5.43E-07
1,1-Dichloropropene	< 0.002 ND	< 0.002 ND	< 0.002 ND	< 0.002 ND	< 0.1 ND	< 1.64E-02 ND	< 2.18E-01	< 3.33E-06	< 4.19E-07
Hexachlorobutadiene	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.12 ND	< 4.85E-02 ND	< 6.44E-01	< 9.84E-06	< 1.24E-06
Isopropyl benzene	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.0046 ND	< 0.1 ND	< 2.68E-02 ND	< 3.56E-01	< 5.44E-06	< 6.85E-07
p-Isopropyltoluene	< 0.0076 ND	< 0.0076 ND	< 0.0076 ND	< 0.0076 ND	< 0.1 ND	< 3.88E-02 ND	< 5.15E-01	< 7.87E-06	< 9.92E-07
Naphthalene	< 0.02 ND	< 0.043	< 0.17	< 0.079	< 0.17 ND	< 3.26E-01	< 4.33E+00	< 6.62E-05	< 8.34E-06
n-Propylbenzene	< 0.0058 ND	< 0.0058 ND	< 0.0058 ND	< 0.0058 ND	< 0.1 ND	< 3.16E-02 ND	< 4.19E-01	< 6.41E-06	< 8.08E-07
1,1,1,2-Tetrachloroethane	< 0.002 ND	< 0.002 ND	< 0.002 ND	< 0.002 ND	< 0.12 ND	< 1.81E-02 ND	< 2.40E-01	< 3.67E-06	< 4.62E-07
Tetrahydrofuran	< 0.062 ND	< 0.062 ND	< 0.062 ND	< 0.062 ND	< 1.2 ND	< 3.49E-01 ND	< 4.63E+00	< 7.08E-05	< 8.92E-06
1,2,3-Trichlorobenzene	< 0.028 ND	< 0.028 ND	< 0.028 ND	< 0.028 ND	< 0.23 ND	< 1.31E-01 ND	< 1.74E+00	< 2.66E-05	< 3.36E-06
1,2,4-Trichlorobenzene	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.006 ND	< 0.15 ND	< 3.66E-02 ND	< 4.86E-01	< 7.43E-06	< 9.36E-07
1,1,2-Trichloro-1,2,2-trifluoroethane	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.0036 ND	< 0.13 ND	< 2.53E-02 ND	< 3.36E-01	< 5.14E-06	< 6.47E-07
1,2,4-Trimethylbenzene	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.0096 ND	< 0.11 ND	< 4.76E-02 ND	< 6.32E-01	< 9.67E-06	< 1.22E-06
1,3,5-Trimethylbenzene	< 0.0056 ND	< 0.0056 ND	< 0.0056 ND	< 0.0056 ND	< 0.1 ND	< 3.08E-02 ND	< 4.09E-01	< 6.25E-06	< 7.87E-07
m- & p-Xylene	< 0.0125 J	< 0.0099 J	< 0.0095 J	< 0.0083 J	< 0.2 ND	< 5.70E-02	< 7.57E-01	< 1.16E-05	< 1.46E-06
o-Xylene	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.0034 ND	< 0.14 ND	< 2.54E-02 ND	< 3.37E-01	< 5.15E-06	< 6.48E-07
Tentatively Identified Compounds (TICs)									
Nonane	0.06 NJ	0	0	0	0	6.00E-02	7.96E-01	1.22E-05	1.53E-06
Benzaldehyde	0	0.074 NJ	0.063 NJ	0.041 NJ	0	1.78E-01	2.36E+00	3.61E-05	4.55E-06

(a) Stack gas sample volume (analyzed tubes only) — 2.6599 dry std cubic feet; 0.07533 dry std cubic meters

(b) Stack gas flow rate — 8850 actual cubic feet per minute; 4.17729 actual cubic meters per second; 4080 dry std cubic feet per minute; 1.9258 dry std cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-15. Speciated Semivolatile Organic Compound Emissions – Run 1

Semivolatile Compound	Front Half Analytical Result (ug/sample)	Back Half Analytical Result (ug/sample)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Standard Target Analytes					
Acenaphthene	0.5 ND	0.5 ND	1.8 ND	< 8.04E-01	< 1.85E-06
Acenaphthylene	0.5 ND	0.5 ND	1.5 ND	< 7.18E-01	< 1.65E-06
Benzyl alcohol	35 ND	35 ND	1.8 ND	< 2.06E+01	< 4.74E-05
Bis(2-chloroethoxy) methane	0.59 ND	0.5 ND	1.8 ND	< 8.30E-01	< 1.91E-06
Bis-(2-chloroethyl) ether	0.76 ND	0.56 ND	1.5 ND	< 8.10E-01	< 1.86E-06
Bis(2-ethylhexyl) phthalate	5.7 J	10 ND	18 J	< 9.68E+00	< 2.22E-05
4-Bromophenyl-phenyl ether	0.53 ND	0.5 ND	1.3 ND	< 6.69E-01	< 1.54E-06
Butylbenzylphthalate	1.1 ND	0.61 ND	2.1 ND	< 1.09E+00	< 2.51E-06
4-Chloroaniline	1.2 ND	6 ND	7.3 ND	< 4.16E+00	< 9.57E-06
4-Chloro-3-methylphenol	1 ND	0.62 ND	6 ND	< 2.19E+00	< 5.03E-06
2-Chloronaphthalene	0.5 ND	0.5 ND	1.3 ND	< 6.60E-01	< 1.52E-06
2-Chlorophenol	0.98 ND	0.5 ND	1.5 ND	< 8.56E-01	< 1.97E-06
4-Chlorophenyl-phenyl ether	0.51 ND	0.5 ND	2.9 ND	< 1.12E+00	< 2.58E-06
Dibenzofuran	0.53 ND	0.5 ND	2.7 ND	< 1.07E+00	< 2.46E-06
Di-n-butylphthalate	0.71 ND	10 ND	2.1 ND	< 3.68E+00	< 8.45E-06
1,2-Dichlorobenzene	0.84 ND	0.51 ND	1.6 ND	< 8.47E-01	< 1.95E-06
1,3-Dichlorobenzene	1.2 ND	0.57 ND	1.3 ND	< 8.81E-01	< 2.03E-06
1,4-Dichlorobenzene	1.1 ND	0.53 ND	1.9 ND	< 1.01E+00	< 2.33E-06
3,3'-Dichlorobenzidine	2.7 ND	7.4 ND	7.1 ND	< 4.94E+00	< 1.14E-05
2,4-Dichlorophenol	1.5 ND	0.5 ND	2.1 ND	< 1.18E+00	< 2.71E-06
Diethyl phthalate	1.5 ND	0.73 ND	1.3 ND	< 1.01E+00	< 2.33E-06
2,4-Dimethylphenol	2.9 ND	6.3 ND	1.4 ND	< 3.04E+00	< 7.00E-06
Dimethylphthalate	0.63 ND	0.5 ND	1.2 ND	< 6.69E-01	< 1.54E-06
4,6-Dinitro-2-methylphenol	5 ND	8.7 ND	1.3 ND	< 4.31E+00	< 9.90E-06
2,4-Dinitrophenol	5.9 ND	22 ND	3.7 ND	< 9.07E+00	< 2.09E-05
2,4-Dinitrotoluene	1.6 ND	0.5 ND	2.5 ND	< 1.32E+00	< 3.04E-06
2,6-Dinitrotoluene	1.3 ND	0.5 ND	1.9 ND	< 1.06E+00	< 2.44E-06
Di-n-octyl phthalate	2.1 ND	0.56 ND	2.3 ND	< 1.42E+00	< 3.27E-06
Hexachlorobenzene	0.56 ND	0.5 ND	2.4 ND	< 9.93E-01	< 2.28E-06
Hexachlorobutadiene	1.4 ND	0.74 ND	1.8 ND	< 1.13E+00	< 2.60E-06
Hexachlorocyclo-pentadiene	10 ND	10 ND	6 ND	< 7.46E+00	< 1.72E-05
Hexachloroethane	2.5 ND	0.54 ND	1.8 ND	< 1.39E+00	< 3.19E-06
Isophrone	0.66 ND	0.5 ND	1.6 ND	< 7.92E-01	< 1.82E-06
2-Methylphenol	2.3 ND	3 ND	1.9 ND	< 2.07E+00	< 4.75E-06
2-Nitroaniline	0.56 ND	0.5 ND	2.6 ND	< 1.05E+00	< 2.42E-06
3-Nitroaniline	3.8 ND	2 ND	4.3 ND	< 2.90E+00	< 6.67E-06
4-Nitroaniline	2.3 ND	2 ND	3.5 ND	< 2.24E+00	< 5.15E-06
Nitrobenzene	0.73 ND	0.5 ND	1.5 ND	< 7.84E-01	< 1.80E-06
2-Nitrophenol	3.2 ND	0.5 ND	2.4 ND	< 1.75E+00	< 4.03E-06
4-Nitrophenol	3.3 ND	3.3 ND	3.5 ND	< 2.90E+00	< 6.67E-06
N-Nitrosodiphenylamine	0.6 ND	0.87 ND	1.3 ND	< 7.95E-01	< 1.83E-06
N-Nitroso-di-n-propylamine	0.73 ND	0.5 ND	2.1 ND	< 9.56E-01	< 2.20E-06
2,2'-oxybis (1-Chloropropane)	1 ND	0.76 ND	1.6 ND	< 9.65E-01	< 2.22E-06
Pentachlorophenol	25 ND	25 ND	3.2 ND	< 1.53E+01	< 3.51E-05
Phenol	1.1 ND	0.9 ND	2 ND	< 1.15E+00	< 2.64E-06
1,2,4-Trichlorobenzene	0.73 ND	0.59 ND	2 ND	< 9.53E-01	< 2.19E-06
2,4,5-Trichlorophenol	2.3 ND	1.3 ND	2 ND	< 1.61E+00	< 3.70E-06
2,4,6-Trichlorophenol	1.4 ND	0.75 ND	2.3 ND	< 1.28E+00	< 2.94E-06
Special Target Analytes					
Acetophenone	0.77 ND	3.9 J	2.4 ND	< 2.03E+00	< 4.67E-06
Aniline	0.95 ND	7.3 ND	17 ND	< 7.25E+00	< 1.67E-05
Anthracene	0.51 ND	0.5 ND	1.5 ND	< 7.21E-01	< 1.66E-06
Benzaldehyde	2.6 ND	6.4 J	2 ND	< 3.16E+00	< 7.26E-06
Benzidine	51 ND	51 ND	60 ND	< 4.65E+01	< 1.07E-04
Benzo(a)anthracene	0.82 ND	0.58 ND	1.6 ND	< 8.61E-01	< 1.98E-06
Benzo(b)fluoranthene	1.4 ND	1.1 ND	3.9 ND	< 1.84E+00	< 4.22E-06
Benzo(k)fluoranthene	2.1 ND	1.6 ND	2.7 ND	< 1.84E+00	< 4.22E-06
Benzoic acid	42 ND	46 ND	8.7 ND	< 2.78E+01	< 6.38E-05
Benzonitrile	2.4 ND	1.7 ND	2.4 ND	< 1.87E+00	< 4.29E-06
Benzo(ghi)perylene	2.8 ND	0.62 ND	2 ND	< 1.56E+00	< 3.58E-06
Benzo(a)pyrene	1 ND	0.5 ND	1.6 ND	< 8.90E-01	< 2.05E-06
Carbazole	0.76 ND	0.64 ND	2 ND	< 9.76E-01	< 2.24E-06
Chrysene	0.88 ND	0.64 ND	1.2 ND	< 7.81E-01	< 1.80E-06
Dibenz(ah)anthracene	2 ND	0.6 ND	2.6 ND	< 1.49E+00	< 3.43E-06
1,3-Dinitrobenzene	0.59 ND	0.52 ND	2.7 ND	< 1.09E+00	< 2.51E-06
Diphenylamine	0.5 ND	0.5 ND	2.7 ND	< 1.06E+00	< 2.44E-06
1,2-Diphenylhydrazine	0.63 ND	0.5 ND	1.3 ND	< 6.98E-01	< 1.60E-06
Fluoranthene	0.5 ND	0.5 ND	1.6 ND	< 7.46E-01	< 1.72E-06
Fluorene	0.51 ND	0.5 ND	2.5 ND	< 1.01E+00	< 2.32E-06
Indeno(1,2,3-cd)pyrene	2.1 ND	0.54 ND	2.1 ND	< 1.36E+00	< 3.13E-06
2-Methylnaphthalene	0.56 ND	0.5 ND	2.1 ND	< 9.07E-01	< 2.09E-06
3 & 4-Methylphenol	2.3 ND	2 ND	2 ND	< 1.81E+00	< 4.16E-06
Naphthalene	0.5 ND	0.6 ND	1.6 ND	< 7.75E-01	< 1.78E-06
N-Nitrosodimethylamine	0.72 ND	0.5 ND	2 ND	< 9.24E-01	< 2.13E-06
Pentachlorobenzene	0.52 ND	0.5 ND	2.1 ND	< 8.96E-01	< 2.06E-06
Pentachloronitrobenzene	0.76 ND	0.5 ND	2.4 ND	< 1.05E+00	< 2.42E-06
Phenanthrene	0.51 ND	0.5 ND	1.7 ND	< 7.78E-01	< 1.79E-06
Pyrene	0.74 ND	0.53 ND	1.3 ND	< 7.38E-01	< 1.70E-06
Pyridine	0.89 ND	0.74 ND	4.9 ND	< 1.87E+00	< 4.31E-06
1,2,4,5-Tetrachlorobenzene	0.87 ND	0.5 ND	2 ND	< 9.68E-01	< 2.22E-06
Tentatively Identified Compounds					
3-Penten-2-one, 4-methyl-	95 NJ	0	230 NJ	9.33E+01	2.14E-04
Unknown (2.5254)	4.5 NJ	0	40 NJ	1.28E+01	2.94E-05
Unknown (2.7017)	7.4 NJ	0	0	2.12E+00	4.88E-06
Unknown (2.7428)	52 NJ	0	0	1.49E+01	3.43E-05
Unknown (2.9132)	5.3 NJ	0	0	1.52E+00	3.50E-06
Unknown (2.1494)	0	70 NJ	0	2.01E+01	4.62E-05
Toluene	0	26 NJ	0	7.46E+00	1.72E-05
Methane, dibromochloro-	0	9.7 NJ	0	2.78E+00	6.40E-06
Tetrachloroethylene	0	75 NJ	0	2.15E+01	4.95E-05
Unknown (2.6018)	0	4.1 NJ	0	1.18E+00	2.71E-06
Unknown (2.6547)	0	9.3 NJ	0	2.67E+00	6.14E-06
Heptane, 2,5-dimethyl-	0	18 NJ	24 NJ	1.21E+01	2.77E-05
Unknown (2.7781)	0	590 NJ	1400 NJ	5.71E+02	1.31E-03
Benzene, chloro-	0	420 NJ	0	1.21E+02	2.77E-04
Methane, tribromo-	0	10 NJ	0	2.87E+00	6.60E-06
Benzaldehyde, 4-ethyl-	0	5.9 NJ	0	1.69E+00	3.89E-06
Phosphine imide, P,P,P-triphen	0	4.8 NJ	0	1.38E+00	3.17E-06
3-Penten-2-one, (E)-	0	0	22 NJ	6.32E+00	1.45E-05
Unknown (2.5724)	0	0	18 NJ	5.17E+00	1.19E-05
Octane, 2-methyl-	0	0	13 NJ	3.73E+00	8.58E-06
Unknown (4.5642)	0	0	47 NJ	1.35E+01	3.10E-05

