Appointment

From: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
Sent: 2/25/2019 4:42:25 PM
To: Noah, Greg [Noah.Greg@epa.gov]; Chen, Xi [Chen.Xi@epa.gov]; Dyron.Hamlin@ghd.com; Benjamin.Chandler@ghd.com; Tim Halik [thalik@willowbrook.il.us]; RDemott@ramboll.com; Heidi Hayes [HeidiHayes@eurofinsUS.com]

Subject: Ethylene Oxide Laboratory/Methods Call Conference Line/Code / Ex. 6 code Conference Line/Code / Ex. 6
Location: RTP-C400C-Max20/RTP-Bldg-C

Start: 2/27/2019 7:30:00 PM
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Appointment

From: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
Sent: 2/27/2019 8:48:44 PM
To: Weinstock, Lewis [Weinstock.Lewis@epa.gov]; Noah, Greg [Noah.Greg@epa.gov]; Chen, Xi [Chen.Xi@epa.gov]; Dyron.Hamlin@ghd.com; Benjamin.Chandler@ghd.com; Tim Halik [thalik@willowbrook.il.us]; RDemott@ramboll.com; Heidi Hayes [HeidiHayes@eurofinsUS.com]; Compher, Michael [compher.michael@epa.gov]; Nwia, Jacqueline [nwia.jacqueline@epa.gov]; Julie Swift [Julie.Swift@erg.com]; Jennifer.Nash@erg.com; Hoffman, Kathy [KHoffman@sterigenics.com]

Subject: Ethylene Oxide Laboratory/Methods Call #2 - Conference Line/Code / Ex. 6 [code Conference Line/Code / Ex. 6
Location: RTP-OAQPS-C351K/RTP-OAQPS-BLDG-C

Start: 3/13/2019 6:00:00 PM
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RESEARCH TRIANGLE PARK, NC 27711

Ethylene Oxide Monitoring in Ambient Air Summary[1]

Technical Note - May 2019

1. Ambient Air Sampling Procedures Using Canisters with Passive Vacuum Regulators

The procedure presented in this document is designed for sampling volatile organic compounds (VOCs) including ethylene oxide in ambient air. This procedure is based on the collection of whole air samples in SUMMA® treated canisters to final pressures below atmospheric. The samples are then analyzed using EPA Compendium Method TO-15 *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS).*

Sampler Installation

1. The sampling system consists of two components: a sample canister and a passive vacuum regulator (Veriflow vacuum regulator with gauge and sample inlet probe). The canisters have been cleaned, tested for contamination (blanked) and evacuated, the passive collection assemblies will have been cleaned, tested for contamination (blanked), and calibrated for 24-hour integrated sampling.
2. The complete sampling system must be securely mounted on a support structure which ensures that the sample inlet meets the siting criteria (See QAPP for details https://www.epa.gov/il/quality-assurance-project-plan section 2.1.2).
3. For collocated samplers, horizontal spacing should be between 0 and 4 meters, and inlet heights within 1 meter vertically.

Operating Procedures

A. Equipment and Supplies

1. 6-liter sample collection canister
2. Veriflow vacuum regulator/gauge/inlet probe (passive collection assembly)
3. Chain of Custody (COC) form

B. Sampler and Sample Media Receipt Activities

1. Check parts and components to ensure none is damaged.
2. Ensure all fittings are present and in good condition.
3. Prior to sampling keep all sampling system components in a clean area free of contamination.

[1] For technical assistance, please contact Xi (Doris) Chen, chen.xi@epa.gov, 919-541-4957

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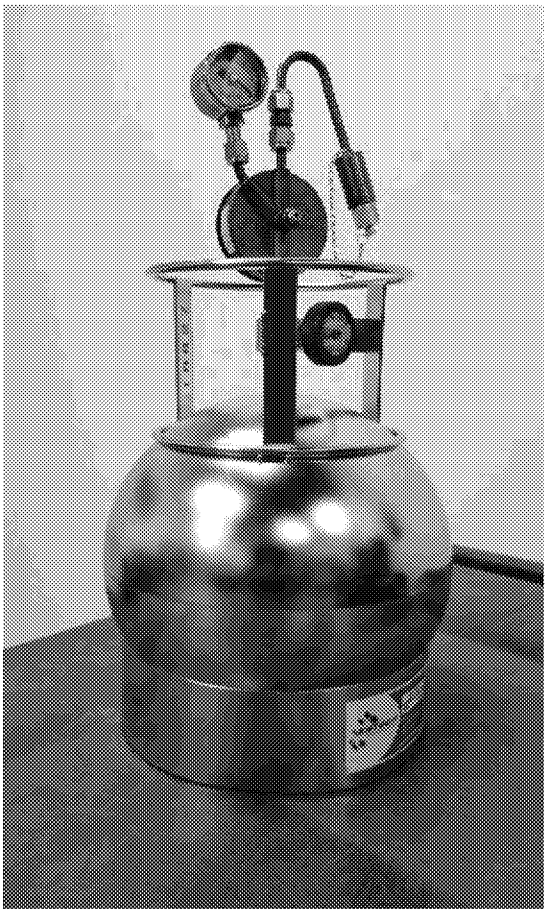
4. Ensure the canister is not damaged. Confirm that the valve remained in the closed position during transport and that the top plug is secured on the bellows valve inlet fitting.

C. Preparing for a Sampling Event

1. Prepare sample paperwork (See Figure 1.2). On the COC, supply all required information in the "Lab Pre-Sampling" section. Record any pertinent observations in the "Comments" section at the bottom of the form.
2. Remove the plug attached to the bellows valve inlet. Retain the plug in a clean place so that it can be used to reseal the bellows valve inlet after the sampling event.
3. Assemble the complete sampling system. (See Figure 1.1)
   a. Attach the outlet fitting of the Veriflow vacuum controller to the canister bellows valve inlet fitting. *Note: Do not over tighten the fitting nut. When the fitting nut feels snug by hand, another quarter turn should be sufficient to secure the controller inlet to the canister.*
   b. Ensure that the plug at the inlet of the Veriflow remains tight in order to perform a leak check. Perform a leak check by opening and then immediately closing the canister valve. Observe the vacuum reading on the Veriflow gauge. If the vacuum changes by more than 1 in Hg over 5 minutes, ensure that all fittings are tight. To assemble another sampling system using another canister, repeat steps 2 and 3.



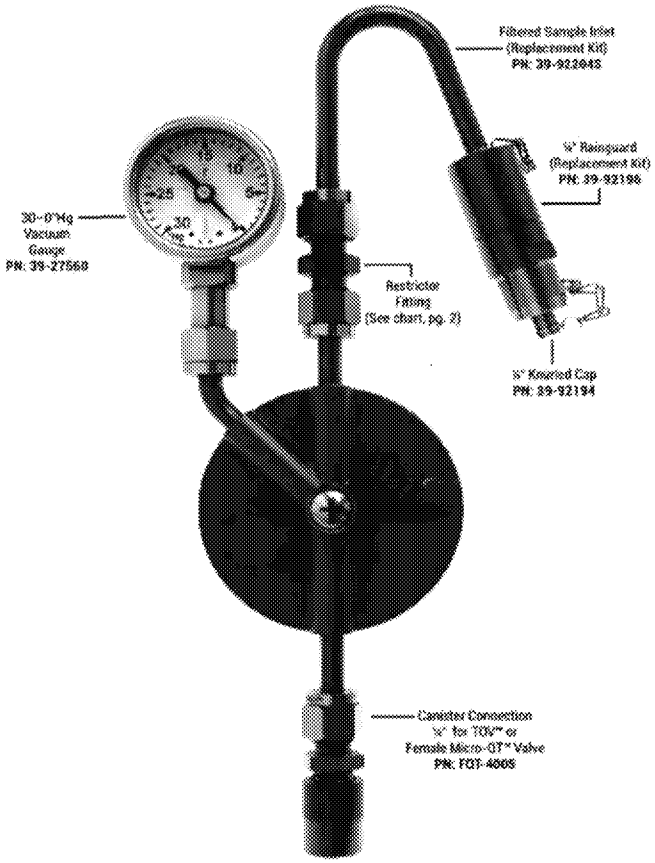


Figure 1.1 SUMMA Canister and Flow Controller

D. Sampling and Data Collection

1. Record the initial collection start time and date in "Setup Date:" in the "Field Setup" section on the COC form. Fully open the canister bellows valve. Observe and record the pressure (i.e., "Hg vacuum) indicated on the gauge.
2. After 24 hours, read the gauge and record the remaining pressure left in the can on the COC and record the reading in the "Field Recovery", "Field Final Can. Press. ("Hg)" blank. If the pressure is zero, note the lack of pressure in the "Comments" section of the form.
3. Close the canister bellows valve fully.
4. Disconnect the canister from Veriflow vacuum controller by unfastening the Veriflow outlet fitting from the canister bellows valve inlet fitting.
5. Replace and secure the retained plug on the canister bellows valve.
6. On the COC, supply all required information in the "Field Recovery" section. Be sure to record any observations that were made during the run period in the "Comments:" section.

AIR TOXICS SAMPLE CHAIN OF CUSTODY

Lab Pre-Sampling

Site Code: _____ Canister Number: _____

City/State: _____ Lab Initial Can. Press. (°Hg): _____

AQS Code: _____ Cleaning Batch # : _____

Collection Date: _____ Date Can. Cleaned: _____

Options:

SNMOC (Y/N): _____ Duplicate Event (Y/N): _____

TOXICS (Y/N): _____ Duplicate Can # : _____

METHANE (Y/N): _____

Relinquished by: _____ Date: _____

Field Setup

Received by: _____ Date: _____

Operator: _____ MFC Setting: _____

System #: _____ Elapsed Timer Reset (Y/N): _____

Setup Date: _____ Canister Valve Opened (Y/N): _____

Field Initial Can. Press.: _____ psig psia °Hg (Circle one)

Field Recovery

Recovery Date: _____ Sample Duration (3 or 24 hr): _____

Operator: _____ Elapsed Time: _____

Field Final Can. Press.: _____ psig psia °Hg (Circle one)

Status: VALID VOID (Circle one) Canister Valve Closed (Y/N): _____

Relinquished by: _____ Date: _____

Lab Recovery

Received by: _____ Date: _____

Lab Final Can. Press.: _____ psig °Hg (Circle one) Converted to psia: _____

Status: VALID VOID (Circle one) Gauge: 1 2 (Circle one)

If void, why: _____

Samples stored in Air Tox Lab (Room 130)

Comments: _____

White: Sample Traveler Canary: Lab Copy Pink: Field Copy

Figure 1.2. Example Chain of Custody/Field Data Sheet

2. Technical Note on Ethylene Oxide analysis by EPA TO-15 Method

Ethylene oxide (EtO) is an emerging pollutant that is quantified using the existing EPA TO-15[2] method with some modifications. The National Air Toxics Trends Sites Technical Assistance Document (NATTS TAD) also has updated guidance for conducting the TO-15 method which EPA has used to enhance the method overall[3]. The typical method setup scans for selected fragment ions (also known as selected ion monitoring mode or SIM) instead of a full spectrum scan in order to increase the analytical sensitivity and efficiency. However, SIM introduces uncertainties and limitations due to decreased collected full scan spectra information. Using SIM, another compound with common fragment ions (primary and secondary) and similar retention time windows as the target compound could be an interferant to the target compound, biasing quantitation results.

The EPA contract laboratory used to research the analysis of ethylene oxide using TO-15 has confirmed that trans-2-butene co-elutes with EtO, creating an interference. The monitoring ions the contract laboratory selected for EtO before October 2018 were 15, 29 and 43; EtO was quantitated based on ion 29. Upon discovery of the interferant, the contract laboratory modified their analytical method to include additional unique confirmatory fragment ions to aid the identification and quantification processes. The modified method is scanning for ions 15, 29, 44, and 41 as well as ion unique to trans-2-butene (ion 56). For quantitation, the most intense ion 29 from EtO is used as the base quantitation peak (ions 15 and 44 as qualifying ions). Although the second most abundant ion (44) is in EtO and absent from trans-2-butene, the lower sensitivity and variable background issues (e.g., carbon dioxide) associated with ion 44 make it less desirable for quantitation of EtO. The contract laboratory has analyzed standards that include EtO and the interferant trans-2-butene and is able to accurately identify and quantitate each compound using the modified method.

See Figures 2.1 and 2.2 for example chromatograms and spectra for samples analyzed by the modified method (scanning for ions, 15, 29, 44, 41 and 56) illustrating a sample with and without the presence of trans-2-butene, respectively.

In Figure 2.1, a prepared standard including the mixture of trans-2-butene and EtO at 0.25ppbv (individual concentration) was analyzed by SIM scanning for ions 15, 29, 44 as well as 41 and 56. At the target retention time window for EtO and trans-2-butene, the sample spectrum captured strong signals for ions 15, 29 and 44 as well as ions 41 and 56, which indicates and confirms the presence of trans-2-butene. In addition, the chromatograms for ions 41 and 56 were further examined to confirm that the first peak is correctly identified as trans-2-butene, and the second peak detected at 12.466 minutes is determined to be EtO and quantitated as such (determined concentration circled in figure as 0.24ppbv).

In Figure 2.2, an ambient sample collected at Willowbrook Village Hall on 19th November, 2018 was analyzed by SIM scanning for ions 15, 29, 44 as well as 41 and 56. At the target retention time window for EtO and trans-2-butene (established by standards), the sample spectrum captured strong signals for ions 15, 29 and 44 but minimal to no signal for ions 41 and 56, which indicates the absence of trans-2-butene. Also, by comparing to the EtO reference spectrum recorded from an EtO standard analyzed by the contract laboratory, the relative ratios of the sample for ions 15,

[2]https://www.epa.gov/sites/production/files/2015-07/documents/epa-to-15_0.pdf
[3]https://www3.epa.gov/ttn/amtic/files/ambient/airtox/NATTS%20TAD%20Revision%203_FINAL%20October%20 2016.pdf

29 and 44 match closely with the established reference ratios. Coupled with the retention time window, the peak detected at 12.395 minutes is determined to be solely EtO and quantitated as such (determined concentration circled in figure as 3.38ppbv).

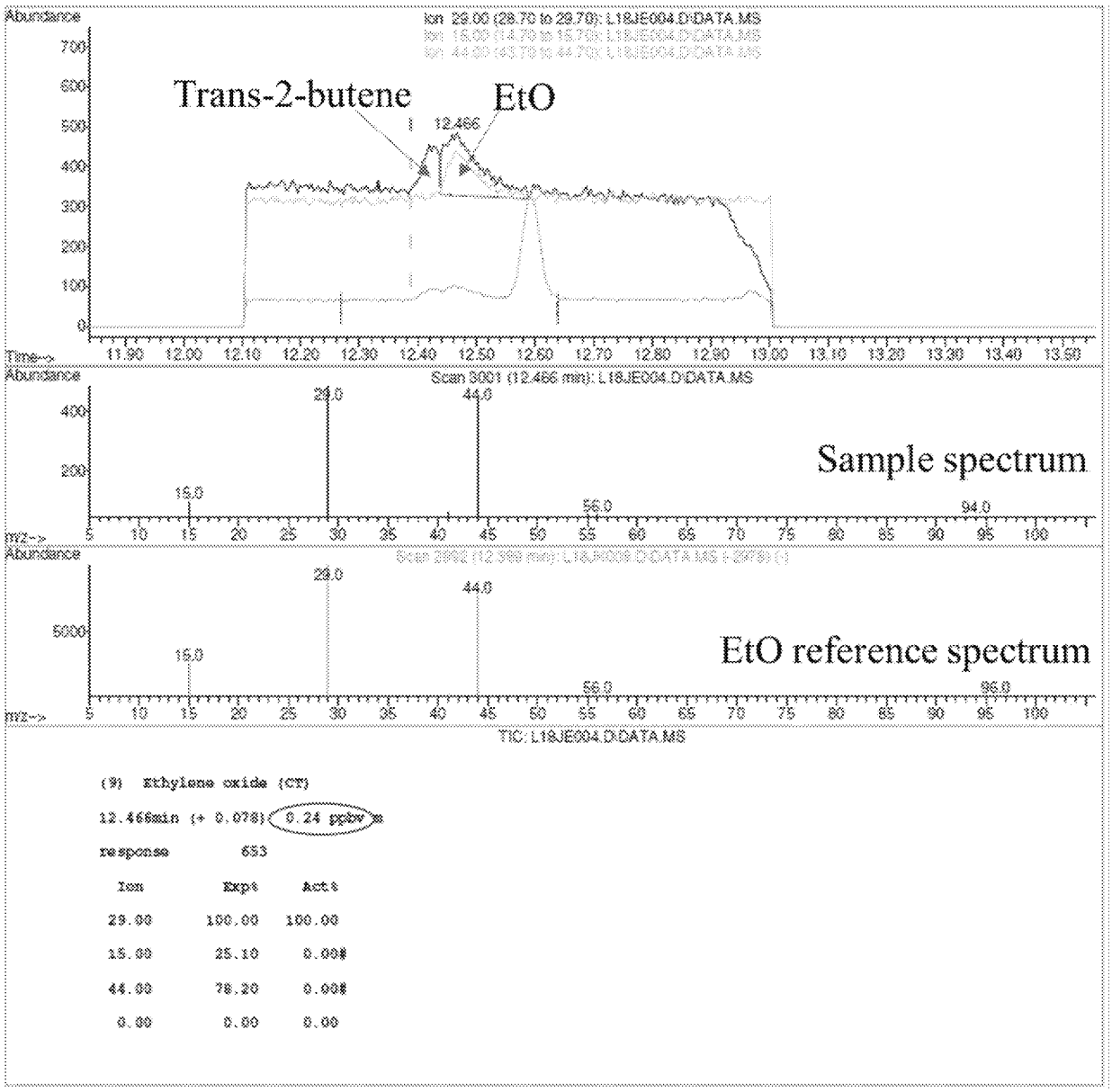


Figure 2.1. Example chromatogram and spectrum for a mixture standard (including both trans-2-butene and EtO) analyzed for EtO by the modified TO-15 method.

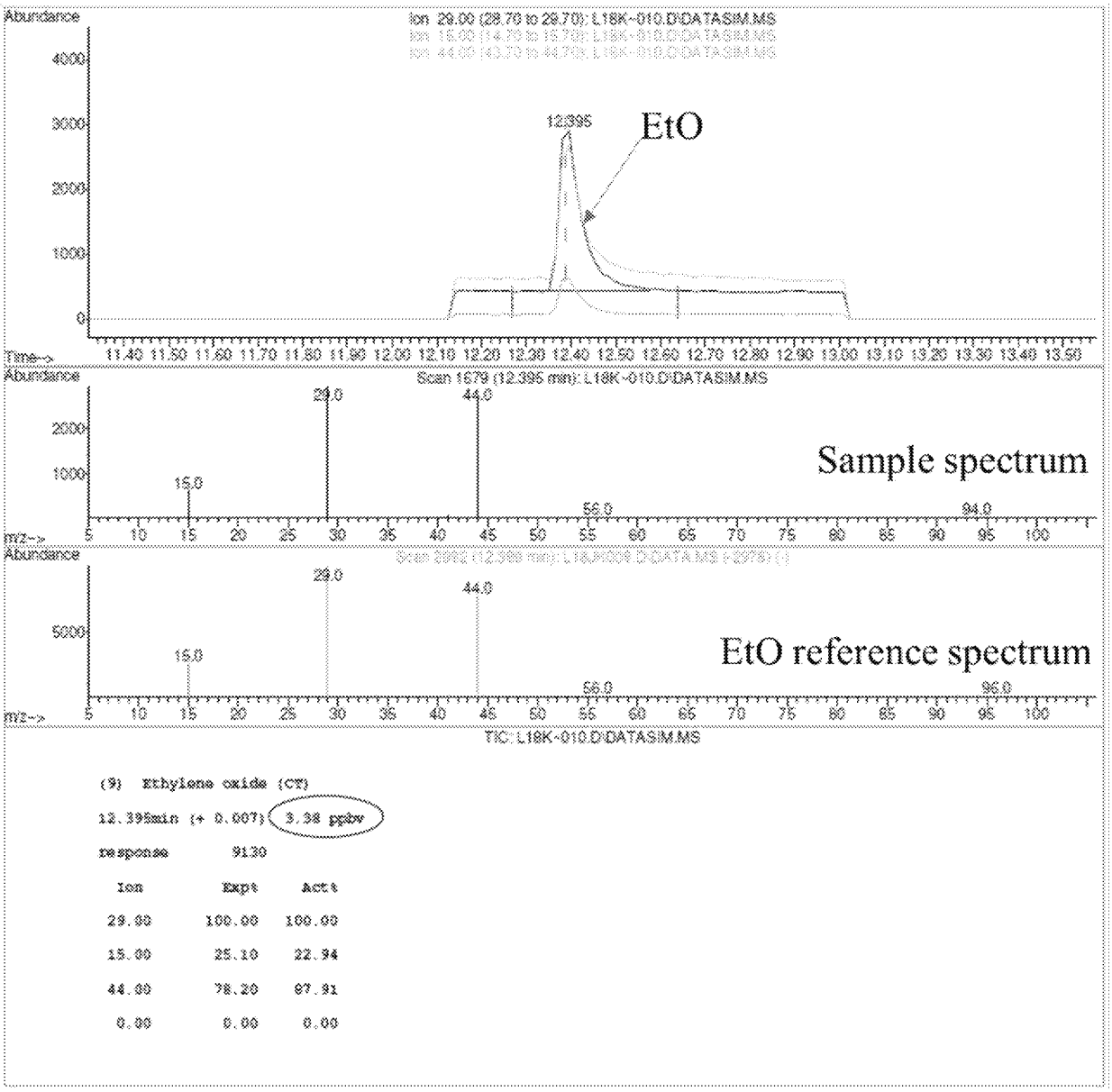


Figure 2.2. Example chromatogram and spectrum for a sample (collected at Willowbrook Village Hall on November 19th, 2018) analyzed for EtO by the modified TO-15 method.

3. Quality Control and Data Validation Requirements for Ethylene Oxide Sampling and TO-15 Analysis

Calibration and Calibration Check Frequency Requirements for Standards and Critical Instruments

Instrument or Standard	Area of Use	Required Calibration Check [a] Frequency and Tolerance	Required Calibration [b] Frequency
Balances	Laboratory – Weighing standard materials, calibration of pipettes, determining mass loss for microwave metals digestion, weighing PAHs sorbent resin (XAD-2)	Each day of use with certified calibration check weights bracketing the balance load; Must be within manufacturer-specified tolerance covering the range of use	Initially, annually, and when calibration checks demonstrate an out of tolerance condition
Certified Weights	Laboratory – Calibration verification of balances	Check not required.	Annual certification by accredited metrology laboratory; Must be within manufacturer-specified tolerance
Mechanical Pipettes	Laboratory – Dispensing liquid volumes	Minimally quarterly, recommended monthly, by weighing delivered volumes of deionized water bracketing those dispensed; Must be within manufacturer-specified tolerance covering the range of use	Initially and when calibration checks demonstrate an out of tolerance condition
Bottletop Dispensers	Laboratory – Dispensing critical liquid volumes	Each day of use by delivery into a To Contain (TC) graduated cylinder Must be within ± 5%	When delivery volumes are set and when calibration checks fail criteria
Thermometers – Laboratory	Laboratory – Temperature monitoring of water baths, metals digestion, refrigerated storage units, canister cleaning ovens, and water for pipette calibration	Check not required.	Annual at temperature range of use or at not-to-exceed temperature – Correction factors applied to match certified standard
Thermometers – Meteorological	Field – Recording environmental conditions during sample collection	Minimally quarterly, monthly recommended Must be within ± 0.5°C of certified standard at working temperature	Initially and when calibration checks indicate readings out of tolerance
Barometers	Field – Recording environmental conditions during sample collection Laboratory – Recording environmental conditions during instrument calibration	Minimally quarterly, monthly recommended Must be within ± 10 mm Hg of certified standard at typical barometric pressure	Initially and when calibration checks indicate readings out of tolerance
Flow Transfer Standards	Field – Critical flow orifices and volumetric flow meters for calibrating and verifying sampling unit flows	Check not required.	Annual; Must be within manufacturer-specified tolerance and cover the range of use

Instrument or Standard	Area of Use	Required Calibration Check [a] Frequency and Tolerance	Required Calibration [b] Frequency
	Built-in thermometers and barometers must be calibrated		
Pressure Gauges or Transducers	Field and Laboratory – Measure canister pressure/vacuum before and after collection, measure final canister vacuum following cleaning	Annual. Must be within 0.5 psi or manufacturer-specified tolerance and cover the range of use	Initially and when calibration checks show out of tolerance. Must cover the range of use
Flow Controllers and Meters – Laboratory	Laboratory – Mass flow controllers (MFCs), flow rotameters, or similar devices for measuring/metering gas flow rates for critical measurements (standard gas mixing)	Minimally quarterly, monthly recommended Flow within ± 2% of certified standards	Initially and when calibration checks demonstrate flows are out of tolerance
VOCs Sampling Units	Field – Collection of VOCs in canisters Flow control (such as MFC) Pressure gauge/transducer	If performed, minimally quarterly, for flow control, annually for pressure gauge/transducer Flow control (check is optional) within ±10% of certified flow If needed for critical measurements (canister starting/ending pressure), pressure gauge/transducer within ± 0.5 pounds per square inch (psi) of certified standard	Flow control - Initially and when components affecting flow are adjusted or replaced, or when calibration checks demonstrate flows are out of tolerance Pressure gauges/transducers – initially and when calibration checks demonstrate flows are out of tolerance
GC/MS for VOCs analysis	Laboratory – Analysis of VOCs from stainless steel canisters	Refer to Table 4.2-3	Initially, following failed continuing calibration verification (CCV) check, following failed bromofluorobenzene (BFB) tune check, or when changes/maintenance to the instrument affect calibration response

Summary of Quality Control Parameters for NATTS VOCs Analysis

Parameter	Description and Details	Required Frequency	Acceptance Criteria
Instrument Blank (IB)	Analysis of swept carrier gas through the pre concentrator to demonstrate the instrument is sufficiently clean to begin analysis	Prior to ICAL and daily beginning CCV	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower
BFB Tune Check	50 ng injection of BFB for tune verification of quadrupole MS detector	Prior to initial calibration and every 24 hours of analysis thereafter	Abundance criteria listed in Table 4.2-2
Initial Calibration (ICAL)	Analysis of a minimum of five calibration levels covering approximately 0.1 to 5 ppb	Initially, following failed BFB tune check, failed CCV, or when changes/maintenance to the instrument affect calibration response	Average RRF ≤ 30% RSD and each calibration level must be within ± 30% of nominal For quadratic or linear curves, r ≥ 0.995, each calibration level must be within ± 30% of nominal
Secondary Source Calibration Verification (SSCV)	Analysis of a secondary source standard at the mid-range of the calibration curve to verify ICAL accuracy	Immediately after each ICAL	Recovery within ± 30% of nominal or RRF within ±30% of the mean ICAL RRF
Continuing Calibration Verification (CCV)	Analysis of a known standard at the mid-range of the calibration curve to verify ongoing instrument calibration	Following each daily BFB tune check and every 24 hours of analysis; recommended after each ten sample injections and to conclude each sequence	Recovery within ± 30% of nominal or RRF within ±30% of the mean ICAL RRF
Canister Cleaning Batch Blank	A canister selected for analysis from a given batch of clean canisters to ensure acceptable background levels in the batch of cleaned canisters	One canister from each batch of cleaned canisters – Canister chosen must represent no more than 10 total canisters.	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower (All Tier I Core analytes must meet this criterion)
Internal Standards (IS)	Deuterated or not naturally occurring compounds co-analyzed with samples to monitor instrument response and assess matrix effects	Added to all calibration standards, QC samples, and field-collected samples	Area response for each IS compound within ± 40% of the average response of the ICAL
Pre concentrator Leak Check	Pressurizing or evacuating the canister connection to verify as leak-free	Each standard and sample canister connected to the instrument	< 0.2 psi change/minute or manufacturer recommendations
Method Blank (MB)	Canister filled with clean diluent gas	One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower
Laboratory Control Sample (LCS)	Canister spiked with known amount of target analyte at approximately the lower third of the calibration curve	(Recommended) One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's recovery must be 70 to 130% of its nominal spiked amount
Duplicate Sample	Field sample collected through the same inlet probe as the primary sample	10% of primary samples for sites performing duplicate sample collection (as prescribed in workplan)	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL

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Parameter	Description and Details	Required Frequency	Acceptance Criteria
Collocated Sample	Field sample collected through a separate inlet probe from the primary sample	10% of primary samples for sites performing collocated sample collection (as prescribed in workplan)	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL
Replicate Analysis	Replicate analysis of a field-collected sample (chosen by analyst)	Once with every analysis sequence (as prescribed in workplan)	Precision ≤ 25% RPD for target VOCs with concentrations ≥ 5x MDL
Retention Time (RT)	RT of each target compound and internal standard	All qualitatively identified compounds and internal standards	Target VOCs within ± 0.06 RRT units of mean ICAL RRT IS compounds within ± 0.33 minutes of the mean ICAL RT

VOCs via EPA Compendium Method TO-15 – Frequencies and Acceptance Criteria

The following table is a distillation of the general quality control guidance and requirements in Section 3 and the individual methods described in Section 4 of the NATTS Technical Assistance Document. More information on each data validation parameter can be located within the text identified in the reference column. Each parameter is assigned a category of importance. The categories in order of decreasing importance are:

1. Critical – Criteria must be met for reported results to be valid – Samples for which these criteria are not met are invalidated.
2. MQO – Required NATTS Measurement Quality Objective which must be attained – Failure to meet these criteria does not necessarily invalidate data,but may compromise data and result in exclusion from trends analysis.
3. Operational – Failure to meet criteria does not invalidate reported results; the results are compromised and on a case-by-case basis may require qualification – refer to Section 3.3.1.3.15 for the list of AQS qualifiers
4. Practical – Failure to meet criteria does not invalidate reported results; results may be compromised but do not require qualification.

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
		Field Readiness Checks and Collection Activities		
Canister Cleaning Batch Blank	Minimally one canister selected for analysis from a given batch of clean canisters to ensure acceptable background levels in the batch of cleaned canisters - must represent no more than 10 canisters	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower	Section 4.2.6.2.4 TO-15 Section 8.4.1.6	Critical
Canister Viability	All canisters	Canister must be used within 30 days from final evacuation	Section 4.2.6.2 TO-15 Section 1.3	Operational
Sampling Unit Clock/Timer Check	Verified with each sample collection event	Clock/timer accurate to ±5 minute of reference for digital timers, ±15 minutes for mechanical timers, set to local standard time Sample collection period verified to be midnight to midnight	Section 4.2.5.3 and Table 3.3-1	Operational
Canister Starting Pressure Determination	Each canister prior to collection of a field sample or preparation of a calibration standard or laboratory QC sample	Vacuum > 28" Hg as determined with calibrated pressure gauge or transducer	Section 4.2.5.2.1	Critical
Sample Setup Leak Check	Each canister prior to collection - draw vacuum on canister connection	Leak rate must be < 0.2 psi over 5 minutes	Section 4.2.5.2.1	Critical

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Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Sampling Frequency	One sample every six days according to the EPA National Monitoring Schedule	Sample must be valid or a make-up sample should be scheduled (refer to Section 2.1.2.1)	Section 4.2.5.3	Critical and MQO
Sampling Period	All field-collected samples	1380-1500 minutes (24 ± 1 hr) starting and ending at midnight	Section 4.2.5.3	Critical and MQO
Pre-Sample Collection Purge	Each sampling event	Minimum of ten air changes just prior to sample collection	Section 4.2.5.4	Practical
Field-collected Sample Final Pressure	All field-collected samples	Must be determined with a calibrated pressure gauge or transducer per agency quality system specification	Section 4.2.5.2.4	Operational
Sample Receipt				
Chain-of-custody	All field-collected samples including field QC samples	Each canister must be uniquely identified and accompanied by a valid and legible COC with complete sample documentation	Sections 3.3.1.3.7 and 4.2.5.2.4	Critical
Sample Holding Time	All field-collected samples, laboratory QC samples, and standards	Analysis within 30 days of end of collection (field-collected samples) or preparation (QC samples or standards)	Section 4.2.1 TO-15 Sections 1.3, 2.3, and 9.2.8.1	Operational
Canister Receipt Pressure Check	All field-collected samples upon receipt at the laboratory – measured with calibrated pressure gauge or transducer	Pressure change of ≤ 0.5 psi from the final pressure at retrieval	Section 4.2.8	Critical for subambient sample collection, operational for pressurized sample collection
GC/MS Analysis				
Instrument Blank (IB)	Analysis of swept carrier gas through the preconcentrator to demonstrate the instrument is sufficiently clean prior to analysis of ICAL or daily beginning CCV	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower	Section 4.2.10.5.2.2	Operational
BFB Tune Check	50 ng injection of BFB for tune verification of MS detector analyzed prior to initial calibration and every 24 hours of analysis thereafter (for quadrupole MS only)	Must meet abundance criteria listed in Table 4.2-2	Section 4.2.10.5.1 TO-15 Section 10.4.2	Critical

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
GC/MS Multi-Point Initial Calibration (ICAL)	Analysis of a minimum of five calibration levels covering approximately 0.1 to 5 ppb Initially and minimally every three months thereafter, following failed BFB tune check, failed CCV, or when changes to the instrument affect calibration response	Average RRF ≤ 30% RSD and each calibration level must be within ± 30% of nominal For linear regression (with either a linear or quadratic fit), r ≥ 0.995 and each calibration level must be within ± 30% of nominal	Section 4.2.10.5.2.2 TO-15 Section 10.5.5.1	Critical
Secondary Source Calibration Verification (SSCV)	Analysis of a secondary source standard at the mid-range of the calibration curve to verify ICAL accuracy immediately after each ICAL	Recovery within ± 30% of nominal	Section 4.2.10.5.2.3	Critical
Continuing Calibration Verification (CCV)	Analysis of a known standard at the mid-range of the calibration curve to verify ongoing instrument calibration; following each daily BFB tune check and at the conclusion of each analytical sequence	Each target VOC must recover within 70-130% of the nominal spiked amount or the RRF must be within 30% of the mean ICAL RRF	Section 4.2.10.5.2.4 TO-15 Section 10.6.5	Critical
Internal Standards (IS)	Deuterated or non-naturally occurring compounds co-analyzed with all calibration standards, laboratory QC samples, and field-collected samples so as to monitor instrument response and assess matrix effects	Area response for each IS compound within ± 40% of the average response of the ICAL	Section 4.2.10.5.4 TO-15 Section 10.7.5	Critical
Preconcentrator Leak Check	Pressurizing or evacuating each canister connection to the preconcentrator to verify as leak-free prior to analysis	< 0.2 psi change/minute or manufacturer specifications	Section 4.2.10.5.2.1	Operational
Method Blank (MB)	Canister filled with clean humidified diluent gas (gas employed for dilution of standards and /or samples) One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower	Section 4.2.10.4.3 TO-15 Section 10.7.5	Operational
Laboratory Control Sample (LCS)	Canister spiked with known amount of target analyte at approximately the lower third of the calibration curve *Recommended:* One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's recovery must be 70 to 130% of its nominal spiked amount	Section 4.2.10.5.2.5	Operational
Retention Time (RT)	RT of each target compound and internal standard for all qualitatively identified compounds and internal standards	Each target VOC's RRT must be within ± 0.06 RRT units of its mean ICAL RRT Each IS RT must be within ± 0.33 minutes of its mean ICAL RT	Sections 4.2.10.5.2.2 and 4.2.10.5.4 TO-15 Sections 10.5.5.2, 10.5.5.3, and 10.5.5.4	Critical

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Compound Identification	Qualitative identification of each target VOC in each standard, blank, QC sample, and field-collected sample (including field QC samples)	Signal-to-noise ≥ 3:1 RT within prescribed window Ion abundances of at least one qualifier ion within 30% of ICAL mean Peak apexes co-maximized (within one scan for quadrupole MS) for quantitation and qualifier ions	Section 4.2.10.5.3	Critical
Replicate Analysis	A single additional analysis of a field-collected canister Once with every analysis sequence (as prescribed in workplan)	Precision ≤ 25% RPD for target VOCs with concentrations ≥ 5x MDL	Section 4.2.10.5.2.5 TO-15 Section 11.1.1	Operational
Duplicate Sample	Field sample collected through the same inlet probe as the primary sample 10% of primary samples for sites performing duplicate sample collection (as prescribed in workplan)	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL	Sections 4.2.4; 4.2.4.1	Operational
Collocated Sample	Field sample collected through a separate inlet probe as the primary sample 10% of primary samples for sites performing duplicate sample collection (as prescribed in workplan	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL	Sections 4.2.4 and 4.2.4.1	Operational

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Laboratory Readiness and Proficiency				
Method Detection Limit	Determined initially and minimally annually thereafter and when method changes alter instrument sensitivity	MDL determined via 4.1 must be: Acrolein ≤ 0.09 µg/m^3 Benzene ≤ 0.13 µg/m^3 1,3-Butadiene ≤ 0.10 µg/m^3 Carbon Tetrachloride ≤ 0.017 µg/m^3 Chloroform ≤ 0.50 µg/m^3 Tetrachloroethylene ≤ 0.17 µg/m^3 Trichloroethylene ≤ 0.20 µg/m^3 Vinyl Chloride ≤ 0.11 µg/m^3 These MDL MQOs current as of October 2015. Refer to current workplan template for up-to-date MQOs.	Sections 4.1 and 4.2.7	MQO
Stock Standard Gases	Purchased stock standard gases for each target VOC All standards	Certified and accompanied by certificate of analysis Recertified or replaced annually unless a longer expiration is specified by the supplier	Section 4.2.10.3.1	Critical
Proficiency Testing	Blind sample submitted to each laboratory to evaluate laboratory bias Two per calendar year[1]	Each target compound within ± 25% of the assigned target value Failure of one PT must prompt corrective action. Failure of two consecutive PTs (for a specific core analyte) must prompt qualification of the analyte in field collected samples until return to conformance.	Section 2.1.4.1	Operational and MQO
Canister and Sampling Unit Testing and Maintenance				
Canister Leak Test	Testing of the leak tightness of each canister in the agency fleet Annually, may be performed simultaneously with canister zero air check	Leak rate must be ≤ 0.1 psi/day	Section 4.2.6.1.1.1	Operational

ED_002475A_00000026-00016

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Canister Zero Check	Verification that a canister does not contribute to positive bias over an approximate 30-day period *Strongly Recommended:* Each canister in the agency fleet once annually (or as defined by agency policy) or after major maintenance such as replacement of valve	All Tier I core target compounds must be < 0.2 ppb or < 3x MDL, whichever is lower	Section 4.2.6.1.1.1 TO-15 Section 8.4.3	Operational
Canister Known Standard Gas Check	Verification that a canister does not contribute to bias over an approximate 30-day period *Strongly Recommended:* Each canister in the agency fleet once annually (or as defined by agency policy) or after major maintenance such as replacement of valve	All Tier I core target compounds must be within ± 30% of nominal	Section 4.2.6.1.1.2	Operational
Sampling Unit Flow Calibration	Calibration of sampling unit flow controller Initially and when calibration checks demonstrate flows are out of tolerance, or when components affecting flow are adjusted or replaced	Flow set to match the certified flow primary or transfer standard	Table 3.3-1 TO-15 Section 8.3.5	Practical
Sampling Unit Non-biasing Certification	Verification that the sampling unit does not contribute to bias Prior to field deployment and annually thereafter, or when flow path components are repaired or replaced Sampling units must be subject to a Zero Check and Known Standard Challenge	Zero Check – All Tier I core target analytes < 0.2 ppb or < 3x MDL, whichever is lower Known Standard Challenge – All Tier I core target analytes within ±15% of the reference sample	Section 4.2.5.5	Operational
Sampling Unit Flow Calibration Check or Audit	Verification of sampling unit flow rate Minimally quarterly, monthly recommended	Flow within ±10% of certified primary or transfer standard flow and design flow	Table 3.3-1	Practical
Site Specifications and Maintenance				
Sampling Unit Siting	Verify conformance to requirements Annually	270° unobstructed probe inlet Inlet 2-15 meters above-ground level ≥ 10 meters from drip line of nearest tree Collocated sampling inlets spaced within 4 meters of primary sampling unit inlet	Section 2.4	Operational

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Sample Probe and Inlet	Sample probe and inlet materials composition Annually	Chromatographic grade stainless steel or borosilicate glass	Section 4.2.3.2	Operational
Sample Inlet Filter	Particulate filter maintenance Minimally annually	Clean or replace the 2-µm sintered stainless steel filter	Section 4.2.3.3 TO-15 Section 7.1.1.5	Operational
Sampling Inlet and Inlet Line Cleaning	Sample inlet and inlet line cleaning or replacement Minimally annually - More often in areas with high airborne particulate levels	Cleaned with distilled water or replaced	Section 4.2.3.1	Operational

Message

From: Davis, Alison [Davis.Alison@epa.gov]
Sent: 10/11/2019 1:07:59 PM
To: Bremer, Kristen [Bremer.Kristen@epa.gov]; Caparoso, Jennifer [Caparoso.Jennifer@epa.gov]; Chen, Xi [Chen.Xi@epa.gov]; Cozzie, David [Cozzie.David@epa.gov]; Hollingsworth, Terri [Hollingsworth.Terri@epa.gov]; Jones, Rhea [Jones.Rhea@epa.gov]; Koerber, Mike [Koerber.Mike@epa.gov]; Lassiter, Penny [Lassiter.Penny@epa.gov]; McBrian, Jenia [McBrian.Jenia@epa.gov]; Mckelvey, Laura [Mckelvey.Laura@epa.gov]; Noah, Greg [Noah.Greg@epa.gov]; Noonan, Jenny [Noonan.Jenny@epa.gov]; Rimer, Kelly [Rimer.Kelly@epa.gov]; Rodman, Sonja [Rodman.Sonja@epa.gov]; Sasser, Erika [Sasser.Erika@epa.gov]; Shappley, Ned [Shappley.Ned@epa.gov]; Shine, Brenda [Shine.Brenda@epa.gov]; Smith, Darcie [Smith.Darcie@epa.gov]; Strum, Madeleine [Strum.Madeleine@epa.gov]; Terry, Sara [Terry.Sara@epa.gov]; Thurman, James [Thurman.James@epa.gov]; Weinstock, Lewis [Weinstock.Lewis@epa.gov]; Wilson, Holly [Wilson.Holly@epa.gov]; Witt, Jon [Witt.Jon@epa.gov]
Subject: AJC.com: Georgia EPD doubted ethylene oxide cancer risks. Other states acted.