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume 122.990 dry standard cubic feet
3.48 dry standard cubic meters

(b) Stack gas flow rate 4,870 dry standard cubic feet per minute
2.30 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-16. Speciated Semivolatile Organic Compound Emissions – Run 2

Semivolatile Compound	Front Half Analytical Result (ug/sample)	Back Half Analytical Result (ug/sample)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Standard Target Analytes					
Acenaphthene	0.5 ND	0.5 ND	1.7 ND	< 8.11E-01	< 1.49E-06
Acenaphthylene	0.5 ND	0.5 ND	1.4 ND	< 7.21E-01	< 1.32E-06
Benzyl alcohol	35 ND	35 ND	1.7 ND	< 2.15E+01	< 3.94E-05
Bis(2-chloroethoxy) methane	0.59 ND	0.5 ND	1.7 ND	< 8.38E-01	< 1.53E-06
Bis-(2-chloroethyl) ether	0.76 ND	0.56 ND	1.4 ND	< 8.17E-01	< 1.50E-06
Bis(2-ethylhexyl) phthalate	3.3 ND	10 ND	29	< 1.27E+01	< 2.33E-05
4-Bromophenyl-phenyl ether	0.53 ND	0.5 ND	1.2 ND	< 6.70E-01	< 1.23E-06
Butylbenzylphthalate	1.1 ND	0.61 ND	1.9 ND	< 1.08E+00	< 1.99E-06
4-Chloroaniline	1.2 ND	6 ND	6.8 ND	< 4.21E+00	< 7.70E-06
4-Chloro-3-methylphenol	1 ND	0.62 ND	5.6 ND	< 2.17E+00	< 3.97E-06
2-Chloronaphthalene	0.5 ND	0.5 ND	1.2 ND	< 6.61E-01	< 1.21E-06
2-Chlorophenol	0.98 ND	0.5 ND	1.4 ND	< 8.65E-01	< 1.58E-06
4-Chlorophenyl-phenyl ether	0.51 ND	0.5 ND	2.7 ND	< 1.11E+00	< 2.04E-06
Dibenzofuran	0.53 ND	0.5 ND	2.5 ND	< 1.06E+00	< 1.94E-06
Di-n-butylphthalate	0.71 ND	10 ND	1.9 ND	< 3.79E+00	< 6.94E-06
1,2-Dichlorobenzene	0.84 ND	0.51 ND	1.5 ND	< 8.56E-01	< 1.57E-06
1,3-Dichlorobenzene	1.2 ND	0.57 ND	1.2 ND	< 8.92E-01	< 1.63E-06
1,4-Dichlorobenzene	1.1 ND	0.53 ND	1.7 ND	< 1.00E+00	< 1.83E-06
3,3'-Dichlorobenzidine	2.7 ND	7.4 ND	6.6 ND	< 5.02E+00	< 9.19E-06
2,4-Dichlorophenol	1.5 ND	0.5 ND	2 ND	< 1.20E+00	< 2.20E-06
Diethyl phthalate	1.5 ND	0.73 ND	1.2 ND	< 1.03E+00	< 1.89E-06
2,4-Dimethylphenol	2.9 ND	6.3 ND	1.3 ND	< 3.15E+00	< 5.78E-06
Dimethylphthalate	0.63 ND	0.5 ND	1.1 ND	< 6.70E-01	< 1.23E-06
4,6-Dinitro-2-methylphenol	5 ND	8.7 ND	1.2 ND	< 4.48E+00	< 8.20E-06
2,4-Dinitrophenol	5.9 ND	22 ND	3.4 ND	< 9.40E+00	< 1.72E-05
2,4-Dinitrotoluene	1.6 ND	0.5 ND	2.3 ND	< 1.32E+00	< 2.42E-06
2,6-Dinitrotoluene	1.3 ND	0.5 ND	1.8 ND	< 1.08E+00	< 1.98E-06
Di-n-octyl phthalate	2.1 ND	0.56 ND	2.1 ND	< 1.43E+00	< 2.62E-06
Hexachlorobenzene	0.56 ND	0.5 ND	2.3 ND	< 1.01E+00	< 1.85E-06
Hexachlorobutadiene	1.4 ND	0.74 ND	1.6 ND	< 1.12E+00	< 2.06E-06
Hexachlorocyclo-pentadiene	10 ND	10 ND	5.6 ND	< 7.69E+00	< 1.41E-05
Hexachloroethane	2.5 ND	0.54 ND	1.7 ND	< 1.42E+00	< 2.61E-06
Isophrone	0.66 ND	0.5 ND	1.5 ND	< 7.99E-01	< 1.46E-06
2-Methylphenol	2.3 ND	3 ND	1.8 ND	< 2.13E+00	< 3.91E-06
2-Nitroaniline	0.56 ND	0.5 ND	2.4 ND	< 1.04E+00	< 1.90E-06
3-Nitroaniline	3.8 ND	2 ND	4 ND	< 2.94E+00	< 5.39E-06
4-Nitroaniline	2.3 ND	2 ND	3.3 ND	< 2.28E+00	< 4.18E-06
Nitrobenzene	0.73 ND	0.5 ND	1.4 ND	< 7.90E-01	< 1.45E-06
2-Nitrophenol	3.2 ND	0.5 ND	2.3 ND	< 1.80E+00	< 3.30E-06
4-Nitrophenol	3.3 ND	3.3 ND	3.3 ND	< 2.97E+00	< 5.45E-06
N-Nitrosodiphenylamine	0.6 ND	0.87 ND	1.2 ND	< 8.02E-01	< 1.47E-06
N-Nitroso-di-n-propylamine	0.73 ND	0.5 ND	2 ND	< 9.70E-01	< 1.78E-06
2,2'-oxybis (1-Chloropropane)	1 ND	0.76 ND	1.5 ND	< 9.79E-01	< 1.79E-06
Pentachlorophenol	25 ND	25 ND	2.9 ND	< 1.59E+01	< 2.91E-05
Phenol	1.1 ND	0.9 ND	1.8 ND	< 1.14E+00	< 2.09E-06
1,2,4-Trichlorobenzene	0.73 ND	0.59 ND	1.8 ND	< 9.37E-01	< 1.72E-06
2,4,5-Trichlorophenol	2.3 ND	1.3 ND	1.8 ND	< 1.62E+00	< 2.97E-06
2,4,6-Trichlorophenol	1.4 ND	0.75 ND	2.1 ND	< 1.28E+00	< 2.34E-06
Special Target Analytes					
Acetophenone	0.77 ND	4 J	2.2 ND	< 2.09E+00	< 3.83E-06
Aniline	0.95 ND	7.3 ND	16 ND	< 7.28E+00	< 1.33E-05
Anthracene	0.51 ND	0.5 ND	1.4 ND	< 7.24E-01	< 1.33E-06
Benzaldehyde	2.6 ND	5.1 J	1.8 ND	< 2.85E+00	< 5.23E-06
Benzidine	51 ND	51 ND	56 ND	< 4.75E+01	< 8.69E-05
Benzo(a)anthracene	0.82 ND	0.58 ND	1.5 ND	< 8.71E-01	< 1.60E-06
Benzo(b)fluoranthene	1.4 ND	1.1 ND	3.6 ND	< 1.83E+00	< 3.36E-06
Benzo(k)fluoranthene	2.1 ND	1.6 ND	2.5 ND	< 1.86E+00	< 3.41E-06
Benzoic acid	42 ND	46 ND	8 ND	< 2.88E+01	< 5.28E-05
Benzonitrile	2.4 ND	1.7 ND	2.2 ND	< 1.89E+00	< 3.47E-06
Benzo(ghi)perylene	2.8 ND	0.62 ND	1.8 ND	< 1.57E+00	< 2.87E-06
Benzo(a)pyrene	1 ND	0.5 ND	1.5 ND	< 9.01E-01	< 1.65E-06
Carbazole	0.76 ND	0.64 ND	1.9 ND	< 9.91E-01	< 1.82E-06
Chrysene	0.88 ND	0.64 ND	1.1 ND	< 7.87E-01	< 1.44E-06
Dibenz(ah)anthracene	2 ND	0.6 ND	2.4 ND	< 1.50E+00	< 2.75E-06
1,3-Dinitrobenzene	0.59 ND	0.52 ND	2.5 ND	< 1.08E+00	< 1.99E-06
Diphenylamine	0.5 ND	0.5 ND	2.5 ND	< 1.05E+00	< 1.93E-06
1,2-Diphenylhydrazine	0.63 ND	0.5 ND	1.2 ND	< 7.00E-01	< 1.28E-06
Fluoranthene	0.5 ND	0.5 ND	1.5 ND	< 7.51E-01	< 1.38E-06
Fluorene	0.51 ND	0.5 ND	2.3 ND	< 9.94E-01	< 1.82E-06
Indeno(1,2,3-cd)pyrene	2.1 ND	0.54 ND	1.9 ND	< 1.36E+00	< 2.50E-06
2-Methylnaphthalene	0.56 ND	0.5 ND	1.9 ND	< 8.89E-01	< 1.63E-06
3 & 4-Methylphenol	2.3 ND	2 ND	1.9 ND	< 1.86E+00	< 3.41E-06
Naphthalene	0.5 ND	0.6 ND	1.5 ND	< 7.81E-01	< 1.43E-06
N-Nitrosodimethylamine	0.72 ND	0.5 ND	1.9 ND	< 9.37E-01	< 1.72E-06
Pentachlorobenzene	0.52 ND	0.5 ND	1.9 ND	< 8.77E-01	< 1.61E-06
Pentachloronitrobenzene	0.76 ND	0.5 ND	2.2 ND	< 1.04E+00	< 1.90E-06
Phenanthrene	0.51 ND	0.5 ND	1.6 ND	< 7.84E-01	< 1.44E-06
Pyrene	0.74 ND	0.53 ND	1.2 ND	< 7.42E-01	< 1.36E-06
Pyridine	0.89 ND	0.74 ND	4.5 ND	< 1.84E+00	< 3.37E-06
1,2,4,5-Tetrachlorobenzene	0.87 ND	0.5 ND	1.8 ND	< 9.52E-01	< 1.74E-06
Tentatively Identified Compounds					
Furan, 2,5-dimethyl-	4.6 NJ	0	0	1.38E+00	2.53E-06
Unknown (1.9671)	5.4 NJ	0	0	1.62E+00	2.97E-06
Unknown (2.5253)	4.8 NJ	0	38 NJ	1.29E+01	2.36E-05
Unknown (2.6545)	8.6 NJ	0	0	2.58E+00	4.73E-06
Heptane, 2,5-dimethyl-	18 NJ	12 NJ	11 NJ	1.23E+01	2.26E-05
Unknown (2.7485)	82 NJ	0	0	2.46E+01	4.51E-05
3-Hexene-2,5-dione	5.2 NJ	0	0	1.56E+00	2.86E-06
Unknown (2.1492)	0	54 NJ	0	1.62E+01	2.97E-05
Toluene	0	20 NJ	0	6.01E+00	1.10E-05
Methane, dibromochloro-	0	8 NJ	0	2.40E+00	4.40E-06
Octane, 2-methyl-	0	6.1 NJ	0	1.83E+00	3.36E-06
Unknown (2.7721)	0	550 NJ	0	1.65E+02	3.03E-04
Benzene, chloro-	0	82 NJ	0	2.46E+01	4.51E-05
Methane, tribromo-	0	10 NJ	0	3.00E+00	5.50E-06
Benzoic acid, methyl ester	0	4.4 NJ	0	1.32E+00	2.42E-06
Benzaldehyde, 3-ethyl-	0	5.9 NJ	0	1.77E+00	3.25E-06
Unknown (2.0259)	0	0	21 NJ	6.31E+00	1.16E-05
3-Hexen-2-one	0	0	620 NJ	1.86E+02	3.41E-04
Unknown (2.7486)	0	0	400 NJ	1.20E+02	2.20E-04
Unknown (2.9542)	0	0	17 NJ	5.11E+00	9.35E-06
Unknown (3.1657)	0	0	11 NJ	3.30E+00	6.05E-06
Unknown (4.8579)	0	0	16 NJ	4.81E+00	8.80E-06

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume — 117.540 dry standard cubic feet; 3.33 dry standard cubic meters

(b) Stack gas flow rate — 3,880 dry standard cubic feet per minute; 1.83 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-17. Speciated Semivolatile Organic Compound Emissions – Run 3

Semivolatile Compound	Front Half Analytical Result (ug/sample)	Back Half Analytical Result (ug/sample)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Standard Target Analytes					
Acenaphthene	0.5 ND	0.5 ND	1.7 ND	< 7.58E-01	< 1.46E-06
Acenaphthylene	0.5 ND	0.5 ND	1.5 ND	< 7.02E-01	< 1.35E-06
Benzyl alcohol	35 ND	35 ND	1.0 ND	< 2.02E+01	< 3.88E-05
Bis(2-chloroethoxy) methane	0.59 ND	0.5 ND	1.0 ND	< 8.12E-01	< 1.56E-06
Bis-(2-chloroethyl) ether	0.76 ND	0.56 ND	1.5 ND	< 7.92E-01	< 1.53E-06
Bis(2-ethylhexyl) phthalate	3.3 ND	10 ND	16 J	< 8.23E+00	< 1.58E-05
4-Bromophenyl-phenyl ether	0.53 ND	0.5 ND	1.3 ND	< 6.54E-01	< 1.26E-06
Butylbenzylphthalate	1.1 ND	0.61 ND	2 ND	< 1.04E+00	< 2.01E-06
4-Chloroaniline	1.2 ND	6 ND	7.1 ND	< 4.02E+00	< 7.74E-06
4-Chloro-3-methylphenol	1 ND	0.62 ND	5.0 ND	< 2.08E+00	< 4.01E-06
2-Chloronaphthalene	0.5 ND	0.5 ND	1.2 ND	< 6.18E-01	< 1.19E-06
2-Chlorophenol	0.98 ND	0.5 ND	1.5 ND	< 8.37E-01	< 1.61E-06
4-Chlorophenyl-phenyl ether	0.51 ND	0.5 ND	2.8 ND	< 1.07E+00	< 2.06E-06
Dibenzofuran	0.53 ND	0.5 ND	2.6 ND	< 1.02E+00	< 1.96E-06
Di-n-butylphthalate	0.71 ND	10 ND	2 ND	< 3.57E+00	< 6.88E-06
1,2-Dichlorobenzene	0.84 ND	0.51 ND	1.5 ND	< 8.01E-01	< 1.54E-06
1,3-Dichlorobenzene	1.2 ND	0.57 ND	1.3 ND	< 8.62E-01	< 1.66E-06
1,4-Dichlorobenzene	1.1 ND	0.53 ND	1.8 ND	< 9.63E-01	< 1.86E-06
3,3'-Dichlorobenzidine	2.7 ND	7.4 ND	6.9 ND	< 4.78E+00	< 9.20E-06
2,4-Dichlorophenol	1.5 ND	0.5 ND	2.1 ND	< 1.15E+00	< 2.22E-06
Diethyl phthalate	1.5 ND	0.73 ND	1.2 ND	< 9.63E-01	< 1.86E-06
2,4-Dimethylphenol	2.9 ND	6.3 ND	1.4 ND	< 2.98E+00	< 5.73E-06
Dimethylphthalate	0.63 ND	0.5 ND	1.2 ND	< 6.54E-01	< 1.26E-06
4,6-Dinitro-2-methylphenol	5 ND	8.7 ND	1.3 ND	< 4.21E+00	< 8.11E-06
2,4-Dinitrophenol	5.9 ND	22 ND	3.6 ND	< 8.85E+00	< 1.70E-05
2,4-Dinitrotoluene	1.6 ND	0.5 ND	2.4 ND	< 1.26E+00	< 2.43E-06
2,6-Dinitrotoluene	1.3 ND	0.5 ND	1.8 ND	< 1.01E+00	< 1.95E-06
Di-n-octyl phthalate	2.1 ND	0.56 ND	2.2 ND	< 1.37E+00	< 2.63E-06
Hexachlorobenzene	0.56 ND	0.5 ND	2.4 ND	< 9.72E-01	< 1.87E-06
Hexachlorobutadiene	1.4 ND	0.74 ND	1.7 ND	< 1.08E+00	< 2.08E-06
Hexachlorocyclo-pentadiene	10 ND	10 ND	5.8 ND	< 7.25E+00	< 1.40E-05
Hexachloroethane	2.5 ND	0.54 ND	1.7 ND	< 1.33E+00	< 2.56E-06
Isophrone	0.66 ND	0.5 ND	1.6 ND	< 7.75E-01	< 1.49E-06
2-Methylphenol	2.3 ND	3 ND	1.9 ND	< 2.02E+00	< 3.89E-06
2-Nitroaniline	0.56 ND	0.5 ND	2.5 ND	< 1.00E+00	< 1.93E-06
3-Nitroaniline	3.8 ND	2 ND	4.2 ND	< 2.81E+00	< 5.41E-06
4-Nitroaniline	2.3 ND	2 ND	3.4 ND	< 2.16E+00	< 4.17E-06
Nitrobenzene	0.73 ND	0.5 ND	1.5 ND	< 7.67E-01	< 1.48E-06
2-Nitrophenol	3.2 ND	0.5 ND	2.4 ND	< 1.71E+00	< 3.30E-06
4-Nitrophenol	3.3 ND	3.3 ND	3.4 ND	< 2.81E+00	< 5.41E-06
N-Nitrosodiphenylamine	0.6 ND	0.87 ND	1.2 ND	< 7.50E-01	< 1.44E-06
N-Nitroso-di-n-propylamine	0.73 ND	0.5 ND	2.1 ND	< 9.35E-01	< 1.80E-06
2,2'-oxybis (1-Chloropropane)	1 ND	0.76 ND	1.6 ND	< 9.44E-01	< 1.82E-06
Pentachlorophenol	25 ND	25 ND	3.1 ND	< 1.49E+01	< 2.87E-05
Phenol	1.1 ND	0.9 ND	1.9 ND	< 1.10E+00	< 2.11E-06
1,2,4-Trichlorobenzene	0.73 ND	0.59 ND	1.9 ND	< 9.04E-01	< 1.74E-06
2,4,5-Trichlorophenol	2.3 ND	1.3 ND	1.9 ND	< 1.54E+00	< 2.98E-06
2,4,6-Trichlorophenol	1.4 ND	0.75 ND	2.2 ND	< 1.22E+00	< 2.35E-06
Special Target Analytes					
Acetophenone	0.77 ND	5.1 J	2.3 ND	< 2.29E+00	< 4.42E-06
Aniline	0.95 ND	7.3 ND	16 ND	< 6.81E+00	< 1.31E-05
Anthracene	0.51 ND	0.5 ND	1.5 ND	< 7.05E-01	< 1.36E-06
Benzaldehyde	2.6 ND	6.9 J	1.9 ND	< 3.20E+00	< 6.17E-06
Benzidine	51 ND	51 ND	58 ND	< 4.49E+01	< 8.65E-05
Benzo(a)anthracene	0.82 ND	0.58 ND	1.5 ND	< 8.15E-01	< 1.57E-06
Benzo(b)fluoranthene	1.4 ND	1.1 ND	3.8 ND	< 1.77E+00	< 3.41E-06
Benzo(k)fluoranthene	2.1 ND	1.6 ND	2.6 ND	< 1.77E+00	< 3.41E-06
Benzoic acid	42 ND	46 ND	8.4 ND	< 2.71E+01	< 5.21E-05
Benzonitrile	2.4 ND	1.7 ND	2.3 ND	< 1.80E+00	< 3.46E-06
Benzo(ghi)perylene	2.8 ND	0.62 ND	1.9 ND	< 1.49E+00	< 2.88E-06
Benzo(a)pyrene	1 ND	0.5 ND	1.6 ND	< 8.71E-01	< 1.68E-06
Carbazole	0.76 ND	0.64 ND	2 ND	< 9.55E-01	< 1.84E-06
Chrysene	0.88 ND	0.64 ND	1.2 ND	< 7.64E-01	< 1.47E-06
Dibenz(ah)anthracene	2 ND	0.6 ND	2.5 ND	< 1.43E+00	< 2.76E-06
1,3-Dinitrobenzene	0.59 ND	0.52 ND	2.6 ND	< 1.04E+00	< 2.01E-06
Diphenylamine	0.5 ND	0.5 ND	2.6 ND	< 1.01E+00	< 1.95E-06
1,2-Diphenylhydrazine	0.63 ND	0.5 ND	1.3 ND	< 6.83E-01	< 1.31E-06
Fluoranthene	0.5 ND	0.5 ND	1.6 ND	< 7.30E-01	< 1.41E-06
Fluorene	0.51 ND	0.5 ND	2.5 ND	< 9.06E-01	< 1.90E-06
Indeno(1,2,3-cd)pyrene	2.1 ND	0.54 ND	2 ND	< 1.30E+00	< 2.51E-06
2-Methylnaphthalene	0.56 ND	0.5 ND	2 ND	< 8.60E-01	< 1.66E-06
3 & 4-Methylphenol	2.3 ND	2 ND	2 ND	< 1.77E+00	< 3.41E-06
Naphthalene	0.5 ND	9.9 J	1.6 ND	< 3.37E+00	< 6.49E-06
N-Nitrosodimethylamine	0.72 ND	0.5 ND	1.9 ND	< 8.76E-01	< 1.69E-06
Pentachlorobenzene	0.52 ND	0.5 ND	2 ND	< 8.48E-01	< 1.63E-06
Pentachloronitrobenzene	0.76 ND	0.5 ND	2.3 ND	< 1.00E+00	< 1.93E-06
Phenanthrene	0.51 ND	0.5 ND	1.7 ND	< 7.61E-01	< 1.47E-06
Pyrene	0.74 ND	0.53 ND	1.3 ND	< 7.22E-01	< 1.39E-06
Pyridine	0.89 ND	0.74 ND	4.7 ND	< 1.78E+00	< 3.42E-06
1,2,4,5-Tetrachlorobenzene	0.87 ND	0.5 ND	1.9 ND	< 9.18E-01	< 1.77E-06
Tentatively Identified Compounds					
Unknown (2.7427)	23 NJ	0	0	6.46E+00	1.24E-05
9-Octadecenamide, (Z)-	14 NJ	0	0	3.93E+00	7.57E-06
Unknown (12.701)	5.7 NJ	0	0	1.60E+00	3.08E-06
Unknown (2.1492)	0	70 NJ	0	1.97E+01	3.79E-05
Toluene	0	55 NJ	0	1.54E+01	2.98E-05
Methane, dibromochloro-	0	9.9 NJ	0	2.78E+00	5.36E-06
Tetrachloroethylene	0	21 NJ	0	5.90E+00	1.14E-05
Unknown (2.7779)	0	630 NJ	0	1.77E+02	3.41E-04
Benzene, chloro-	0	260 NJ	0	7.30E+01	1.41E-04
Methane, tribromo-	0	14 NJ	0	3.93E+00	7.57E-06
Benzaldehyde, 3-ethyl-	0	7.2 NJ	0	2.02E+00	3.89E-06
3-Penten-2-one, 4-methyl-	0	0	120 NJ	3.37E+01	6.49E-05
Unknown (2.5254)	0	0	37 NJ	1.04E+01	2.00E-05
Unknown (2.7428)	0	0	34 NJ	9.55E+00	1.84E-05