Sorry for the weird spacing. Go to the link if you want to avoid it!

https://www.ajc.com/news/state--regional-govt--politics/georgia-epd-doubted-ethylene-oxide-cancer-risks-other-states-acted/jIPP6icwlOUajphQ1hOt7O/

AJC DIGGING DEEPER: AIR QUALITY

1 hour ago

By

- Johnny Edwards
- J. Scott Trubey, **The Atlanta Journal-Constitution**

EPD kept quiet about toxic gas emissions, resisted air testing. Colorado, Illinois, Michigan leapt to reassure residents.

When Colorado environmental regulators received a federal report that warned of potential cancer risks in communities near Denver in August 2018, they alerted the public and the media and vowed to find out what residents were breathing.

Two days after the information became public, the state started air testing for ethylene oxide, the cancer-causing compound used by a medical sterilization company that the federal Environmental Protection Agency identified as the culprit of the possible health threat. Within a month, Colorado officials had persuaded the company to enact new pollution controls, and a second round of air tests in October, after the upgrades, showed a dramatic reduction in concentrations of the toxic gas.

By October, the Illinois attorney general had sued a suburban Chicago company to curb emissions, and a month later Michigan started testing the air around one of its ethylene oxide emitters.

When confronted with the EPA's National Air Toxics Assessment (NATA) at exactly the same time as Colorado, Illinois and Michigan, Georgia regulators decided not to publicize the EPA's report and rejected as unreliable the idea of air testing, according to an Atlanta Journal-Constitution review of more than 22,000 emails and other documents.

The Georgia Environmental Protection Division also kept the NATA report from then-Gov. Nathan Deal and incoming Gov. Brian Kemp, according to interviews with state officials, despite state law that says the agency has a duty to counsel the governor on environmental concerns affecting the state.

By the time Colorado had convinced its medical sterilization plant to enact pollution controls, records show, Georgia was still three months away from even meeting with the operators of two metro Atlanta sterilizers that were also emitting potentially dangerous levels of the cancer-causing gas according to the EPA's 2018 assessment.

After site visits at the plants at the end of 2018, Georgia EPD waited for months for the two plants to produce data so that the state could conduct its own analysis using mathematical modeling, which Georgia only completed in June.

Photo: The Atlanta Journal-Constitution

The AJC's review of Georgia's response to the ethylene oxide crisis also found that state regulators appeared to miss the big picture — that the federal EPA now considered the risk of ethylene oxide exposure to be many times greater than before and that the public deserved to know. The agency's narrow thinking and slow response contributed to a public panic in July when online health care publications broke the news about the potential health threat, the AJC found.

Once the risk became public, Georgia reversed course and committed to air testing around the plants. Gov. Kemp quickly secured pledges of enhanced pollution controls at both of the ethylene oxide emitters in metro Atlanta — Sterigenics near Smyrna in Cobb County and Becton Dickinson (BD) in Covington.

But those actions came a year after those taken in Colorado and Illinois, and eight months after proactive measures in Michigan, all states that EPA flagged for ethylene oxide risks.

"I feel betrayed," said Smyrna homeowner Jenni Shover, who took part in a protest this summer holding up a sign that read, "Hell hath no fury like a woman poisoned."

"They made a conscious decision not to tell the public," Shover said. "There is no trust with them."

At town halls in Marietta and Covington in August, Georgia regulators apologized to the public and presented new modeling that showed risks from ethylene oxide, or EtO, were less acute, confined to the immediate vicinity of the plants and not in surrounding neighborhoods. They also announced that both plants would invest millions to upgrade their emissions controls.
But many residents aren't buying it.

"We need independent testing to get the facts," Jason McCarthy, who leads a Covington-area chapter of the group called Stop EtO, said at one town hall. "We need independent testing to repair the trust that was broken."

Photo: The Atlanta Journal-Constitution
Georgia EPD Director Richard Dunn and other officials stand by their handling of the ethylene oxide controversy. They said they thought from the outset that the 2018 report from EPA grossly overstated ethylene oxide dangers, a view shared by many EtO emitters, and required a deeper ground-level assessment.

"The driver of our thinking was this is a screening tool, and we need further study," Dunn said. "That was the sole driver."

Kemp spokeswoman Candice Broce said EPD will be more forthcoming with the public in the future. The NATA report has been online since 2018, but with EPD being "a very scientific branch of government," they didn't recognize a need for public relations, she said.

"It wasn't that they didn't take any action, it's that they didn't publicize it in a way people would have expected," Broce said. "And they've changed that practice. They're moving forward, trying to be as clear as possible with press releases and public hearings, to be transparent and get tough questions from the community."

Failure to communicate

The state had plenty of time to craft a regulatory and communications response, the AJC found.

In summer 2017, Georgia regulators got an early peek at the EPA's findings, which suggested two Atlanta-area plants might be emitting harmful levels of ethylene oxide, an invisible, odorless gas that had been reclassified as a carcinogen in the final days of the Obama administration. Federal officials told states not to share its "draft results" with anyone outside of their agencies.

A Georgia modeling and data manager at the time reviewed the preliminary findings and sent an email to an EPA air quality official, saying she didn't understand "strange hot spots" in Newton and Cobb counties. The EPA official responded that the risk factor for ethylene oxide "went up by about a factor of 60."

The exchange triggered some internal discussion within EPD, but no deeper investigation.

In the final NATA report, the areas of risk shifted slightly. But neighborhoods around the Sterigenics and BD plants remained on the list of ethylene oxide hot spots.

EPA distributed talking points to state agencies, including Georgia EPD, but opted against issuing a press release.

Karen Hays, the director of the Georgia EPD's air protection branch, said she did not recall agency leaders having any discussions about informing the public.

"As far as communication, trying to communicate something that is this complicated is really challenging for us because there is a lot of information that is quite frankly contradictory," she said. "To take what's in the NATA and spread it out to the public without doing a detailed evaluation of what's really happening, to me, is just not appropriate."

Photo: SIPA USA VIA AP IMAGES

Colorado: 'reassure the public'

Colorado, Illinois and Michigan had no such qualms about releasing information, the AJC found.

Colorado regulators issued a press release the same day the federal report was made public, Aug. 22, 2018, linking to EPA's website and describing the state's plans for dealing with the Denver-area plant, Terumo BCT.

"Measuring actual exposures, rather than computer-modeled exposure as in the EPA analysis, will provide a more accurate picture of whether there is a potential health risk," the press release from the Colorado Department of Public Health and Environment said.

The announcement said that even though Terumo BCT was in compliance with state and federal pollution control requirements, and even though the state's own cancer registry showed no elevation in cases near the plant, the first round of air sampling would be done within a month.

Testing started two days later — lasting seven days with samples taken from four sites around the plant. The results backed up what the federal report's modeling showed — air concentrations that well exceeded the EPA's cancer danger threshold.

"We knew that once (NATA) went out, people were going to see it, and we would get questions on it," said Gordon Pierce, a program manager in the Colorado's air pollution control division. "So if we didn't have answers or have work ongoing to try and get answers, we would be called to task on it."

Pierce said his department could have relied on computer modeling alone to evaluate the cancer risks, the approach taken in Georgia, but that might not have satisfied people living nearby.

Colorado tested the air again for seven days in October 2018, after Terumo BCT installed new pollution controls. This time samples were taken at eight points, including as far as a mile away. The tests found a 2- to 5-fold reduction in cancer risk, although it remained above the EPA's acceptable range for ethylene oxide. Pierce said he's waiting for guidance from EPA on what to do next.

"It was to reassure the public," Pierce said. "It was also to make sure that what we were being told by the company matched."

After an open house to explain the testing results to residents, publicity subsided and the state had the issue behind them by Christmas.

Excluding staff time, the air sampling cost Colorado $23,000, according to a department spokeswoman.

Photo: The Atlanta Journal-Constitution

Illinois, Michigan also act

In the Chicago suburb of Willowbrook, federal scientists were so alarmed by emissions modeling at a Sterigenics facility that the agency conducted its own air sampling, months before the the NATA report's publication. EPA also called in a specialized division of the Atlanta-based Centers for Disease Control and Prevention to assess the results.

Based on preliminary modeling and air testing, the CDC specialists said ethylene oxide in the air posed "a public health hazard to these populations."

The NATA report and the Willowbrook air tests were released together in August 2018, triggering organized protests and a series of angry public meetings. Illinois state lawmakers enacted new pollution controls. By October, the state attorney general and DuPage County sued Sterigenics to curb emissions.

After the Village of Willowbrook conducted its own air tests in February, which showed high levels of the gas, the state temporarily closed the plant until it could meet strict new standards. Last month, Sterigenics announced the plant will not reopen.

"We're going to be done up here by the time you guys get started (air testing)," Willowbrook Mayor Frank Trilla told the AJC last month. "By the time you get done, they're going to have shutters on their doors."

Georgia's air quality regulators watched the Willowbrook controversy unfold, swapping news stories about heated public meetings and sharing the federal air testing report, emails show. That still didn't spur anyone to craft a communications strategy.

Photo: MARK BLACK / FOR THE AJC

The records show EPD officials taking a skeptical view of Illinois' enforcement efforts. A risk assessment program manager downplayed the air testing, writing in an email that "my concern … is the assumption that a casual relationship can be easily drawn between chronic exposure to (ethylene oxide) air emissions and elevated cancers in the population surrounding a facility under routine monitoring."

Observing the Willowbrook controversy from across Lake Michigan, however, the Michigan Department of Environment, Great Lakes and Energy wanted no such firestorm on its watch.

Three months after NATA posted, Michigan conducted air tests around its most problematic plant, Viant Medical in Grand Rapids. The plant had already been on the department's radar because of high cancer rates in the surrounding community.

But with outrage building in Willowbrook, Michigan went forward with a press release in January, announcing Michigan had issued Viant Medical a violation notice for failing to control its ethylene oxide emissions, according to Chris Ethridge, a field operations manager for the Michigan's air quality division.

"We had measurements that were of concern, so we felt compelled to notify the community," Ethridge said. "I think it's kind of a matter of ethics."

A second round of air testing in March found emissions levels still above state standards. The company has announced that it will halt its sterilizing operations at the plant by the end of the year, characterizing it as a business decision. Under a proposed consent order, the company faces a $110,000 fine for its emissions.

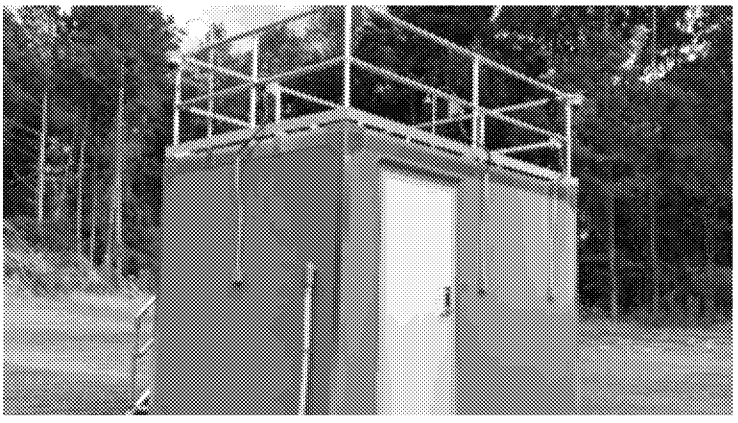

Photo: The Atlanta Journal-Constitution

Air testing dismissed

EPD defended computer modeling as being more scientifically sound than air testing, but experts told the AJC modeling should be buttressed by testing data around emission sources.

Modeling analyzes companies' self-reported emissions, building and smokestack dimensions, and years of meteorological data to estimate where gases go and plot areas of potential exposure.

Monitoring samples the air to determine what compounds are present and in what amounts. There are drawbacks: it can take months and may not pinpoint the exact sources of a chemical.

But air testing can be used to check whether the modeling and self-reported company data match the physical conditions in the air.

"It's good to verify your model with observations," said Jennifer Kaiser, a Georgia Tech assistant professor in environmental engineering and atmospheric sciences. "Testing is sort of ground truth."

The federal EPA says air testing has discovered ethylene oxide in higher concentrations than expected and in places where scientists hadn't forecasted.

Industry groups contend air sampling fails to take into account background levels of ethylene oxide produced by vehicle emissions and other natural sources. They also say the EPA's risk level for the compound is too strict, lower in fact than what is naturally made within the human body.

Photo: The Atlanta Journal-Constitution

Georgia EPD echoed some of those arguments, saying in an interview that early test results in Illinois were invalidated because other chemicals collected by sampling canisters skewed the data.

Dika Kuoh, Georgia's assistant air protection branch chief, said the science of ethylene oxide air testing hadn't been perfected when EPA published the NATA report in August 2018. Federal regulators released air testing guidance only a few months ago.

"Modeling is always the first tool that's used in these situations because it is the one that gives you the quickest result," Kuoh said. "You go monitoring, you are just measuring the air, and you could be measuring all kinds of things that are not the facility or related to the facility."

Photo: The Atlanta Journal-Constitution

Public outrage when the health risks became known, however, forced EPD to rethink this position two months ago, agreeing to conduct long-term testing near both plants.

"I will say this, from my perspective, the monitoring is due to demands from the community," EPD Director Dunn said. "It's less so from a scientific perspective."

Shover, who protested Sterigenics in August, has been living near the plant for nearly two decades. She says Georgia already squandered its chance to find out what the two plants were pumping out before they knew they were under scrutiny. With every ache, pain and itch, she said she worries about cancer.

"We will never have that data — never," Shover said. "And that is unforgivable."

Staff Writer Meris Lutz contributed to this story.

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Facilities using ethylene oxide in Georgia

Sterigenics, Smyrna

Sterilization Services of Georgia, South Fulton

BD (Becton, Dickinson and Company), Madison

BD (Becton, Dickinson and Company), Covington

Kendall Patient Recovery, Augusta

Stepan, Winder

Anewmed, Tucker
Innovative Chemical Technologies, Cartersville
Source: Georgia Environmental Protection Division

Timeline of ethylene oxide regulation

December 2016: Ethylene oxide, or EtO, a gas used to sterilize medical equipment, is reclassified as a known carcinogen by EPA.
June 2017: EPA shares preliminary results of its National Air Toxics Assessment (NATA) report with states, including Georgia.
August 2017: Georgia EPD officials note "hot spots" near Georgia medical sterilization plants, including Sterigenics in Cobb and BD in Newton counties.
August 2018: EPA releases its NATA report indicating three Georgia census tracts near Sterigenics and BD that use EtO have the potential for high cancer risk; EPA and Georgia EPD do not publicize the findings.
June 14, 2019: Georgia starts first round of ambient air testing in South DeKalb County, miles from any known EtO source to get a fix on background levels. The reading is 15 times higher than what is deemed acceptable by federal regulators, while later tests find no detectable EtO.
July 19, 2019: NATA data publicized in Georgia by WebMd/Georgia Health News.
August 7, 2019: Georgia EPD enters into a consent order with sterilizer Sterigenics to improve emissions controls at its plant near Smyrna.
Early September: GHD, an international environmental consulting firm working for Smyrna, Cobb County and Atlanta, takes air samples near Sterigenics while plant operations are suspended. The tests find no detectable EtO in most samples, but one sample reading is 395 times above the federal threshold.
Late September and early October 2019: EPD installs monitors to test the air near Sterigenics and BD.
Source: Georgia Environmental Protection documents and AJC analysis.

Message

From: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
Sent: 5/6/2019 2:26:20 PM
To: hilary@sonomatech.com [Hilary@sonomatech.com]
CC: Chen, Xi [Chen.Xi@epa.gov]
Subject: RE: Ethylene oxide question
Attachments: EtO Ambient Sampling for Toolbox - Mar 2019.pdf

Hi Hilary:

Our technical expert is Doris (Xi) Chen who manages the air toxics program, having taken over from Dave Shelow. I'd be happy to talk with you as well. EtO can be a very challenging measurement.

I'm including a document that Doris developed that is a good EtO primer.

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

From: Hilary Hafner <Hilary@sonomatech.com>
Sent: Friday, May 03, 2019 11:44 AM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Subject: Ethylene oxide question

Hi Lew,
I hear you are on a special assignment regarding EtO. I am sorry I didn't get a chance to see you when I was last out at EPA. We are getting inquiries about making ambient measurements of EtO and I was wondering if you had some information to dive into or some contacts I could talk to about current thinking on the best methods for collecting and analyzing EtO. Happy to chat as well. any help you could give me would be greatly appreciated! Thanks,

Hilary

Hilary R. Hafner
Chief Operating Officer
Meteorology, Measurements, and Outreach
Division Manager
Sonoma Technology, Inc.
1450 N. McDowell Blvd., Suite 200
Petaluma, CA 94954
707.665.9900
sonomatech.com

Message

From: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
Sent: 9/23/2019 8:06:52 PM
To: Chen, Xi [Chen.Xi@epa.gov]
Subject: FW: Level IV data package
Attachments: L488088_package_1.pdf; ATT00001.txt

Please review and let me know what you find. Thanks!

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

-----Original Message-----
From: Cipriano, Renee <RCipriano@schiffhardin.com>
Sent: Monday, September 23, 2019 3:23 PM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Subject: Level IV data package

Attached. Thank you again Renee

This message and any attachments may contain confidential information protected by the attorney-client or other privilege.
If you believe that it has been sent to you in error, please reply to the sender that you received the message in error. Then delete it. Thank you.

Excuse Typos

Sent from my iPhone

SGS Galson Data Package

Client : GHD Services Inc.
Project : 11183332
SDG : L488088

Data package for samples received:
08/06/19

SGS GALSON

Mr. Ben Chandler
GHD Services Inc.
11719 Hinson Road
Suite 100
Little Rock, AR 72212

August 26, 2019

Account# 29016

Login# L488088

Dear Ben Chandler:

Enclosed are the analytical results for the samples received by our laboratory on August 06, 2019. All samples on the chain of custody were received in good condition unless otherwise noted. Any additional observations will be noted on the chain of custody.

Please contact client services at (888) 432-5227 if you would like any additional information regarding this report. Thank you for using SGS Galson.

Sincerely,

SGS Galson

Lisa Swab

Lisa Swab
Laboratory Director

Enclosure(s)

COMMENT ANNEX

This report revision is being issued to include a footnote for increased LOQ for sample AIR-11183332-157.

Please note that this revision cancels and supersedes L488088 (report reference:1) dated August 13, 2019 issued by SGS Galson.

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- Unless otherwise noted within the report, all quality control results associated with the samples were within established control limits or did not impact reported results.

- Note: The findings recorded within this report were drawn from analysis of the sample(s) provided to the laboratory by the Client (or a third party acting at the Client's direction). The laboratory does not have control over the sampling process, including but not limited to the use of field equipment and collection media, as well as the sampling duration, collection volume or any other collection parameter used by the Client. The findings herein constitute no warranty of the sample's representativeness of any sampled environment, and strictly relate to the samples as they were presented to the laboratory. For recommended sampling collection parameters, please refer to the Sampling and Analysis Guide at www.sgsgalson.com.

- Unrounded results are carried through the calculations that yield the final result and the final result is rounded to the number of significant figures appropriate to the accuracy of the analytical method. Please note that results appearing in the columns preceding the final result column may have been rounded and therefore, if carried through the calculations, may not yield an identical final result to the one reported.

- The stated LOQs for each analyte represent the demonstrated LOQ concentrations prior to correction for desorption efficiency (if applicable).

- Unless otherwise noted within the report, results have not been blank corrected for any field blank or method blank data.

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National/International	Accreditation/Recognition	Lab ID#	Program/Sector
AIHA-LAP, LLC - IHLAP, ELLAP, EMLAP	ISO/IEC 17025 and USEPA NLLAP	Lab ID 100324	Industrial Hygiene, Environmental Lead, Environmental Microbiology

State	Accreditation/Recognition	Lab ID#	Program/Sector
New York (NYSDOH)	ELAP and NELAC (TNI)	Lab ID: 11626	Air Analysis, Solid and Hazardous Waste
New Jersey (NJDEP)	NELAC (TNI)	Lab ID: NY024	Air Analysis
Louisiana (LDEQ)	LELAP	Lab ID: 04083	Air Analysis, Solid Chemical Materials
Texas	Texas Dept. of Licensing and Regulation	Lab ID: 1042	Mold Analysis Laboratory license

Legend

< - Less than	mg - Milligrams	MDL - Method Detection Limit	ppb - Parts per Billion
> - Greater than	ug - Micrograms	NA - Not Applicable	ppm - Parts per Million
l - Liters	m3 - Cubic Meters	NS - Not Specified	ppbv - ppb Volume
LOQ - Limit of Quantitation	kg - Kilograms	ND - Not Detected	ppmv - ppm Volume
ft2 - Square Feet	cm2 - Square Centimeters	in2 - Square Inches	ng - Nanograms

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : VILLAGE OF WILLOWBROOK
Project No. : 11183332
Date Sampled : 02-AUG-19 - 04-AUG-19
Date Received : 06-AUG-19

Account No.: 29016
Login No. : L488088
Date Analyzed : 08-AUG-19 - 09-AUG-19
Report ID : 1151984

Ethylene Oxide

Galson ID:			L488088-1		L488088-2		L488088-3	
Client ID:			AIR-11183332-150		AIR-11183332-151		AIR-11183332-152	
	LOQ ppbv	LOQ ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3
Ethylene oxide	0.040	0.072	0.091	0.16	<0.040	<0.072	0.073	0.13

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Supervisor: SAP
Collection Media : 6L Canister
Approved by : SAP
Submitted by : BLD
Date : 26-AUG-19

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : VILLAGE OF WILLOWBROOK
Project No. : 11183332
Date Sampled : 02-AUG-19 - 04-AUG-19
Date Received : 06-AUG-19

Account No.: 29016
Login No. : L488088

Date Analyzed : 08-AUG-19 - 09-AUG-19
Report ID : 1151984

Ethylene Oxide

Galson ID:			L488088-4		L488088-5		L488088-6	
Client ID:			AIR-11183332-153		AIR-11183332-154		AIR-11183332-155	
	LOQ ppbv	LOQ ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3
Ethylene oxide	0.040	0.072	5.0	8.9	<0.040	<0.072	0.11	0.19

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Supervisor: SAP
Collection Media : 6L Canister
Approved by : SAP
Submitted by : BLD
Date : 26-AUG-19

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : VILLAGE OF WILLOWBROOK
Project No. : 11183332
Date Sampled : 02-AUG-19 - 04-AUG-19
Date Received : 06-AUG-19

Account No.: 29016
Login No. : L488088

Date Analyzed : 08-AUG-19 - 09-AUG-19
Report ID : 1151984

Ethylene Oxide

Galson ID:			L488088-7		L488088-8		L488088-9	
Client ID:			AIR-11183332-156		AIR-11183332-157		AIR-11183332-158	
	LOQ ppbv	LOQ ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3
Ethylene oxide	0.040	0.072	<0.040	<0.072	<0.052	<0.094	<0.040	<0.072

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Supervisor: SAP
Collection Media : 6L Canister
Approved by : SAP
Submitted by : BLD
Date : 26-AUG-19

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : VILLAGE OF WILLOWBROOK
Project No. : 11183332
Date Sampled : 02-AUG-19 - 04-AUG-19
Date Received : 06-AUG-19

Account No.: 29016
Login No. : L488088

Date Analyzed : 08-AUG-19 - 09-AUG-19
Report ID : 1151984

Ethylene Oxide

Galson ID:			L488088-10		L488088-11		L488088-12	
Client ID:			AIR-11183332-159		AIR-11183332-160		AIR-11183332-161	
	LOQ ppbv	LOQ ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3
Ethylene oxide	0.040	0.072	0.10	0.19	<0.040	<0.072	<0.040	<0.072

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Supervisor: SAP
Collection Media : 6L Canister
Approved by : SAP
Submitted by : BLD
Date : 26-AUG-19

LABORATORY FOOTNOTE REPORT

GALSON

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client Name : GHD Services Inc.
Site : VILLAGE OF WILLOWBROOK
Project No. : 11183332

Date Sampled : 02-AUG-19 - 04-AUG-19 Account No.: 29016
Date Received: 06-AUG-19 Login No. : L488088
Date Analyzed: 08-AUG-19 - 09-AUG-19

L488088 (Report ID: 1151984):
SOPs: in-vocs(36)

L488088-6 (Report ID: 1151984):
Sample canister was received at/near ambient pressure.

L488088-8 (Report ID: 1151984):
Elevated detection limits due to low sample volume received.
Sample was pressurized with zero grade nitrogen prior to analysis.

L488088 (Report ID: 1151984):
Accuracy and mean recovery data presented below is based on a 95% confidence interval (k=2). The estimated accuracy applies to the media, technology, and SOP referenced in this report and does not account for the uncertainty associated with the sampling process. The accuracy is based solely on spike recovery data from internal quality control samples. Where N/A appears below, insufficient data is available to provide statistical accuracy and mean recovery values for the associated analyte.

Parameter	Accuracy	Mean Recovery
Ethylene oxide	+/-34.6%	103%

SGS GALSON

GC/MS Incoming Canister Log

Login: L488088

Date: 06-AUG-19

Recorded by: Bethany DiCaprio

Sample #	Can Id	Incoming Pressure	Prep Number	Scan date	Scan user
L488088-1	WL210	-3.8	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-2	WL211	-2.82	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-3	WL027	-2.28	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-4	WL084	-5.35	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-5	WL216	-4.27	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-6	WL279	-.09	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-7	WL004	-3.1	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-8	WL221	-10.77	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-9	WL290	-3.19	PSY539881	06-AUG-19	Bethany DiCaprio
L488088-10	WL295	-2.55	PSY539881	06-AUG-19	Bethany DiCaprio
L488088-11	WL274	-3.85	PSY539881	06-AUG-19	Bethany DiCaprio
L488088-12	WL158	-4.39	PSY539881	06-AUG-19	Bethany DiCaprio

491552811727
Date:08/06/19
Shipper:FEDEX
Initials:BCF
Prep:UNKNOWN
1188088

CART

491552811738
Date:08/06/19
Shipper:FEDEX
Initials:BCF
Prep:UNKNOWN

GALSON F CUSTODY

	(surcharge)
☑ Standard	0%
☐ 4 Business Days	35%
☐ 3 Business Days	50%
☐ 2 Business Days	75%
☐ Next Day by 6pm	100%
☐ Next Day by Noon	150%
☐ Same Day	200%

☑ Samples submitted using the FreePumpLoan™ Program

☐ Samples submitted using the FreeSamplingBadges™ Program

Client Acct No.: 29016

Original Prep No.: PSY539122

CS Rep: BHONEYCUTT

Online COC No.: 187524

Report To: Mr. Ben Chandler
Company Name: GHD Services Inc.
Address 1: 11719 Hinson Road
Address 2: Suite 100
City, State Zip: Little Rock, AR 72212
Phone No.: 501 - 366 - 3999
Cell No.:
Email reports to: benjamin.chandler@ghd.com, dyron.hamlin@ghd.com
Email EDD to: benjamin.chandler@ghd.com, dyron.hamlin@ghd.com
Comments:

Invoice To: ACCOUNTS PAYABLE
Company Name: GHD Services Inc.
Address 1: 2055 Niagara Falls Blvd
Address 2: Suite 3
City, State Zip: Niagara Falls, NY 14304
Phone No.:
Email Address: APinvoices-340@ghd.com
Comments:
P.O. No.:
Payment info.: ☐ I will call SGS Galson to provide credit card info
☐ Card on File (enter the last five digits on the line below)

Comments:
Ambient Air Samples - Ethylene Oxide Report Results in ug/m3 and ppb

State Sampled: Illinois

Please indicate which OEL(s) this data will be used for:
☐ OSHA PEL ☐ ACGIH TLV ☐ MSHA ☐ Cal OSHA
☐ IAQ: _____ Specify Limit(s) ☐ Other: _____ Specify Other

Site Name: VILLAGE OF WILLOWBROOK | Project: 11183332 | Sampled By: Daniel Showalter | List description of industry or Process/interferences present in sampling area:

Sample ID (Maximum of 20 Characters)	Date Sampled	Collection Medium	Sample Volume Sample Time Sample Area	Liters Minutes in², cm², ft²	Analysis Requested	Method Reference ^	Hexavalent Chromium Process (e.g., welding, plating, painting, etc.)
AIR-11183332-150	8/2/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-151	8/2/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	

☐ ^ If the method(s) indicated on the COC are not our routine/preferred method(s), we will substitute our routine/preferred methods. If this is not acceptable, check here to have us contact you.

Chain of Custody	Print Name / Signature		Date	Time		Print Name / Signature		Date	Time
Relinquished By:	Daniel Showalter	SIGNED ELECTRONICALLY	8/5/2019	13:56	Received By:	Bill Fischer	Bill Fischer	06 Aug 19	1033
Relinquished By:					Received By:				

Samples received after 3pm will be considered as next day's business.

Online COC No.: 187524
Prep No.: PSY539122
Account No.: 29016
Finalized: 8/5/2019 2:57:07 PM

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via: http://www.sgs.com/en/Terms-and-Conditions.aspx

SGS North America, Inc. | 6601 Kirkville Road E. Syracuse, NY 13057, USA t +1 888 432 5227 | +1 315 432 5227 www.galsonlabs.com | www.sgs.com

Member of the SGS Group (SGS SA)

SGS GALSON CHAIN OF CUSTODY

Comments :

Sample ID (Maximum of 20 Characters)	Date Sampled	Collection Medium	Sample Volume Sample Time Sample Area	Liters Minutes in², cm², ft²	Analysis Requested	Method Reference ^	Hexavalent Chromium Process (e.g., welding, plating, painting, etc.)
AIR-11183332-152	8/2/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-153	8/2/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-154	8/3/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-155	8/3/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-156	8/3/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-157	8/3/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-158	8/4/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-159	8/4/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	

☐ ^ If the method(s) indicated on the COC are not our routine/preferred method(s), we will substitute our routine/preferred methods. If this is not acceptable, check here to have us contact you.

Chain of Custody	Print Name / Signature		Date	Time		Print Name / Signature		Date	Time
Relinquished By :	Daniel Showalter	SIGNED ELECTRONICALLY	8/5/2019	13:56	Received By :	Bill Fischer	Bill Fischer	06Aug19	1033
Relinquished By :					Received By :				

Samples received after 3pm will be considered as next day's business.

Online COC No. : 187524
Prep No. : PSY539122
Account No. : 29016
Finalized : 8/5/2019 2:57:07 PM

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SGS GALSON CHAIN OF CUSTODY

Comments :

Sample ID (Maximum of 20 Characters)	Date Sampled	Collection Medium	Sample Volume Sample Time Sample Area	Liters Minutes in², cm², ft²	Analysis Requested	Method Reference ^	Hexavalent Chromium Process (e.g., welding, plating, painting, etc.)
AIR-11183332-160	8/4/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	
AIR-11183332-161	8/4/2019	6-L Canister	6	L	Ethylene Oxide	mod. OSHA PV2120/mod. EPA TO15; GC/MS	

☐ ^ If the method(s) indicated on the COC are not our routine/preferred method(s), we will substitute our routine/preferred methods. If this is not acceptable, check here to have us contact you.

Chain of Custody	Print Name / Signature		Date	Time		Print Name / Signature		Date	Time
Relinquished By :	Daniel Showalter	SIGNED ELECTRONICALLY	8/5/2019	13:56	Received By :	Bill Fischer	Bill Fischer	06Aug19	1033
Relinquished By :					Received By :				

Samples received after 3pm will be considered as next day's business.

Online COC No. : 187524
Prep No. : PSY539122
Account No. : 29016
Finalized : 8/5/2019 2:57:07 PM

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via: http://www.sgs.com/en/Terms-and-Conditions.aspx

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Internal Chain of Custody

Login #	Client Name	Acct/Job #	VTSR	Debulk Date
L488088	GHD Services Inc.	29016	06-AUG-19	

Lab ID.	Client ID	Matrix	Storage	Sequence No.	Date/Time	Action	Tech. Name	Department
L488088-1	AIR-11183332-150	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-1	AIR-11183332-150	OPTIONS	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-2	AIR-11183332-151	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-3	AIR-11183332-152	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS

Login #	Client Name	Acct/Job #	VTSR	Debulk Date
L488088	GHD Services Inc.	29016	06-AUG-19	

Lab ID.	Client ID	Matrix	Storage	Sequence No.	Date/Time	Action	Tech. Name	Department
L488088-4	AIR-11183332-153	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-5	AIR-11183332-154	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-6	AIR-11183332-155	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-7	AIR-11183332-156	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS

Login #	Client Name	Acct/Job #	VTSR	Debulk Date
L488088	GHD Services Inc.	29016	06-AUG-19	

Lab ID.	Client ID	Matrix	Storage	Sequence No.	Date/Time	Action	Tech. Name	Department
L488088-8	AIR-11183332-157	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-9	AIR-11183332-158	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-10	AIR-11183332-159	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS
L488088-11	AIR-11183332-160	6L Caniste	Shelf 1					
				1	08/06/2019 11:19	Check Out	BCARUSO	Login
				2	08/06/2019 11:22	Check In	BCARUSO	Login
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS

Login #	Client Name	Acct/Job #	VTSR	Debulk Date
L488088	GHD Services Inc.	29016	06-AUG-19	

Lab ID.	Client ID	Matrix	Storage	Sequence No.	Date/Time	Action	Tech. Name	Department		
L488088-12	AIR-11183332-161	6L Caniste	Shelf 1							
				1	08/06/2019 11:19	Check Out	BCARUSO	Login		
				2	08/06/2019 11:22	Check In	BCARUSO	Login		
				3	08/06/2019 15:16	Check Out	BDICAPRIO	GCMS		

GCMS ANALYSIS

GHD Services Inc. Package: L488088 Project # 11183332

SGS Galson received 12 samples on August 06, 2019 for the analysis of Ethylene Oxide in whole air. The samples were assigned to SGS Galson ID: L488088. The samples were collected in pre-cleaned, evacuated canister samplers. The samples were signed-out of the sample storage area on August 06, 2019 (for screening purposes) and were stored in the GC/MS area until they were analyzed.

Sample ID	Date Sampled	Date Analyzed
L488088-1 (AIR-11183332-150)	August 02, 2019	August 08, 2019
L488088-2 (AIR-11183332-151)	August 02, 2019	August 08, 2019
L488088-3 (AIR-11183332-152)	August 02, 2019	August 08, 2019
L488088-4 (AIR-11183332-153)	August 02, 2019	August 08, 2019
L488088-5 (AIR-11183332-154)	August 03, 2019	August 08, 2019
L488088-6 (AIR-11183332-155)	August 03, 2019	August 08, 2019
L488088-7 (AIR-11183332-156)	August 03, 2019	August 09, 2019
L488088-8 (AIR-11183332-157)	August 03, 2019	August 09, 2019
L488088-9 (AIR-11183332-158)	August 04, 2019	August 09, 2019
L488088-10 (AIR-11183332-159)	August 04, 2019	August 09, 2019
L488088-11 (AIR-11183332-160)	August 04, 2019	August 09, 2019
L488088-12 (AIR-11183332-161)	August 04, 2019	August 09, 2019

Analysis Narrative

The samples were analyzed by GC/MS following modified methods mod. OSHA PV2120/mod. EPA TO15; GC/MS (SGS Galson SOP IN-VOCS).

Sample AIR-11183332-155 was received at ambient pressure.

Sample AIR-11183332-157 was received at a low pressure and was pressurized with high-purity nitrogen before analysis. This raises the LOQ by 1.3 times.

Samples AIR-11183332-150 through AIR-11183332-155 were analyzed with sequence T080819 (WG452050).

Samples AIR-11183332-156 through AIR-11183332-161 were analyzed with sequence T080919 (WG452190).

The detection limit standards (DLS-WG452050-4 and WG452190-4) were within established control limits for all compounds.

The laboratory control sample and duplicate (LCS/LCSD-WG452050-2, WG452050-3, WG452190-2, and WG452190-3) were within established control limits for all compounds.

The calibration verification standards (CCV-WG452050-6, WG452050-7, WG452050-8, WG452190-5, and WG452190-6) were within established control limits for all compounds.

The initial calibration was performed on July 30, 2019. The calibration range was 0.040 to 25 ppbv.

Summary of Quality Control Measures

●The continuing calibration verification standard (CCV) is a mid-level standard prepared from the same source as the initial calibration standards and is analyzed at the beginning and end of every post-tune 24-hour working period. The control limits response factors must fall within ±30% of the average RF for all analytes.