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume — 125.710 dry standard cubic feet; 3.56 dry standard cubic meters

(b) Stack gas flow rate — 4,080 dry standard cubic feet per minute; 1.93 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-18. Total Volatile Organic Compound Emissions (C1 – C7) – Run 1

Volatile Compound	Bag Analytical Result (ppmv, dry)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ppmv, dry)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Total C1	1.72	0	1.72E+00	1.15E+03	2.76E-03
Total C2	0.083 ND	0	< 8.30E-02	< 1.04E+02	< 2.49E-04
Total C3	0.11 ND	0	< 1.10E-01	< 2.02E+02	< 4.85E-04
Total C4	0.08 ND	0.042 ND	< 8.08E-02	< 1.96E+02	< 4.69E-04
Total C5	0.14 ND	0.02436 J,B	< 1.40E-01	< 4.22E+02	< 1.01E-03
Total C6	0.13 ND	0.03108 J	< 1.30E-01	< 4.68E+02	< 1.12E-03
Total C7	0.18 ND	0.0042 ND	< 1.80E-01	< 7.52E+02	< 1.80E-03
Total Volatile Organics	< 2.443	0.10164	< 2.44E+00	< 3.29E+03	< 7.90E-03

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume	0.759	dry standard cubic feet
	0.02	dry standard cubic meters
(b) Stack gas flow rate	5,080	dry standard cubic feet per minute
	2.40	dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-19. Total Volatile Organic Compound Emissions (C1 – C7) – Run 2

Volatile Compound	Bag Analytical Result (ppmv, dry)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ppmv, dry)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Total C1	1.76	0	1.76E+00	1.18E+03	2.14E-03
Total C2	0.083 ND	0	< 8.30E-02	< 1.04E+02	< 1.89E-04
Total C3	0.11 ND	0	< 1.10E-01	< 2.02E+02	< 3.68E-04
Total C4	0.08 ND	0.042 ND	< 8.07E-02	< 1.95E+02	< 3.56E-04
Total C5	0.14 ND	0.01386 J,B	< 1.40E-01	< 4.21E+02	< 7.68E-04
Total C6	0.13 ND	0.03654 J	< 1.30E-01	< 4.68E+02	< 8.53E-04
Total C7	0.18 ND	0.0042 ND	< 1.80E-01	< 7.52E+02	< 1.37E-03
Total Volatile Organics	< 2.483	0.0966	< 2.48E+00	< 3.32E+03	< 6.05E-03

NOTE: All concentrations in this table are uncorrected for oxygen concentration.
(a) Stack gas sample volume 0.894 dry standard cubic feet
0.03 dry standard cubic meters
(b) Stack gas flow rate 3,860 dry standard cubic feet per minute
1.82 dry standard cubic meters per second
(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-20. Total Volatile Organic Compound Emissions (C1 – C7) – Run 3

Volatile Compound	Bag Analytical Result (ppmv, dry)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ppmv, dry)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Total C1	1.68	0	1.68E+00	1.12E+03	2.15E-03
Total C2	0.083 ND	0	< 8.30E-02	< 1.04E+02	< 1.99E-04
Total C3	0.11 ND	0	< 1.10E-01	< 2.02E+02	< 3.87E-04
Total C4	0.08 ND	0.042 ND	< 8.06E-02	< 1.95E+02	< 3.74E-04
Total C5	0.14 ND	0.0126 J,B	< 1.40E-01	< 4.21E+02	< 8.07E-04
Total C6	0.13 ND	0.03906 J	< 1.30E-01	< 4.68E+02	< 8.97E-04
Total C7	0.18 ND	0.0042 ND	< 1.80E-01	< 7.52E+02	< 1.44E-03
Total Volatile Organics	< 2.403	0.09786	< 2.40E+00	< 3.26E+03	< 6.26E-03

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume 1.065 dry standard cubic feet
0.03 dry standard cubic meters

(b) Stack gas flow rate 4,060 dry standard cubic feet per minute
1.92 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-21. Total Semivolatile and Nonvolatile Organic Emissions – Run 1

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	240
Stack gas flow rate	dscfm	5,080
	acfm	11,370
	dscm/min	143.87
Stack gas temperature	°F	175
Stack gas velocity	ft/min	3,618
Stack gas sample volume	dscf	134.440
	dscm	3.807
Isokinetic	%	97.7
Stack gas moisture content	vol %	45.5
Stack gas carbon dioxide content	vol %, dry	6.4
Stack gas oxygen content	vol %, dry	9.8
Total Semivolatile Organics by TCO		
Total semivolatiles collected	ug	5320
TCO concentration	ug/dscm	1.40E+03
	ug/dscm @7% O_2	1.75E+03
TCO emission rate	lb/h	2.66E-02
	kg/h	1.21E-02
	g/s	3.35E-03
Total Nonvolatile Organics by GRAV		
Total nonvolatiles collected	ug	3050
GRAV concentration	ug/dscm	8.01E+02
	ug/dscm @7% O_2	1.00E+03
GRAV emission rate	lb/h	1.52E-02
	kg/h	6.92E-03
	g/s	1.92E-03

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-22. Total Semivolatile and Nonvolatile Organic Emissions – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	240
Stack gas flow rate	dscfm	3,860
	acfm	8,610
	dscm/min	109.32
Stack gas temperature	°F	174
Stack gas velocity	ft/min	2,742
Stack gas sample volume	dscf	120.300
	dscm	3.407
Isokinetic	%	98.9
Stack gas moisture content	vol %	45.1
Stack gas carbon dioxide content	vol %, dry	7.2
Stack gas oxygen content	vol %, dry	8.9
Total Semivolatile Organics by TCO		
Total semivolatiles collected	ug	2830
TCO concentration	ug/dscm	8.31E+02
	ug/dscm @7% O_2	9.61E+02
TCO emission rate	lb/h	1.20E-02
	kg/h	5.45E-03
	g/s	1.51E-03
Total Nonvolatile Organics by GRAV		
Total nonvolatiles collected	ug	2260
GRAV concentration	ug/dscm	6.63E+02
	ug/dscm @7% O_2	7.68E+02
GRAV emission rate	lb/h	9.59E-03
	kg/h	4.35E-03
	g/s	1.21E-03

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-23. Total Semivolatile and Nonvolatile Organic Emissions – Run 3

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	240
Stack gas flow rate	dscfm	4,060
	acfm	8,890
	dscm/min	114.98
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,832
Stack gas sample volume	dscf	125.030
	dscm	3.541
Isokinetic	%	97.7
Stack gas moisture content	vol %	44.5
Stack gas carbon dioxide content	vol %, dry	7.1
Stack gas oxygen content	vol %, dry	9.3
Total Semivolatile Organics by TCO		
Total semivolatiles collected	ug	1924
TCO concentration	ug/dscm	5.43E+02
	ug/dscm @7% O_2	6.50E+02
TCO emission rate	lb/h	8.26E-03
	kg/h	3.75E-03
	g/s	1.04E-03
Total Nonvolatile Organics by GRAV		
Total nonvolatiles collected	ug	2250
GRAV concentration	ug/dscm	6.35E+02
	ug/dscm @7% O_2	7.60E+02
GRAV emission rate	lb/h	9.66E-03
	kg/h	4.38E-03
	g/s	1.22E-03

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute
dscm = Dry standard cubic meters

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-24. PCDD/PCDF Emission Summary – Run 1

Parameter	Units	Measured Value	
Stack Sampling Parameters			
Net sampling time	minutes		240
Stack gas flow rate	dscfm		5,290
	acfm		11,760
Stack gas temperature	°F		176
Stack gas velocity	ft/min		3,744
Stack gas sample volume	dscf		139.210
	dscm		3.943
Isokinetic	%		101.2
Stack gas moisture content	vol%		45.2
Stack gas carbon dioxide	vol %, dry		6.4
Stack gas oxygen	vol %, dry		9.8
PCDD/PCDF			
Total PCDD/PCDF	pg/sample	<	12288
Stack gas PCDD/PCDF concentration	ng/dscm	<	3.12E+00
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	3.90E+00
PCDD/PCDF emission rate	g/s	<	7.78E-09
PCDD/PCDF Toxic Equivalents as 2,3,7,8-TCDD			
Stack gas PCDD/PCDF concentration	ng/dscm	<	5.23E-02
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	6.53E-02
PCDD/PCDF emission rate	g/s	<	1.30E-10

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-25. PCDD/PCDF Emission Summary – Run 2

Parameter	Units	Measured Value
Stack Sampling Parameters		
Net sampling time	minutes	240
Stack gas flow rate	dscfm	3,780
	acfm	8,320
Stack gas temperature	°F	175
Stack gas velocity	ft/min	2,646
Stack gas sample volume	dscf	119.220
	dscm	3.376
Isokinetic	%	100.9
Stack gas moisture content	vol%	44.4
Stack gas carbon dioxide	vol %, dry	7.2
Stack gas oxygen	vol %, dry	8.9
PCDD/PCDF		
Total PCDD/PCDF	pg/sample	< 7223.8
Stack gas PCDD/PCDF concentration	ng/dscm	< 2.12E+00
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	< 2.45E+00
PCDD/PCDF emission rate	g/s	< 3.78E-09
PCDD/PCDF Toxic Equivalents as 2,3,7,8-TCDD		
Stack gas PCDD/PCDF concentration	ng/dscm	< 4.52E-02
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	< 5.23E-02
PCDD/PCDF emission rate	g/s	< 8.07E-11

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-26. PCDD/PCDF Emission Summary – Run 3

Parameter	Units		Measured Value
Stack Sampling Parameters			
Net sampling time	minutes		240
Stack gas flow rate	dscfm		4,040
	acfm		8,850
Stack gas temperature	°F		175
Stack gas velocity	ft/min		2,820
Stack gas sample volume	dscf		126.180
	dscm		3.573
Isokinetic	%		99.9
Stack gas moisture content	vol%		44.5
Stack gas carbon dioxide	vol %, dry		7.1
Stack gas oxygen	vol %, dry		9.3
PCDD/PCDF			
Total PCDD/PCDF	pg/sample	<	9067.1
Stack gas PCDD/PCDF concentration	ng/dscm	<	2.49E+00
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	2.98E+00
PCDD/PCDF emission rate	g/s	<	4.75E-09
PCDD/PCDF Toxic Equivalents as 2,3,7,8-TCDD			
Stack gas PCDD/PCDF concentration	ng/dscm	<	5.23E-02
Stack gas PCDD/PCDF concentration	ng/dscm @7% O_2	<	6.25E-02
PCDD/PCDF emission rate	g/s	<	9.96E-11

Note: dscf = Dry standard cubic feet
dscfm = Dry standard cubic feet per minute
acfm = Actual cubic feet per minute

Standard conditions are 68°F, 29.92 in. Hg (20°C, 760 mm Hg)

Table 7-27. PCDD/PCDF Congener and TEQ Emissions – Run 1

Congener No.	PCDD/PCDF Compound	Analytical Result (pg/sample)		Stack (a,b,c) Concentration (ng/dscm)	2,3,7,8-TCDD Toxicity Equivalence Factor	Stack Concentration Toxic Equivalents (ng/dscm)	Emission Rate as 2,3,7,8-TCDD (g/s)
		Front Half	Back Half				
PCDDs							
1	2,3,7,8-TCDD	10 ND	19 Q	< 4.82E-03	1	< 4.82E-03	< 1.20E-11
	Other TCDD	0	1681	4.26E-01			
	Total TCDD	4 Q,J	1700 Q	4.32E-01			
2	1,2,3,7,8-PeCDD	50 ND	33 J	< 8.37E-03	0.5	< 4.19E-03	< 1.05E-11
	Other PeCDD	0	547	1.39E-01			
	Total PeCDD	8.2 Q,J	580 Q	1.49E-01			
3	1,2,3,4,7,8-HxCDD	50 ND	11 J	< 2.79E-03	0.1	< 2.79E-04	< 6.97E-13
4	1,2,3,6,7,8-HxCDD	50 ND	9.6 J	< 2.43E-03	0.1	< 2.43E-04	< 6.08E-13
5	1,2,3,7,8,9-HxCDD	50 ND	16 J	< 4.06E-03	0.1	< 4.06E-04	< 1.01E-12
	Other HxCDD	0	123.4	3.13E-02			
	Total HxCDD	6.3 Q,J	160 Q	4.22E-02			
6	1,2,3,4,6,7,8-HpCDD	6.7 J	24 B,J	7.79E-03	0.01	7.79E-05	1.94E-13
	Other HpCDD	4.3	20	6.16E-03			
	Total HpCDD	11 J	44 J,B	1.40E-02			
7	OCDD	22 Q,B,J	27 B,J	1.24E-02	0.001	1.24E-05	3.10E-14
Total PCDDs(d)		< 51.5	2511	< 6.50E-01		< 1.00E-02	< 2.50E-11
PCDFs							
8	2,3,7,8-TCDF	2.4 Q,J	230 Q	5.89E-02	0.1	5.89E-03	1.47E-11
	Other TCDF	12.6	5770	1.47E+00			
	Total TCDF	15 Q,J	6000 Q	1.53E+00			
9	1,2,3,7,8-PeCDF	3.3 Q,J	170 Q	4.40E-02	0.05	2.20E-03	5.49E-12
10	2,3,4,7,8-PeCDF	2.9 Q,J	190	4.89E-02	0.5	2.45E-02	6.11E-11
	Other PeCDF	22.8	2240	5.74E-01			
	Total PeCDF	29 Q	2600 Q	6.67E-01			
11	1,2,3,4,7,8-HxCDF	5.7 Q,J	200 Q	5.22E-02	0.1	5.22E-03	1.30E-11
12	1,2,3,6,7,8-HxCDF	3.7 Q,J	100	2.63E-02	0.1	2.63E-03	6.57E-12
13	2,3,4,6,7,8-HxCDF	2.7 B,J	47 B,J	1.26E-02	0.1	1.26E-03	3.15E-12
14	1,2,3,7,8,9-HxCDF	50 ND	5.5 B,J	< 1.40E-03	0.1	< 1.40E-04	< 3.48E-13
	Other HxCDF	0	477.5	1.21E-01			
	Total HxCDF	21 Q,J,B	830 Q,B	2.16E-01			
15	1,2,3,4,6,7,8-HpCDF	8 Q,B,J	150 B	4.01E-02	0.01	4.01E-04	1.00E-12
16	1,2,3,4,7,8,9-HpCDF	50 ND	10 Q,J	< 2.54E-03	0.01	< 2.54E-05	< 6.33E-14
	Other HpCDF	0	40	1.01E-02			
	Total HpCDF	8 Q,B,J	200 B,Q	5.28E-02			
17	OCDF	8.5 Q,B,J	14 B,J	5.71E-03	0.001	5.71E-06	1.43E-14
Total PCDFs(e)		< 81.5	9644	< 2.47E+00		< 4.22E-02	< 1.05E-10
Total PCDD/PCDF		< 133	12155	< 3.12E+00		< 5.23E-02	< 1.30E-10

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume 139.210 dry standard cubic feet
3.94 dry standard cubic meters

(b) Stack gas flow rate 5,290 dry standard cubic feet per minute
2.50 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using zero.
If the sum of the detection limits of the individual isomers for a given dioxin or furan exceeded the detection limit of the total it was assumed that these individual isomers, when added, constituted the entire total so that any contribution to the total by "other" isomers would be zero.

(d) Total PCDDs = Total TCDD + Total PeCDD + Total HxCDD + Total HpCDD + OCDD

(e) Total PCDFs = Total TCDF + Total PeCDF + Total HxCDF + Total HpCDF + OCDF

Table 7-28. PCDD/PCDF Congener and TEQ Emissions – Run 2

Congener No.	PCDD/PCDF Compound	Analytical Result (pg/sample)		Stack (a,b,c) Concentration (ng/dscm)	2,3,7,8-TCDD Toxicity Equivalence Factor	Stack Concentration Toxic Equivalents (ng/dscm)	Emission Rate as 2,3,7,8-TCDD (g/s)
		Front Half	Back Half				
			PCDDs				
1	2,3,7,8-TCDD	10 ND	9.2 Q,J	< 2.72E-03	1	< 2.72E-03	< 4.86E-12
	Other TCDD	0	490.8	1.45E-01			
	Total TCDD	10 ND	500 Q	< 1.48E-01			
2	1,2,3,7,8-PeCDD	50 ND	18 J	< 5.33E-03	0.5	< 2.67E-03	< 4.76E-12
	Other PeCDD	0	232	6.87E-02			
	Total PeCDD	1.3 Q,J	250 Q	7.44E-02			
3	1,2,3,4,7,8-HxCDD	50 ND	8.2 J	< 2.43E-03	0.1	< 2.43E-04	< 4.33E-13
4	1,2,3,6,7,8-HxCDD	50 ND	8.5 J	< 2.52E-03	0.1	< 2.52E-04	< 4.49E-13
5	1,2,3,7,8,9-HxCDD	50 ND	13 J	< 3.85E-03	0.1	< 3.85E-04	< 6.87E-13
	Other HxCDD	0	90.3	2.67E-02			
	Total HxCDD	50 ND	120 Q,J	< 3.55E-02			
6	1,2,3,4,6,7,8-HpCDD	50 ND	23 B,J	< 6.81E-03	0.01	< 6.81E-05	< 1.22E-13
	Other HpCDD	0	19	5.63E-03			
	Total HpCDD	2.2 Q,J	42 J,B	1.31E-02			
7	OCDD	17 B,J	24 B,J	1.21E-02	0.001	1.21E-05	2.17E-14
Total PCDDs(d)		< 80.5	936	< 2.83E-01		< 6.35E-03	< 1.13E-11
			PCDFs				
8	2,3,7,8-TCDF	10 ND	130 Q	< 3.85E-02	0.1	< 3.85E-03	< 6.87E-12
	Other TCDF	0	2970	8.80E-01			
	Total TCDF	10 ND	3100 Q	< 9.18E-01			
9	1,2,3,7,8-PeCDF	50 ND	140	< 4.15E-02	0.05	< 2.07E-03	< 3.70E-12
10	2,3,4,7,8-PeCDF	50 ND	150	< 4.44E-02	0.5	< 2.22E-02	< 3.96E-11
	Other PeCDF	0	1710	5.06E-01			
	Total PeCDF	0.8 Q,J	2000 Q	5.93E-01			
11	1,2,3,4,7,8-HxCDF	2.1 Q,J	190	5.69E-02	0.1	5.69E-03	1.02E-11
12	1,2,3,6,7,8-HxCDF	1.6 Q,J	98	2.95E-02	0.1	2.95E-03	5.26E-12
13	2,3,4,6,7,8-HxCDF	50 ND	47 B,J	< 1.39E-02	0.1	< 1.39E-03	< 2.48E-12
14	1,2,3,7,8,9-HxCDF	50 ND	6 Q,B,J	< 1.78E-03	0.1	< 1.78E-04	< 3.17E-13
	Other HxCDF	0	489	1.45E-01			
	Total HxCDF	5.3 J,Q	830 B,Q	2.47E-01			
15	1,2,3,4,6,7,8-HpCDF	3.7 Q,B,J	160 B	4.85E-02	0.01	4.85E-04	8.65E-13
16	1,2,3,4,7,8,9-HpCDF	50 ND	18 J	< 5.33E-03	0.01	< 5.33E-05	< 9.51E-14
	Other HpCDF	0	52	1.54E-02			
	Total HpCDF	3.7 Q,B,J	230 B	6.92E-02			
17	OCDF	4.5 Q,B,J	23 B,J	8.14E-03	0.001	8.14E-06	1.45E-14
Total PCDFs(e)		< 24.3	6183	< 1.84E+00		< 3.89E-02	< 6.94E-11
Total PCDD/PCDF		< 104.8	7119	< 2.12E+00		< 4.52E-02	< 8.07E-11

NOTE: All concentrations in this table are uncorrected for oxygen concentration.
(a) Stack gas sample volume 119.220 dry standard cubic feet
3.38 dry standard cubic meters
(b) Stack gas flow rate 3,780 dry standard cubic feet per minute
1.78 dry standard cubic meters per second
(c) For non-detects, stack concentrations and emissions are calculated using zero.
If the sum of the detection limits of the individual isomers for a given dioxin or furan exceeded the detection limit of the total it was assumed that these individual isomers, when added, constituted the entire total so that any contribution to the total by "other" isomers would be zero.
(d) Total PCDDs = Total TCDD + Total PeCDD + Total HxCDD + Total HpCDD + OCDD
(e) Total PCDFs = Total TCDF + Total PeCDF + Total HxCDF + Total HpCDF + OCDF