●The detection limit standard (DLS) is a standard prepared from the same source as the calibration standards at the concentration that is equivalent to the LOQ. The control limits are 60-140%.

● The laboratory control sample/duplicate (LCS/LCSD) is a standard prepared at the mid-level of the calibration curve, usually from a separate source than the initial calibration standards; however as we have been unable to secure a proper secondary source, due to temporary manufacturing issues, a second analyst has been preparing the LCS/LCSD to provide a secondary check standard. The LCS/LCSD recovery must be 70-130% for all analytes. The LCS/LCSD is analyzed once in every sequence.

●Analyzing an aliquot from the same minican twice at the same dilution factor constitutes a sample duplicate. The method established control limit is agreement within 25% for duplicate analyses.

●Blanks are performed using canisters filled with UHP N2 obtained from the laboratory supply.

Note: The analysis narrative only addresses those nonconformances which may potentially impact sample data. An example of an issue that would not be addressed is a potential high bias for an analyte when all samples are below the reporting level. Another example would be a relative percent difference (RPD) for a set of laboratory spikes that is outside control limits, where the related recoveries are otherwise within limits.

Sequence Name: C:\msdchem\1\sequence\2019\08\T080819.s
Comment:
Operator: BLD
Data Path: C:\MSDCHEM\1\DATA\2019\08\08\
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run	Sequence Barcode Options
(X) Full Method	(X) On Mismatch, Inject Anyway
( ) Reprocessing Only	( ) On Mismatch, Don't Inject
	( ) Barcode Disabled

Line			Sample Name/Misc Info		
1)	Pause	- IS IH686680B			
2)	Sample	13	T0808901	ETOX	BFB
3)	Sample	16	T0808902	ETOX	CCV 5.0 PPBV, IH686762A
4)	Sample	15	T0808903	ETOX	LCS 5.0 PPBV, IH686977A
5)	Sample	15	T0808904	ETOX	LCSD 5.0 PPBV, IH686977A
6)	Sample	13	T0808905	ETOX	BLANK
7)	Sample	14	T0808906	ETOX	DLS 0.040 PPBV, IH686797A
8)	Sample	13	T0808907	ETOX	BLANK
9)	Sample	11	T0808908	ETOX	[redacted] 1.4X1 L487665-2
10)	Sample	12	T0808909	ETOX	[redacted] 1.5X1 L487665-3
11)	Sample	16	T0808910	ETOX	CCV 5.0 PPBV, IH686762A
12)	Sample	13	T0808911	ETOX	GHD 1X1 L487933-1
13)	Sample	14	T0808912	ETOX	GHD 1X1 L487933-2
14)	Sample	15	T0808913	ETOX	GHD 1X1 L487933-3
15)	Sample	16	T0808914	ETOX	GHD 1X1 L487933-4
16)	Sample	17	T0808915	ETOX	GHD 1X1 L488088-1
17)	Sample	18	T0808916	ETOX	GHD 1X1 L488088-2
18)	Sample	19	T0808917	ETOX	GHD 1X1 L488088-3
19)	Sample	20	T0808918	ETOX	GHD 1X1 L488088-4
20)	Sample	21	T0808919	ETOX	GHD 1X1 L488088-5
21)	Sample	22	T0808920	ETOX	GHD 1X1 L488088-6
22)	Sample	16	T0808921	ETOX	CCV 5.0 PPBV, IH686762A

SAP 8/9/19

```
   Sequence Name: C:\msdchem\1\sequence\2019\08\T080919.s
         Comment:
        Operator: BLD
       Data Path: C:\MSDCHEM\1\DATA\2019\08\09\
Instrument Control  Pre-Seq Cmd:
Data Analysis       Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis      Post-Seq Cmd:

    Method Sections To Run      Sequence Barcode Options
    (X) Full Method             (X) On Mismatch, Inject Anyway
    ( ) Reprocessing Only       ( ) On Mismatch, Don't Inject
                                ( ) Barcode Disabled
   ----------------------------------------------------------------------
   Line                  Sample Name/Misc Info
 1)  Pause    - IS IH686680B
 2)  Sample       13  T0809901 ETOX     BFB
 3)  Sample       16  T0809902 ETOX     CCV 5.0 PPBV, IH686762A
 4)  Sample       15  T0809903 ETOX     LCS 5.0 PPBV, IH686977A
 5)  Sample       15  T0809904 ETOX     LCSD 5.0 PPBV, IH686977A
 6)  Sample       13  T0809905 ETOX     BLANK
 7)  Sample       14  T0809906 ETOX     DLS 0.040 PPBV, IH686797A
 8)  Sample       13  T0809907 ETOX     BLANK
 9)  Sample       14  T0809908 ETOX     GHD 1X1 L488088-7
10)  Sample       15  T0809909 ETOX     GHD 1.3X1 L488088-8
11)  Sample       16  T0809910 ETOX     GHD 1X1 L488088-9
12)  Sample       17  T0809911 ETOX     GHD 1X1 L488088-10
13)  Sample       18  T0809912 ETOX     GHD 1X1 L488088-11
14)  Sample       19  T0809913 ETOX     GHD 1X1 L488088-12
15)  Sample       20  T0809914 ETOX     GHD 1X1 L488220-1
16)  Sample       21  T0809915 ETOX     GHD 1X1 L488220-2
17)  Sample       22  T0809916 ETOX     GHD 1X1 L488220-3
18)  Sample       23  T0809917 ETOX     GHD 1.2X1 L488220-4
19)  Sample       16  T0809918 ETOX     CCV 5.0 PPBV, IH686762A
```

SAP 8/12/19

GC/MS
QUALITY CONTROL SUMMARY

GALSON

GC/MS QA-QC Check Report

Tune File : C:\msdchem\1\data\2019\08\08\T0808901.D
Tune Time : 08/08/19 08:55
Daily Calibration File : C:\msdchem\1\data\2019\08\08\T0808902.D
Internal Standard Areas: 422229 2282627 2035993

Sample	Client ID	File	Surr%	Acquired on	Internal Standard Responses		
WG452050-6	Continuing Verifier	T0808902	97	08/08/19 09:27	422229	2282627	2035993
WG452050-2	Lab Control Spike	T0808903	98	08/08/19 09:58	410784	2271788	1989162
WG452050-3	LCS Duplicate	T0808904	97	08/08/19 10:29	441438	2250003	2021702
WG452050-4	DLS	T0808906	97	08/08/19 11:30	412977	2246498	2012510
WG452050-1	Method Blank	T0808907	101	08/08/19 12:09	431890	2162294	1894854
WG452050-7	Continuing Verifier	T0808910	100	08/08/19 15:07	412454	2204850	1956671
L488088-1	AIR-11183332-150	T0808915	103	08/08/19 18:21	476807	2392619	1850676
L488088-2	AIR-11183332-151	T0808916	98	08/08/19 18:59	399355	2387603	1907769
L488088-3	AIR-11183332-152	T0808917	99	08/08/19 19:38	448488	2347581	1844064
L488088-4	AIR-11183332-153	T0808918	100	08/08/19 20:17	435578	2368862	1854764
L488088-5	AIR-11183332-154	T0808919	97	08/08/19 20:56	444374	2287138	1845768
L488088-6	AIR-11183332-155	T0808920	95	08/08/19 21:34	443218	2369963	1898764
WG452050-8	Continuing Verifier	T0808921	100	08/08/19 22:06	405469	2092740	1816188

* = Value outside limits Surrogate Limits = 80 - 120 Internal Standard Limits = +/- 40%

GALSON

GC/MS QA-QC Check Report

Tune File : C:\msdchem\1\data\2019\08\11\T0811901.D
Tune Time : 08/11/19 17:06
Daily Calibration File : C:\msdchem\1\data\2019\08\09\T0809902.D
Internal Standard Areas: 401790 2152228 1902589

Sample	Client ID	File	Surr%	Acquired on	Internal Standard Responses		
WG452190-5	Continuing Verifier	T0809902	99	08/09/19 09:09	401790	2152228	1902589
WG452190-2	Lab Control Spike	T0809903	100	08/09/19 09:40	426482	2177118	1899890
WG452190-3	LCS Duplicate	T0809904	97	08/09/19 10:12	413965	2118169	1881332
WG452190-4	DLS	T0809906	97	08/09/19 11:13	391449	2105490	1881453
WG452190-1	Method Blank	T0809907	99	08/09/19 11:51	388787	2007992	1785890
L488088-7	AIR-11183332-156	T0809908	97	08/09/19 14:22	376041	2112354	1834715
L488088-8	AIR-11183332-157	T0809909	99	08/09/19 15:02	396700	2859855	1852661
L488088-9	AIR-11183332-158	T0809910	95	08/09/19 15:41	395913	2202699	1837190
L488088-10	AIR-11183332-159	T0809911	95	08/09/19 16:19	412925	2212387	1798525
L488088-11	AIR-11183332-160	T0809912	95	08/09/19 16:58	398683	2161697	1823036
L488088-12	AIR-11183332-161	T0809913	99	08/09/19 17:37	392966	2680098	1761414
WG452190-6	Continuing Verifier	T0809918	102	08/09/19 20:46	367853	1973963	1719366

* = Value outside limits Surrogate Limits = 80 - 120 Internal Standard Limits = +/- 40%

SGS Galson
6601 Kirkville Rd. E. Syracuse,NY 13057

ASTD 50ppb STANDARD RECOVERY REPORT

Client : GHD Services Inc.
Account No: 29016
Login No. : L488088

Lab Sample ID		WG452050-6			WG452050-7			WG452050-8		
Type		CCV			CCV			CCV		
Spike Lot #		IH686762			IH686762			IH686762		
Instrument		MS T			MS T			MS T		
Analysis Date		Aug 08, 2019 09:27			Aug 08, 2019 15:07			Aug 08, 2019 22:06		
	Limits (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)
Ethylene oxide	70.0 to 130.	5.00	5.42	108.	5.00	5.41	108.	5.00	5.41	108.

SGS Galson
6601 Kirkville Rd. E. Syracuse,NY 13057

ASTD 50ppb STANDARD RECOVERY REPORT

Client : GHD Services Inc.
Account No: 29016
Login No. : L488088

Lab Sample ID		WG452190-5			WG452190-6					
Type		CCV			CCV					
Spike Lot #		IH686762			IH686762					
Instrument		MS T			MS T					
Analysis Date		Aug 09, 2019 09:09			Aug 09, 2019 20:46					
	Limits (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value ()	Found ()	Recovery (%)
Ethylene oxide	70.0 to 130.	5.00	5.68	114.	5.00	5.50	110.			

page 2 of 2

SGS Galson
6601 Kirkville Rd. E. Syracuse,NY 13057

ASTD 5ppb STANDARD RECOVERY REPORT

Client : GHD Services Inc.
Account No: 29016
Login No. : L488088

Lab Sample ID		WG452050-4			WG452190-4					
Type		DLS			DLS					
Spike Lot #		IH686797			IH686797					
Instrument		MS T			MS T					
Analysis Date		Aug 08, 2019 11:30			Aug 09, 2019 11:13					
	Limits (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value ()	Found ()	Recovery (%)
Ethylene oxide	60.0 to 140.	0.0400	0.0410	103.	0.0400	0.0450	113.			

SGS Galson
6601 Kirkville Rd. E. Syracuse,NY 13057

LCS/LCS DUPLICATE REPORT

Client : GHD Services Inc.
Account No: 29016
Login No. : L488088

Lab Sample ID		WG452050-2			WG452050-3				
Type		LCS			LCSD				
Spike Lot #		IH686977			IH686977				
Instrument		MS T			MS T				
Analysis Date		Aug 08, 2019 09:58			Aug 08, 2019 10:29				
	Limits (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	RPD	RPD Limits
Ethylene oxide	70.0 to 130.	5.00	4.37	87.4	5.00	3.89	77.8	11.7	-25.0 to 25.0

SGS Galson
6601 Kirkville Rd. E. Syracuse,NY 13057

LCS/LCS DUPLICATE REPORT

Client : GHD Services Inc.
Account No: 29016
Login No. : L488088

Lab Sample ID		WG452190-2			WG452190-3				
Type		LCS			LCSD				
Spike Lot #		IH686977			IH686977				
Instrument		MS T			MS T				
Analysis Date		Aug 09, 2019 09:40			Aug 09, 2019 10:12				
	Limits (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	True Value (ppbv)	Found (ppbv)	Recovery (%)	RPD	RPD Limits
Ethylene oxide	70.0 to 130.	5.00	3.68	73.5	5.00	4.41	88.3	-18.2	-25.0 to 25.0

page 2 of 2

SGS Galson
6601 Kirkville Rd. E. Syracuse, NY 13057

METHOD BLANK REPORT

Client : GHD Services Inc.
Account No : 29016
Login No. : L488088

Lab Sample ID Type Instrument Analysis Date Analysis Time	LOQ (ppbv)	WG452050-1 BLANK MS T 08/08/19 12:09 Found (ppbv)	WG452190-1 BLANK MS T 08/09/19 11:51 Found (ppbv)						
Ethylene oxide	0.040	<0.040	<0.040						

page 1 of 1

MS-FORM-165 Ver:0 Appr/Eff Date:03/23/2018 - 03/23/2018 Approved By:CPIERCE

ANALYSIS DATE: 4/23/19 INSTRUMENT ID MS-T ANALYST: BLD

	1	2	3	4	5	6	7				
Data File Names:	T0423908	T0423909	T0423910	T0423911	T0423912	T0423913	T0423914	Average	STD DEV	MDL (3.143 x STD DEV)	Comments
Internal Standards											
Bromochloromethane	207408	205591	213622	200701	205375	209658	205610		4024	12648	**Area counts**
1,4-Difluorobenzene	1320678	1316632	1316632	1316319	1337704	1187686	1317101		50912	160017	**Area counts**
Chlorobenzene-d5	1119540	1093959	1093959	1080032	1108508	1025056	1081862		30345	95375	**Area counts**
System Monitoring (SURR)											
Propylene-d6	8.99	8.62	8.91	9.13	9.28	8.17	9.04	8.88	0.37	1.17	Surr.
Bromofluorobenzene	9.91	10.14	10.26	10.11	9.88	10.84	10.01	10.16	0.33	1.03	Surr.
Target Compounds											
Ethylene Oxide	0.053	0.041	0.037	0.042	0.037	0.028	0.039	0.040	0.007	0.024	

GC/MS
SAMPLE DATA

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808915.D
Acq On : 8 Aug 2019 6:21 pm
Operator : BLD
Sample : GHD 1X1 L488088-1
Misc : L488088-1,WG452050,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 09 08:36:09 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

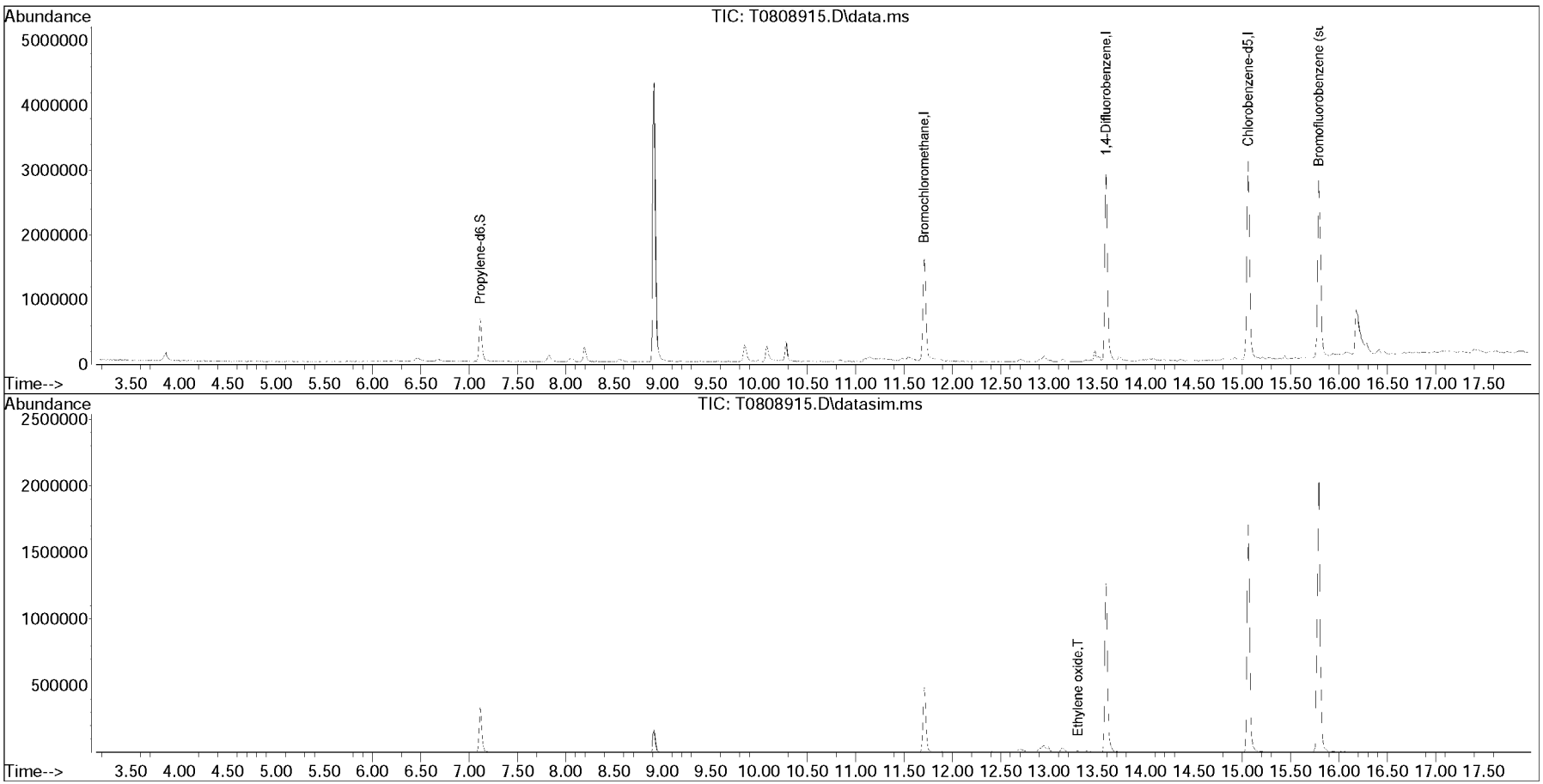
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.709	128	476807	10.00 ppbv	0.03
4) 1,4-Difluorobenzene	13.591	114	2392619	10.00 ppbv	0.00
5) Chlorobenzene-d5	15.060	117	1850676	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.114	46	405760	8.67 ppbv	-0.03
Spiked Amount 10.000	Range 80 - 120		Recovery = 86.70%		
6) Bromofluorobenzene (surr)	15.789	95	1281190	10.25 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 102.50%		
Target Compounds					Qvalue
3] Ethylene oxide	13.299	29	1992m	0.091 ppbv	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

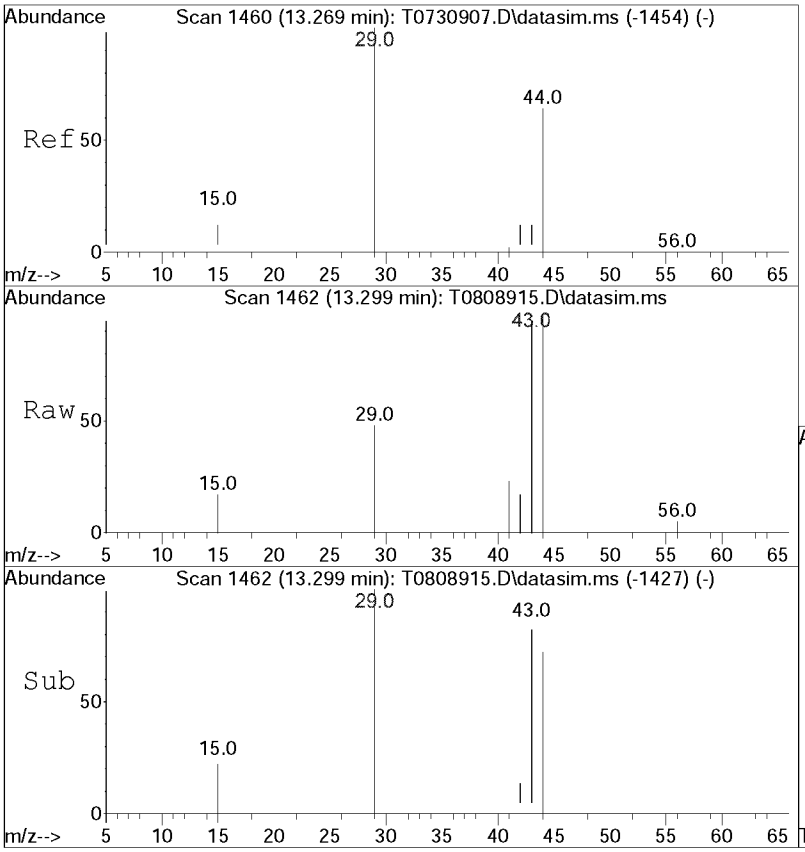
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808915.D
Acq On : 8 Aug 2019 6:21 pm
Operator : BLD
Sample : GHD 1X1 L488088-1
Misc : L488088-1,WG452050,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 09 08:36:09 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



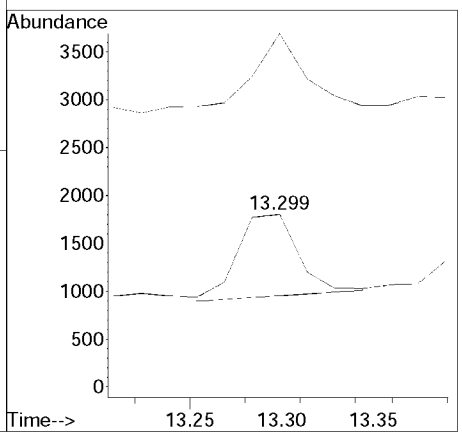
T190730E.M Tue Aug 13 10:30:18 2019 Page: 2



#3
Ethylene oxide
Concen: 0.091 ppbv m
RT: 13.299 min Scan# 1462
Delta R.T. 0.030 min
Lab File: T0808915.D
Acq: 8 Aug 2019 6:21 pm

Tgt Ion: 29 Resp: 1992

Ion	Ratio	Lower	Upper
29	100		
44	0.0	52.3	78.5#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808916.D
Acq On : 8 Aug 2019 6:59 pm
Operator : BLD
Sample : GHD 1X1 L488088-2
Misc : L488088-2,WG452050,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 09 08:36:46 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.482	128	399355	10.00 ppbv	-0.20
4) 1,4-Difluorobenzene	13.491	114	2387603	10.00 ppbv	-0.09
5) Chlorobenzene-d5	15.044	117	1907769	10.00 ppbv	#-0.02
System Monitoring Compounds					
2) Propylene-d6	7.113	46	418975	10.69 ppbv	-0.03
Spiked Amount 10.000	Range 80 - 120		Recovery = 106.90%		
6) Bromofluorobenzene (surr)	15.789	95	1258933	9.77 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.70%		

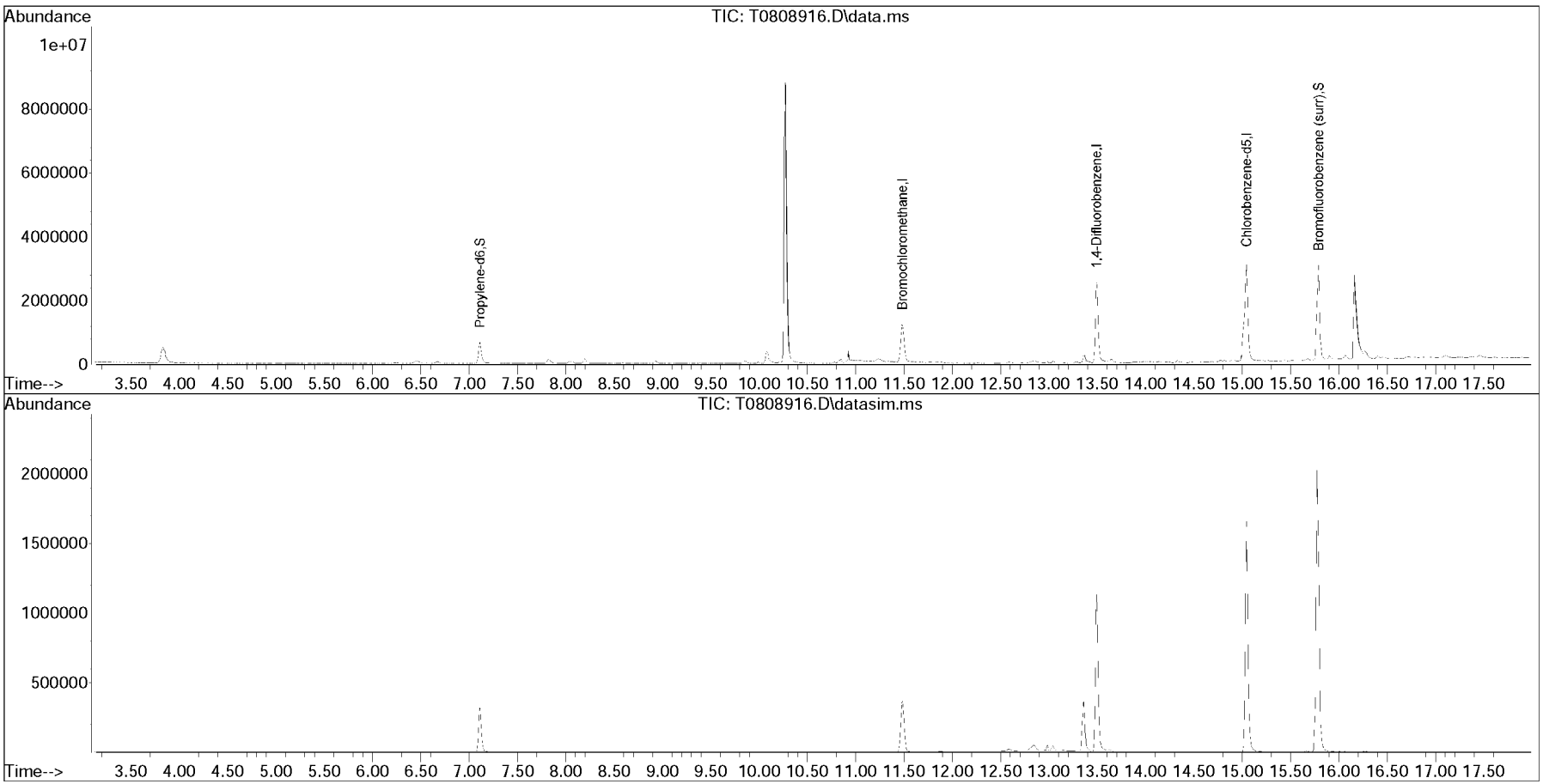
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808916.D
Acq On : 8 Aug 2019 6:59 pm
Operator : BLD
Sample : GHD 1X1 L488088-2
Misc : L488088-2,WG452050,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 09 08:36:46 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808917.D
Acq On : 8 Aug 2019 7:38 pm
Operator : BLD
Sample : GHD 1X1 L488088-3
Misc : L488088-3,WG452050,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 09 08:37:15 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

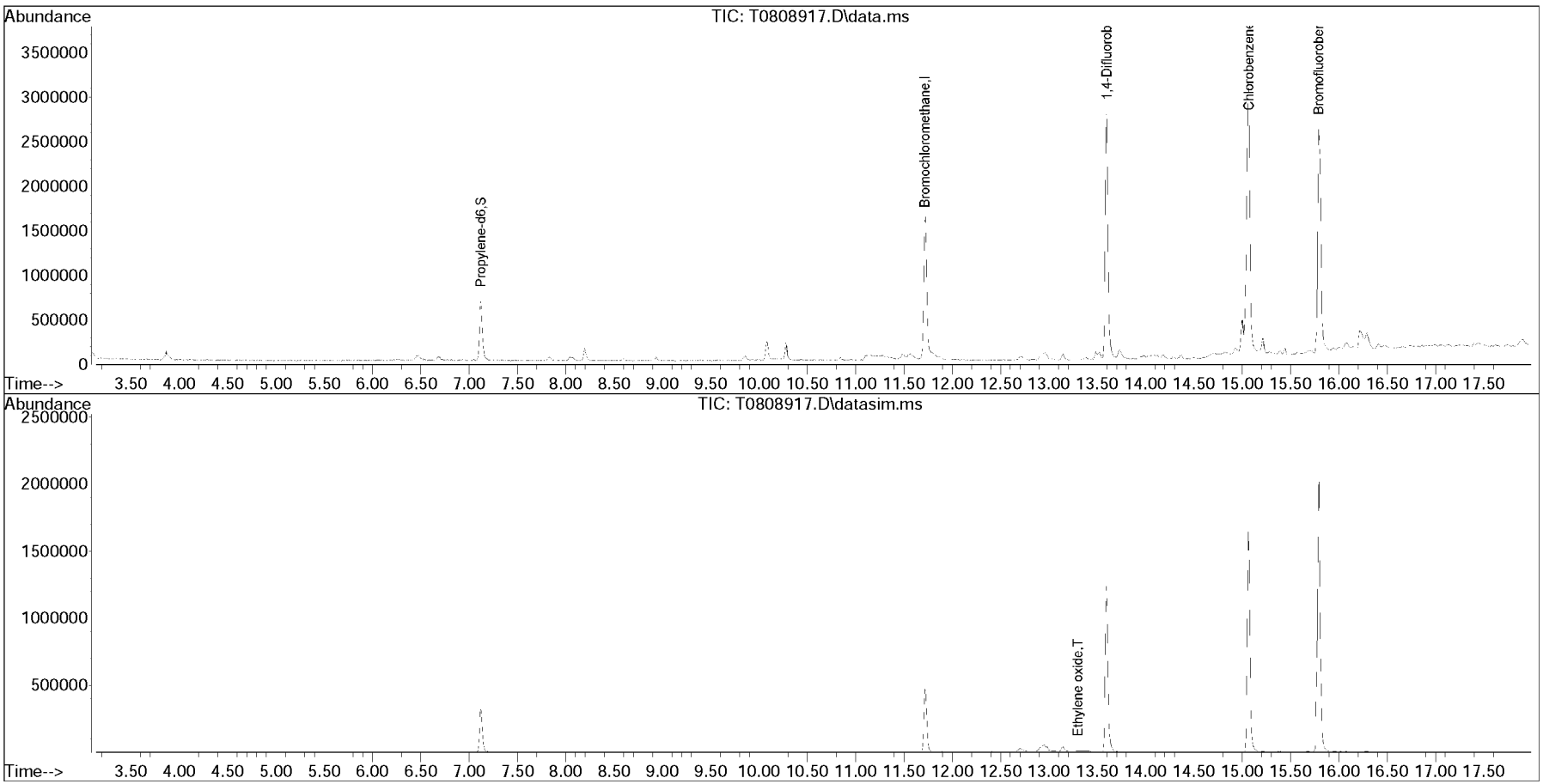
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.715	128	448488	10.00 ppbv	0.03
4) 1,4-Difluorobenzene	13.598	114	2347581	10.00 ppbv	0.01
5) Chlorobenzene-d5	15.069	117	1844064	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.120	46	401960	9.13 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 91.30%		
6) Bromofluorobenzene (surr)	15.789	95	1233254	9.90 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.00%		
Target Compounds					Qvalue
3] Ethylene oxide	13.299	29	1507m	0.073 ppbv	

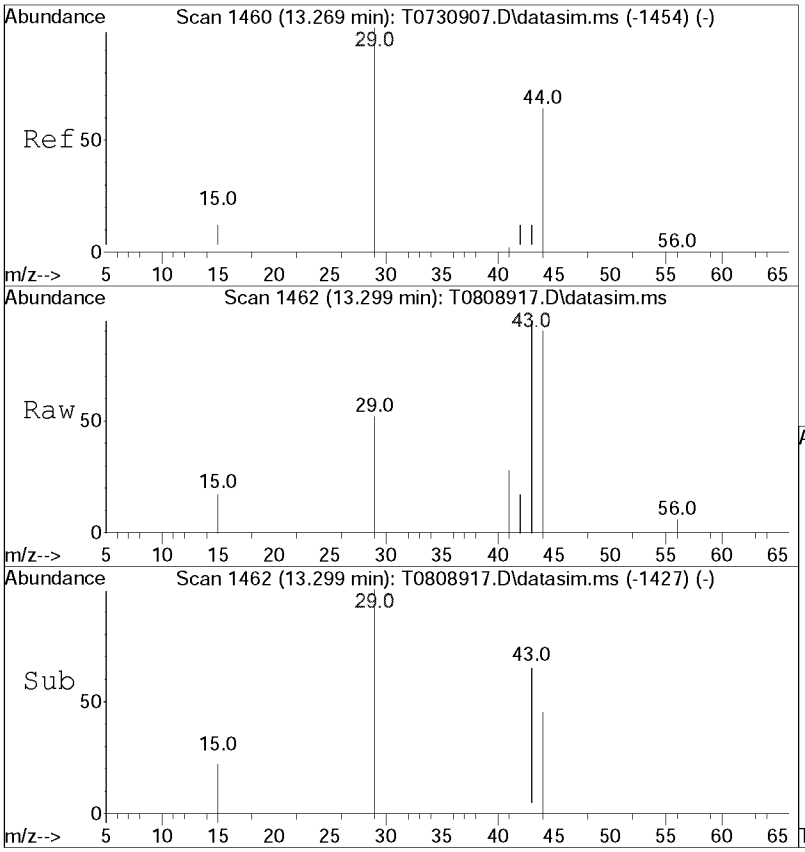
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808917.D
Acq On : 8 Aug 2019 7:38 pm
Operator : BLD
Sample : GHD 1X1 L488088-3
Misc : L488088-3,WG452050,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 09 08:37:15 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

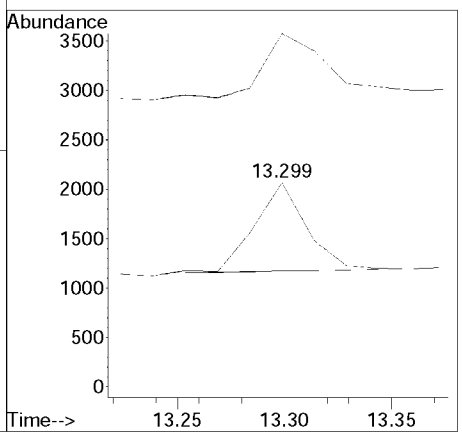




#3
Ethylene oxide
Concen: 0.073 ppbv m
RT: 13.299 min Scan# 1462
Delta R.T. 0.030 min
Lab File: T0808917.D
Acq: 8 Aug 2019 7:38 pm

Tgt Ion: 29 Resp: 1507

Ion	Ratio	Lower	Upper
29	100		
44	0.0	52.3	78.5#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808918.D
Acq On : 8 Aug 2019 8:17 pm
Operator : BLD
Sample : GHD 1X1 L488088-4
Misc : L488088-4,WG452050,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 09 08:37:46 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

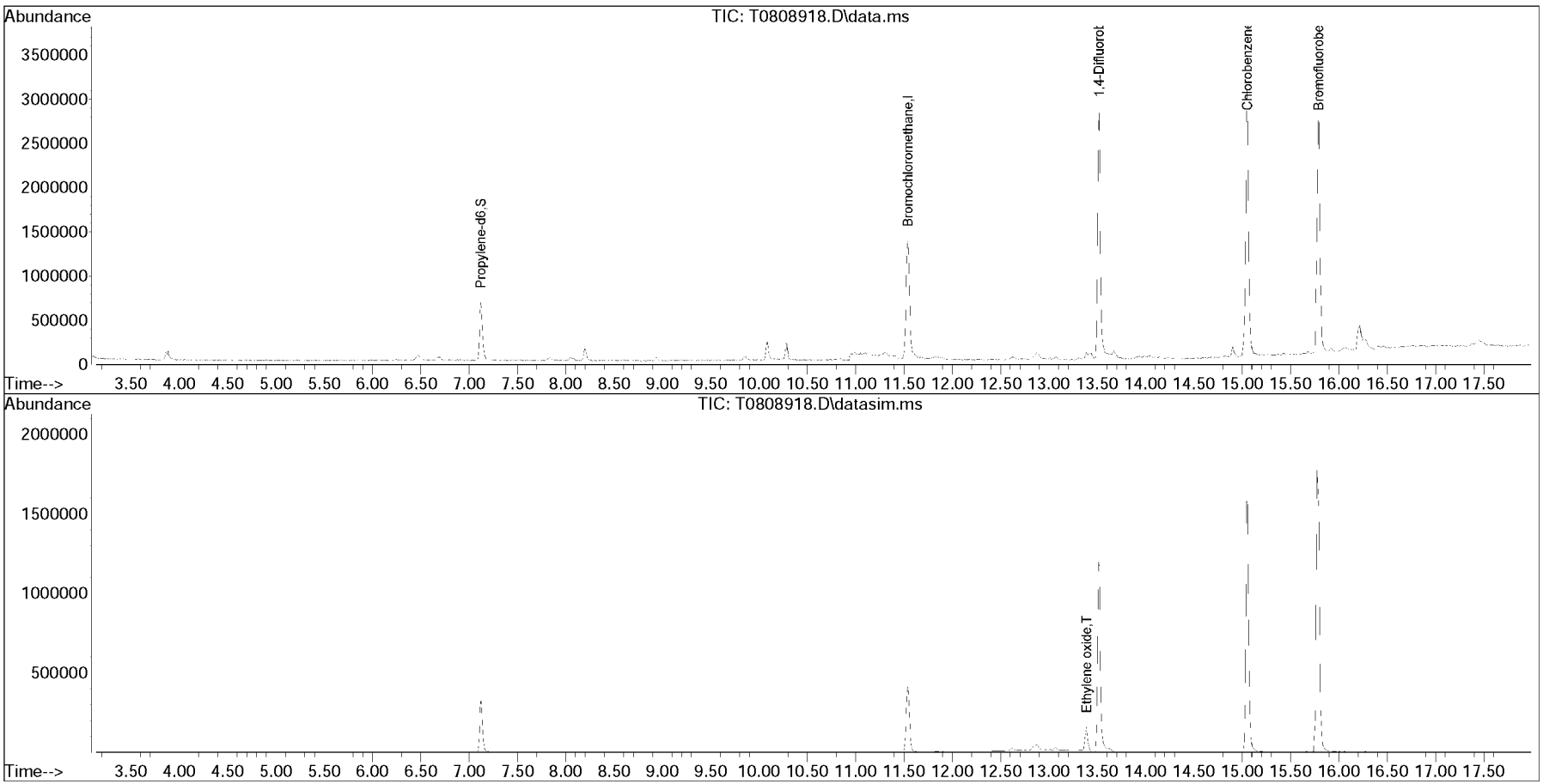
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.542	128	435578	10.00 ppbv	-0.14
4) 1,4-Difluorobenzene	13.518	114	2368862	10.00 ppbv	-0.07
5) Chlorobenzene-d5	15.052	117	1854764	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.120	46	405291	9.48 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 94.80%		
6) Bromofluorobenzene (surr)	15.789	95	1246857m	9.95 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.50%		
Target Compounds					Qvalue
3] Ethylene oxide	13.389	29	98712m	4.954 ppbv	