Table 7-29. PCDD/PCDF Congener and TEQ Emissions – Run 3

Congener No.	PCDD/PCDF Compound	Analytical Result (pg/sample) Front Half	Back Half	Stack (a,b,c) Concentration (ng/dscm)	2,3,7,8-TCDD Toxicity Equivalence Factor	Stack Concentration Toxic Equivalents (ng/dscm)	Emission Rate as 2,3,7,8-TCDD (g/s)
	PCDDs						
1	2,3,7,8-TCDD	10 ND	12 Q	< 3.36E-03	1	< 3.36E-03	< 6.40E-12
	Other TCDD	0	398	1.11E-01			
	Total TCDD	10 ND	410 Q	< 1.15E-01			
2	1,2,3,7,8-PeCDD	50 ND	22 J	< 6.16E-03	0.5	< 3.08E-03	< 5.87E-12
	Other PeCDD	0	228	6.38E-02			
	Total PeCDD	50 ND	250 Q	< 7.00E-02			
3	1,2,3,4,7,8-HxCDD	50 ND	7.3 Q,J	< 2.04E-03	0.1	< 2.04E-04	< 3.90E-13
4	1,2,3,6,7,8-HxCDD	50 ND	9.7 Q.J	< 2.71E-03	0.1	< 2.71E-04	< 5.18E-13
5	1,2,3,7,8,9-HxCDD	50 ND	16 J	< 4.48E-03	0.1	< 4.48E-04	< 8.54E-13
	Other HxCDD	0	97	2.71E-02			
	Total HxCDD	50 ND	130 Q,J	< 3.64E-02			
6	1,2,3,4,6,7,8-HpCDD	2.2 J	26 B,J	7.89E-03	0.01	7.89E-05	1.50E-13
	Other HpCDD	0	24	6.72E-03			
	Total HpCDD	2.2 J	50 J,B	1.46E-02			
7	OCDD	18 B,J	26 B,J	1.23E-02	0.001	1.23E-05	2.35E-14
Total PCDDs(d)		< 130.2	866	< 2.48E-01		< 7.45E-03	< 1.42E-11
	PCDFs						
8	2,3,7,8-TCDF	10 ND	160 Q	< 4.48E-02	0.1	< 4.48E-03	< 8.54E-12
	Other TCDF	0	3840	1.07E+00			
	Total TCDF	10 ND	4000 Q	< 1.12E+00			
9	1,2,3,7,8-PeCDF	50 ND	190	< 5.32E-02	0.05	< 2.66E-03	< 5.07E-12
10	2,3,4,7,8-PeCDF	50 ND	180	< 5.04E-02	0.5	< 2.52E-02	< 4.80E-11
	Other PeCDF	0	2230	6.24E-01			
	Total PeCDF	2 Q,J	2600	7.28E-01			
11	1,2,3,4,7,8-HxCDF	50 ND	230	< 6.44E-02	0.1	< 6.44E-03	< 1.23E-11
12	1,2,3,6,7,8-HxCDF	50 ND	130	< 3.64E-02	0.1	< 3.64E-03	< 6.94E-12
13	2,3,4,6,7,8-HxCDF	50 ND	56 B	< 1.57E-02	0.1	< 1.57E-03	< 2.99E-12
14	1,2,3,7,8,9-HxCDF	50 ND	8.4 B,J	< 2.35E-03	0.1	< 2.35E-04	< 4.48E-13
	Other HxCDF	0	675.6	1.89E-01			
	Total HxCDF	50 ND	1100 B	< 3.08E-01			
15	1,2,3,4,6,7,8-HpCDF	3.5 Q,B,J	190 B	5.41E-02	0.01	5.41E-04	1.03E-12
16	1,2,3,4,7,8,9-HpCDF	50 ND	21 J	< 5.88E-03	0.01	< 5.88E-05	< 1.12E-13
	Other HpCDF	0	69	1.93E-02			
	Total HpCDF	3.5 Q,B,J	280 B	7.93E-02			
17	OCDF	3.4 Q,B,J	22 B,J	7.11E-03	0.001	7.11E-06	1.36E-14
Total PCDFs(e)		< 68.9	8002	< 2.24E+00		< 4.48E-02	< 8.54E-11
Total PCDD/PCDF		< 199.1	8868	< 2.49E+00		< 5.23E-02	< 9.96E-11

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume	126.180	dry standard cubic feet
	3.57	dry standard cubic meters
(b) Stack gas flow rate	4,040	dry standard cubic feet per minute
	1.91	dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using zero.
If the sum of the detection limits of the individual isomers for a given dioxin or furan exceeded the detection limit of the total it was assumed that these individual isomers, when added, constituted the entire total so that any contribution to the total by "other" isomers would be zero.

(d) Total PCDDs = Total TCDD + Total PeCDD + Total HxCDD + Total HpCDD + OCDD

(e) Total PCDFs = Total TCDF + Total PeCDF + Total HxCDF + Total HpCDF + OCDF

Table 7-30. PAH Compound Emissions – Run 1

PAH Compound	Front Half Analytical Result (ng/sample)	Back Half Analytical Result (ng/sample)	Condensate Analytical Result (ng/sample)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Standard Target Analytes					
Acenaphthene	3.4 BJ	3.5 BJ	1.5 J	2.29E-03	5.51E-09
Acenaphthylene	9.1 J	14 J	0.29 ND	< 6.39E-03	< 1.53E-08
Anthracene	4 J	28	7.8 J	1.09E-02	2.61E-08
Benzo(a)anthracene	1.7 BJ	5.4 J	0.48 ND	< 2.07E-03	< 4.97E-09
Benzo(b)fluoranthene	4.2 BJ	40 B	5.8 J	1.37E-02	3.28E-08
Benzo(k)fluoranthene	3.1 BJ	4.3 J	5.5 J	3.52E-03	8.46E-09
Benzo(g,h,i)perylene	5.6 J	4 J	15 BJ	6.72E-03	1.61E-08
Benzo(a)pyrene	2.7 BJ	2.2 BJ	3.4 BJ	2.27E-03	5.45E-09
Benzo(e)pyrene	4.5 BJ	4.4 BJ	5.1 BJ	3.82E-03	9.18E-09
Chrysene	3.5 BJ	18 J	4.7 BJ	7.15E-03	1.72E-08
Dibenzo(a,h)anthracene	0.32 ND	0.5 ND	0.65 ND	< 4.01E-04	< 9.64E-10
Fluoranthene	27 B	100 B	26 B	4.18E-02	1.00E-07
Fluorene	15 BJ	11 BJ	3.3 J	8.00E-03	1.92E-08
Indeno(1,2,3-cd)pyrene	3.3 BJ	3.8 J	4.7 BJ	3.22E-03	7.74E-09
2-Methylnaphthalene	31 BJ	80 BJ	13 BJ	3.39E-02	8.13E-08
Naphthalene	40 BJ	880 B	30 BJ	2.59E-01	6.23E-07
Phenanthrene	140 B	300 B	39 BJ	1.31E-01	3.14E-07
Pyrene	25 BJ	110 B	20 BJ	4.23E-02	1.02E-07
Special Target Analytes					
Perylene	0.91 ND	3.5 BJ	1.7 ND	< 1.67E-03	< 4.01E-09
Total PAHs	< 324.33	1612.6	187.92	< 5.80E-01	< 1.39E-06

NOTE: All concentrations in this table are uncorrected for oxygen concentration.
(a) Stack gas sample volume 129.310 dry standard cubic feet
3.66 dry standard cubic meters
(b) Stack gas flow rate 5,090 dry standard cubic feet per minute
2.40 dry standard cubic meters per second
(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-31. PAH Compound Emissions – Run 2

PAH Compound	Front Half Analytical Result (ng/sample)	Back Half Analytical Result (ng/sample)	Condensate Analytical Result (ng/sample)		Stack (a,b,c) Concentration (ug/dscm)		Emission Rate (g/s)
Standard Target Analytes							
Acenaphthene	1.1 BJ	3.3 BJ	1.5 J		1.67E-03		3.05E-09
Acenaphthylene	0.28 ND	7.8 J	0.23 ND	<	2.35E-03	<	4.29E-09
Anthracene	0.44 ND	8.1 J	3.5 J	<	3.41E-03	<	6.22E-09
Benzo(a)anthracene	0.36 ND	0.35 ND	0.45 ND	<	3.28E-04	<	5.99E-10
Benzo(b)fluoranthene	0.83 ND	55 B	3.9 J	<	1.69E-02	<	3.09E-08
Benzo(k)fluoranthene	1.1 ND	4.6 J	1.2 ND	<	1.95E-03	<	3.57E-09
Benzo(g,h,i)perylene	0.75 ND	4.4 J	18 BJ	<	6.55E-03	<	1.20E-08
Benzo(a)pyrene	1.4 ND	1.7 ND	2.7 BJ	<	1.64E-03	<	3.00E-09
Benzo(e)pyrene	1.1 ND	1.5 ND	5.3 BJ	<	2.23E-03	<	4.08E-09
Chrysene	0.39 ND	21	3.1 BJ	<	6.93E-03	<	1.27E-08
Dibenzo(a,h)anthracene	0.41 ND	0.92 ND	0.45 ND	<	5.04E-04	<	9.20E-10
Fluoranthene	4.4 BJ	32 B	18 BJ		1.54E-02		2.81E-08
Fluorene	3.3 BJ	10 BJ	2.8 J		4.55E-03		8.32E-09
Indeno(1,2,3-cd)pyrene	0.76 ND	1.4 ND	5.3 BJ	<	2.11E-03	<	3.86E-09
2-Methylnaphthalene	12 BJ	52 BJ	13 BJ		2.18E-02		3.98E-08
Naphthalene	23 BJ	1900 B	34 BJ		5.54E-01		1.01E-06
Phenanthrene	25 BJ	96 B	27 BJ		4.19E-02		7.65E-08
Pyrene	6.4 BJ	30 BJ	15 BJ		1.45E-02		2.66E-08
Special Target Analytes							
Perylene	1.4 ND	1.6 ND	1.3 ND	<	1.22E-03	<	2.22E-09
Total PAHs	< 84.42	2231.67	156.73	<	7.00E-01	<	1.28E-06

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume	124.810	dry standard cubic feet
	3.53	dry standard cubic meters
(b) Stack gas flow rate	3,870	dry standard cubic feet per minute
	1.83	dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-32. PAH Compound Emissions – Run 3

PAH Compound	Front Half Analytical Result (ng/sample)	Back Half Analytical Result (ng/sample)	Condensate Analytical Result (ng/sample)		Stack (a,b,c) Concentration (ug/dscm)		Emission Rate (g/s)
Standard Target Analytes							
Acenaphthene	2 BJ	6.5 BJ	1.3 ND	<	2.87E-03	<	5.22E-09
Acenaphthylene	3.3 J	5.9 J	0.32 ND	<	2.79E-03	<	5.07E-09
Anthracene	0.37 ND	11 J	0.41 ND	<	3.45E-03	<	6.27E-09
Benzo(a)anthracene	0.21 ND	6.1 J	0.37 ND	<	1.96E-03	<	3.56E-09
Benzo(b)fluoranthene	4.1 BJ	40 B	2.3 J		1.36E-02		2.47E-08
Benzo(k)fluoranthene	1.1 ND	3.9 J	4.7 J	<	2.84E-03	<	5.16E-09
Benzo(g,h,i)perylene	7.5 J	3.7 J	0.67 ND	<	3.48E-03	<	6.32E-09
Benzo(a)pyrene	4.3 BJ	1.1 ND	1.9 ND	<	2.14E-03	<	3.89E-09
Benzo(e)pyrene	3.2 BJ	2.5 BJ	1.6 ND	<	2.14E-03	<	3.89E-09
Chrysene	0.23 ND	5.7 J	0.43 ND	<	1.86E-03	<	3.39E-09
Dibenzo(a,h)anthracene	0.35 ND	0.72 ND	0.65 ND	<	5.04E-04	<	9.16E-10
Fluoranthene	7.3 BJ	25 B	3.4 BJ		1.05E-02		1.90E-08
Fluorene	6.4 BJ	11 BJ	1.8 J		5.63E-03		1.02E-08
Indeno(1,2,3-cd)pyrene	4.1 BJ	3.1 J	0.68 J		2.31E-03		4.20E-09
2-Methylnaphthalene	17 BJ	67 BJ	15 BJ		2.90E-02		5.27E-08
Naphthalene	35 BJ	17000 B	72 BJ		5.01E+00		9.11E-06
Phenanthrene	49 B	65 B	5.8 BJ		3.51E-02		6.38E-08
Pyrene	5 BJ	28 BJ	3.1 BJ		1.06E-02		1.92E-08
Special Target Analytes							
Perylene	1.1 ND	66 B	1.8 ND	<	2.02E-02	<	3.67E-08
Total PAHs	< 151.56	17352.22	118.23	<	5.16E+00	<	9.38E-06

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume	120.520	dry standard cubic feet
	3.41	dry standard cubic meters
(b) Stack gas flow rate	3,850	dry standard cubic feet per minute
	1.82	dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-33. PCB Emissions – Run 1