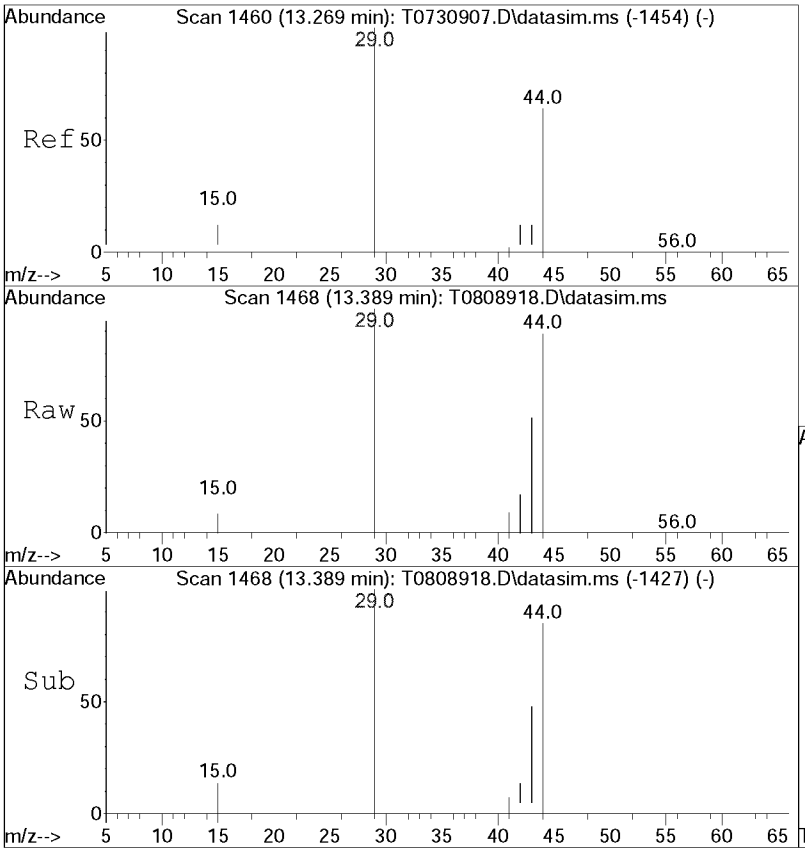
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808918.D
Acq On : 8 Aug 2019 8:17 pm
Operator : BLD
Sample : GHD 1X1 L488088-4
Misc : L488088-4,WG452050,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 09 08:37:46 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

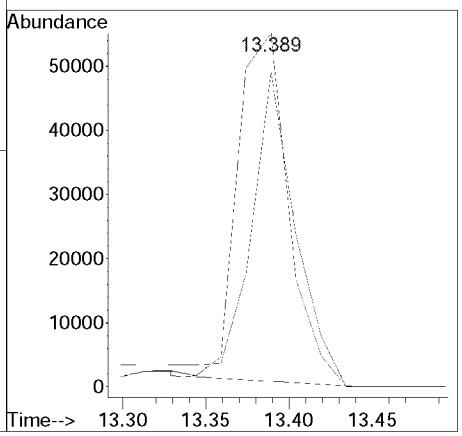




#3
Ethylene oxide
Concen: 4.954 ppbv m
RT: 13.389 min Scan# 1468
Delta R.T. 0.120 min
Lab File: T0808918.D
Acq: 8 Aug 2019 8:17 pm

Tgt Ion: 29 Resp: 98712

Ion	Ratio	Lower	Upper
29	100		
44	0.0	52.3	78.5#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808919.D
Acq On : 8 Aug 2019 8:56 pm
Operator : BLD
Sample : GHD 1X1 L488088-5
Misc : L488088-5,WG452050,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 09 08:38:51 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.689	128	444374	10.00 ppbv	0.00
4) 1,4-Difluorobenzene	13.578	114	2287138	10.00 ppbv	0.00
5) Chlorobenzene-d5	15.060	117	1845768	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.120	46	393127	9.01 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 90.10%		
6) Bromofluorobenzene (surr)	15.789	95	1204146	9.66 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 96.60%		

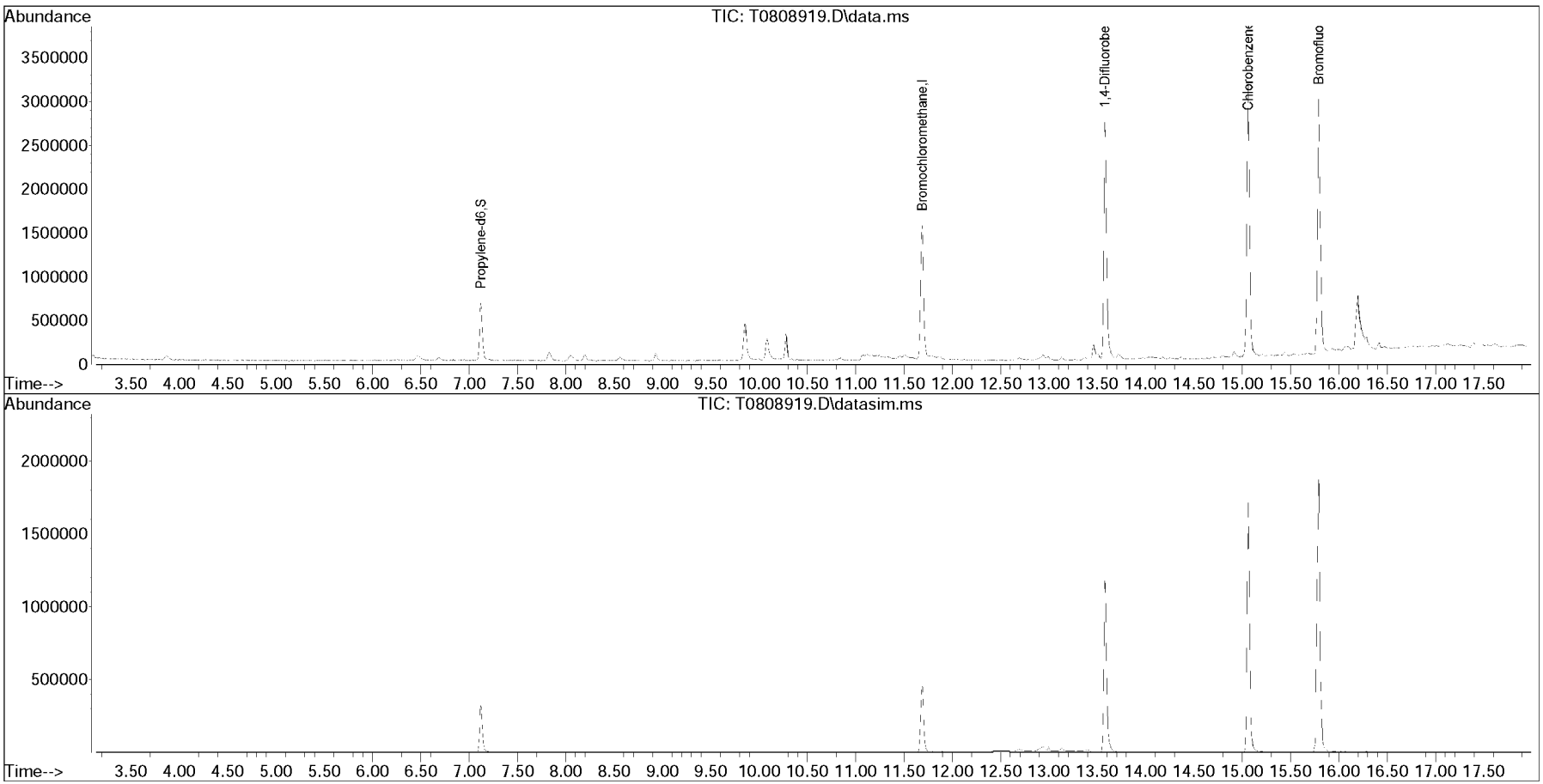
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808919.D
Acq On : 8 Aug 2019 8:56 pm
Operator : BLD
Sample : GHD 1X1 L488088-5
Misc : L488088-5,WG452050,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 09 08:38:51 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808920.D
Acq On : 8 Aug 2019 9:34 pm
Operator : BLD
Sample : GHD 1X1 L488088-6
Misc : L488088-6,WG452050,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Aug 09 08:39:51 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

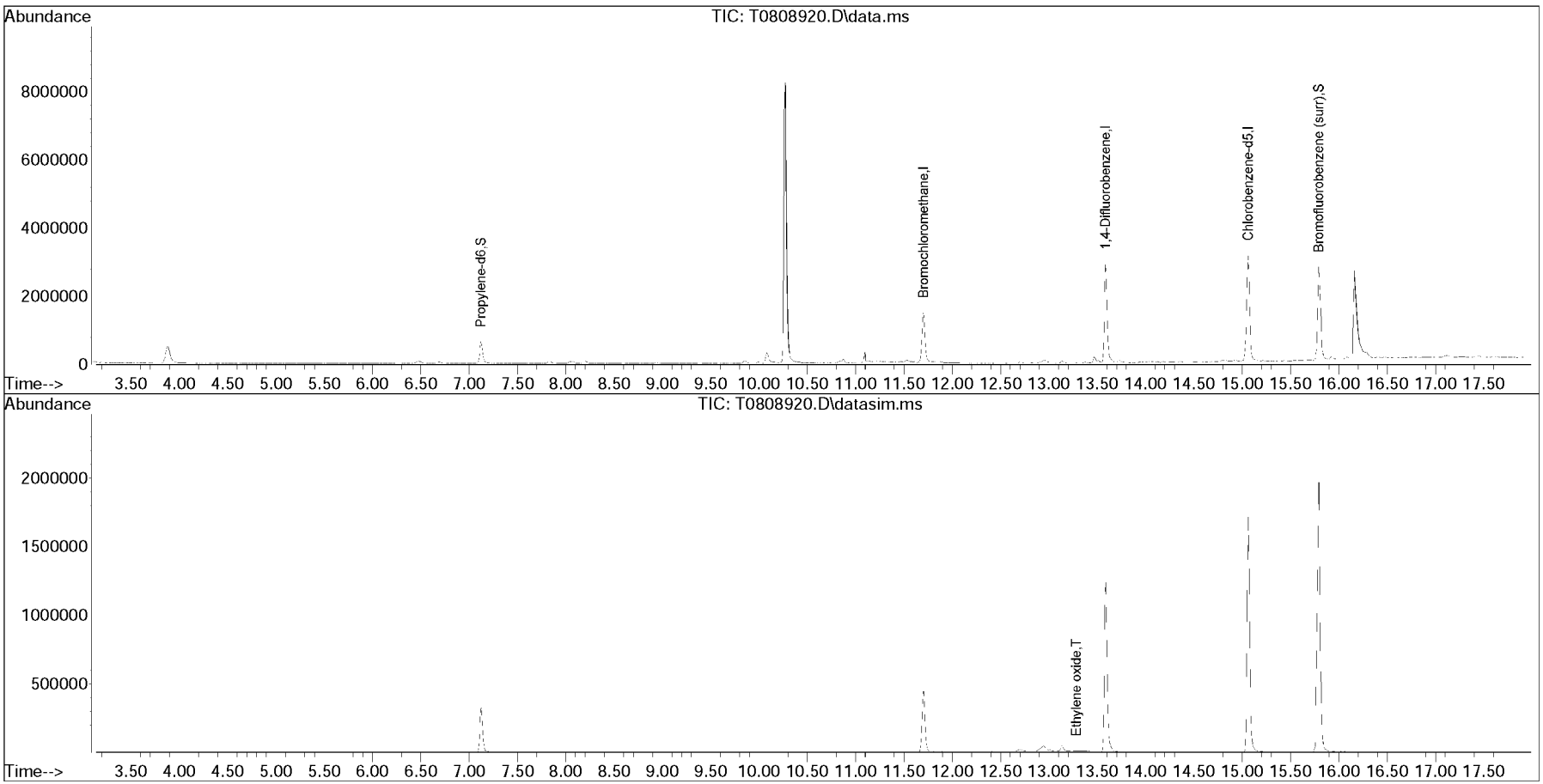
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.702	128	443218	10.00 ppbv	0.02
4) 1,4-Difluorobenzene	13.584	114	2369963	10.00 ppbv	0.00
5) Chlorobenzene-d5	15.060	117	1898764	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.120	46	388445	8.93 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 89.30%		
6) Bromofluorobenzene (surr)	15.789	95	1218555	9.50 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 95.00%		
Target Compounds					Qvalue
3] Ethylene oxide	13.284	29	2137m	0.105 ppbv	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

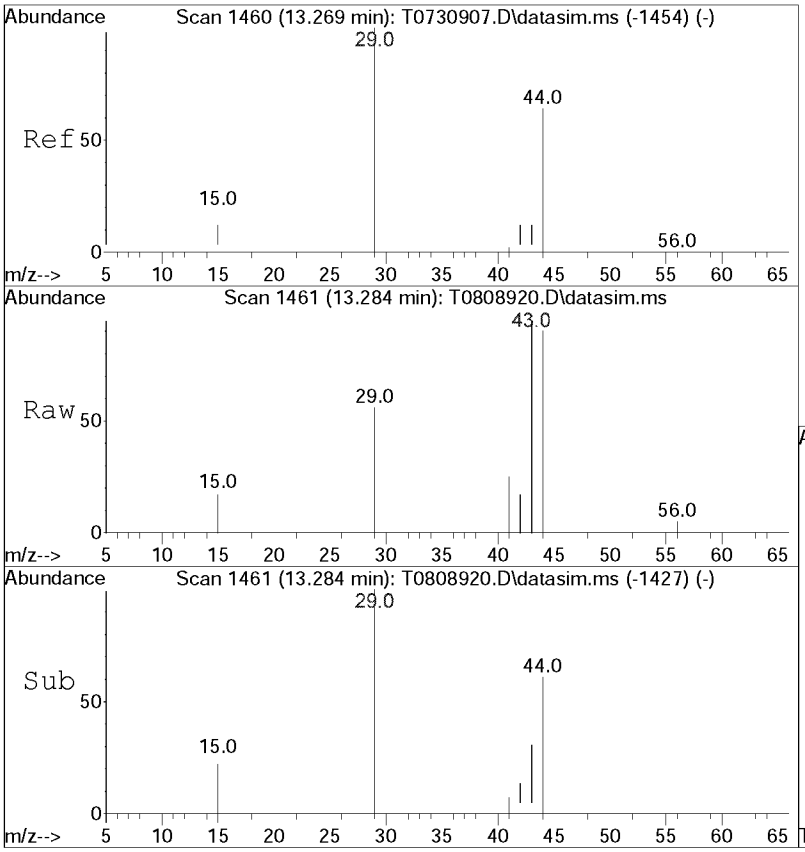
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808920.D
Acq On : 8 Aug 2019 9:34 pm
Operator : BLD
Sample : GHD 1X1 L488088-6
Misc : L488088-6,WG452050,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Aug 09 08:39:51 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



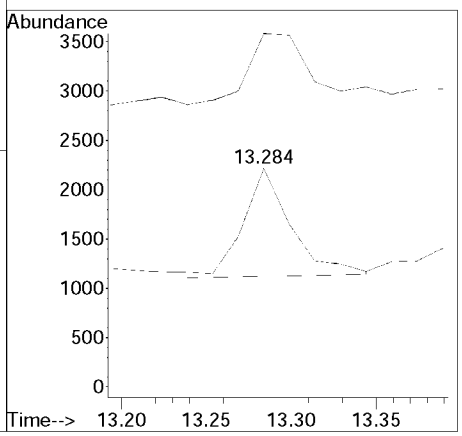
T190730E.M Tue Aug 13 10:30:27 2019 Page: 2



#3
Ethylene oxide
Concen: 0.105 ppbv m
RT: 13.284 min Scan# 1461
Delta R.T. 0.015 min
Lab File: T0808920.D
Acq: 8 Aug 2019 9:34 pm

Tgt Ion: 29 Resp: 2137

Ion	Ratio	Lower	Upper
29	100		
44	0.0	52.3	78.5#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809908.D
Acq On : 9 Aug 2019 2:22 pm
Operator : BLD
Sample : GHD 1X1 L488088-7
Misc : L488088-7,WG452190,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Aug 12 13:40:23 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.536	128	376041	10.00 ppbv	-0.15
4) 1,4-Difluorobenzene	13.511	114	2112354	10.00 ppbv	-0.07
5) Chlorobenzene-d5	15.052	117	1834715	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.127	46	390658	10.58 ppbv	-0.01
Spiked Amount 10.000	Range 80 - 120		Recovery = 105.80%		
6) Bromofluorobenzene (surr)	15.789	95	1207458	9.74 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.40%		

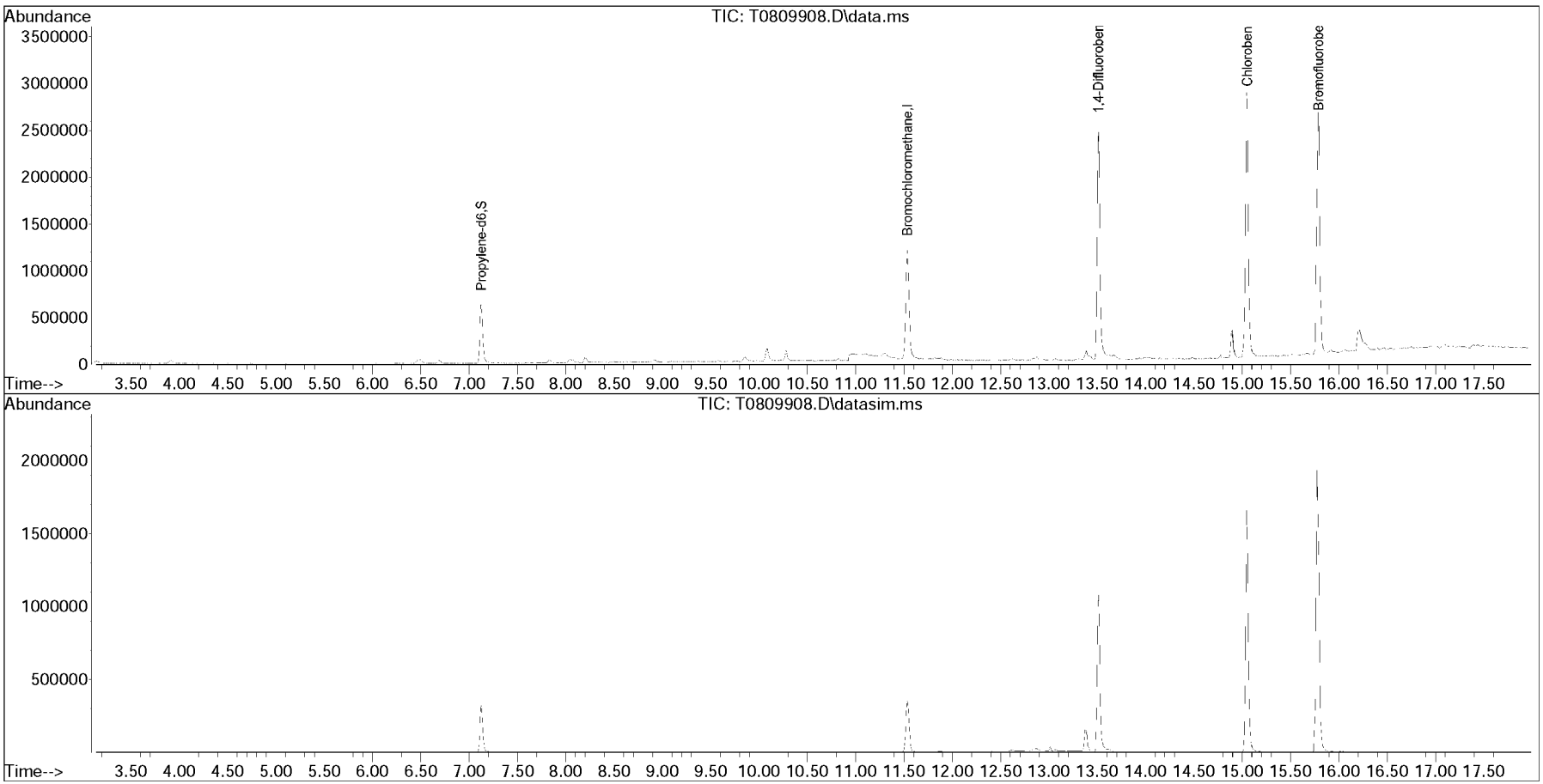
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809908.D
Acq On : 9 Aug 2019 2:22 pm
Operator : BLD
Sample : GHD 1X1 L488088-7
Misc : L488088-7,WG452190,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Aug 12 13:40:23 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809909.D
Acq On : 9 Aug 2019 3:02 pm
Operator : BLD
Sample : GHD 1.3X1 L488088-8
Misc : L488088-8,WG452190,1.3
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 12 13:41:04 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.436	128	396700	10.00 ppbv	-0.25
4) 1,4-Difluorobenzene	13.465	114	2859855	10.00 ppbv	-0.12
5) Chlorobenzene-d5	15.035	117	1852661	10.00 ppbv	#-0.02
System Monitoring Compounds					
2) Propylene-d6	7.127	46	391061	10.04 ppbv	-0.01
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.40%		
6) Bromofluorobenzene (surr)	15.789	95	1232396	9.85 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 98.50%		

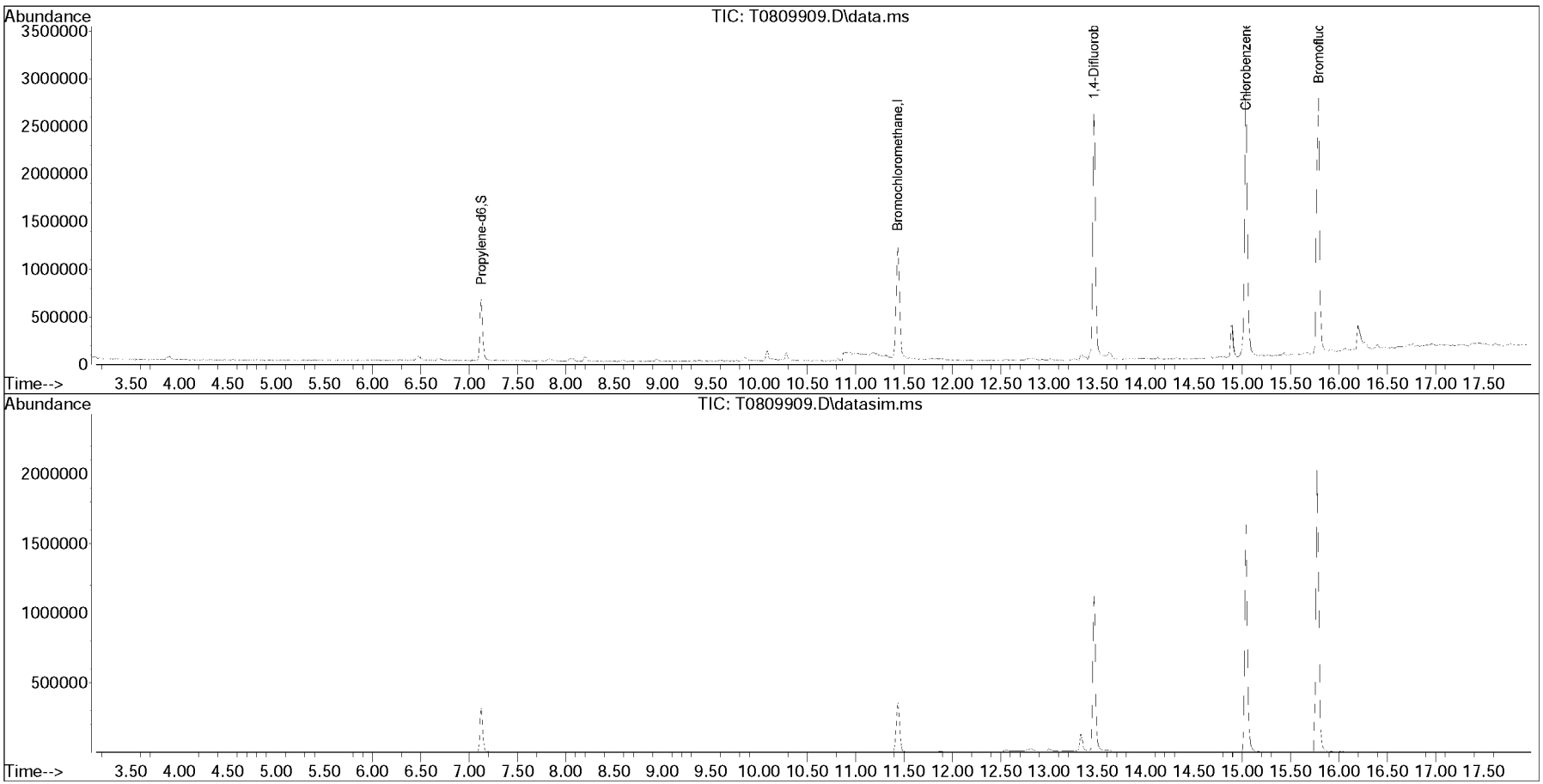
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809909.D
Acq On : 9 Aug 2019 3:02 pm
Operator : BLD
Sample : GHD 1.3X1 L488088-8
Misc : L488088-8,WG452190,1.3
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 12 13:41:04 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809910.D
Acq On : 9 Aug 2019 3:41 pm
Operator : BLD
Sample : GHD 1X1 L488088-9
Misc : L488088-9,WG452190,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 12 13:41:55 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.463	128	395913	10.00 ppbv	-0.22
4) 1,4-Difluorobenzene	13.485	114	2202699m	10.00 ppbv	-0.10
5) Chlorobenzene-d5	15.044	117	1837190	10.00 ppbv	#-0.02
System Monitoring Compounds					
2) Propylene-d6	7.127	46	393035	10.11 ppbv	-0.01
Spiked Amount 10.000	Range 80 - 120		Recovery = 101.10%		
6) Bromofluorobenzene (surr)	15.789	95	1174660m	9.47 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 94.70%		

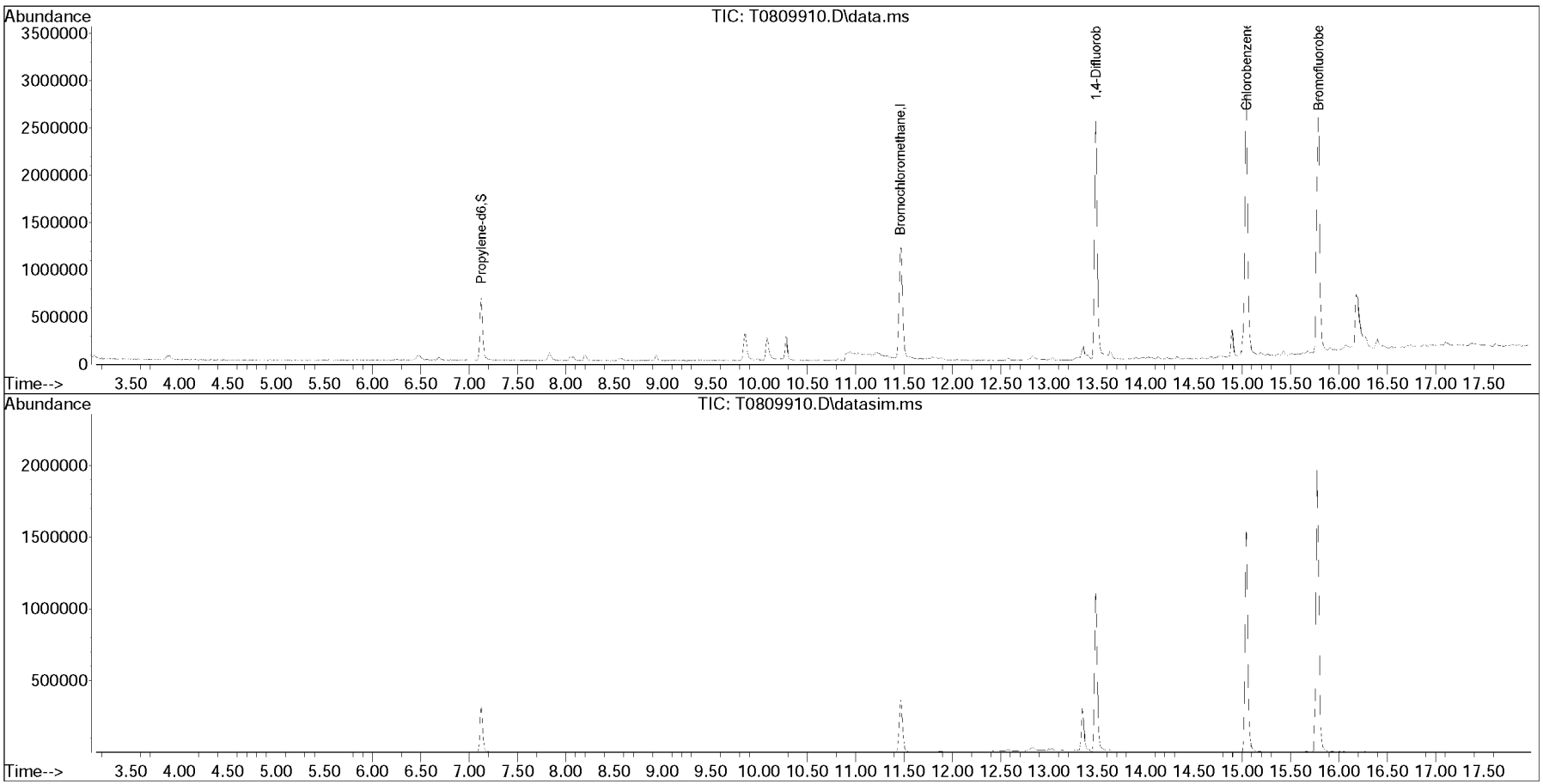
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809910.D
Acq On : 9 Aug 2019 3:41 pm
Operator : BLD
Sample : GHD 1X1 L488088-9
Misc : L488088-9,WG452190,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 12 13:41:55 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809911.D
Acq On : 9 Aug 2019 4:19 pm
Operator : BLD
Sample : GHD 1X1 L488088-10
Misc : L488088-10,WG452190,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 12 13:42:41 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

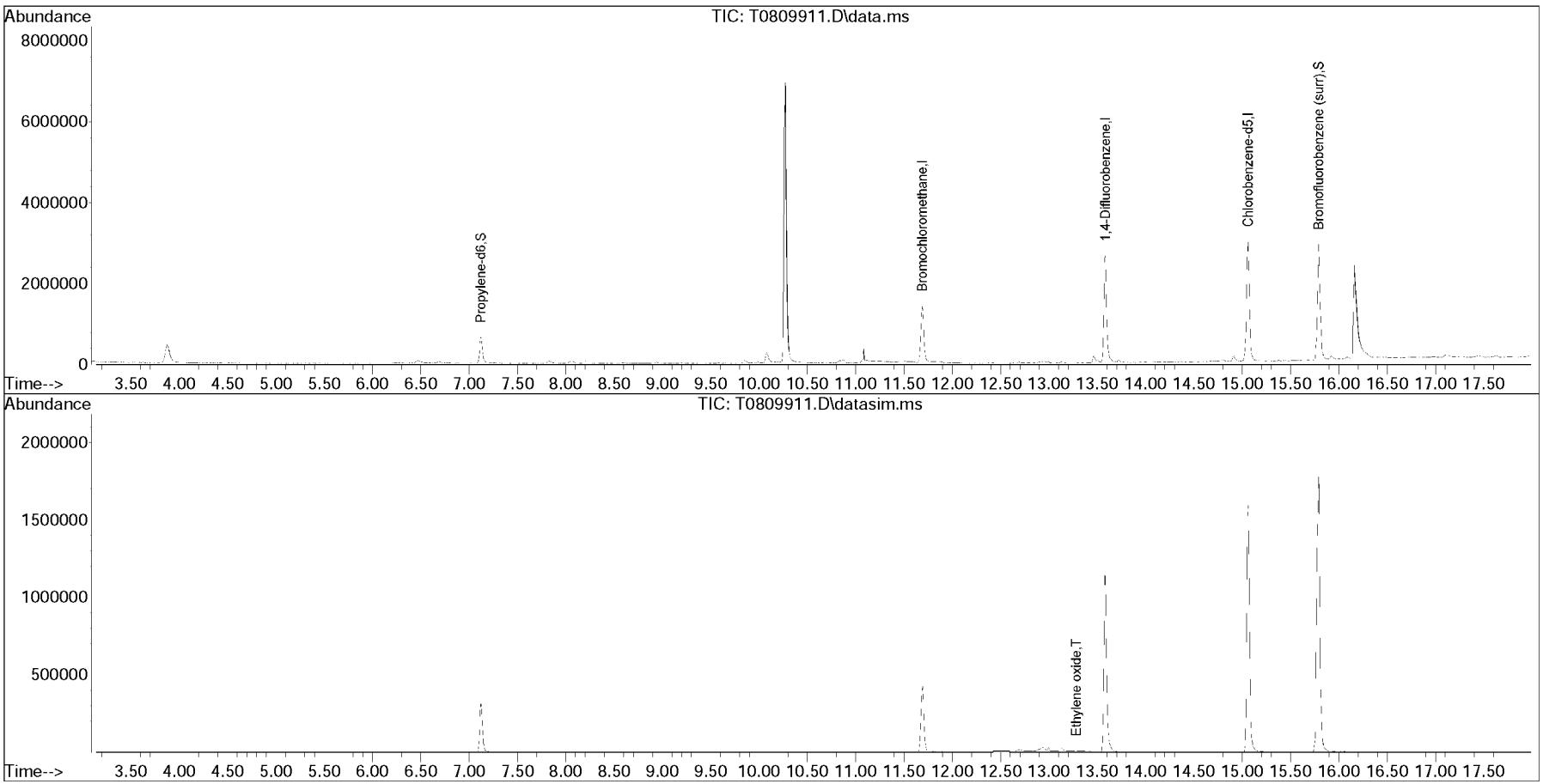
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.689	128	412925	10.00 ppbv	0.00
4) 1,4-Difluorobenzene	13.584	114	2212387	10.00 ppbv	0.00
5) Chlorobenzene-d5	15.060	117	1798525	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.120	46	396310	9.78 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.80%		
6) Bromofluorobenzene (surr)	15.789	95	1158436	9.54 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 95.40%		
Target Compounds					Qvalue
3] Ethylene oxide	13.284	29	1971m	0.104 ppbv	

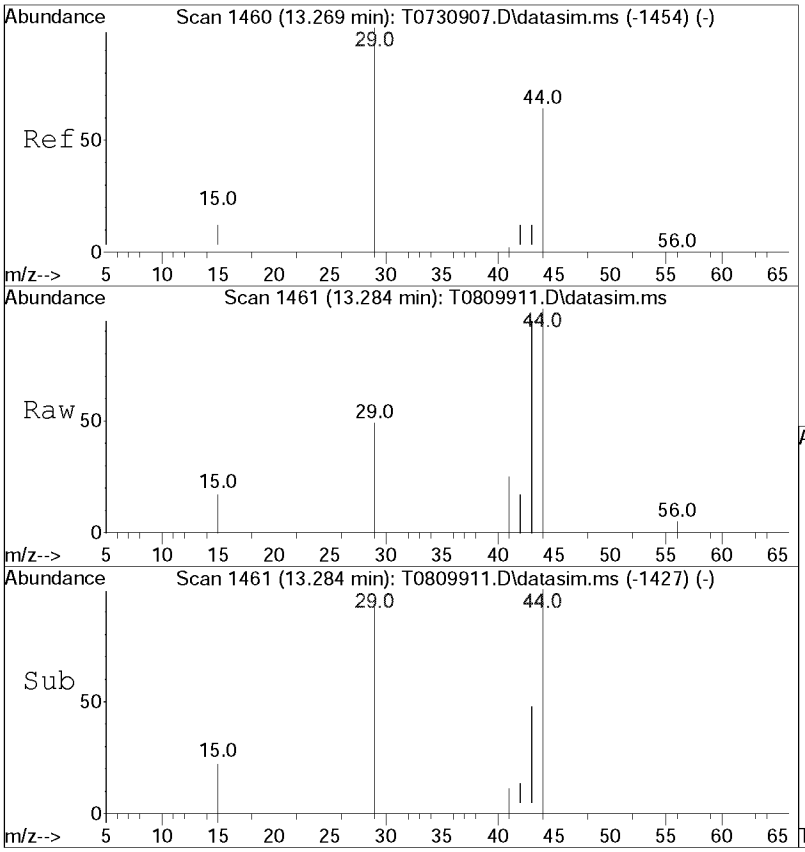
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809911.D
Acq On : 9 Aug 2019 4:19 pm
Operator : BLD
Sample : GHD 1X1 L488088-10
Misc : L488088-10,WG452190,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 12 13:42:41 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

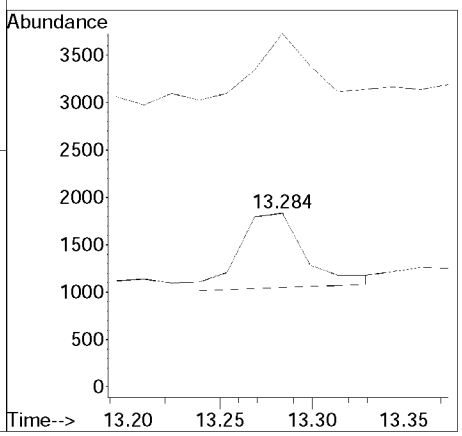




#3
Ethylene oxide
Concen: 0.104 ppbv m
RT: 13.284 min Scan# 1461
Delta R.T. 0.015 min
Lab File: T0809911.D
Acq: 9 Aug 2019 4:19 pm

Tgt Ion: 29 Resp: 1971

Ion	Ratio	Lower	Upper
29	100		
44	0.0	52.3	78.5#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809912.D
Acq On : 9 Aug 2019 4:58 pm
Operator : BLD
Sample : GHD 1X1 L488088-11
Misc : L488088-11,WG452190,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 12 13:43:21 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.529	128	398683	10.00 ppbv	-0.15
4) 1,4-Difluorobenzene	13.511	114	2161697	10.00 ppbv	-0.07
5) Chlorobenzene-d5	15.052	117	1823036	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.120	46	390294	9.97 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.70%		
6) Bromofluorobenzene (surr)	15.789	95	1175184	9.54 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 95.40%		

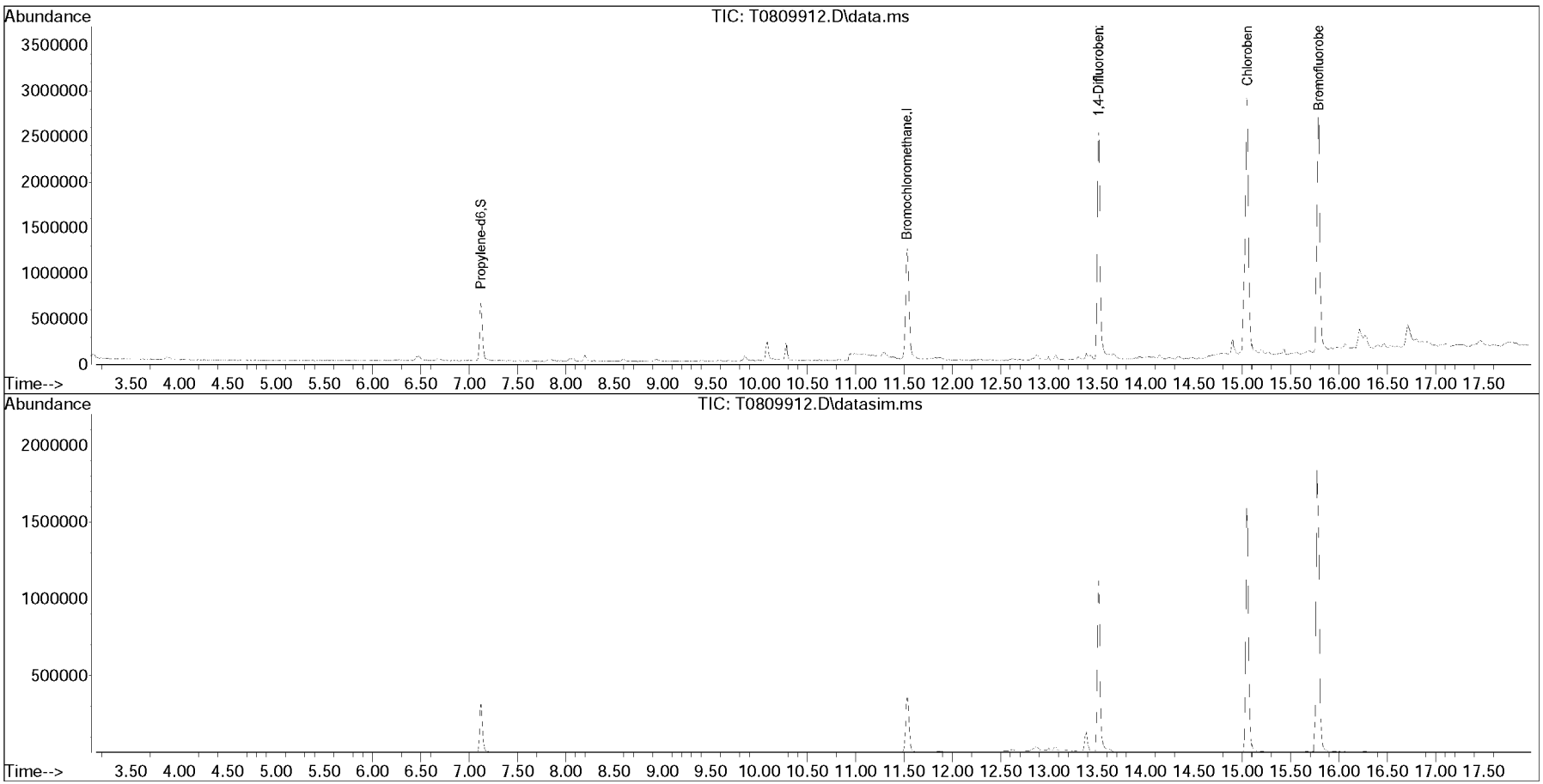
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809912.D
Acq On : 9 Aug 2019 4:58 pm
Operator : BLD
Sample : GHD 1X1 L488088-11
Misc : L488088-11,WG452190,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 12 13:43:21 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809913.D
Acq On : 9 Aug 2019 5:37 pm
Operator : BLD
Sample : GHD 1X1 L488088-12
Misc : L488088-12,WG452190,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 12 13:43:49 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.449	128	392966	10.00 ppbv	-0.23
4) 1,4-Difluorobenzene	13.471	114	2680098	10.00 ppbv	-0.11
5) Chlorobenzene-d5	15.044	117	1761414	10.00 ppbv	#-0.02
System Monitoring Compounds					
2) Propylene-d6	7.127	46	398398	10.33 ppbv	-0.01
Spiked Amount 10.000	Range 80 - 120		Recovery = 103.30%		
6) Bromofluorobenzene (surr)	15.789	95	1177271	9.89 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 98.90%		

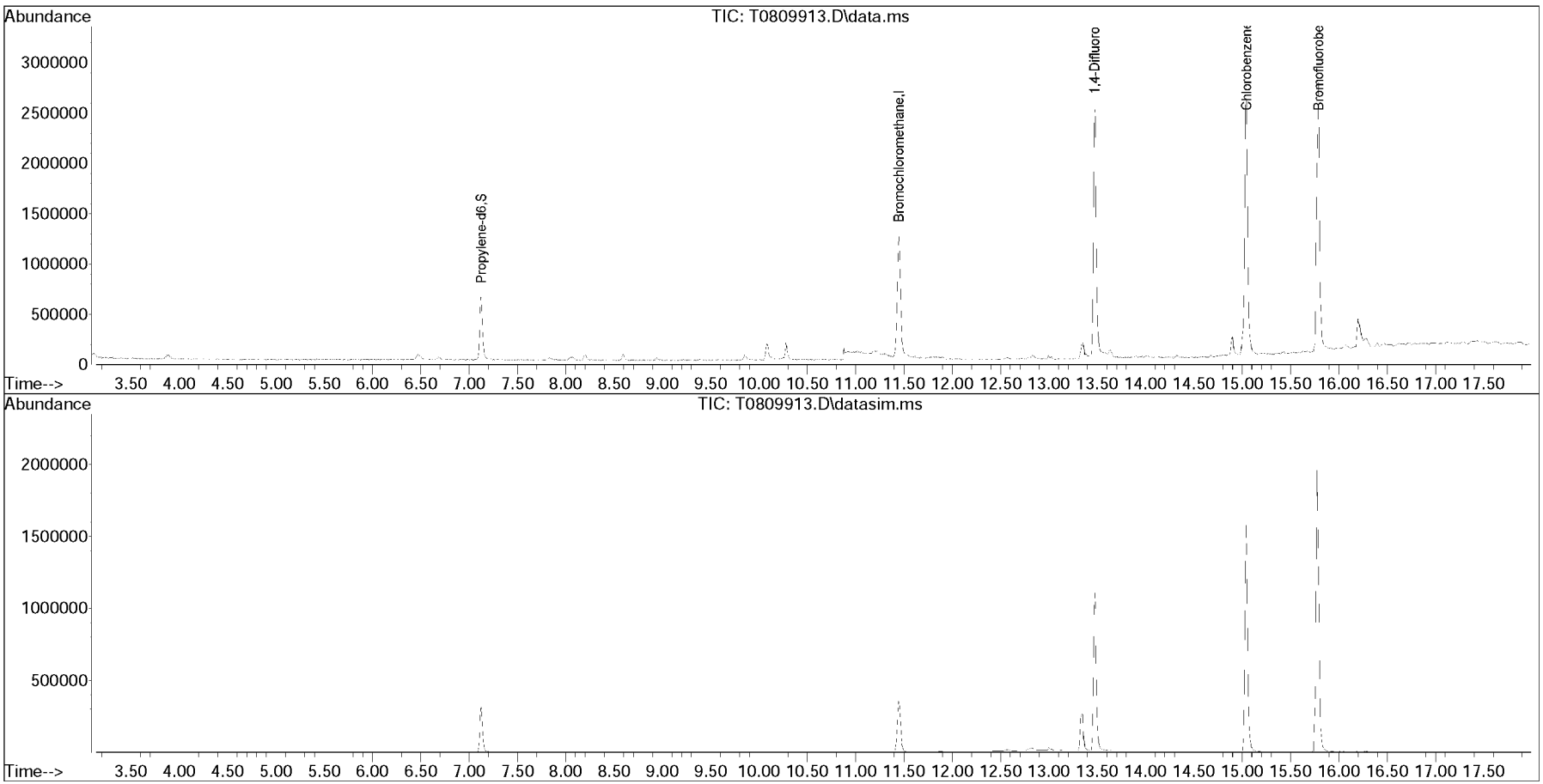
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809913.D
Acq On : 9 Aug 2019 5:37 pm
Operator : BLD
Sample : GHD 1X1 L488088-12
Misc : L488088-12,WG452190,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 12 13:43:49 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



GC/MS
CALIBRATION VERIFICATION

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808902.D
Acq On : 8 Aug 2019 9:27 am
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452050-6,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 08 10:50:51 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

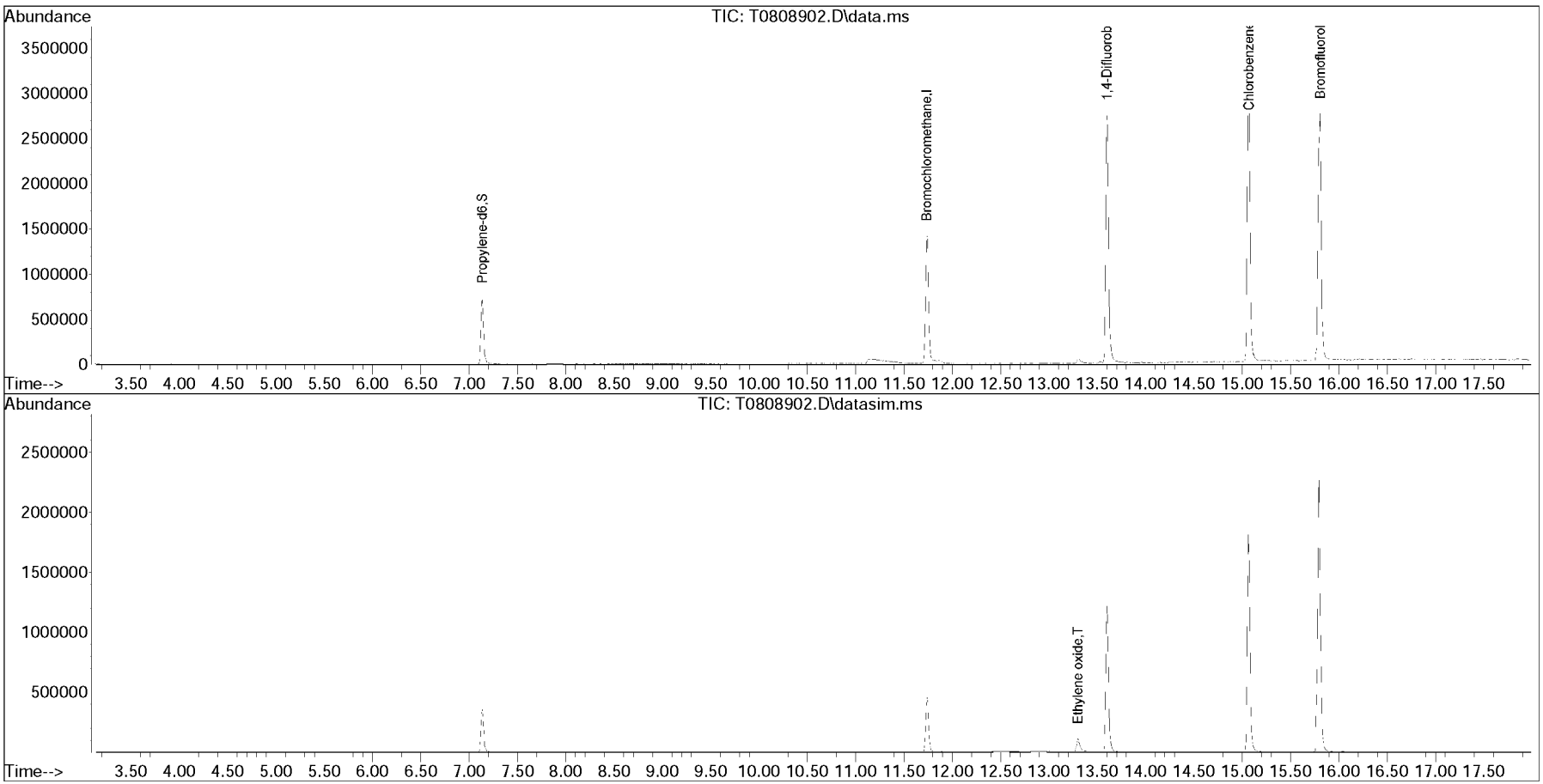
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Bromochloromethane	11.735	128	422229	10.00	ppbv	0.05
4) 1,4-Difluorobenzene	13.598	114	2282627	10.00	ppbv	0.01
5) Chlorobenzene-d5	15.069	117	2035993	10.00	ppbv	# 0.00
System Monitoring Compounds						
2) Propylene-d6	7.133	46	436681	10.53	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 105.30%			
6) Bromofluorobenzene (surr)	15.808	95	1327546	9.65	ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 96.50%			
Target Compounds						Qvalue
3] Ethylene oxide	13.299	29	104659	5.419	ppbv #	53

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808902.D
Acq On : 8 Aug 2019 9:27 am
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452050-6,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 08 10:50:51 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808910.D
Acq On : 8 Aug 2019 3:07 pm
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452050-7,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 08 15:27:02 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

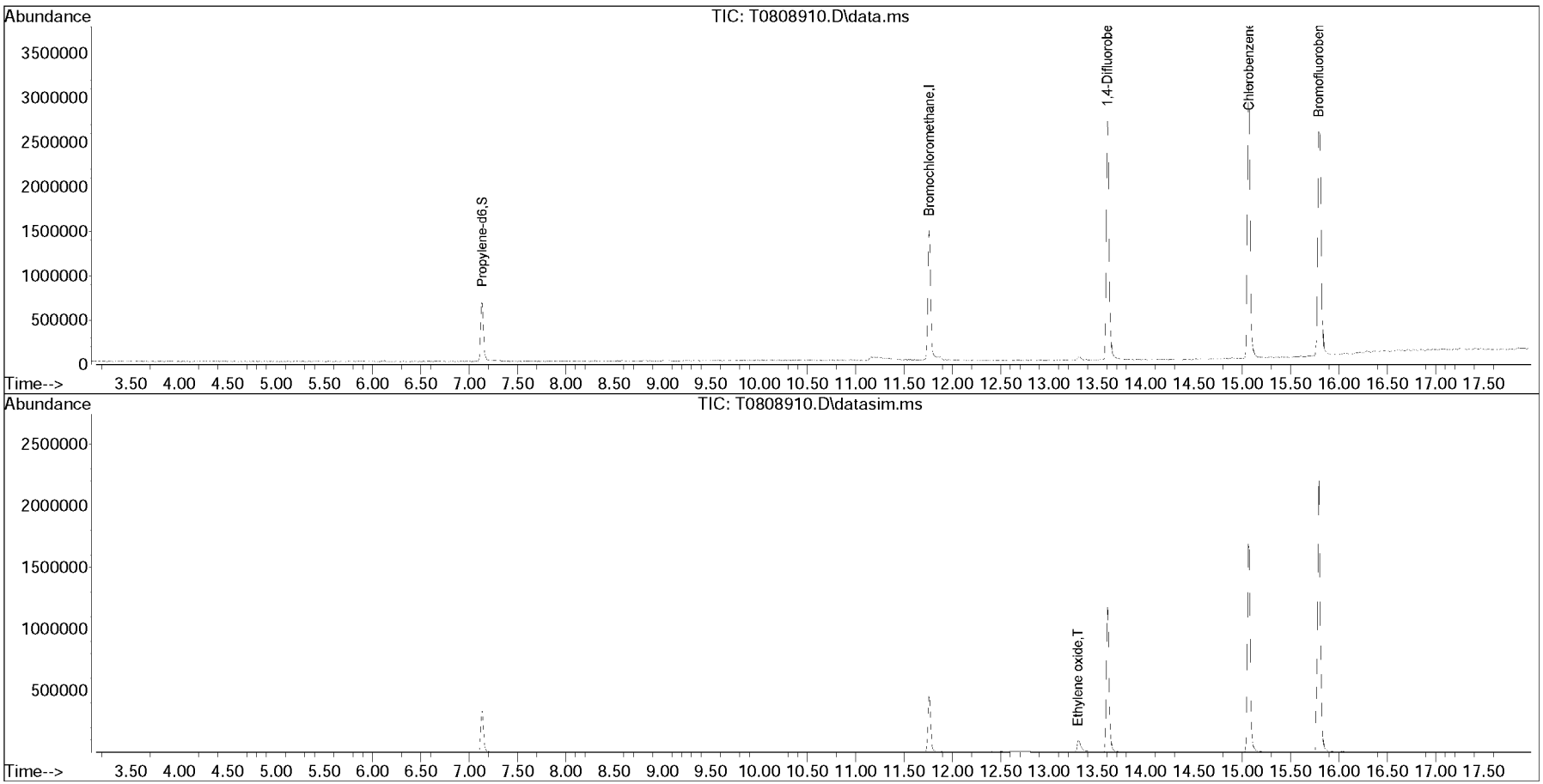
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.762	128	412454	10.00 ppbv	0.08
4) 1,4-Difluorobenzene	13.604	114	2204850	10.00 ppbv	0.02
5) Chlorobenzene-d5	15.069	117	1956671	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.133	46	418815	10.34 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 103.40%		
6) Bromofluorobenzene (surr)	15.789	95	1320607	9.99 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.90%		
Target Compounds					Qvalue
3] Ethylene oxide	13.299	29	102038	5.408 ppbv #	58

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808910.D
Acq On : 8 Aug 2019 3:07 pm
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452050-7,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 08 15:27:02 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808921.D
Acq On : 8 Aug 2019 10:06 pm
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452050-8,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 09 08:40:17 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

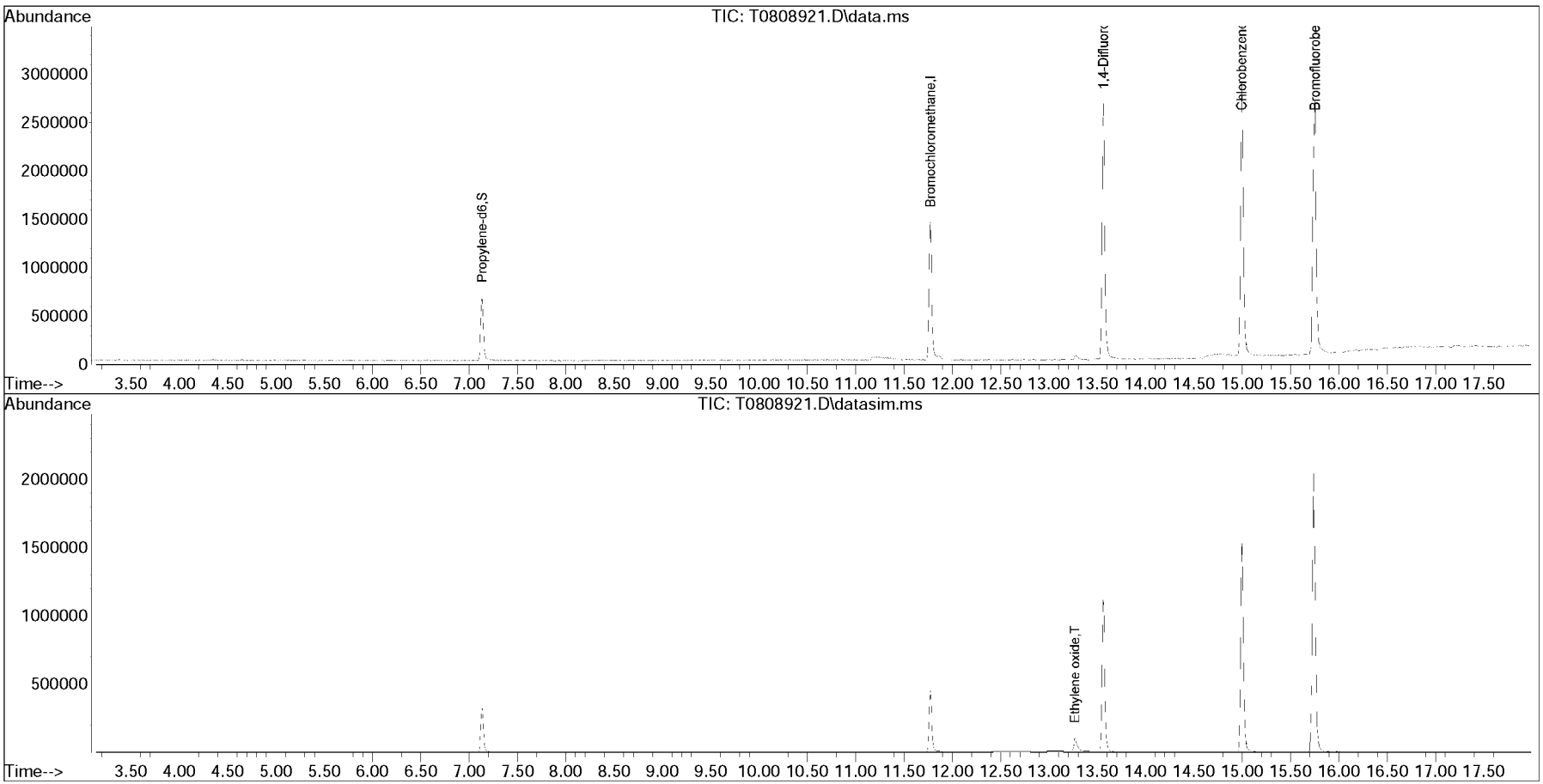
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.775	128	405469	10.00 ppbv	0.09
4) 1,4-Difluorobenzene	13.564	114	2092740	10.00 ppbv	-0.02
5) Chlorobenzene-d5	14.994	117	1816188	10.00 ppbv	#-0.07
System Monitoring Compounds					
2) Propylene-d6	7.133	46	405120	10.18 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 101.80%		
6) Bromofluorobenzene (surr)	15.752	95	1229376	10.02 ppbv	-0.04
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.20%		
Target Compounds					Qvalue
3] Ethylene oxide	13.269	29	100298	5.408 ppbv #	55

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808921.D
Acq On : 8 Aug 2019 10:06 pm
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452050-8,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 09 08:40:17 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809902.D
Acq On : 9 Aug 2019 9:09 am
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452190-5,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 09 09:28:46 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

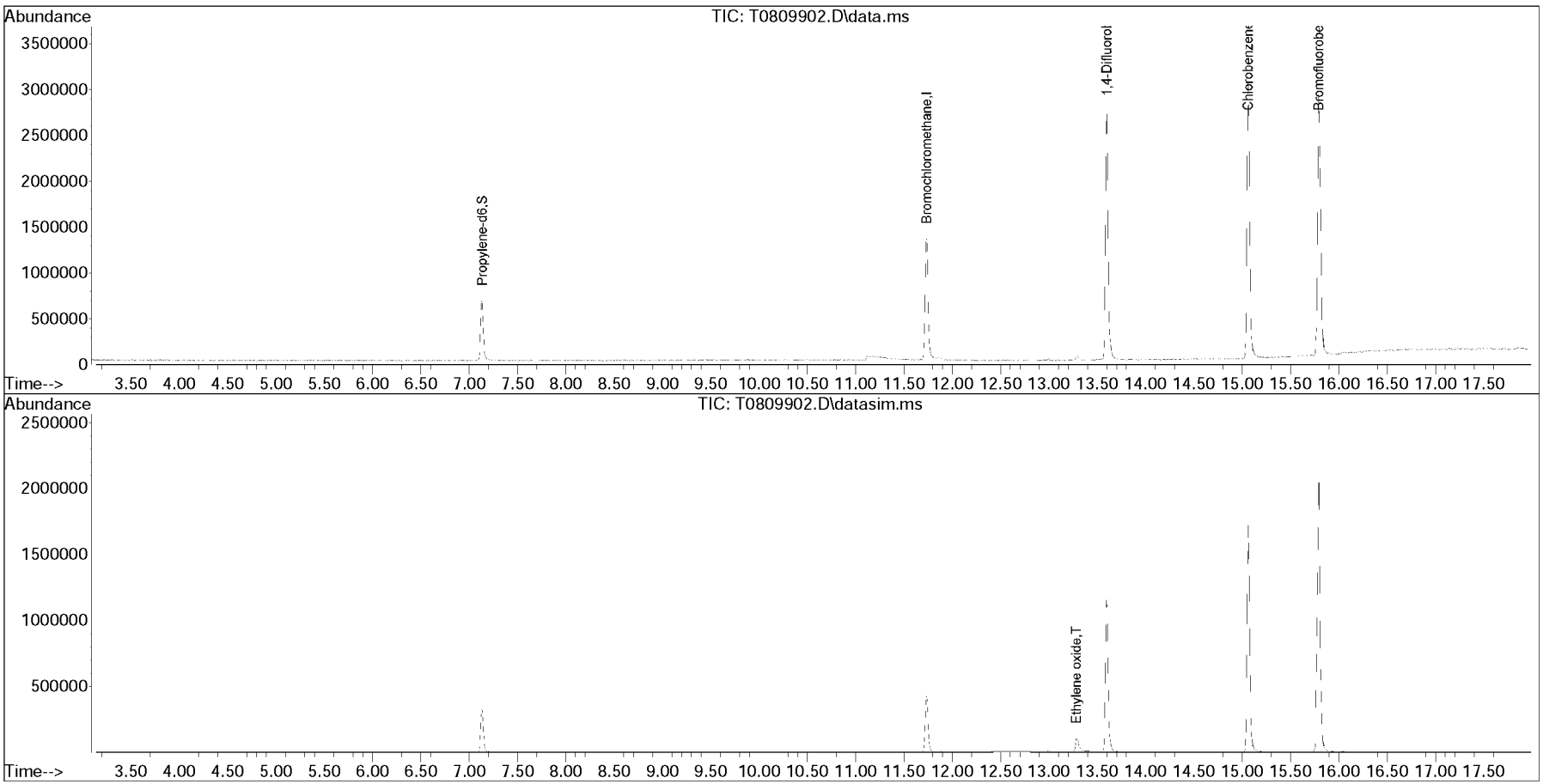
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.735	128	401790	10.00 ppbv	0.05
4) 1,4-Difluorobenzene	13.598	114	2152228	10.00 ppbv	0.01
5) Chlorobenzene-d5	15.060	117	1902589	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.133	46	410031	10.39 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 103.90%		
6) Bromofluorobenzene (surr)	15.789	95	1265456	9.85 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 98.50%		
Target Compounds					Qvalue
3] Ethylene oxide	13.284	29	104324	5.676 ppbv #	51

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809902.D
Acq On : 9 Aug 2019 9:09 am
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452190-5,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 09 09:28:46 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809918.D
Acq On : 9 Aug 2019 8:46 pm
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452190-6,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 12 13:39:50 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

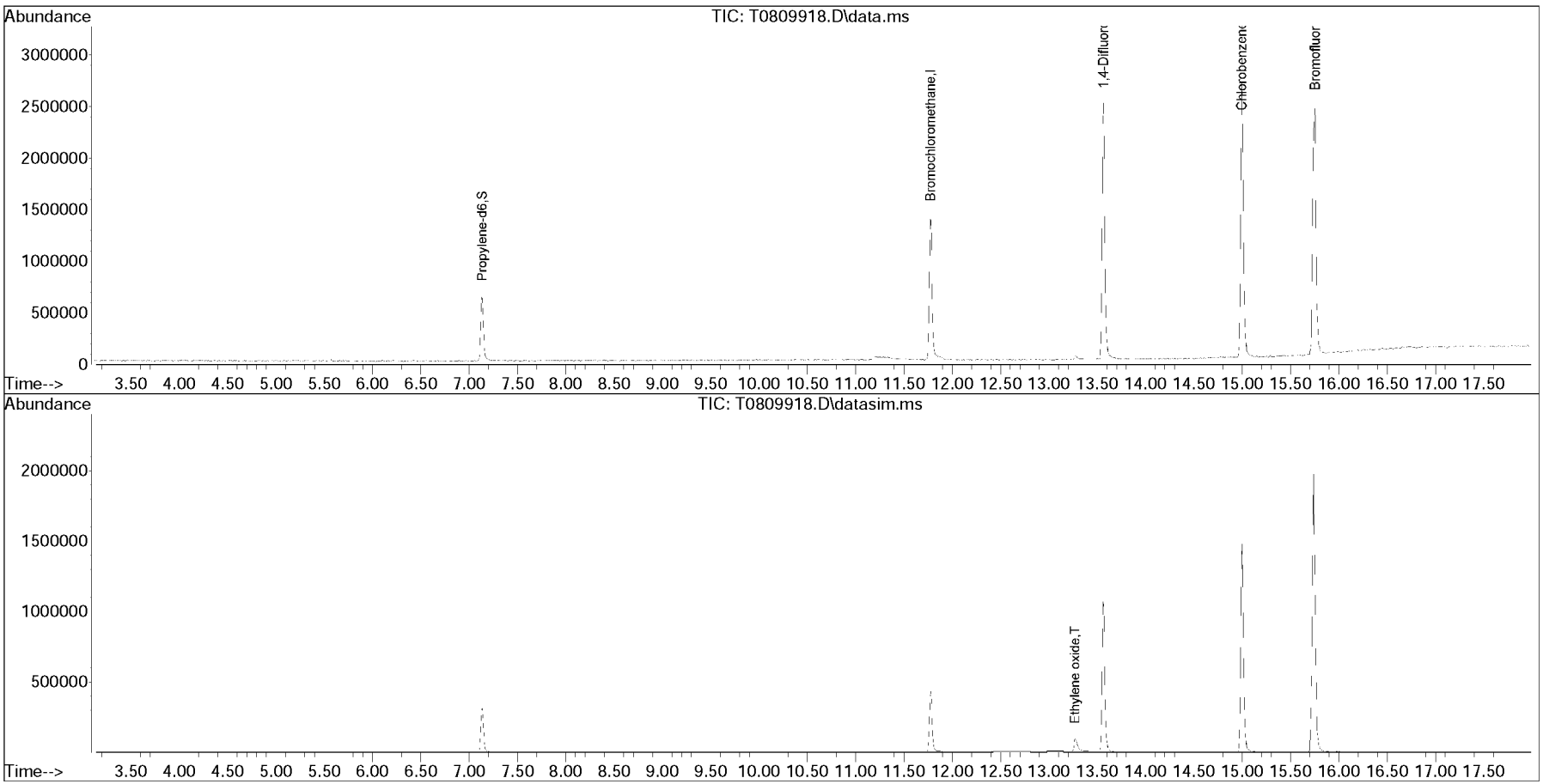
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.775	128	367853	10.00 ppbv	0.09
4) 1,4-Difluorobenzene	13.564	114	1973963	10.00 ppbv	-0.02
5) Chlorobenzene-d5	14.994	117	1719366	10.00 ppbv	#-0.07
System Monitoring Compounds					
2) Propylene-d6	7.133	46	376051	10.41 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 104.10%		
6) Bromofluorobenzene (surr)	15.753	95	1185905	10.21 ppbv	-0.04
Spiked Amount 10.000	Range 80 - 120		Recovery = 102.10%		
Target Compounds					Qvalue
3] Ethylene oxide	13.269	29	92566	5.501 ppbv #	54

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809918.D
Acq On : 9 Aug 2019 8:46 pm
Operator : BLD
Sample : CCV 5.0 PPBV, IH686762A
Misc : WG452190-6,IH686762,100
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 12 13:39:50 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



GC/MS
INITIAL CALIBRATION

Response Factor Report MS-T

Method Path : C:\msdchem\1\methods\
Method File : T190730E.M
Title :
Last Update : Wed Jul 31 15:36:01 2019
Response Via : Initial Calibration

Calibration Files
.040=T0730902.D 0.10=T0730903.D 0.20=T0730904.D 0.50=T0730905.D 1.0 =T0730906.D 5.0 =T0730907.D 10 =T0730908.D
25 =T0730909.D

	Compound	.040	0.10	0.20	0.50	1.0	5.0	10	25	Avg	%RSD
1) I	Bromochloromethane	----------ISTD----------									
2) S	Propylene-d6	0.978	0.996	0.947	0.971	0.993	1.022	0.982	0.965	0.982	2.28
3) T	Ethylene oxide	0.488	0.388	0.417	0.429	0.529	0.511	0.458	0.441	0.457	10.57
4) I	1,4-Difluorobenzene	----------ISTD----------									
5) I	Chlorobenzene-d5	----------ISTD----------									
6) S	Bromofluoroben...	0.674	0.667	0.671	0.690	0.670	0.672	0.668	0.691	0.675	1.42

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730902.D
Acq On : 30 Jul 2019 12:36 pm
Operator : BHB
Sample : ASTD 0.04 PPBV, IH686797A (Sig #1); ASTD 0.20 PPBV, IH686797A (Sig #2)
Misc : IH686797,40
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 31 15:29:38 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:29:09 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Bromochloromethane	11.755	128	613764	10.00	ppbv	0.07
4) 1,4-Difluorobenzene	13.611	114	3189269	10.00	ppbv	0.03
5) Chlorobenzene-d5	15.069	117	2817380	10.00	ppbv	# 0.00
System Monitoring Compounds						
2) Propylene-d6	7.140	46	599986	9.57	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 95.70%			
6) Bromofluorobenzene (surr)	15.808	95	1900095	10.04	ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.40%			
Target Compounds						Qvalue
3] Ethylene oxide	13.359	29	1198m	0.038	ppbv	

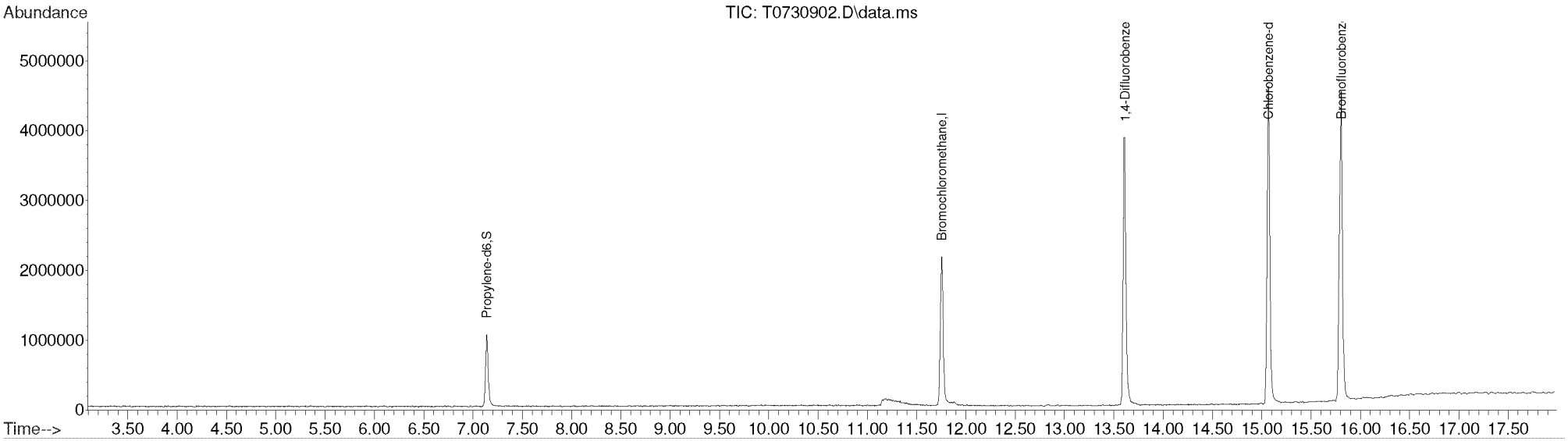
(#) = qualifier out of range (m) = manual integration (+) = signals summed

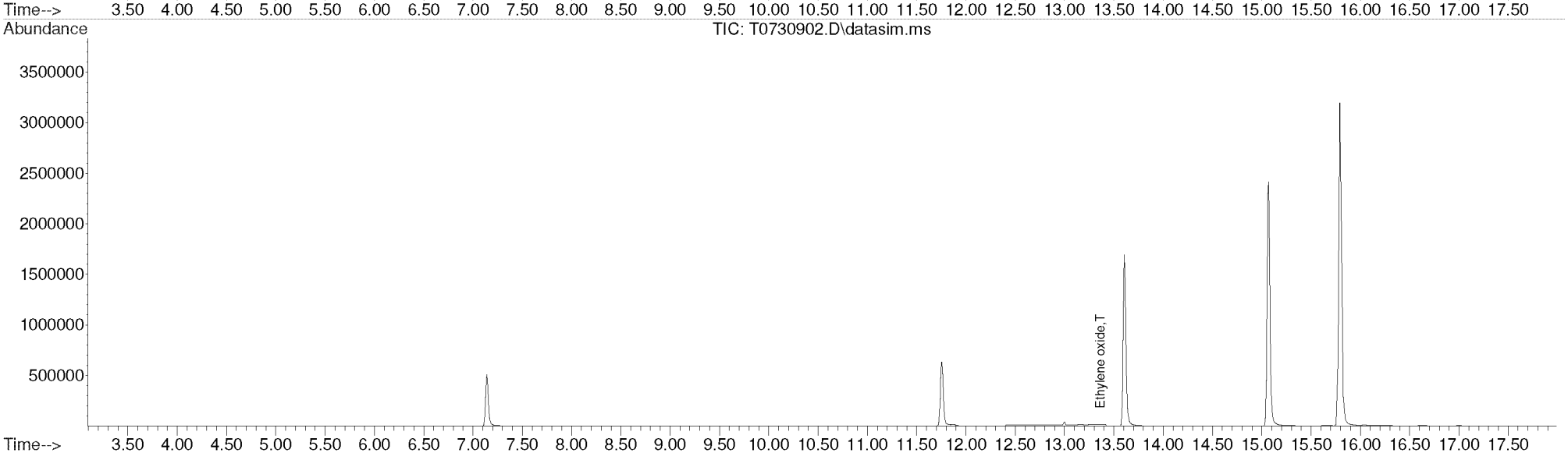
*Manually integrated peaks not automatically detected by software. BLD 8/2/19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730902.D
Acq On : 30 Jul 2019 12:36 pm
Operator : BHB
Sample : ASTD 0.04 PPBV, IH686797A (Sig #1); ASTD 0.20 PPBV, IH686797A (Sig #2)
Misc : IH686797,40
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 31 15:29:38 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:29:09 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730903.D
Acq On : 30 Jul 2019 1:07 pm
Operator : BHB
Sample : ASTD 0.10 PPBV, IH686797A (Sig #1); ASTD 0.50 PPBV, IH686797A (Sig #2)
Misc : IH686797,100
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 31 15:30:30 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:30:09 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Bromochloromethane	11.782	128	604094	10.00	ppbv	0.10
4) 1,4-Difluorobenzene	13.618	114	3115993	10.00	ppbv	0.03
5) Chlorobenzene-d5	15.077	117	2787430	10.00	ppbv	# 0.02
System Monitoring Compounds						
2) Propylene-d6	7.140	46	601946	9.75	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.50%			
6) Bromofluorobenzene (surr)	15.808	95	1859222m	9.93	ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.30%			
Target Compounds						Qvalue
3] Ethylene oxide	13.374	29	2346m	0.076	ppbv	

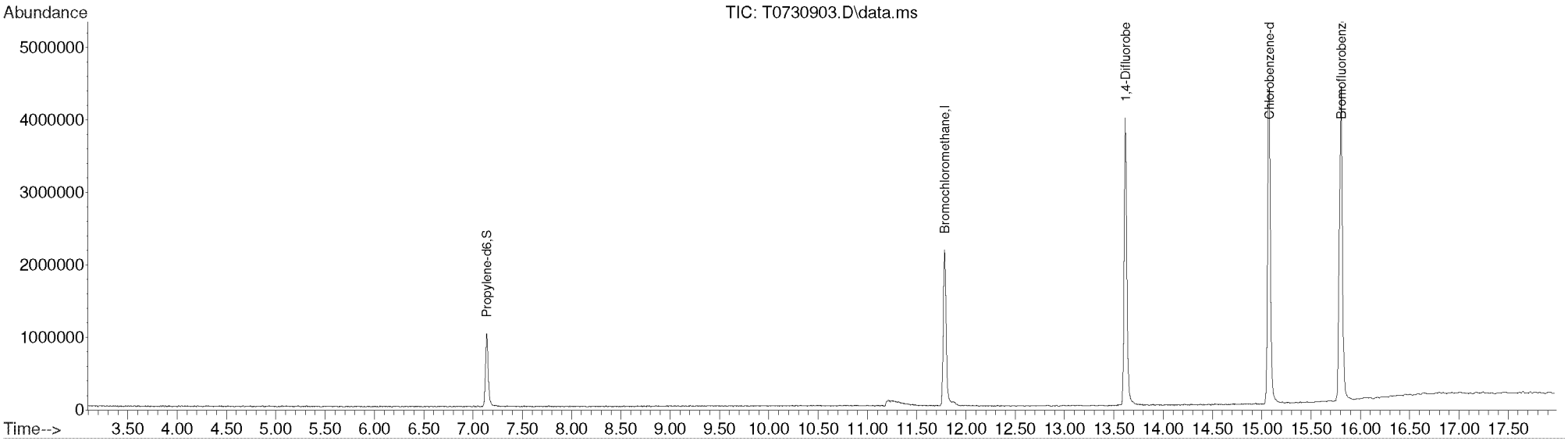
(#) = qualifier out of range (m) = manual integration (+) = signals summed