PCB Compound	Front Half Analytical Result (ng/sample)	Back Half Analytical Result (ng/sample)	Condensate Analytical Result (ng/sample)	Stack (a,b,c) Concentration (ng/dscm)	Emission Rate (g/s)
Co-Planar PCBs					
3,4,3',4'-Tetrachlorobiphenyl (IUPAC 77)	0.03 QB	0.36	0.021 QJ	1.12E-01	2.70E-10
3,4,4',5-Tetrachlorobiphenyl (IUPAC 81)	0.0083 ND	0.06 QJ	0.01 ND	< 2.14E-02	< 5.14E-11
2,3,4,3',4'-Pentachlorobiphenyl (IUPAC 105)	0.022 QJ	0.067 J	0.035 BJ	3.39E-02	8.13E-11
2,3,4,5,4'-Pentachlorobiphenyl (IUPAC 114)	0.0069 ND	0.011 ND	0.0065 ND	< 6.66E-03	< 1.60E-11
2,4,5,3',4'-Pentachlorobiphenyl (IUPAC 118)	0.087 J	0.13 J	0.078 QBJ	8.06E-02	1.94E-10
3,4,5,2',4'-Pentachlorobiphenyl (IUPAC 123)	0.0075 ND	0.022 J	0.0067 ND	< 9.88E-03	< 2.37E-11
3,4,5,3',4'-Pentachlorobiphenyl (IUPAC 126)	0.0073 ND	0.091 QJ	0.0072 ND	< 2.88E-02	< 6.92E-11
2,3,4,5,3',4'-Hexachlorobiphenyl (IUPAC 156)	0.01 ND	0.061 QCJ	0.013 ND	< 2.29E-02	< 5.51E-11
2,3,4,3',4',5'-Hexachlorobiphenyl (IUPAC 157)	0.01 ND	0.061 QCJ	0.013 ND	< 2.29E-02	< 5.51E-11
2,4,5,3',4',5'-Hexachlorobiphenyl (IUPAC 167)	0.0073 ND	0.027 J	0.0091 ND	< 1.19E-02	< 2.85E-11
3,4,5,3',4',5'-Hexachlorobiphenyl (IUPAC 169)	0.0073 ND	0.02 ND	0.0098 ND	< 1.01E-02	< 2.43E-11
2,3,4,5,3',4',5'-Heptachlorobiphenyl (IUPAC 189)	0.0066 ND	0.013 ND	0.0061 ND	< 7.02E-03	< 1.69E-11
Total PCB Homologs					
Total Monochlorobiphenyls	0.67 B	6 B	0.23 BJ	1.88E+00	4.53E-09
Total Dichlorobiphenyls	9.6 QB	9.8 QB	2 BQ	5.84E+00	1.40E-08
Total Trichlorobiphenyls	11 QB	8 QB	3.8 BQ	6.23E+00	1.50E-08
Total Tetrachlorobiphenyls	2.2 QB	4 BQ	2.5 BQ	2.38E+00	5.71E-09
Total Pentachlorobiphenyls	0.49 QJB	1 QB	0.75 JQB	6.12E-01	1.47E-09
Total Hexachlorobiphenyls	0.093 QJ	0.33 QBJ	0.23 QBJ	1.78E-01	4.28E-10
Total Heptachlorobiphenyls	0.21 ND	0.13 QJ	0.024 QBJ	< 9.94E-02	< 2.39E-10
Total Octachlorobiphenyls	0.1 ND	0.16 ND	0.14 ND	< 1.09E-01	< 2.62E-10
Total Nonachlorobiphenyls	0.029 ND	0.054 ND	0.05 ND	< 3.63E-02	< 8.73E-11
Total Decachlorobiphenyl	0.0096 ND	0.016 ND	0.025 ND	< 1.38E-02	< 3.32E-11
Total PCBs	< 24.4016	29.49	9.749	< 1.74E+01	< 4.18E-08

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume: 129.310 dry standard cubic feet; 3.66 dry standard cubic meters

(b) Stack gas flow rate: 5,090 dry standard cubic feet per minute; 2.40 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-34. PCB Emissions – Run 2

PCB Compound	Front Half Analytical Result (ng/sample)	Back Half Analytical Result (ng/sample)	Condensate Analytical Result (ng/sample)	Stack (a,b,c) Concentration (ng/dscm)	Emission Rate (g/s)
Co-Planar PCBs					
3,4,3',4'-Tetrachlorobiphenyl (IUPAC 77)	0.0073 ND	0.17 J	0.018 QJ	< 5.53E-02	< 1.01E-10
3,4,4',5-Tetrachlorobiphenyl (IUPAC 81)	0.0068 ND	0.019 QJ	0.0058 ND	< 8.94E-03	< 1.63E-11
2,3,4,3',4'-Pentachlorobiphenyl (IUPAC 105)	0.0061 ND	0.049 QJ	0.039 BJ	< 2.66E-02	< 4.86E-11
2,3,4,5,4'-Pentachlorobiphenyl (IUPAC 114)	0.0058 ND	0.01 ND	0.0075 QJ	< 6.59E-03	< 1.20E-11
2,4,5,3',4'-Pentachlorobiphenyl (IUPAC 118)	0.018 QJ	0.097 QJ	0.076 BJ	5.40E-02	9.87E-11
3,4,5,2',4'-Pentachlorobiphenyl (IUPAC 123)	0.0063 ND	0.01 ND	0.0036 ND	< 5.63E-03	< 1.03E-11
3,4,5,3',4'-Pentachlorobiphenyl (IUPAC 126)	0.0062 ND	0.069 J	0.0041 ND	< 2.24E-02	< 4.10E-11
2,3,4,5,3',4'-Hexachlorobiphenyl (IUPAC 156)	0.0091 ND	0.048 CJ	0.0069 ND	< 1.81E-02	< 3.31E-11
2,3,4,3',4',5'-Hexachlorobiphenyl (IUPAC 157)	0.0091 ND	0.048 CJ	0.0069 ND	< 1.81E-02	< 3.31E-11
2,4,5,3',4',5'-Hexachlorobiphenyl (IUPAC 167)	0.0063 ND	0.024 J	0.0049 ND	< 9.96E-03	< 1.82E-11
3,4,5,3',4',5'-Hexachlorobiphenyl (IUPAC 169)	0.0062 ND	0.019 ND	0.006 ND	< 8.83E-03	< 1.61E-11
2,3,4,5,3',4',5'-Heptachlorobiphenyl (IUPAC 189)	0.006 ND	0.011 ND	0.0034 ND	< 5.77E-03	< 1.05E-11
Total PCB Homologs					
Total Monochlorobiphenyls	0.061 QBJ	1.2 B	0.24 BJ	4.25E-01	7.76E-10
Total Dichlorobiphenyls	1.5 QB	6.4 QB	1.6 QB	2.69E+00	4.91E-09
Total Trichlorobiphenyls	1.6 BJQ	5.5 QB	2.9 BQ	2.83E+00	5.17E-09
Total Tetrachlorobiphenyls	0.38 QJB	2.8 BQ	2.1 BQ	1.49E+00	2.73E-09
Total Pentachlorobiphenyls	0.03 QJ	0.74 JQB	0.74 JQB	4.27E-01	7.80E-10
Total Hexachlorobiphenyls	0.028 QJ	0.43 BJQ	0.27 BJQ	2.06E-01	3.76E-10
Total Heptachlorobiphenyls	0.19 ND	0.16 QJ	0.03 JQB	< 1.08E-01	< 1.96E-10
Total Octachlorobiphenyls	0.089 ND	0.014 QJ	0.0099 QJ	< 3.19E-02	< 5.83E-11
Total Nonachlorobiphenyls	0.028 ND	0.039 ND	0.027 ND	< 2.66E-02	< 4.86E-11
Total Decachlorobiphenyl	0.0082 ND	0.02 QJ	0.011 ND	< 1.11E-02	< 2.03E-11
Total PCBs	< 3.9142	17.303	7.9279	< 8.25E+00	< 1.51E-08

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume: 124.810 dry standard cubic feet; 3.53 dry standard cubic meters

(b) Stack gas flow rate: 3,870 dry standard cubic feet per minute; 1.83 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-35. PCB Emissions – Run 3

PCB Compound	Front Half Analytical Result (ng/sample)	Back Half Analytical Result (ng/sample)	Condensate Analytical Result (ng/sample)	Stack (a,b,c) Concentration (ng/dscm)	Emission Rate (g/s)
Co-Planar PCBs					
3,4,3',4'-Tetrachlorobiphenyl (IUPAC 77)	0.017 QJ	0.12 QJ	0.0071 ND	< 4.22E-02	< 7.67E-11
3,4,4',5-Tetrachlorobiphenyl (IUPAC 81)	0.0079 ND	0.061 ND	0.0064 ND	< 2.21E-02	< 4.01E-11
2,3,4,3',4'-Pentachlorobiphenyl (IUPAC 105)	0.0069 ND	0.093 J	0.017 QBJ	< 3.42E-02	< 6.22E-11
2,3,4,5,4'-Pentachlorobiphenyl (IUPAC 114)	0.0066 ND	0.012 ND	0.0081 QJ	< 7.82E-03	< 1.42E-11
2,4,5,3',4'-Pentachlorobiphenyl (IUPAC 118)	0.031 J	0.16 J	0.023 QBJ	6.27E-02	1.14E-10
3,4,5,2',4'-Pentachlorobiphenyl (IUPAC 123)	0.0069 ND	0.012 ND	0.017 QBJ	< 1.05E-02	< 1.91E-11
3,4,5,3',4'-Pentachlorobiphenyl (IUPAC 126)	0.0074 ND	0.043 QJ	0.0053 ND	< 1.63E-02	< 2.97E-11
2,3,4,5,3',4'-Hexachlorobiphenyl (IUPAC 156)	0.0091 ND	0.056 CJ	0.012 QCJ	< 2.26E-02	< 4.10E-11
2,3,4,3',4',5'-Hexachlorobiphenyl (IUPAC 157)	0.0091 ND	0.056 CJ	0.012 QCJ	< 2.26E-02	< 4.10E-11
2,4,5,3',4',5'-Hexachlorobiphenyl (IUPAC 167)	0.0067 ND	0.021 QJ	0.0058 ND	< 9.81E-03	< 1.78E-11
3,4,5,3',4',5'-Hexachlorobiphenyl (IUPAC 169)	0.0078 ND	0.021 ND	0.0083 ND	< 1.09E-02	< 1.98E-11
2,3,4,5,3',4',5'-Heptachlorobiphenyl (IUPAC 189)	0.0065 ND	0.013 ND	0.0045 ND	< 7.03E-03	< 1.28E-11
Total PCB Homologs					
Total Monochlorobiphenyls	0.18 QBJ	0.91 B	0.19 BJ	3.75E-01	6.81E-10
Total Dichlorobiphenyls	2.6 BQ	4.9 QB	0.68 QBJ	2.40E+00	4.36E-09
Total Trichlorobiphenyls	2.6 BQ	6.1 BQ	0.88 QBJ	2.81E+00	5.10E-09
Total Tetrachlorobiphenyls	0.51 QBJ	2.9 BQ	0.73 JQB	1.21E+00	2.20E-09
Total Pentachlorobiphenyls	0.058 QJ	0.95 JQB	0.28 QJB	3.77E-01	6.86E-10
Total Hexachlorobiphenyls	0.047 JQ	0.47 QBJ	0.1 QBJ	1.81E-01	3.29E-10
Total Heptachlorobiphenyls	0.2 ND	0.15 QJ	0.21 ND	< 1.64E-01	< 2.98E-10
Total Octachlorobiphenyls	0.094 ND	0.15 ND	0.1 ND	< 1.01E-01	< 1.83E-10
Total Nonachlorobiphenyls	0.03 ND	0.052 ND	0.032 ND	< 3.34E-02	< 6.07E-11
Total Decachlorobiphenyl	0.0086 ND	0.015 ND	0.013 ND	< 1.07E-02	< 1.95E-11
Total PCBs	< 6.3276	16.597	3.215	< 7.66E+00	< 1.39E-08

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume — 120.520 dry standard cubic feet; 3.41 dry standard cubic meters

(b) Stack gas flow rate — 3,850 dry standard cubic feet per minute; 1.82 dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-36. Organochlorine Pesticide Emissions – Run 1

OCP Compound	Front Half Analytical Result (ug/sample)	Back Half Analytical Result (ug/sample)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Standard Target Analytes					
Aldrin	0.036 ND	0.014 ND	0.034 ND	< 2.41E-02	< 5.54E-08
a-BHC	0.026 ND	0.022 ND	0.016 ND	< 1.84E-02	< 4.22E-08
b-BHC	0.033 ND	0.063 ND	0.034 ND	< 3.73E-02	< 8.58E-08
g-BHC (Lindane)	0.014 ND	0.014 ND	0.012 ND	< 1.15E-02	< 2.64E-08
d-BHC	0.015 ND	0.022 J,COL	0.025 ND	< 1.78E-02	< 4.09E-08
a-Chlordane	0.013 ND	0.021 J,COL	0.014 ND	< 1.38E-02	< 3.17E-08
g-Chlordane	0.078 ND	0.043 ND	0.018 ND	< 3.99E-02	< 9.17E-08
4,4'-DDD	0.083 ND	0.093 ND	0.14 ND	< 9.07E-02	< 2.09E-07
4,4'-DDE	0.039 ND	0.052 J	0.028 ND	< 3.42E-02	< 7.85E-08
4,4'-DDT	0.023 ND	0.063 J,COL	0.026 J	< 3.22E-02	< 7.39E-08
Dieldrin	0.013 ND	0.015 ND	0.012 ND	< 1.15E-02	< 2.64E-08
Endosulfan I	0.013 ND	0.018 ND	0.014 ND	< 1.29E-02	< 2.97E-08
Endosulfan II	0.014 ND	0.06 J,COL	0.018 ND	< 2.64E-02	< 6.07E-08
Endosulfan sulfate	0.023 ND	0.013 ND	0.016 ND	< 1.49E-02	< 3.43E-08
Endrin	0.05 ND	0.063 ND	0.051 ND	< 4.71E-02	< 1.08E-07
Heptachlor	0.016 ND	0.013 ND	0.02 J,COL	< 1.41E-02	< 3.23E-08
Methoxychlor	0.038 ND	0.11 ND	0.037 ND	< 5.31E-02	< 1.22E-07
Special Target Analytes					
Chlorobenzilate	0.083 ND	0.093 ND	0.15 J,COL	< 9.36E-02	< 2.15E-07
Endrin aldehyde	0.018 ND	0.04 ND	0.02 J,B,COL	< 2.24E-02	< 5.15E-08
Endrin ketone	0.017 ND	0.017 ND	0.025 ND	< 1.69E-02	< 3.89E-08
Heptachlor epoxide	0.015 ND	0.042 J,COL	0.012 ND	< 1.98E-02	< 4.55E-08
Diallate	11 ND	9.7 ND	0.78 ND	< 6.17E+00	< 1.42E-05

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume	122.990	dry standard cubic feet
	3.48	dry standard cubic meters
(b) Stack gas flow rate	4,870	dry standard cubic feet per minute
	2.30	dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-37. Organochlorine Pesticide Emissions – Run 2

OCP Compound	Front Half Analytical Result (ug/sample)	Back Half Analytical Result (ug/sample)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Standard Target Analytes					
Aldrin	0.036 ND	0.014 ND	0.034 ND	< 2.52E-02	< 4.62E-08
a-BHC	0.026 ND	0.022 ND	0.023 J	< 2.13E-02	< 3.91E-08
b-BHC	0.033 ND	0.063 ND	0.052 J,COL	< 4.45E-02	< 8.14E-08
g-BHC (Lindane)	0.014 ND	0.014 ND	0.012 ND	< 1.20E-02	< 2.20E-08
d-BHC	0.015 ND	0.019 ND	0.11 COL	< 4.33E-02	< 7.92E-08
a-Chlordane	0.013 ND	0.028 J,COL	0.014 ND	< 1.65E-02	< 3.03E-08
g-Chlordane	0.078 ND	0.043 ND	0.018 ND	< 4.18E-02	< 7.65E-08
4,4'-DDD	0.083 ND	0.093 ND	0.14 ND	< 9.49E-02	< 1.74E-07
4,4'-DDE	0.039 ND	0.052 J	0.028 ND	< 3.57E-02	< 6.55E-08
4,4'-DDT	0.023 ND	0.012 ND	0.022 ND	< 1.71E-02	< 3.14E-08
Dieldrin	0.013 ND	0.015 ND	0.012 ND	< 1.20E-02	< 2.20E-08
Endosulfan I	0.013 ND	0.018 ND	0.014 ND	< 1.35E-02	< 2.48E-08
Endosulfan II	0.014 ND	0.023 ND	0.018 ND	< 1.65E-02	< 3.03E-08
Endosulfan sulfate	0.023 ND	0.013 ND	0.016 ND	< 1.56E-02	< 2.86E-08
Endrin	0.05 ND	0.063 ND	0.051 ND	< 4.93E-02	< 9.02E-08
Heptachlor	0.016 ND	0.013 ND	0.11 COL	< 4.18E-02	< 7.65E-08
Methoxychlor	0.038 ND	0.11 ND	0.035 ND	< 5.50E-02	< 1.01E-07
Special Target Analytes					
Chlorobenzilate	0.083 ND	0.093 ND	0.13 ND	< 9.19E-02	< 1.68E-07
Endrin aldehyde	0.018 ND	0.04 ND	0.18 B,COL	< 7.15E-02	< 1.31E-07
Endrin ketone	0.017 ND	0.017 ND	0.025 ND	< 1.77E-02	< 3.25E-08
Heptachlor epoxide	0.015 ND	0.015 ND	0.025 J,COL	< 1.65E-02	< 3.03E-08
Diallate	11 ND	9.7 ND	0.78 ND	< 6.45E+00	< 1.18E-05

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume	117.540	dry standard cubic feet
	3.33	dry standard cubic meters
(b) Stack gas flow rate	3,880	dry standard cubic feet per minute
	1.83	dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

Table 7-38. Organochlorine Pesticide Emissions – Run 3

OCP Compound	Front Half Analytical Result (ug/sample)	Back Half Analytical Result (ug/sample)	Condensate Analytical Result (ug/sample)	Stack (a,b,c) Concentration (ug/dscm)	Emission Rate (g/s)
Standard Target Analytes					
Aldrin	0.036 ND	0.014 ND	0.034 ND	< 2.36E-02	< 4.54E-08
a-BHC	0.026 ND	0.022 ND	0.016 ND	< 1.80E-02	< 3.46E-08
b-BHC	0.033 ND	0.074 J,COL	0.035 J,COL	< 3.99E-02	< 7.68E-08
g-BHC (Lindane)	0.014 ND	0.014 ND	0.012 ND	< 1.12E-02	< 2.16E-08
d-BHC	0.015 ND	0.019 ND	0.078 J,COL	< 3.15E-02	< 6.06E-08
a-Chlordane	0.013 ND	0.016 ND	0.014 ND	< 1.21E-02	< 2.33E-08
g-Chlordane	0.078 ND	0.043 ND	0.018 ND	< 3.90E-02	< 7.52E-08
4,4'-DDD	0.083 ND	0.26 J,COL	0.14 ND	< 1.36E-01	< 2.61E-07
4,4'-DDE	0.039 ND	0.047 ND	0.028 ND	< 3.20E-02	< 6.17E-08
4,4'-DDT	0.023 ND	0.021 ND	0.023 ND	< 1.88E-02	< 3.62E-08
Dieldrin	0.013 ND	0.015 ND	0.012 ND	< 1.12E-02	< 2.16E-08
Endosulfan I	0.013 ND	0.018 ND	0.014 ND	< 1.26E-02	< 2.43E-08
Endosulfan II	0.014 ND	0.023 ND	0.018 ND	< 1.54E-02	< 2.98E-08
Endosulfan sulfate	0.023 ND	0.013 ND	0.016 ND	< 1.46E-02	< 2.81E-08
Endrin	0.05 ND	0.063 ND	0.051 ND	< 4.61E-02	< 8.87E-08
Heptachlor	0.016 ND	0.013 ND	0.056 J,COL	< 2.39E-02	< 4.60E-08
Methoxychlor	0.038 ND	0.11 ND	0.037 ND	< 5.20E-02	< 1.00E-07
Special Target Analytes					
Chlorobenzilate	0.083 ND	0.097 J,COL	0.14 ND	< 8.99E-02	< 1.73E-07
Endrin aldehyde	0.018 ND	0.04 ND	0.022 J,B,COL	< 2.25E-02	< 4.33E-08
Endrin ketone	0.017 ND	0.017 ND	0.025 ND	< 1.66E-02	< 3.19E-08
Heptachlor epoxide	0.015 ND	0.015 ND	0.013 J,COL	< 1.21E-02	< 2.33E-08
Diallate	11 ND	9.7 ND	0.78 ND	< 6.03E+00	< 1.16E-05

NOTE: All concentrations in this table are uncorrected for oxygen concentration.

(a) Stack gas sample volume	125.710	dry standard cubic feet
	3.56	dry standard cubic meters
(b) Stack gas flow rate	4,080	dry standard cubic feet per minute
	1.93	dry standard cubic meters per second

(c) For non-detects, stack concentrations and emissions are calculated using the detection limit.

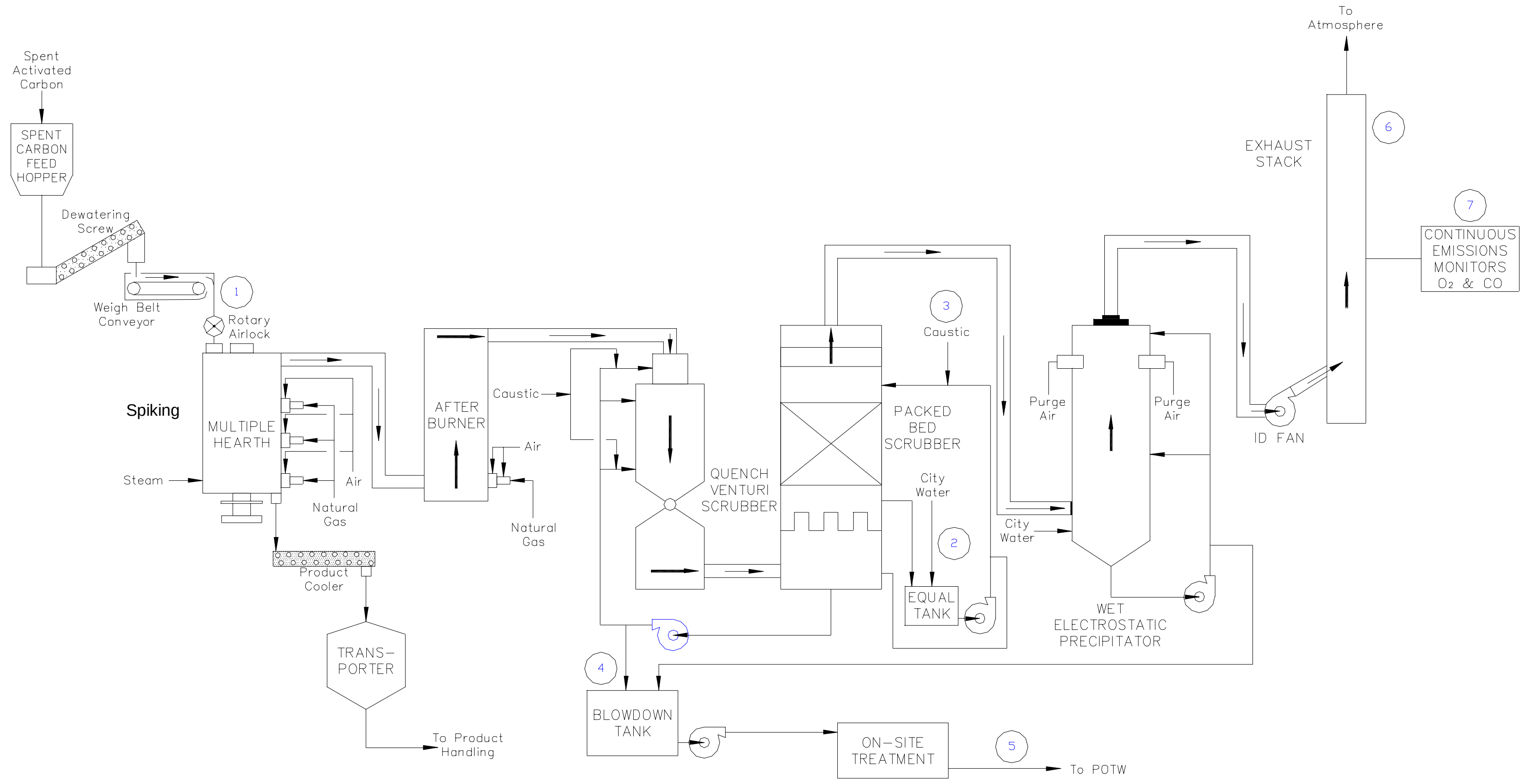

Figure 2-1. Sampling Locations.