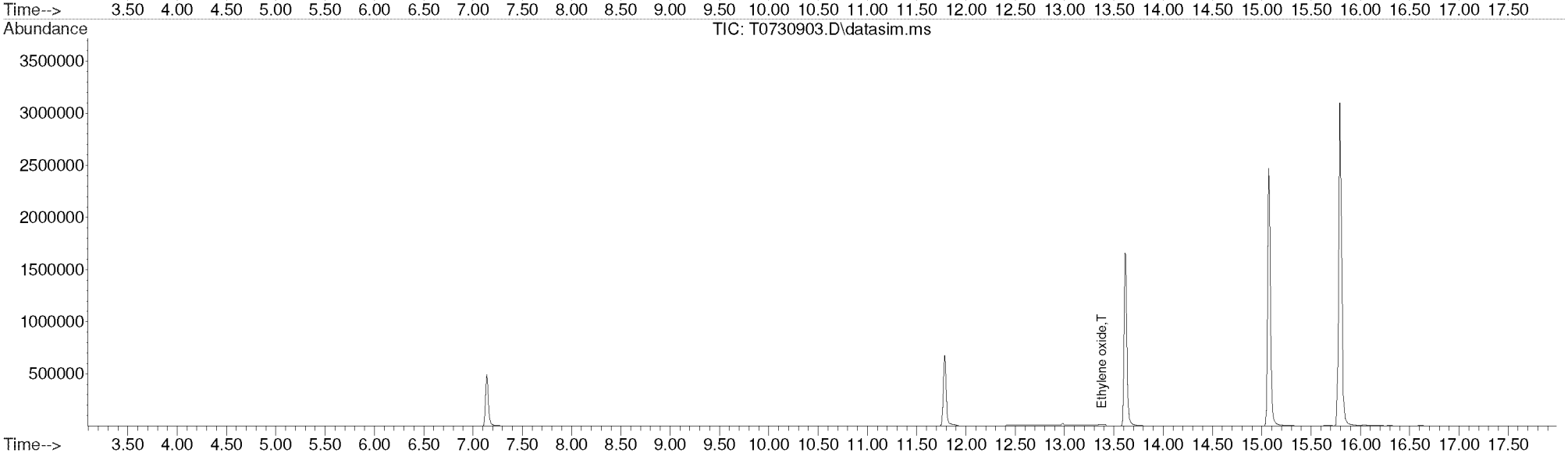
*Manually integrated peaks not automatically detected by software. BLD 8/2/19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730903.D
Acq On : 30 Jul 2019 1:07 pm
Operator : BHB
Sample : ASTD 0.10 PPBV, IH686797A (Sig #1); ASTD 0.50 PPBV, IH686797A (Sig #2)
Misc : IH686797,100
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 31 15:30:30 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:30:09 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730904.D
Acq On : 30 Jul 2019 1:40 pm
Operator : BHB
Sample : ASTD 0.2 PPBV, IH686797A (Sig #1); ASTD 1.0 PPBV, IH686797A (Sig #2)
Misc : IH686797,200
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jul 31 15:31:45 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:31:00 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Bromochloromethane	11.775	128	618989	10.00	ppbv	0.09
4) 1,4-Difluorobenzene	13.618	114	3098046	10.00	ppbv	0.03
5) Chlorobenzene-d5	15.069	117	2779781	10.00	ppbv	# 0.00
System Monitoring Compounds						
2) Propylene-d6	7.140	46	586455	9.27	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 92.70%			
6) Bromofluorobenzene (surr)	15.808	95	1865320	9.99	ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.90%			
Target Compounds						Qvalue
3] Ethylene oxide	13.359	29	5161m	0.163	ppbv	

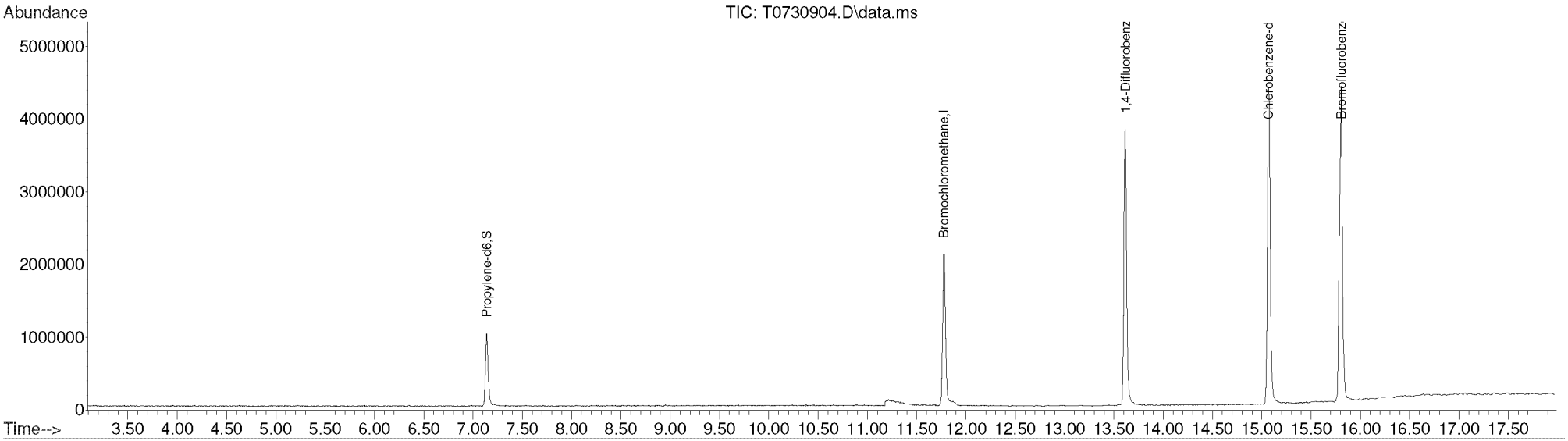
(#) = qualifier out of range (m) = manual integration (+) = signals summed

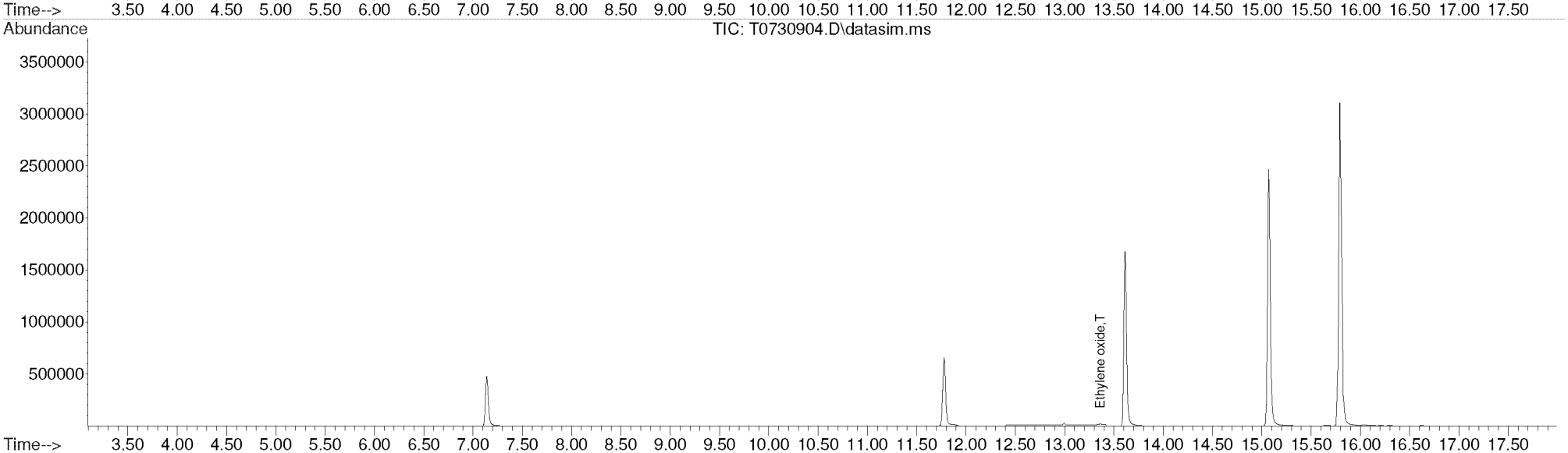
*Manually integrated peaks not automatically detected by software. BLD 8/2/19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730904.D
Acq On : 30 Jul 2019 1:40 pm
Operator : BHB
Sample : ASTD 0.2 PPBV, IH686797A (Sig #1); ASTD 1.0 PPBV, IH686797A (Sig #2)
Misc : IH686797,200
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jul 31 15:31:45 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:31:00 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730905.D
Acq On : 30 Jul 2019 2:18 pm
Operator : BHB
Sample : ASTD 0.5 PPBV, IH686797A (Sig #1); ASTD 2.5 PPBV, IH686797A (Sig #2)
Misc : IH686797,500
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jul 31 15:32:19 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:31:00 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.775	128	604707	10.00 ppbv	0.09
4) 1,4-Difluorobenzene	13.618	114	3041541	10.00 ppbv	0.03
5) Chlorobenzene-d5	15.069	117	2702982	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.140	46	587168	9.51 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 95.10%		
6) Bromofluorobenzene (surr)	15.808	95	1864830	10.27 ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 102.70%		
Target Compounds					Qvalue
3] Ethylene oxide	13.344	29	12959m	0.420 ppbv	

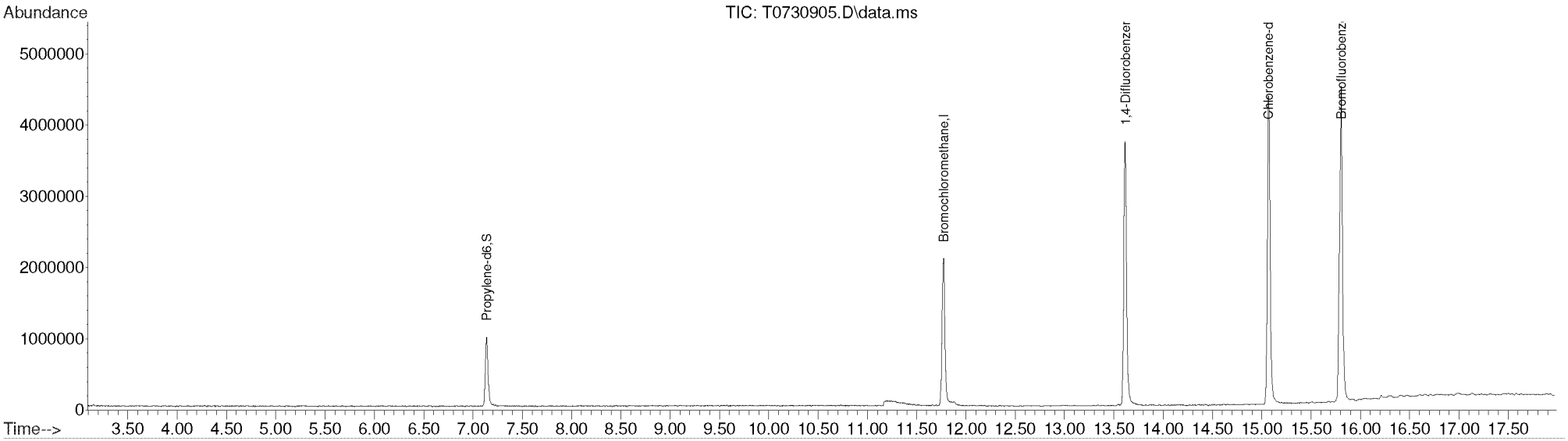
(#) = qualifier out of range (m) = manual integration (+) = signals summed

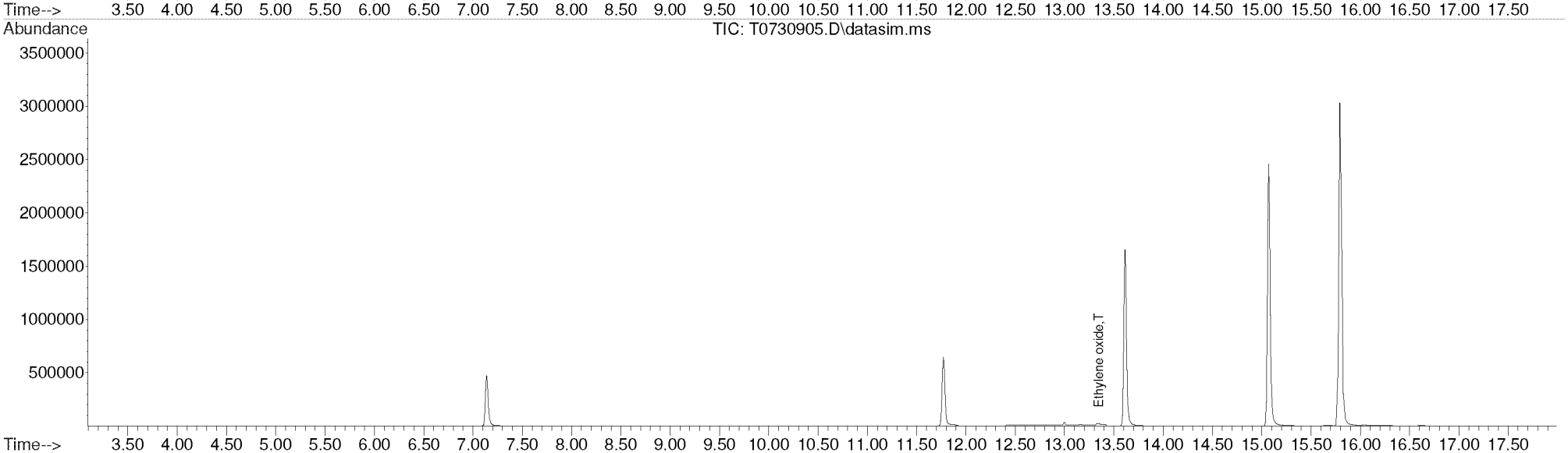
*Manually integrated peaks not automatically detected by software. BLD 8/2/19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730905.D
Acq On : 30 Jul 2019 2:18 pm
Operator : BHB
Sample : ASTD 0.5 PPBV, IH686797A (Sig #1); ASTD 2.5 PPBV, IH686797A (Sig #2)
Misc : IH686797,500
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jul 31 15:32:19 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:31:00 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730906.D
Acq On : 30 Jul 2019 2:49 pm
Operator : BHB
Sample : ASTD 1.0 PPBV, IH686762A (Sig #1); ASTD 5.0 PPBV, IH686762A (Sig #2)
Misc : IH686762,20
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jul 31 15:33:24 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:31:00 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.789	128	601982	10.00 ppbv	0.11
4) 1,4-Difluorobenzene	13.618	114	3042929	10.00 ppbv	0.03
5) Chlorobenzene-d5	15.077	117	2730513	10.00 ppbv	# 0.02
System Monitoring Compounds					
2) Propylene-d6	7.140	46	597623	9.72 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.20%		
6) Bromofluorobenzene (surr)	15.808	95	1829435	9.97 ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.70%		
Target Compounds					Qvalue
3] Ethylene oxide	13.359	29	31821m	1.035 ppbv	

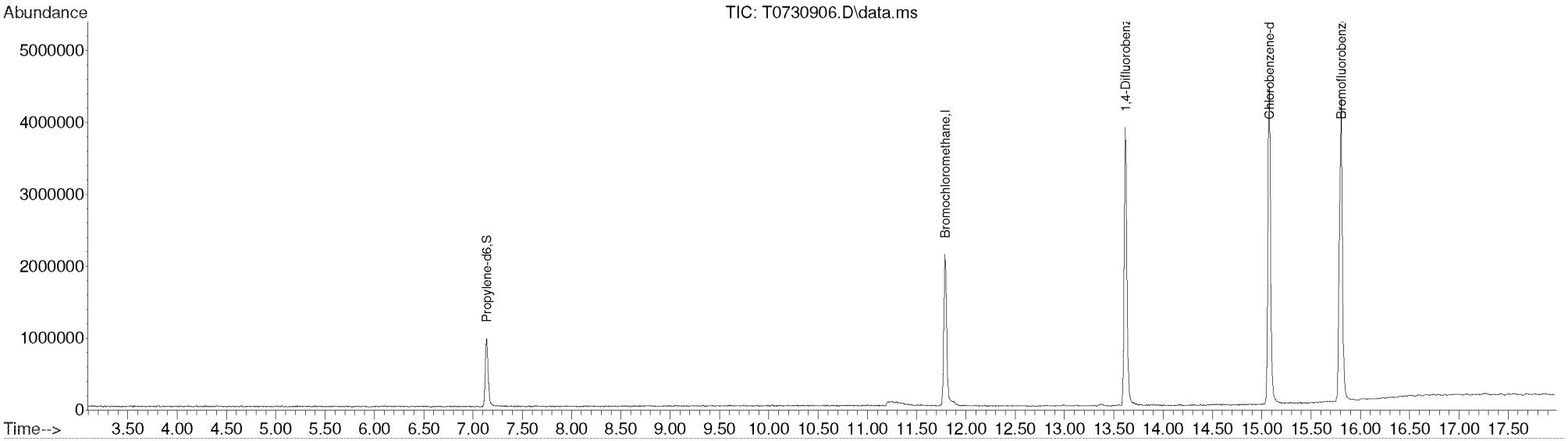
(#) = qualifier out of range (m) = manual integration (+) = signals summed

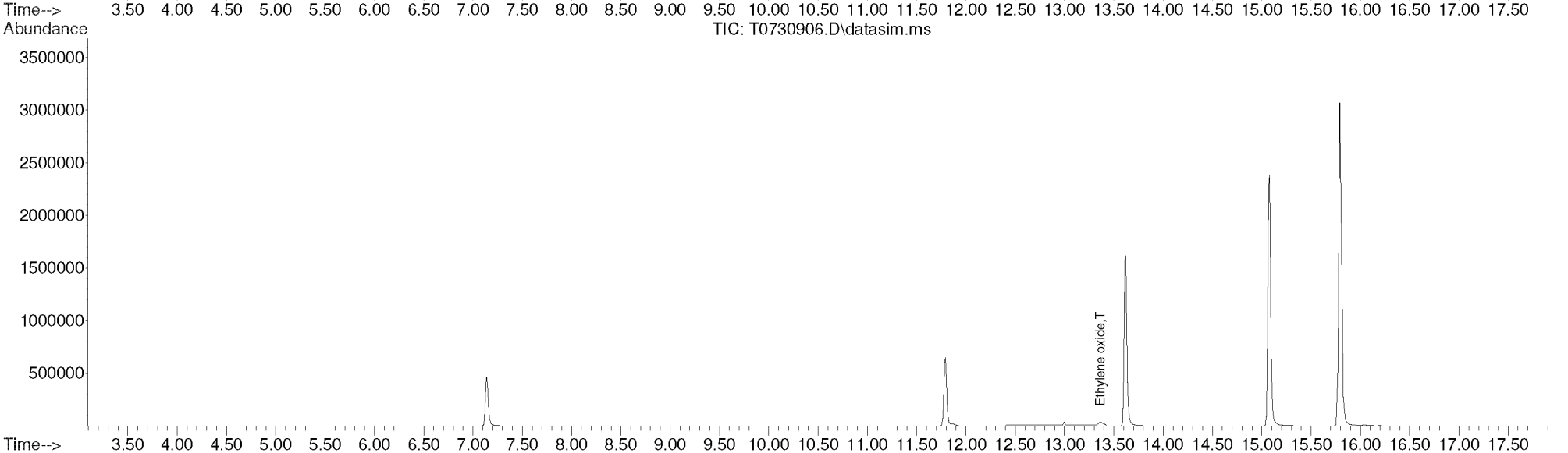
*Manually integrated peaks not automatically detected by software. BLD 8/2/19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730906.D
Acq On : 30 Jul 2019 2:49 pm
Operator : BHB
Sample : ASTD 1.0 PPBV, IH686762A (Sig #1); ASTD 5.0 PPBV, IH686762A (Sig #2)
Misc : IH686762,20
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jul 31 15:33:24 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:31:00 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730907.D
Acq On : 30 Jul 2019 3:20 pm
Operator : BHB
Sample : ASTD 5.0 PPBV, IH686762A (Sig #1); ASTD 25 PPBV, IH686762A (Sig #2)
Misc : IH686762,100
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jul 31 15:28:04 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Tue Jun 11 12:00:51 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.682	128	565531	10.00 ppbv	0.15
4) 1,4-Difluorobenzene	13.584	114	3011656	10.00 ppbv	0.02
5) Chlorobenzene-d5	15.060	117	2679130	10.00 ppbv	#-0.04
System Monitoring Compounds					
2) Propylene-d6	7.140	46	577694	9.92 ppbv	-0.06
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.20%		
6) Bromofluorobenzene (surr)	15.789	95	1800222m	10.17 ppbv	-0.06
Spiked Amount 10.000	Range 80 - 120		Recovery = 101.70%		
Target Compounds					Qvalue
3] Ethylene oxide	13.269	29	144406	5.659 ppbv #	57

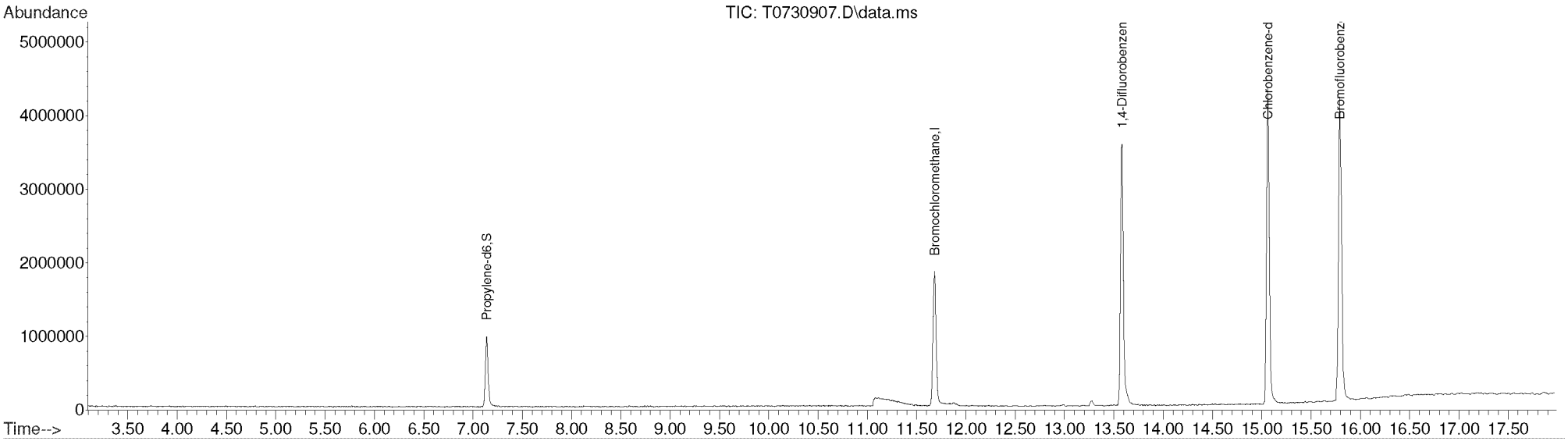
(#) = qualifier out of range (m) = manual integration (+) = signals summed

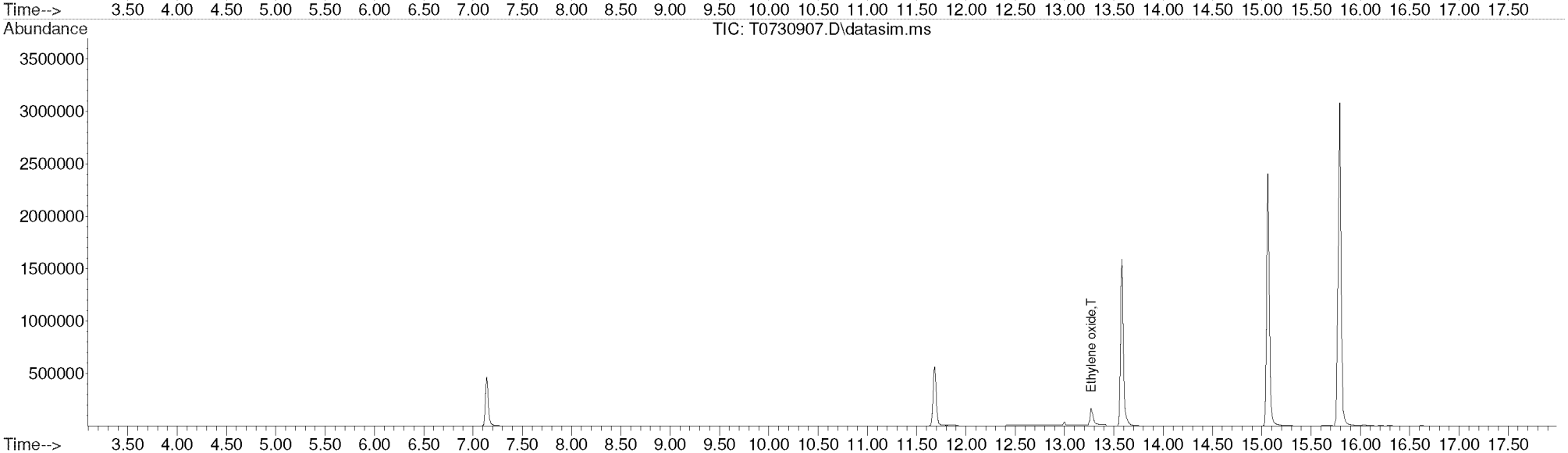
*Manually integrated peaks not automatically detected by software. BLD 8/2/19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730907.D
Acq On : 30 Jul 2019 3:20 pm
Operator : BHB
Sample : ASTD 5.0 PPBV, IH686762A (Sig #1); ASTD 25 PPBV, IH686762A (Sig #2)
Misc : IH686762,100
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jul 31 15:28:04 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Tue Jun 11 12:00:51 2019
Response via : Initial Calibration





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730908.D
Acq On : 30 Jul 2019 3:53 pm
Operator : BHB
Sample : ASTD 10 PPBV, IH686762A (Sig #1); ASTD 50 PPBV, IH686762A (Sig #2)
Misc : IH686762,200
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jul 31 15:34:56 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:34:34 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D

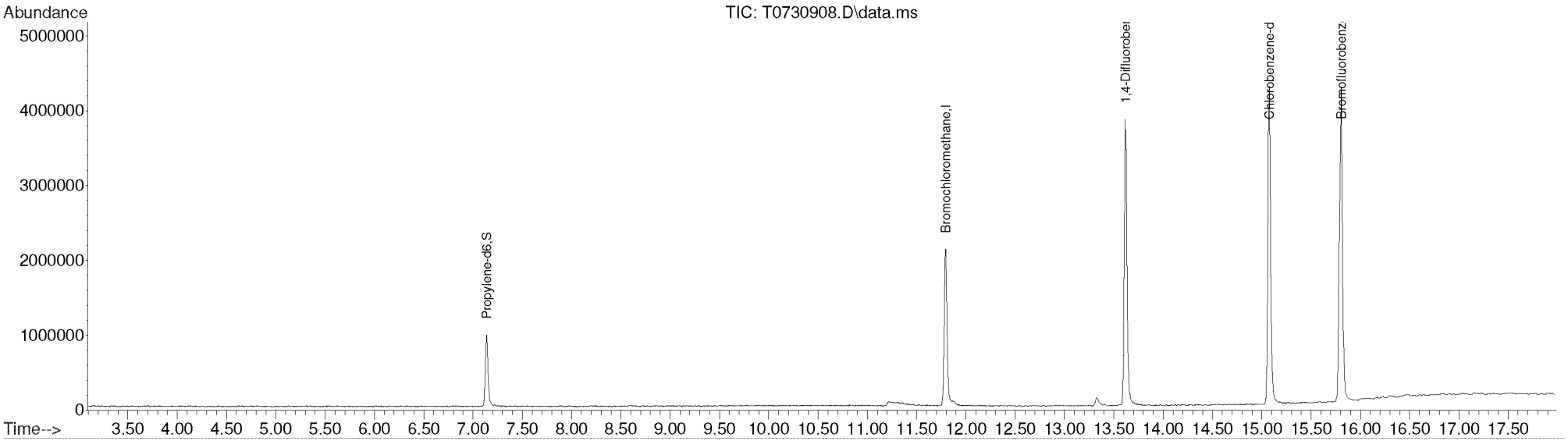
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Bromochloromethane	11.795	128	577117	10.00	ppbv	0.11
4) 1,4-Difluorobenzene	13.618	114	3008779	10.00	ppbv	0.03
5) Chlorobenzene-d5	15.077	117	2692847	10.00	ppbv	# 0.02
System Monitoring Compounds						
2) Propylene-d6	7.140	46	566825	9.61	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 96.10%			
6) Bromofluorobenzene (surr)	15.808	95	1799527	9.95	ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.50%			
Target Compounds						Qvalue
3] Ethylene oxide	13.314	29	264143	8.962	ppbv #	80

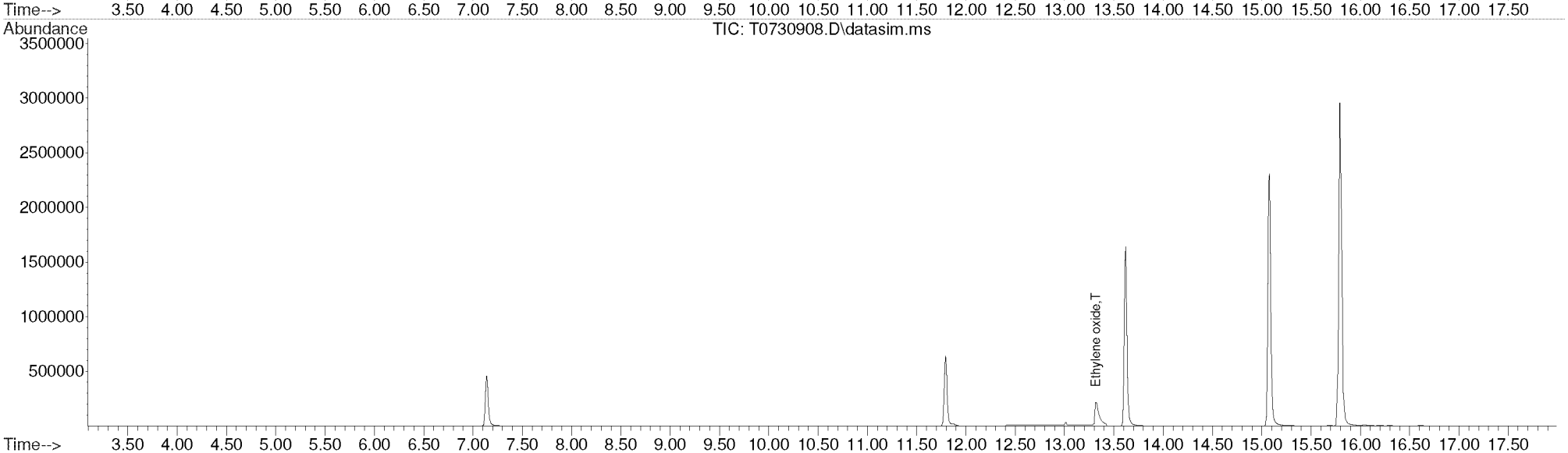
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730908.D
Acq On : 30 Jul 2019 3:53 pm
Operator : BHB
Sample : ASTD 10 PPBV, IH686762A (Sig #1); ASTD 50 PPBV, IH686762A (Sig #2)
Misc : IH686762,200
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jul 31 15:34:56 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:34:34 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730909.D
Acq On : 30 Jul 2019 4:31 pm
Operator : BHB
Sample : ASTD 25 PPBV, IH686762A (Sig #1); ASTD 125 PPBV, IH686762A (Sig #2)
Misc : IH686762,500
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 31 15:35:36 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:35:22 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D

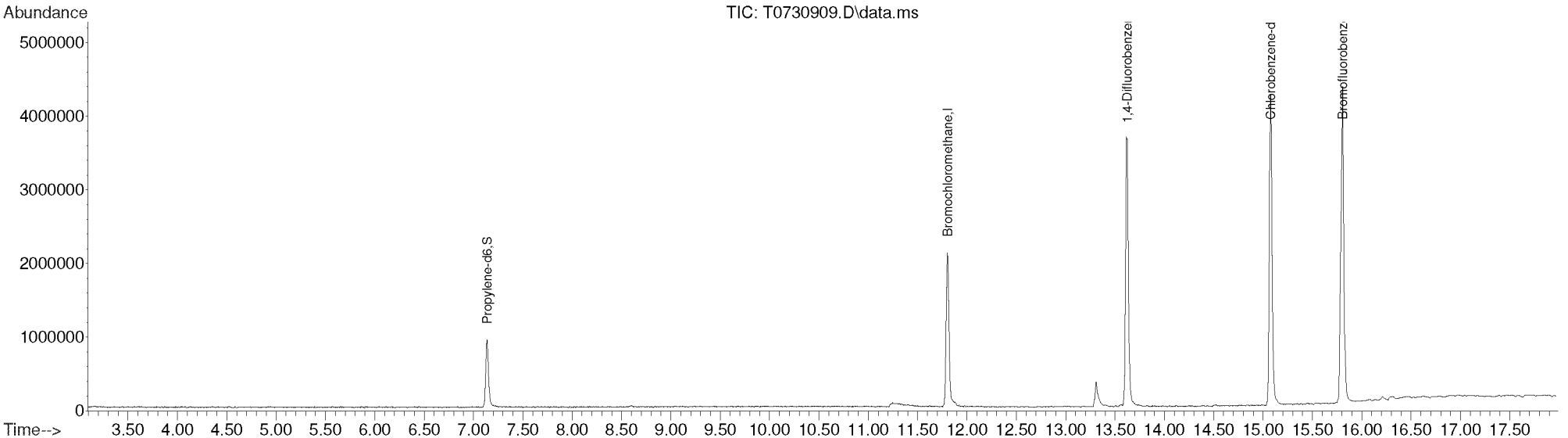
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Bromochloromethane	11.802	128	592072	10.00	ppbv	0.12
4) 1,4-Difluorobenzene	13.624	114	3005614	10.00	ppbv	0.04
5) Chlorobenzene-d5	15.077	117	2640962	10.00	ppbv	# 0.02
System Monitoring Compounds						
2) Propylene-d6	7.140	46	571546	9.45	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 94.50%			
6) Bromofluorobenzene (surr)	15.808	95	1825241	10.29	ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 102.90%			
Target Compounds						Qvalue
3] Ethylene oxide	13.299	29	652160	21.569	ppbv	87

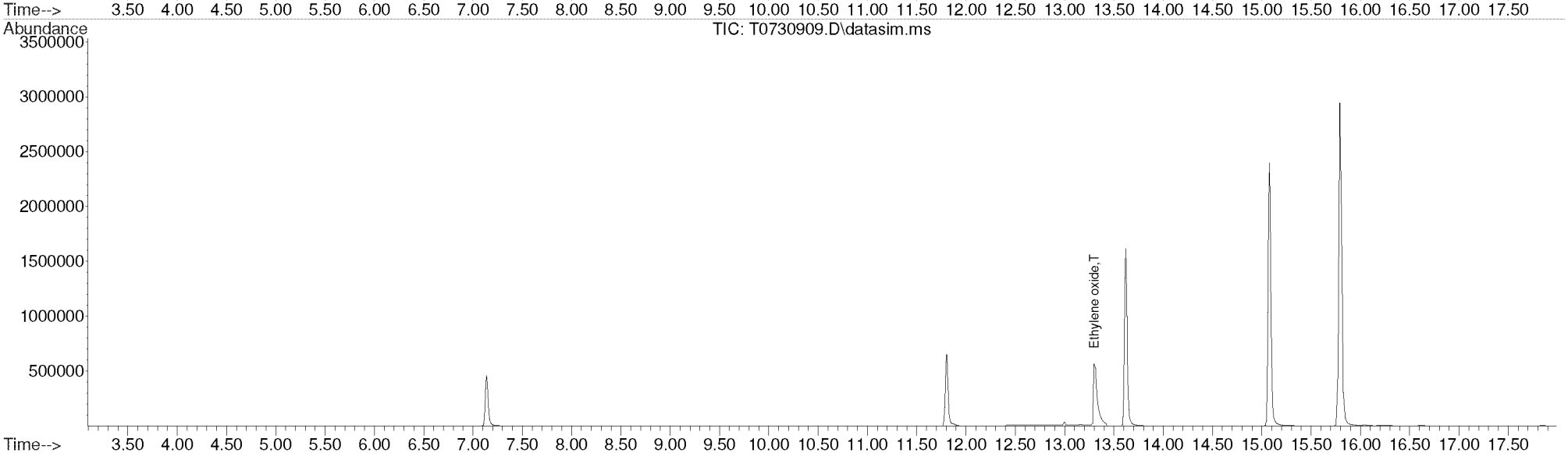
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30 - Copy\
Data File : T0730909.D
Acq On : 30 Jul 2019 4:31 pm
Operator : BHB
Sample : ASTD 25 PPBV, IH686762A (Sig #1); ASTD 125 PPBV, IH686762A (Sig #2)
Misc : IH686762,500
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 31 15:35:36 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:35:22 2019
Response via : Continuing Cal File: C:\msdchem\1\data\2019\07\30\T0730907.D





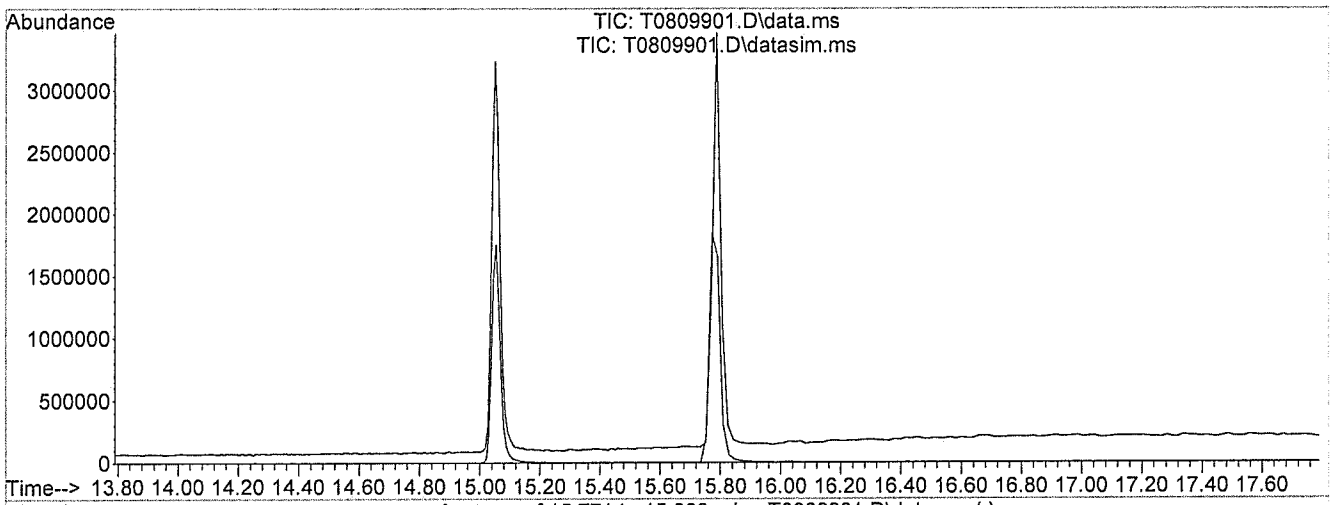
GC/MS
RAW QC DATA

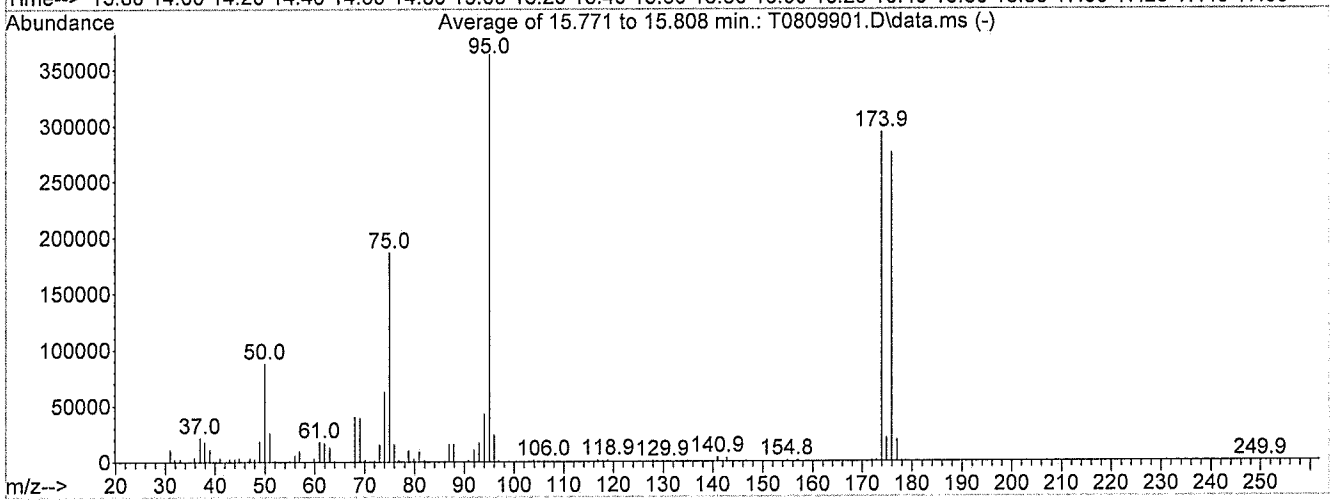
BFB

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809901.D
Acq On : 9 Aug 2019 8:38 am
Operator : BLD
Sample : BFB
Misc : BFB,WG452190,1
ALS Vial : 13 Sample Multiplier: 1

Integration File signal 1: rteint.p
Integration File signal 2: rteint2.p

Method : C:\msdchem\1\methods\T190820E.M
Title :
Last Update : Wed Aug 21 08:23:53 2019





AutoFind: Scans 1750, 1751, 1752; Background Corrected with Scan 1742

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.1	87897	PASS
75	95	30	66	51.3	186861	PASS
95	95	100	100	100.0	364117	PASS
96	95	5	9	6.6	24076	PASS
173	174	0.00	2	0.5	1351	PASS
174	95	50	120	80.8	294315	PASS
175	174	4	9	7.2	21270	PASS
176	174	93	101	93.8	276011	PASS
177	176	5	9	6.9	19005	PASS

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809907.D
Acq On : 9 Aug 2019 11:51 am
Operator : BLD
Sample : BLANK
Misc : WG452190-1,WG452190,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 09 13:19:21 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.755	128	388787	10.00 ppbv	0.07
4) 1,4-Difluorobenzene	13.558	114	2007992	10.00 ppbv	-0.03
5) Chlorobenzene-d5	14.994	117	1785890	10.00 ppbv	#-0.07
System Monitoring Compounds					
2) Propylene-d6	7.127	46	395777	10.37 ppbv	-0.01
Spiked Amount 10.000	Range 80 - 120		Recovery = 103.70%		
6) Bromofluorobenzene (surr)	15.753	95	1198410	9.93 ppbv	-0.04
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.30%		

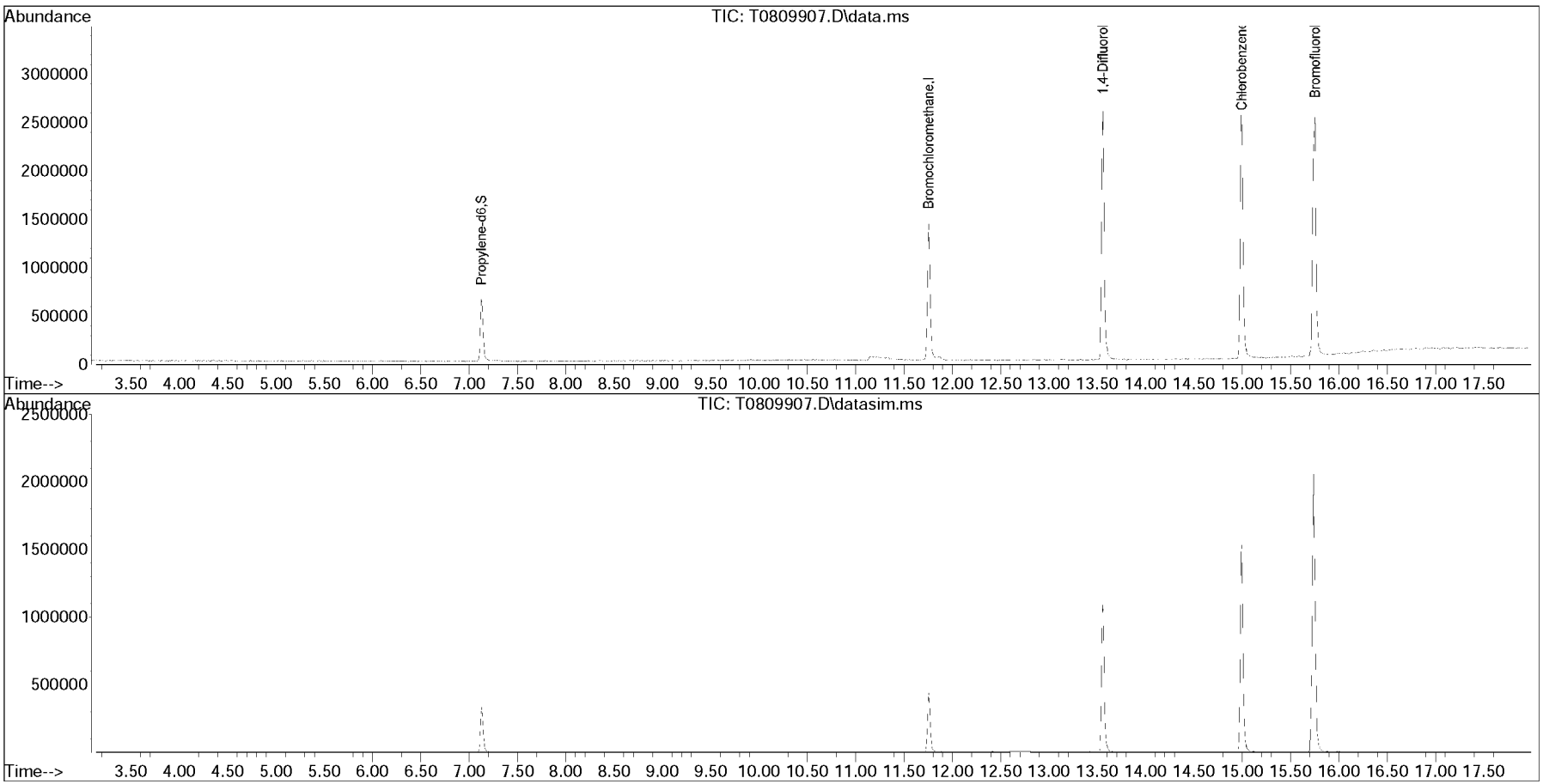
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809907.D
Acq On : 9 Aug 2019 11:51 am
Operator : BLD
Sample : BLANK
Misc : WG452190-1,WG452190,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 09 13:19:21 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809903.D
Acq On : 9 Aug 2019 9:40 am
Operator : BLD
Sample : LCS 5.0 PPBV, IH686977A
Misc : WG452190-2,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 09 11:57:04 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

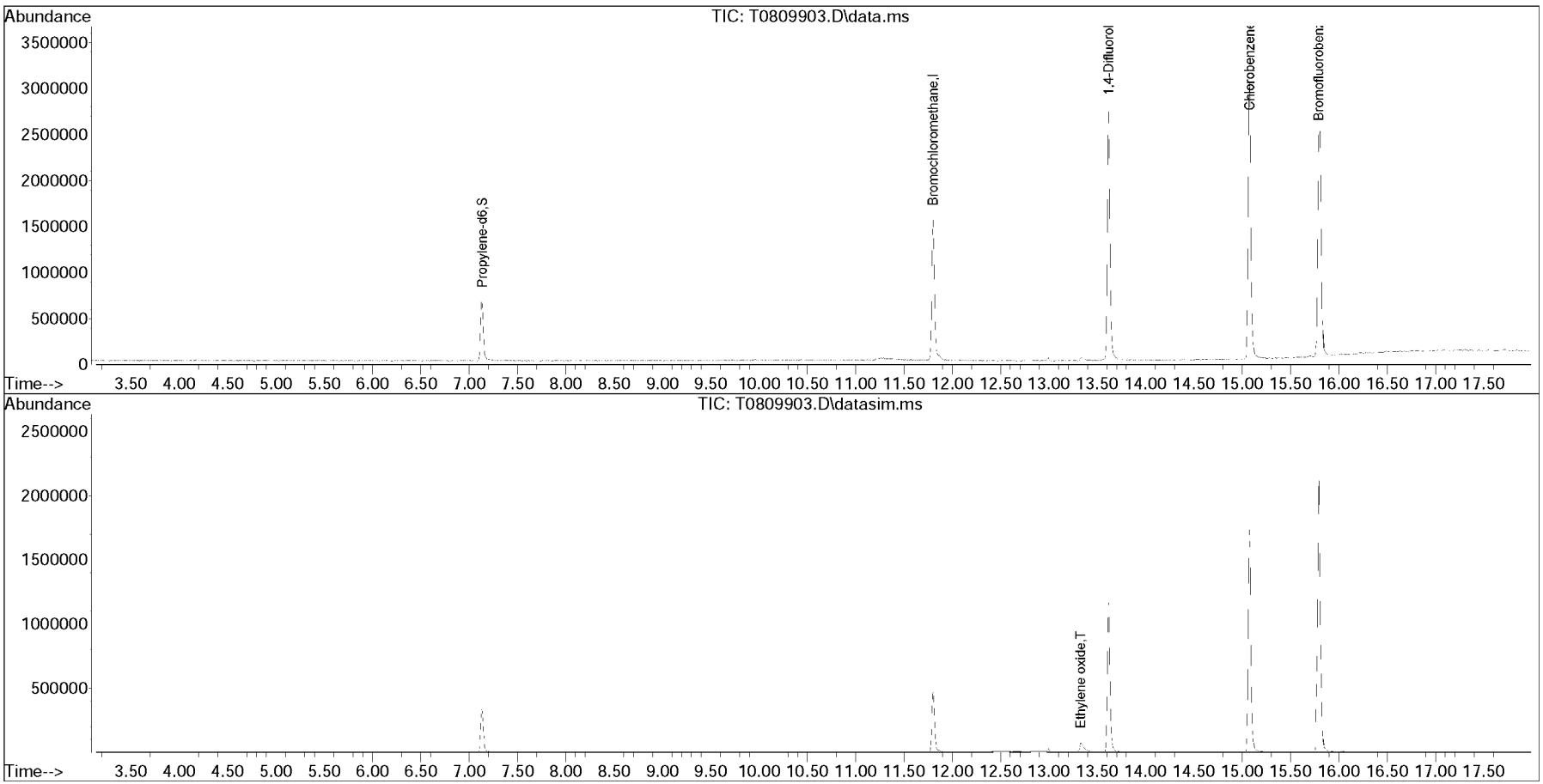
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.802	128	426482	10.00 ppbv	0.12
4) 1,4-Difluorobenzene	13.618	114	2177118	10.00 ppbv	0.03
5) Chlorobenzene-d5	15.077	117	1899890	10.00 ppbv	# 0.02
System Monitoring Compounds					
2) Propylene-d6	7.133	46	411542	9.83 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 98.30%		
6) Bromofluorobenzene (surr)	15.789	95	1279620	9.97 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.70%		
Target Compounds					Qvalue
3] Ethylene oxide	13.329	29	71724m	3.677 ppbv	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809903.D
Acq On : 9 Aug 2019 9:40 am
Operator : BLD
Sample : LCS 5.0 PPBV, IH686977A
Misc : WG452190-2,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 09 11:57:04 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809904.D
Acq On : 9 Aug 2019 10:12 am
Operator : BLD
Sample : LCSD 5.0 PPBV, IH686977A
Misc : WG452190-3,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 09 11:57:36 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

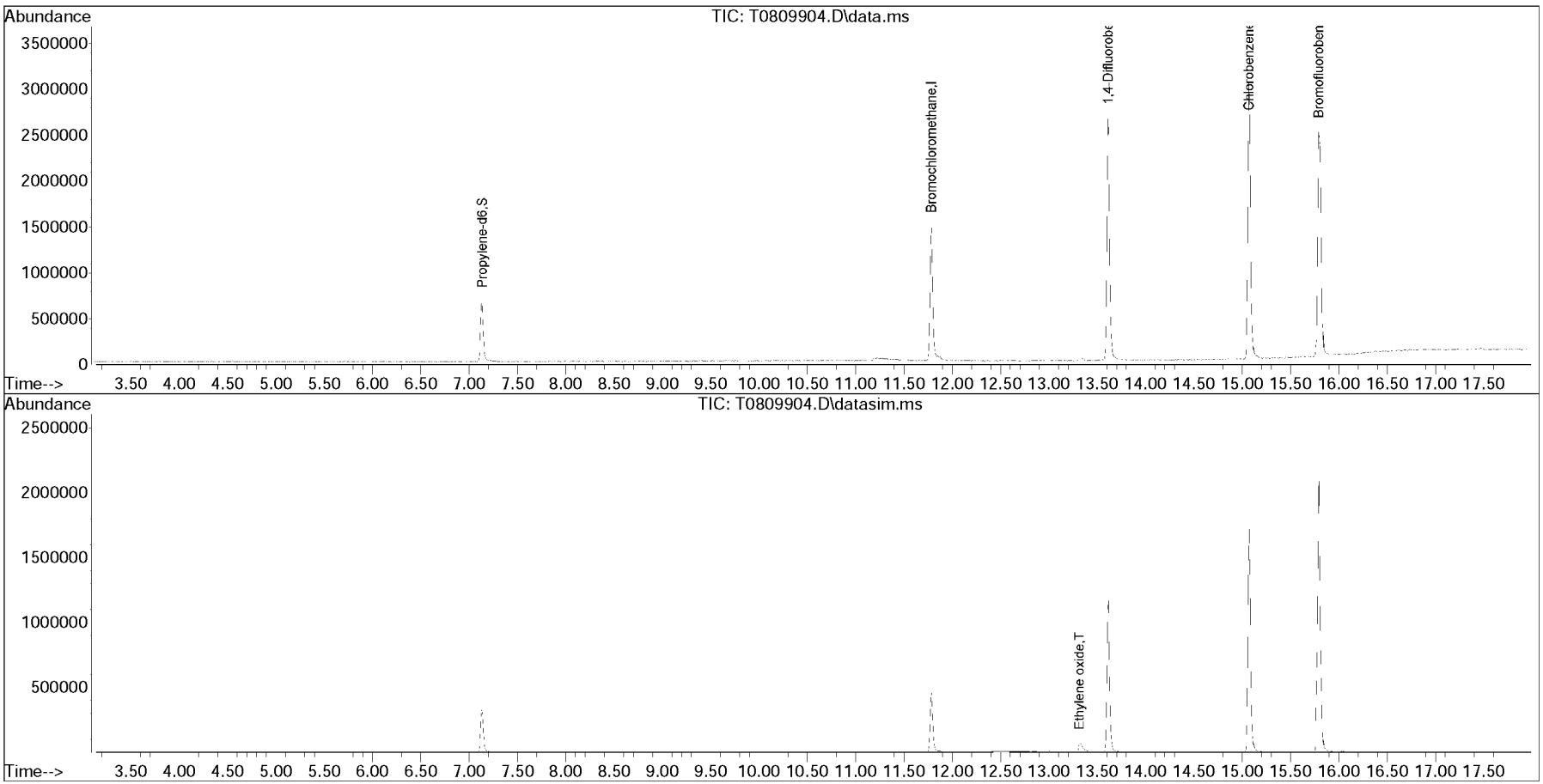
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.782	128	413965	10.00 ppbv	0.10
4) 1,4-Difluorobenzene	13.611	114	2118169	10.00 ppbv	0.03
5) Chlorobenzene-d5	15.069	117	1881332	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.134	46	399337	9.83 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 98.30%		
6) Bromofluorobenzene (surr)	15.790	95	1231099	9.69 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 96.90%		
Target Compounds					Qvalue
3] Ethylene oxide	13.314	29	83572m	4.413 ppbv	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809904.D
Acq On : 9 Aug 2019 10:12 am
Operator : BLD
Sample : LCSD 5.0 PPBV, IH686977A
Misc : WG452190-3,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 09 11:57:36 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809906.D
Acq On : 9 Aug 2019 11:13 am
Operator : BLD
Sample : DLS 0.040 PPBV, IH686797A
Misc : WG452190-4,IH686797,40
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Aug 09 13:18:40 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

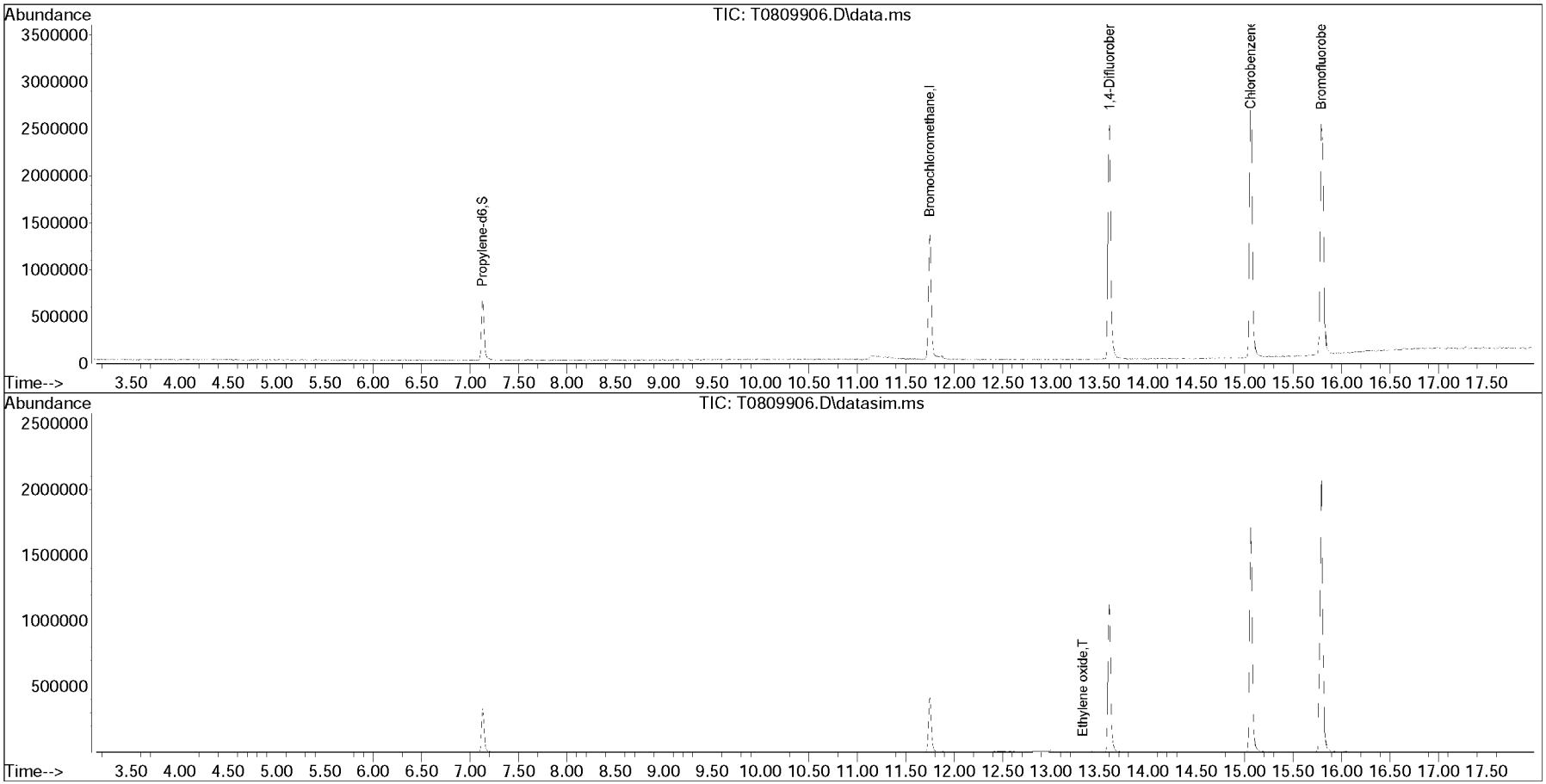
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.749	128	391449	10.00 ppbv	0.07
4) 1,4-Difluorobenzene	13.604	114	2105490	10.00 ppbv	0.02
5) Chlorobenzene-d5	15.060	117	1881453	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.127	46	395094	10.28 ppbv	-0.01
Spiked Amount 10.000	Range 80 - 120		Recovery = 102.80%		
6) Bromofluorobenzene (surr)	15.789	95	1232542	9.70 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.00%		
Target Compounds					Qvalue
3] Ethylene oxide	13.329	29	806m	0.045 ppbv	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\09\
Data File : T0809906.D
Acq On : 9 Aug 2019 11:13 am
Operator : BLD
Sample : DLS 0.040 PPBV, IH686797A
Misc : WG452190-4,IH686797,40
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Aug 09 13:18:40 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

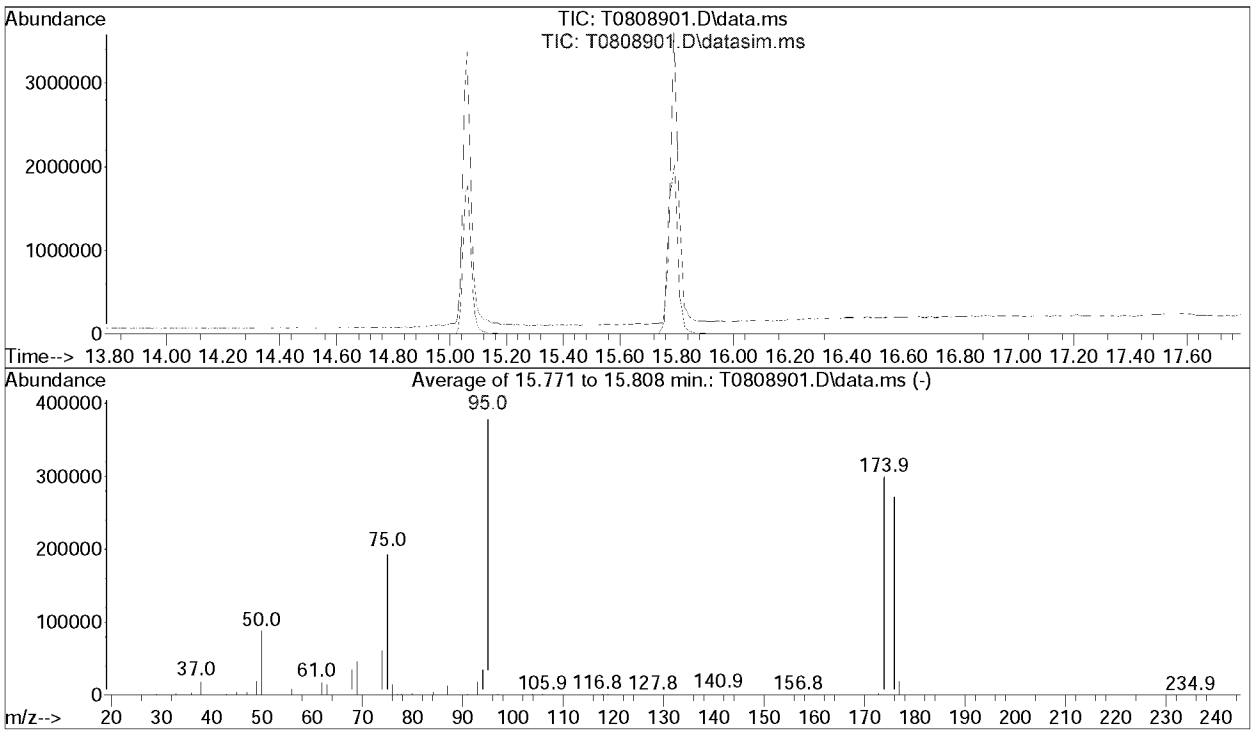


BFB

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808901.D
Acq On : 8 Aug 2019 8:55 am
Operator : BLD
Sample : BFB
Misc : BFB,WG452050,1
ALS Vial : 13 Sample Multiplier: 1

Integration File signal 1: rteint.p
Integration File signal 2: rteint2.p

Method : C:\msdchem\1\methods\T190730E.M
Title :
Last Update : Wed Jul 31 15:36:01 2019



AutoFind: Scans 1750, 1751, 1752; Background Corrected with Scan 1740

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	22.3	88527	PASS
75	95	30	66	50.0	198213	PASS
95	95	100	100	100.0	396772	PASS
96	95	5	9	6.4	25291	PASS
173	174	0.00	2	1.0	2889	PASS
174	95	50	120	75.5	299725	PASS
175	174	4	9	7.6	22648	PASS
176	174	93	101	97.1	290893	PASS
177	176	5	9	6.7	19506	PASS

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808907.D
Acq On : 8 Aug 2019 12:09 pm
Operator : BLD
Sample : BLANK
Misc : WG452050-1,WG452050,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 08 13:01:27 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Bromochloromethane	11.782	128	431890	10.00	ppbv	0.10
4) 1,4-Difluorobenzene	13.564	114	2162294	10.00	ppbv	-0.02
5) Chlorobenzene-d5	15.002	117	1894854	10.00	ppbv	#-0.06
System Monitoring Compounds						
2) Propylene-d6	7.133	46	423719	9.99	ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.90%			
6) Bromofluorobenzene (surr)	15.752	95	1296941	10.13	ppbv	-0.04
Spiked Amount 10.000	Range 80 - 120		Recovery = 101.30%			

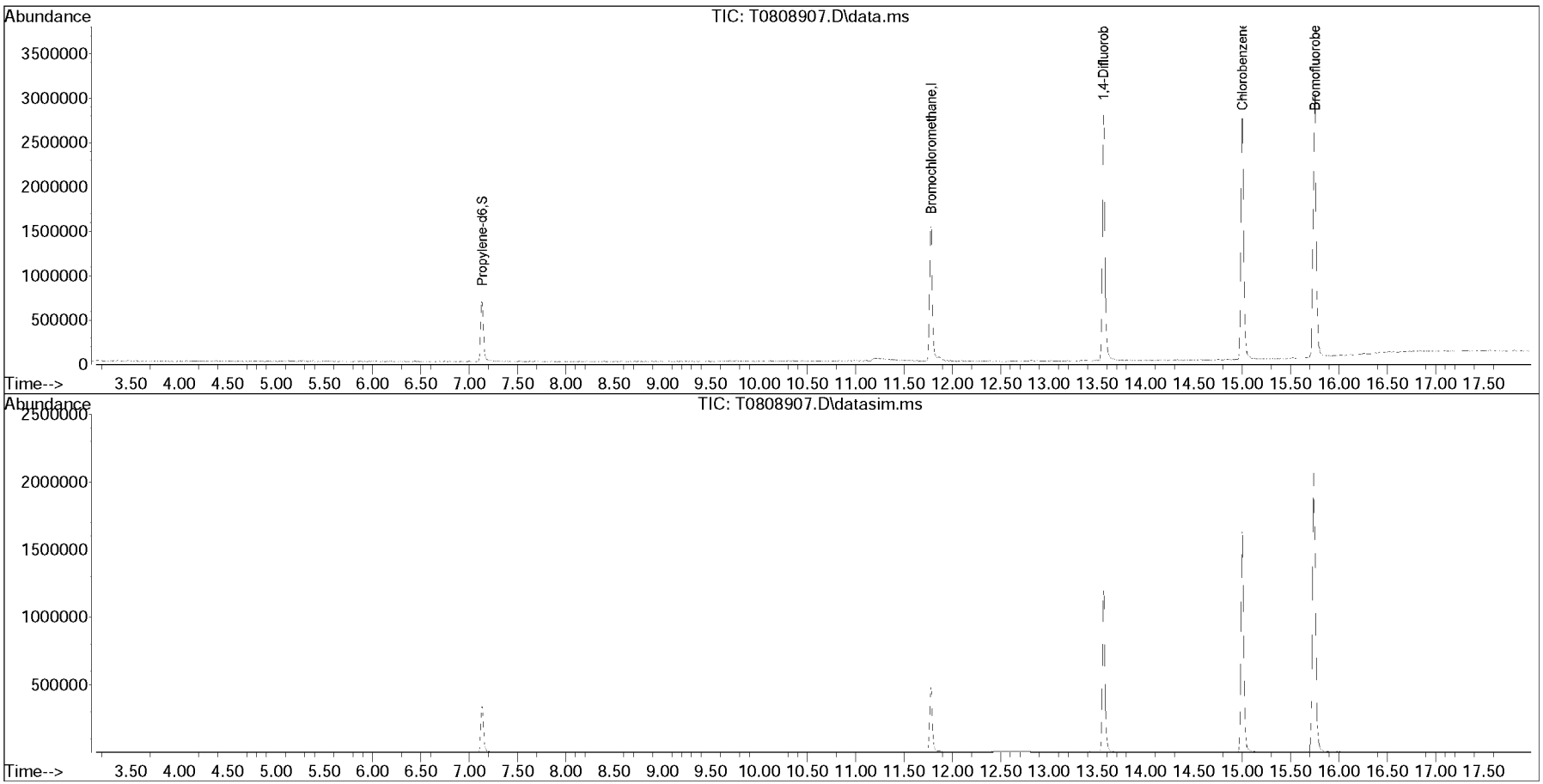
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808907.D
Acq On : 8 Aug 2019 12:09 pm
Operator : BLD
Sample : BLANK
Misc : WG452050-1,WG452050,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 08 13:01:27 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808903.D
Acq On : 8 Aug 2019 9:58 am
Operator : BLD
Sample : LCS 5.0 PPBV, IH686977A
Misc : WG452050-2,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 08 10:51:08 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

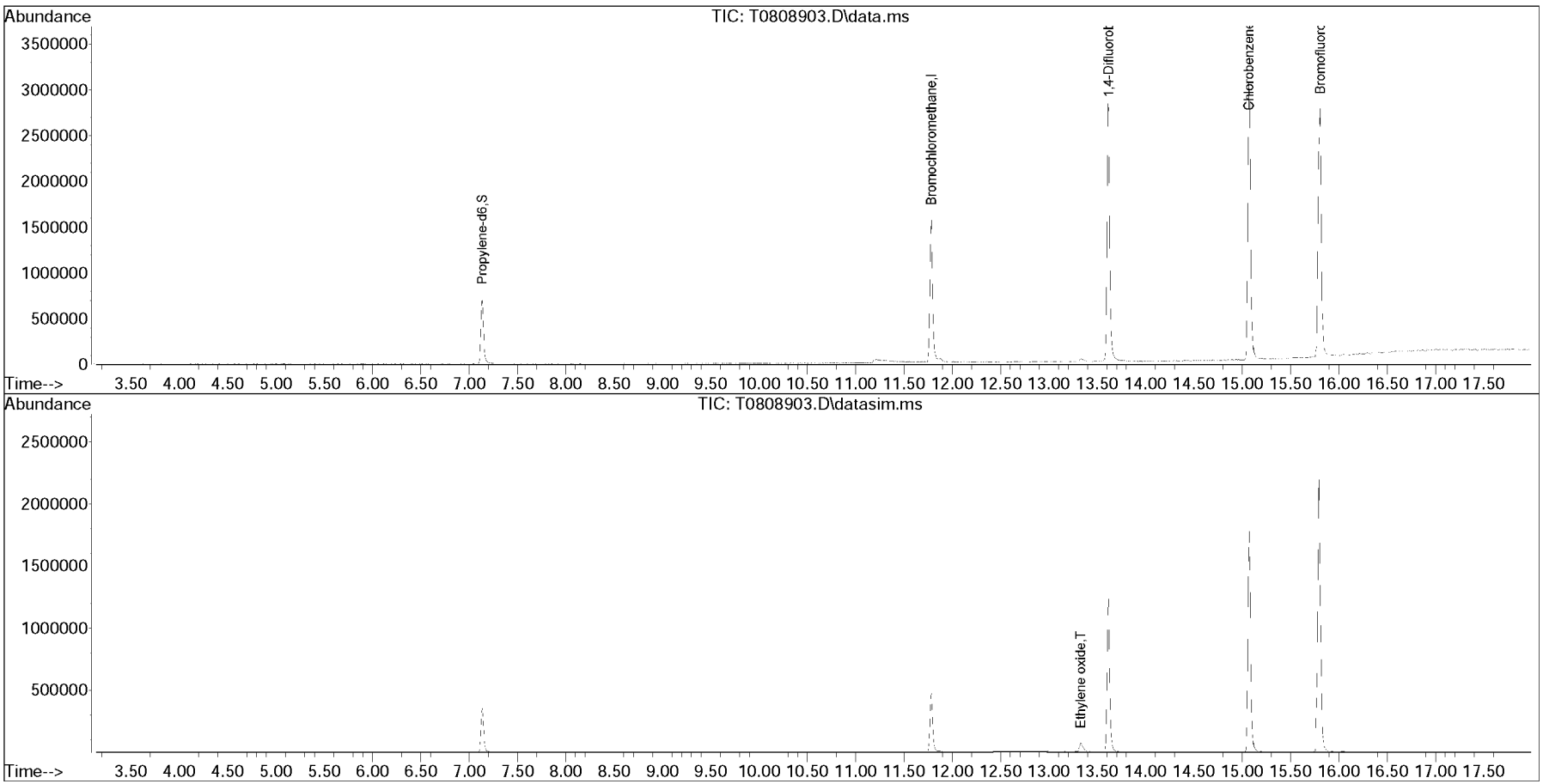
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.782	128	410784	10.00 ppbv	0.10
4) 1,4-Difluorobenzene	13.617	114	2271788	10.00 ppbv	0.03
5) Chlorobenzene-d5	15.069	117	1989162	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.133	46	423619	10.50 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 105.00%		
6) Bromofluorobenzene (surr)	15.808	95	1309791	9.75 ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.50%		
Target Compounds					Qvalue
3] Ethylene oxide	13.329	29	82137m	4.371 ppbv	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808903.D
Acq On : 8 Aug 2019 9:58 am
Operator : BLD
Sample : LCS 5.0 PPBV, IH686977A
Misc : WG452050-2,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 08 10:51:08 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808904.D
Acq On : 8 Aug 2019 10:29 am
Operator : BLD
Sample : LCSD 5.0 PPBV, IH686977A
Misc : WG452050-3,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 08 10:51:22 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

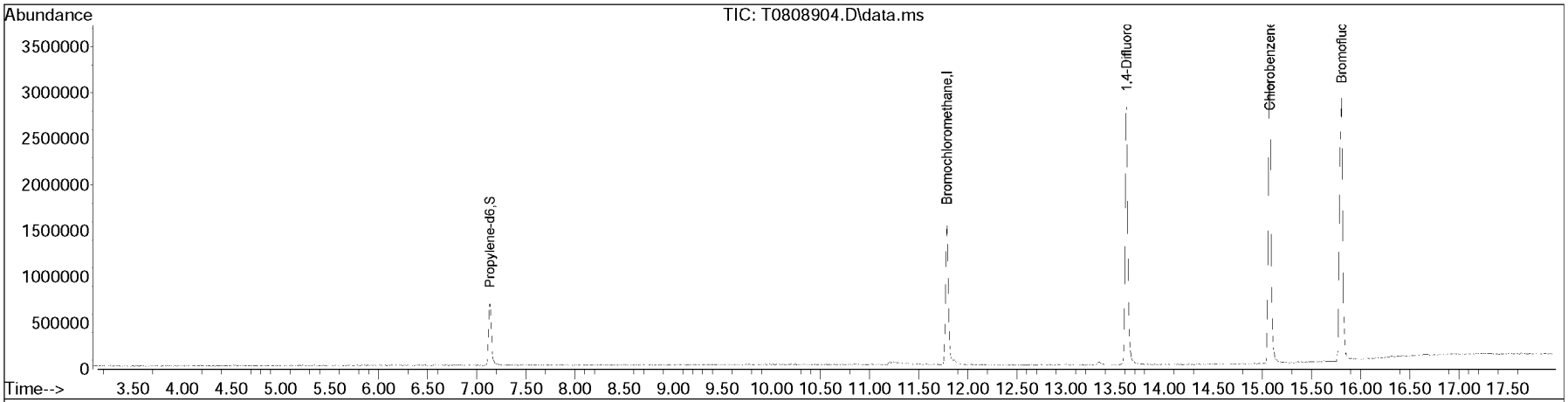
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.788	128	441438	10.00 ppbv	0.11
4) 1,4-Difluorobenzene	13.617	114	2250003	10.00 ppbv	0.03
5) Chlorobenzene-d5	15.077	117	2021702	10.00 ppbv	# 0.02
System Monitoring Compounds					
2) Propylene-d6	7.133	46	419720	9.68 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 96.80%		
6) Bromofluorobenzene (surr)	15.808	95	1330313	9.74 ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 97.40%		
Target Compounds					Qvalue
3] Ethylene oxide	13.329	29	78534m	3.889 ppbv	

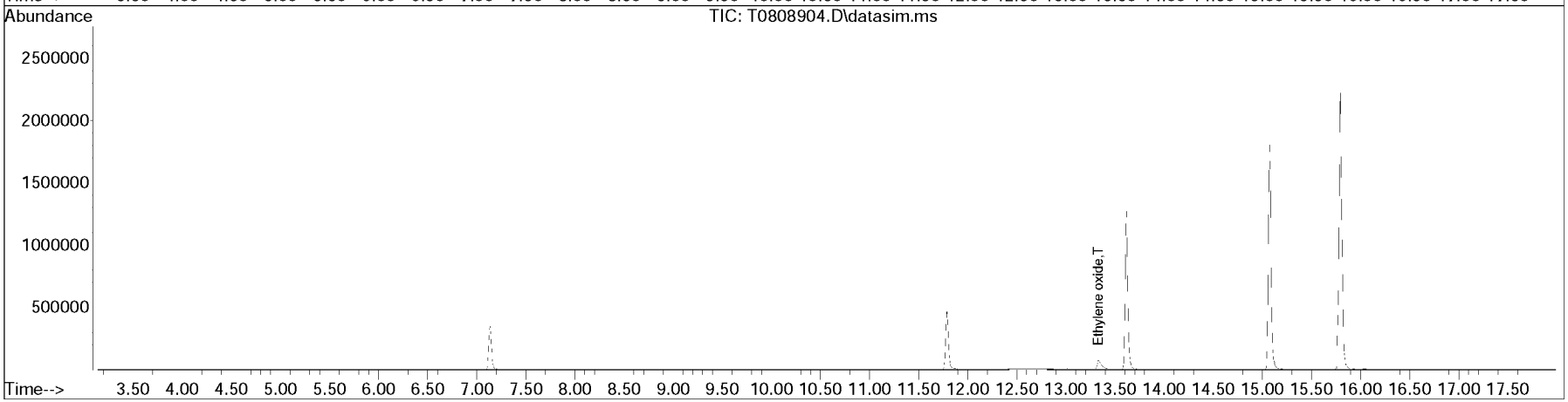
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808904.D
Acq On : 8 Aug 2019 10:29 am
Operator : BLD
Sample : LCSD 5.0 PPBV, IH686977A
Misc : WG452050-3,IH686977,100
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 08 10:51:22 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration





Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808906.D
Acq On : 8 Aug 2019 11:30 am
Operator : BLD
Sample : DLS 0.040 PPBV, IH686797A
Misc : WG452050-4,IH686797,40
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Aug 08 13:00:45 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

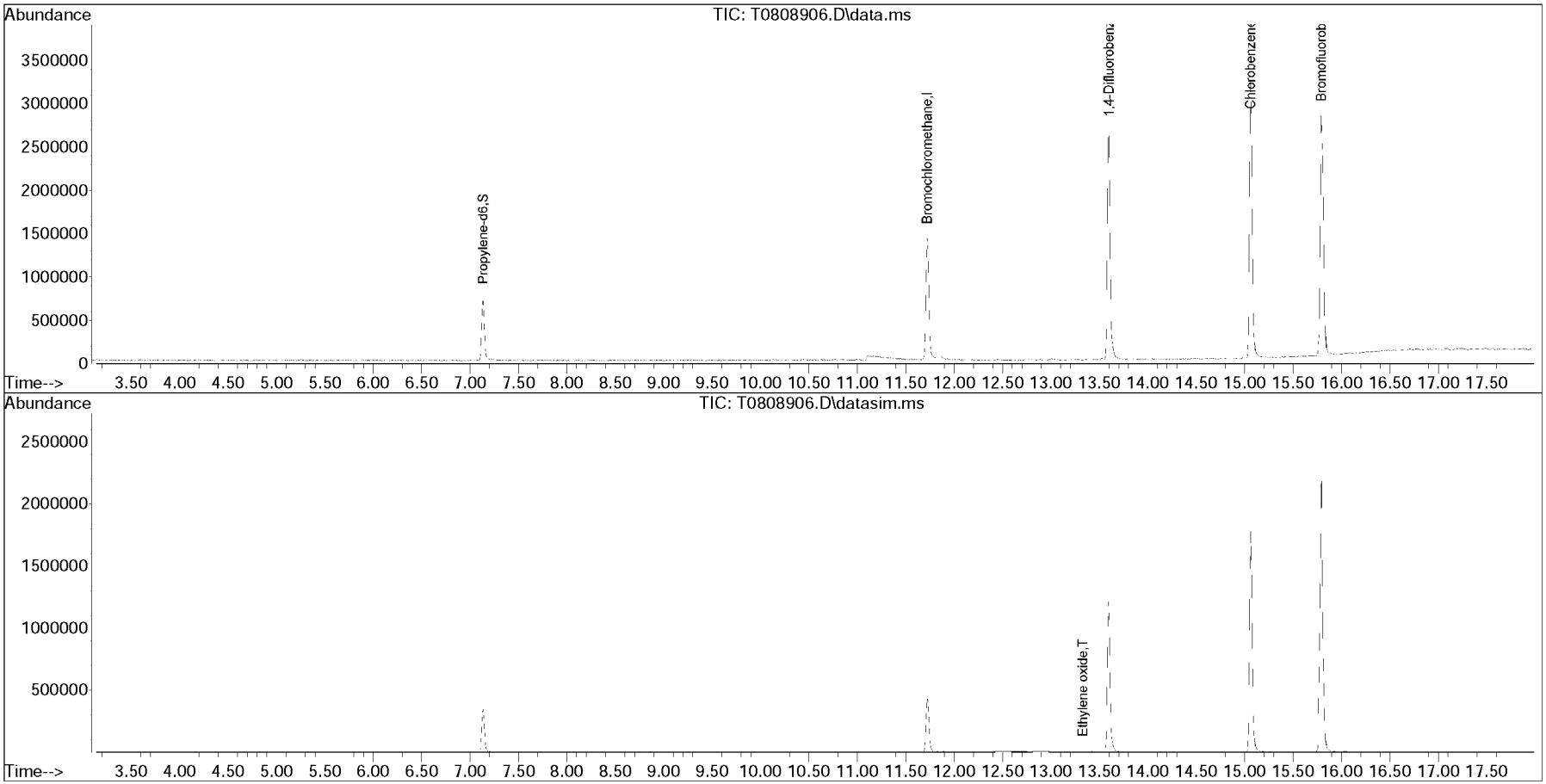
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.722	128	412977	10.00 ppbv	0.04
4) 1,4-Difluorobenzene	13.598	114	2246498	10.00 ppbv	0.01
5) Chlorobenzene-d5	15.061	117	2012510	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.134	46	434391	10.71 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 107.10%		
6) Bromofluorobenzene (surr)	15.790	95	1317749	9.69 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 96.90%		
Target Compounds					Qvalue
3] Ethylene oxide	13.329	29	768m	0.041 ppbv	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\08\08\
Data File : T0808906.D
Acq On : 8 Aug 2019 11:30 am
Operator : BLD
Sample : DLS 0.040 PPBV, IH686797A
Misc : WG452050-4,IH686797,40
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Aug 08 13:00:45 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



GCMS Sample Calculations

Relative Response Factor (RRF)

$$\text{RRF} = \frac{(\text{Ax})(\text{Cis})}{(\text{Ais})(\text{Cx})}$$

Where: Ax =Area of the characteristic ion for the compound being measured in the sample.
Ais = Area of the characteristic ion for the corresponding internal standard.
Cx = concentration of the compound being measured
Cis = concentration of the internal standard

Percent Relative Standard Deviation (%RSD)

$$\%\text{RSD} = \frac{(\text{Standard deviation of RRF values})(100)}{(\text{mean RRF})}$$

Percent Difference (%D)

$$\%\text{D} = \frac{(\text{RRFc}) - (\text{mean RRFi})(100)}{(\text{mean RRFi})}$$

Where: RRFc =relative response factor from the continuing calibration.
Mean RRFi = mean relative response factor from the initial calibration.

<u>Whole Air Canister Samples</u>

$$\mathbf{ppbv} = \frac{(\text{Ax})(\text{IS})(\text{Df})}{(\text{Ais})(\text{RRFi})} \; ; \; \frac{\mathbf{ug}}{\mathbf{m3}} = \frac{(\text{ppbv})(\text{MW})}{24.45}$$

Where: Ax =Area of the characteristic ion for the compound being measured in the sample
Df = Dilution factor
Ais = Area of the characteristic ion for the corresponding internal standard.
IS = Concentration of the Internal Standard injected in ppbv
RRFi = Mean relative response factor (from initial calibration) for the compound being measured.
MW= Molecular Weight of analyte

Note: TICs are calculated using a RRF of 1. The ug/m3 value is calculated using the MW of the most probable TIC from the library comparison.

<u>TO-17 Thermal Desorption Tubes</u>

$$\mathbf{ng} = \frac{(\text{Ax})(\text{IS})(\text{Df})}{(\text{Ais})(\text{RRFi})} \; ; \; \frac{\mathbf{ug}}{\mathbf{m3}} = \left(\frac{\text{ng}}{\text{air vol (L)}}\right)\left(\frac{1\text{ug}}{1000\text{ng}}\right)\left(\frac{1000\text{L}}{1\text{m3}}\right) \; ; \; \mathbf{ppbv} = \frac{\left(\frac{\text{ug}}{\text{m3}}\right)(24.45)}{(\text{MW})}$$

Where: Ax =Area of the compound characteristic ion in the sample.
Ais = Area of the characteristic ion for the corresponding internal standard.
IS = Amount of internal standard in ng
RRFi = Mean relative response factor (from initial calibration) for the compound being measured.
Df = Dilution Factor (Dilution Factor = 1 for tube splits and multiple tube splits)
Air vol = sample volume in L

EPA325b Passive Thermal Desorption Tubes

$$\mathbf{ng} = \frac{(\mathrm{Ax})(\mathrm{IS})(\mathrm{Df})}{(\mathrm{Ais})(\mathrm{RRFi})}; \frac{\mathbf{ug}}{\mathbf{m3}} = \left(\frac{(\mathrm{ng})\left(\frac{\mathrm{ug}}{1000\mathrm{ng}}\right)}{(\mathrm{SR})(\mathrm{time})\left(\frac{\mathrm{m3}}{10^6\mathrm{mL}}\right)}\right); \mathbf{ppbv} = \frac{\left(\frac{\mathrm{ug}}{\mathrm{m3}}\right)(24.45)}{(\mathrm{MW})}$$

Where: Ax =Area of the compound characteristic ion in the sample.
Ais = Area of the characteristic ion for the corresponding internal standard.
IS = Amount of internal standard in ng
RRFi = Mean relative response factor (from initial calibration) for the compound being measured.
Df = Dilution Factor
time = time sampled
SR = Diffusive Sampling Rate for the compound being measured

Radiello

$$\mathbf{ng} = \frac{(\mathrm{Ax})(\mathrm{IS})(\mathrm{Df})}{(\mathrm{Ais})(\mathrm{RRFi})} \; ; \; \frac{\mathbf{ug}}{\mathbf{m3}} = \frac{\left(\frac{\mathrm{M}}{1\mathrm{ul\ injection}}\right)\left(\frac{1000\mathrm{ul}}{1\mathrm{ml}}\right)\left(\frac{1\mathrm{ug}}{1000\mathrm{ng}}\right)(2\mathrm{ml\ final\ vol})}{(\mathrm{t})(\mathrm{Qk})\left(\frac{1\mathrm{L}}{1000\mathrm{ml}}\right)\left(\frac{1\mathrm{m3}}{1000\mathrm{L}}\right)} \; ; \; \mathbf{ppbv} = \frac{\left(\frac{\mathrm{ug}}{\mathrm{m3}}\right)(24.45)}{(\mathrm{MW})}$$

Where: M =mass of the analyte in ng
Qk = Sampling rate of the analyte in ml/min
t = exposure time in minutes
MW = molecular weight of analyte

TVOC s

$$\textbf{Total VOCs as "Comp"} = \frac{\sum_{n=1}^{\infty}(\mathrm{A_n}) - \sum(\mathrm{A_{sys}})}{RF}$$

$$\textbf{RF canister} = \frac{\mathrm{A_{Comp}}}{(\mathrm{C}) * \left(\frac{\mathrm{MW}}{24.45}\right)} \; ; \textbf{RF tube} = \frac{\mathrm{A_{Comp}}}{(\mathrm{C})}$$

Where:

- Ax = peak areas of all peaks in the chromatogram
- A_{Sys} = area of known "system" peaks like the internal standard, CO2 or siloxanes.
- RF = response factor for a compound ("comp" = either heptane (LEEDs 2009) or toluene (LEEDs v4)).
- A_{Comp} = peak area of either heptane or toluene
- MW = molecular weight of heptane or toluene
- C = concentration of heptane or toluene in the opening CCV for the analytical sequence

GC/MS
INJECTION LOG

Sequence Report

8/9/2019 8:12:56 AM

ID	Name	Inlet	Pos.	Int Std	Cal Std	Sample	Method	Inject	Status	Error	Notes
	BFB	Three	T14	50	0	100	Q190109E.CTD3	8/8/2019 8:54:17 AM	Completed		
	CCV 5 PPBV	Three	T1	50	100	0	Q190109E.CTD3	8/8/2019 9:25:37 AM	Completed		
	LCS 5 PPBV	Three	T16	50	0	100	Q190109E.CTD3	8/8/2019 9:56:54 AM	Completed		
	LCSD 5 PPBV	Three	T16	50	0	100	Q190109E.CTD3	8/8/2019 10:28:03 AM	Completed		
	Blank	Three	T14	50	0	100	Q190109E.CTD3	8/8/2019 10:59:06 AM	Completed		
	DLS 0.04 ppbv	Three	T15	50	0	40	Q190109E.CTD3	8/8/2019 11:29:07 AM	Completed		
	Blank	Three	T14	50	0	500	Q190109E.CTD3	8/8/2019 12:07:28 PM	Completed		
	AEC 1.4X1 L487665-2	Three	T1	50	0	500	Q190109E.CTD3	8/8/2019 1:55:14 PM	Completed		
	AEC 1.5X1 L487665-3	Three	T2	50	0	500	Q190109E.CTD3	8/8/2019 2:34:50 PM	Completed		
	CCV 5 PPBV	Three	T1	50	100	0	Q190109E.CTD3	8/8/2019 3:06:02 PM	Completed		
	GHD 1X1 L487933-1	Three	T3	50	0	500	Q190109E.CTD3	8/8/2019 3:44:43 PM	Completed		
	GHD 1X1 L487933-2	Three	T4	50	0	500	Q190109E.CTD3	8/8/2019 4:23:13 PM	Completed		
	GHD 1X1 L487933-3	Three	T5	50	0	500	Q190109E.CTD3	8/8/2019 5:02:21 PM	Completed		
	GHD 1X1 L487933-4	Three	T6	50	0	500	Q190109E.CTD3	8/8/2019 5:41:06 PM	Completed		
	GHD 1X1 L488088-1	Three	T7	50	0	500	Q190109E.CTD3	8/8/2019 6:19:42 PM	Completed		

SAP 8/9/19

Sequence Report

8/9/2019 8:12:56 AM

	GHD 1X1 L488088-2	Three	T8	50	0	500	Q190109E.CTD3	8/8/2019 6:58:18 PM	Completed		
	GHD 1X1 L488088-3	Three	T9	50	0	500	Q190109E.CTD3	8/8/2019 7:36:49 PM	Completed		
	GHD 1X1 L488088-4	Three	T10	50	0	500	Q190109E.CTD3	8/8/2019 8:15:59 PM	Completed		
	GHD 1X1 L488088-5	Three	T11	50	0	500	Q190109E.CTD3	8/8/2019 8:54:48 PM	Completed		
	GHD 1X1 L488088-6	Three	T12	50	0	500	Q190109E.CTD3	8/8/2019 9:33:17 PM	Completed		
	CCV 5 PPBV	Three	T1	50	100	0	Q190109E.CTD3	8/8/2019 10:04:31 PM	Completed		

SAP 8/9/19

Sequence Report

8/12/2019 11:14:29 AM

ID	Name	Vial	Pos.	IntStd	CalStd	Sample	Method	Injed	Status	Error	Notes
	BFB	Three	T14	50	0	100	Q190109E.CTD3	8/9/2019 8:36:32 AM	Completed		
	CCV 5 PPBV	Three	T1	50	100	0	Q190109E.CTD3	8/9/2019 9:07:52 AM	Completed		
	LCS 5 PPBV	Three	T16	50	0	100	Q190109E.CTD3	8/9/2019 9:39:09 AM	Completed		
	LCSD 5 PPBV	Three	T16	50	0	100	Q190109E.CTD3	8/9/2019 10:10:21 AM	Completed		
	Blank	Three	T14	50	0	100	Q190109E.CTD3	8/9/2019 10:41:29 AM	Completed		
	DLS 0.04 ppbv	Three	T15	50	0	40	Q190109E.CTD3	8/9/2019 11:11:32 AM	Completed		
	Blank	Three	T14	50	0	500	Q190109E.CTD3	8/9/2019 11:49:46 AM	Completed		
	GHD 1X1 L488088-7	Three	T1	50	0	500	Q190109E.CTD3	8/9/2019 2:21:08 PM	Completed		
	GHD 1.3X1 L488088-8	Three	T2	50	0	500	Q190109E.CTD3	8/9/2019 3:00:52 PM	Completed		
	GHD 1X1 L488088-9	Three	T3	50	0	500	Q190109E.CTD3	8/9/2019 3:39:33 PM	Completed		
	GHD 1X1 L488088-10	Three	T4	50	0	500	Q190109E.CTD3	8/9/2019 4:17:57 PM	Completed		
	GHD 1X1 L488088-11	Three	T5	50	0	500	Q190109E.CTD3	8/9/2019 4:56:39 PM	Completed		
	GHD 1X1 L488088-12	Three	T6	50	0	500	Q190109E.CTD3	8/9/2019 5:35:33 PM	Completed		
	GHD 1X1 L488220-1	Three	T7	50	0	500	Q190109E.CTD3	8/9/2019 6:14:15 PM	Completed		
	GHD 1X1 L488220-2	Three	T8	50	0	500	Q190109E.CTD3	8/9/2019 6:52:44 PM	Completed		
	GHD 1X1 L488220-3	Three	T9	50	0	500	Q190109E.CTD3	8/9/2019 7:33:52 PM	Completed		
	GHD 1.2X1 L488220-4	Three	T10	50	0	500	Q190109E.CTD3	8/9/2019 8:13:33 PM	Completed		

SAP 8/12/19

Sequence Report

8/12/2019 11:14:29 AM

	CCV 5 PPBV	Three	T1	50	100	0	Q190109E .CTD3	8/9/2019 8:44:42 PM	Complete d		

SAP 8/12/19

2 / 2

GC/MS
STANDARDS LOG

4700 Precision Diluter Standards Preparation Report

Date: 7/22/2019 1:21:52 PM

Dilution ID: 1149

Report ID: IH686797A

Canister Size: 6000cc **Canister ID:** WL270/24057 **Target Final Psia:** 30

Prepared By: BLD

Comment: Re-dilute from IH686762A; 90 ul H2O D1847

Channel Methods

Ch.	Title	Init. Conc.	Target Conc.	Dilution Factor	Init. Psia	Target Psid	Final Psid	Target Psia	Final Psia	Duration	Final Conc.
1	Diluent	100 percent	100 percent	1	0.26	11.54	11.54	11.80	11.80	00:05:43	N/A
6	Re-Dilute	25 ppb	0.5 ppb	50	11.80	0.59	0.61	12.40	12.41	00:02:06	0.51 ppb
1	Diluent	100 percent	100 percent	1	12.41	17.59	17.60	30.00	30.01	00:05:42	N/A

Total Duration: 00:13:38

Channel Configuration and Standards Inventory

Ch.	Source	Init. Conc.	Cylinder ID	Expiration Date	Notes
1	Diluent	100 percent		12/31/2019	
6	Re-Dilute	25 ppb		8/19/2019	

4700 Precision Diluter Standards Preparation Report

Date: 7/19/2019 1:06:05 PM

Dilution ID: 1148

Report ID: IH686762A

Canister Size: 6000cc **Canister ID:** WL245/234 **Target Final Psia:** 30

Prepared By: BLD

Comment: 90 ul H2O D1847

Channel Methods

Ch.	Title	Init. Conc.	Target Conc.	Dilution Factor	Init. Psia	Target Psid	Final Psid	Target Psia	Final Psia	Duration	Final Conc.
1	Diluent	100 percent	100 percent	1	0.40	11.40	11.40	11.80	11.80	00:05:06	N/A
2	ETOX stock	995 ppb	25 ppb	39.8	11.80	0.74	0.75	12.55	12.55	00:02:27	25.04 ppb
1	Diluent	100 percent	100 percent	1	12.55	17.45	17.46	30.00	30.01	00:05:38	N/A

Total Duration: 00:13:17

Channel Configuration and Standards Inventory

Ch.	Source	Init. Conc.	Cylinder ID	Expiration Date	Notes
1	Diluent	100 percent		12/31/2019	
2	ETOX stock	995 ppb	FF20160	10/1/2019	REF 32329

4700 Precision Diluter Standards Preparation Report

Date: 7/29/2019 5:24:44 PM

Dilution ID: 1163

Report ID: IH686977A

Canister Size: 6000cc **Canister ID:** WL281 **Target Final Psia:** 30 **Prepared By:** BHB

Comment: 90 ul H2O, Syr ID: D1847

Channel Methods

Ch.	Title	Init. Conc.	Target Conc.	Dilution Factor	Init. Psia	Target Psid	Final Psid	Target Psia	Final Psia	Duration	Final Conc.
1	Diluent	100 percent	100 percent	1	0.26	11.58	11.58	11.84	11.84	00:05:23	N/A
2	ETOX stock	995 ppb	25 ppb	39.8	11.84	0.75	0.75	12.59	12.59	00:02:16	24.91 ppb
1	Diluent	100 percent	100 percent	1	12.59	17.42	17.43	30.00	30.02	00:05:41	N/A

Total Duration: 00:13:27

Channel Configuration and Standards Inventory

Ch.	Source	Init. Conc.	Cylinder ID	Expiration Date	Notes
1	Diluent	100 percent		12/31/2019	
2	ETOX stock	995 ppb	FF20160	10/1/2019	REF 32329

4700 Precision Diluter Standards Preparation Report

Date: 7/17/2019 1:46:47 PM

Dilution ID: 1140

Report ID: IH686680B

Canister Size: 6000cc **Canister ID:** 1561 **Target Final Psia:** 45 **Prepared By:** BLD

Comment: 90 ul H2O D1847

Channel Methods

Ch.	Title	Init. Conc.	Target Conc.	Dilution Factor	Init. Psia	Target Psid	Final Psid	Target Psia	Final Psia	Duration	Final Conc.
1	Diluent	100 percent	100 percent	1	0.26	11.62	11.62	11.87	11.87	00:05:06	N/A
3	IS stock	1000 ppb	100 ppb	10	11.87	4.47	4.47	16.34	16.34	00:04:32	99.9 ppb
1	Diluent	100 percent	100 percent	1	16.34	28.66	28.66	45.00	45.00	00:09:30	N/A

Total Duration: 00:19:16

Channel Configuration and Standards Inventory

Ch.	Source	Init. Conc.	Cylinder ID	Expiration Date	Notes
1	Diluent	100 percent		12/31/2019	
3	IS stock	1000 ppb	CC301886	3/28/2020	REF 33361

Galson Chemical Inventory Report

10/09/2018 09:16

Ref	Description	Location	Dept	Date Received	Expire Date	Dispose Date	D
32329	ETHYLENE OXIDE	LAB 3M-3	18MS	10/09/2018	10/01/2019		

Vendor Air ***Manufacturer*** AIRGAS ***Lot No*** 163-401311324-1

Comments

Cas Num	Chemical Name	% Purity	Conc(ug/mL)
75-21-8	ETHYLENE OXIDE		1

Galson Chemical Inventory Report

04/04/2019 14:47

Ref	Description	Location	Dept	Date Received	Expire Date	Dispose Date	D
33361	INTERNAL/TUNING STD	LAB 3	18MS	04/04/2019	03/28/2020		

Vendor Linde Gases ***Manufacturer*** LINDE ***Lot No*** 1484532

Comments TO-15 Internal Standard

Cas Num	Chemical Name	% Purity	Conc(ug/mL)
1517-52-8	Propene-d6		.9
3114-55-4	CHLOROBENZENE-D5		1.06
460-00-4	4-BROMOFLUOROBENZENE		1.04
540-36-3	1,4-DIFLUOROBENZENE		1.02
74-97-5	CHLOROBROMOMETHANE		1.02

SGS GALSON

Galson Labs
Standards Report
07/19/2019 11:44:43

Lot IH686762

Description ETHYLENE OXIDE CCV

Operator BDICAPRIO **Prep Date** 07/19/2019 **Expiration Date** 08/19/2019

Stock:

Ref#	Compound Name	Stock Conc	Units	Final Conc	Units
32329	ETHYLENE OXIDE	.995	PPBV	25	PPBV

SGS GALSON

Galson Labs
Standards Report
07/22/2019 13:16:55

Lot IH686797

Description ETHYLENE OXIDE DLS (from IH686762A)

Operator BDICAPRIO **Prep Date** 07/22/2019 **Expiration Date** 08/19/2019

Stock:

Ref#	Compound Name	Stock Conc	Units	Final Conc	Units
32329	ETHYLENE OXIDE	.995	PPBV	.5	PPBV

SGS GALSON

Galson Labs
Standards Report
08/01/2019 12:21:52

Lot IH686977

Description ETHYLENE OXIDE LCS

Operator BBUSH **Prep Date** 07/26/2019 **Expiration Date** 08/26/2019

Stock:

Ref#	Compound Name	Stock Conc	Units	Final Conc	Units
32329	ETHYLENE OXIDE	.995	PPBV	25	PPBV

SGS GALSON

Galson Labs
Standards Report
07/17/2019 13:04:25

Lot IH686680

Description 100 ppb Internal Standard/Surrogate with Propene-d6

Operator BDICAPRIO **Prep Date** 07/17/2019 **Expiration Date** 08/17/2019

Stock:

Ref#	Compound Name	Stock Conc	Units	Final Conc	Units
33361	1,4-DIFLUOROBENZENE		PPB		PPB

GC/MS
MINICAN CLEANING DATA

SGS GALSON

TO-15 Canister Cleaning Log

Batch Certified

Report run on: August 19, 2019 2:50 PM

QC Batch No.:	**WAC3457**	**Cleaning Date:**	05/31/19
Canister No. for QC	WL021	**Can Size:**	6 L
Number of Heat Cycles:	6	**Number of No-heat Cycles:**	0
Timer S/N:	170505574	**Held:**	30 **mins**
Comments:	ETOX		

Blank	Analysis	Approved by	Date	Pass/Fail
WG445665-7	IT-ETOX	SPUTRELO	06/07/19 10:26	PASS

Can ID	Initial Press.("Hg)	Initial Press. Date/Time	Final Press.("Hg)	Final Press. Date/Time	Sent in Prep	Ship Press.("Hg)	Ship Press. Date/Time	Sample Number
WL211	-29.48	06/03/19 13:57			PSY539508	-29.36	07/30/19 15:54	L488088-2
WL084	-29.52	06/03/19 14:00			PSY539508	-29.46	07/30/19 15:49	L488088-4
WL216	-29.52	06/03/19 13:59			PSY539508	-29.45	07/30/19 15:46	L488088-5
WL004	-29.52	06/03/19 14:01			PSY539508	-29.47	07/30/19 15:52	L488088-7
WL221	-29.5	06/03/19 13:58			PSY539508	-29.47	07/30/19 15:56	L488088-8

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\06\04\
Data File : T0604908.D
Acq On : 4 Jun 2019 1:48 pm
Operator : BLD
Sample : WAC3457,WG445665
Misc : WG445665-7,WG445665,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 04 16:00:41 2019
Quant Method : C:\msdchem\1\methods\T190422E.M
Quant Title :
QLast Update : Wed Apr 24 13:05:32 2019
Response via : Initial Calibration

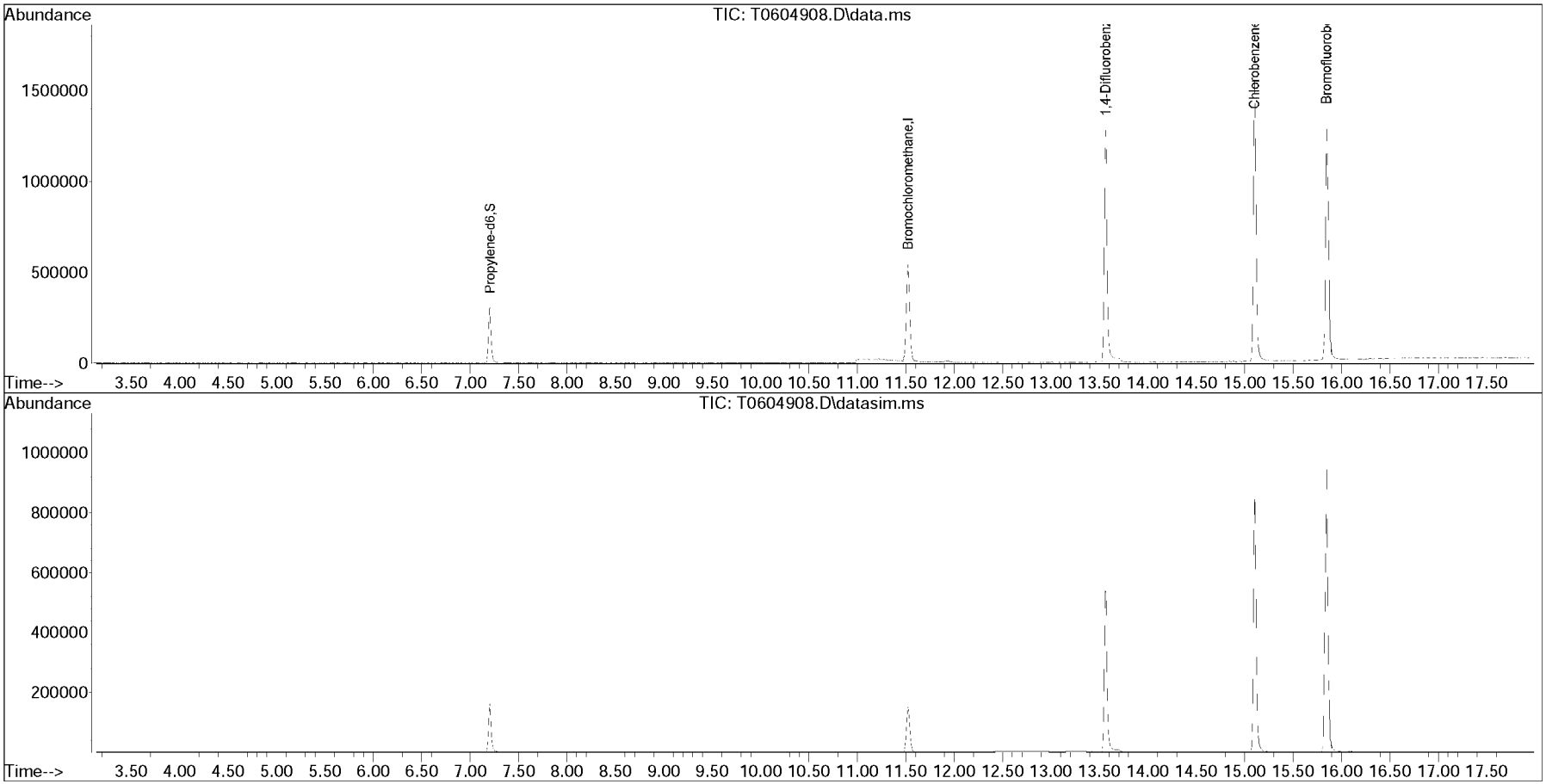
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.522	128	161201	10.00 ppbv	-0.07
4) 1,4-Difluorobenzene	13.564	114	1057028	10.00 ppbv	-0.07
5) Chlorobenzene-d5	15.102	117	888723	10.00 ppbv	#-0.06
System Monitoring Compounds					
2) Propylene-d6	7.206	46	187749	7.59 ppbv	-0.05
Spiked Amount 10.000	Range 80 - 120		Recovery =	75.90%#	
6) Bromofluorobenzene (surr)	15.845	95	598027	9.90 ppbv	-0.06
Spiked Amount 10.000	Range 80 - 120		Recovery =	99.00%	
Target Compounds					Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\06\04\
Data File : T0604908.D
Acq On : 4 Jun 2019 1:48 pm
Operator : BLD
Sample : WAC3457,WG445665
Misc : WG445665-7,WG445665,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 04 16:00:41 2019
Quant Method : C:\msdchem\1\methods\T190422E.M
Quant Title :
QLast Update : Wed Apr 24 13:05:32 2019
Response via : Initial Calibration



SGS GALSON

TO-15 Canister Cleaning Log

Batch Certified

Report run on: August 19, 2019 2:51 PM

QC Batch No.:	**WAC3462**	**Cleaning Date:**	06/06/19
Canister No. for QC	WL183	**Can Size:**	6 L
Number of Heat Cycles:	6	**Number of No-heat Cycles:**	0
Timer S/N:	170505574	**Held:**	30 **mins**
Comments:	ETOX		

Blank	Analysis	Approved by	Date	Pass/Fail
WG446122-7	IT-ETOX	SPUTRELO	06/10/19 15:26	PASS

Can ID	Initial Press.("Hg)	Initial Press. Date/Time	Final Press.("Hg)	Final Press. Date/Time	Sent in Prep	Ship Press.("Hg)	Ship Press. Date/Time	Sample Number
WL210	-29.56	06/07/19 15:44	-29.64	06/11/19 13:58	PSY539508	-29.48	07/30/19 15:55	L488088-1
WL027	-29.57	06/07/19 15:48	-29.64	06/11/19 13:57	PSY539508	-29.47	07/30/19 15:51	L488088-3

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\06\07\
Data File : T0607908.D
Acq On : 7 Jun 2019 4:21 pm
Operator : BLD
Sample : WAC3462,WG446122
Misc : WG446122-7,WG446122,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 10 10:47:36 2019
Quant Method : C:\msdchem\1\methods\T190422E.M
Quant Title :
QLast Update : Wed Apr 24 13:05:32 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.536	128	165048	10.00 ppbv	-0.05
4) 1,4-Difluorobenzene	13.571	114	1028385	10.00 ppbv	-0.07
5) Chlorobenzene-d5	15.102	117	882091	10.00 ppbv	#-0.06
System Monitoring Compounds					
2) Propylene-d6	7.200	46	181315	7.16 ppbv	-0.05
Spiked Amount 10.000	Range 80 - 120		Recovery =	71.60%#	
6) Bromofluorobenzene (surr)	15.845	95	602910	10.05 ppbv	-0.06
Spiked Amount 10.000	Range 80 - 120		Recovery =	100.50%	

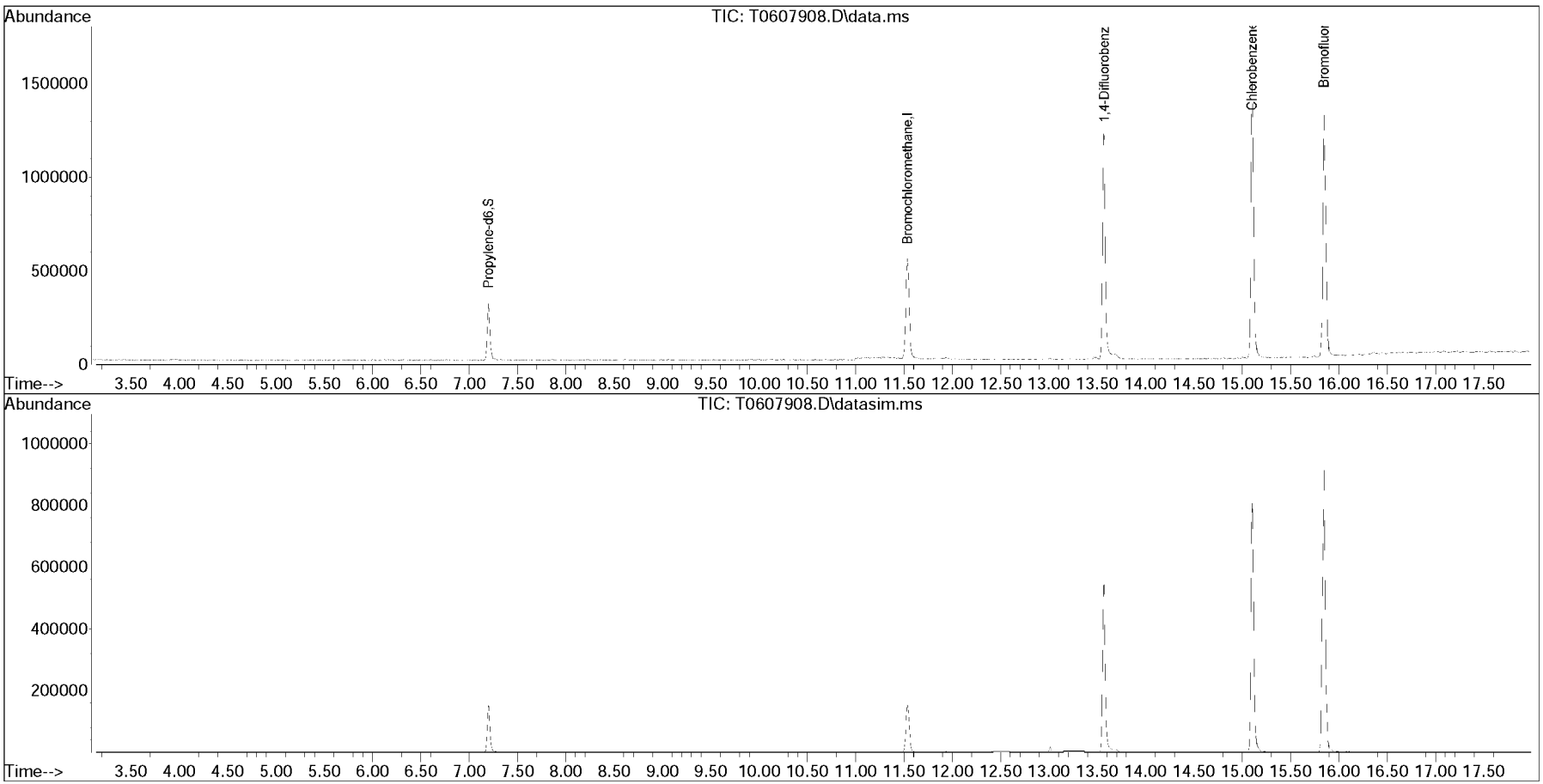
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\06\07\
Data File : T0607908.D
Acq On : 7 Jun 2019 4:21 pm
Operator : BLD
Sample : WAC3462,WG446122
Misc : WG446122-7,WG446122,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 10 10:47:36 2019
Quant Method : C:\msdchem\1\methods\T190422E.M
Quant Title :
QLast Update : Wed Apr 24 13:05:32 2019
Response via : Initial Calibration



SGS GALSON

TO-15 Canister Cleaning Log

Batch Certified

Report run on: August 19, 2019 2:51 PM

QC Batch No.:	**WAC3469**	**Cleaning Date:**	06/14/19
Canister No. for QC	WL036	**Can Size:**	6 L
Number of Heat Cycles:	6	**Number of No-heat Cycles:**	0
Timer S/N:	170505574	**Held:**	30 **mins**
Comments:	ETOX		

Blank	Analysis	Approved by	Date	Pass/Fail
WG446942-7	IT-ETOX	SPUTRELO	06/18/19 09:23	PASS

Can ID	Initial Press.("Hg)	Initial Press. Date/Time	Final Press.("Hg)	Final Press. Date/Time	Sent in Prep	Ship Press.("Hg)	Ship Press. Date/Time	Sample Number
WL279	-29.59	06/17/19 12:35	-29.46	06/18/19 13:58	PSY539508	-29.46	07/30/19 15:53	L488088-6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\06\17\
Data File : T0617908.D
Acq On : 17 Jun 2019 2:21 pm
Operator : BLD
Sample : WAC3469,WG446942-7
Misc : WG446942-7,WG446942,1
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Jun 18 08:43:54 2019
Quant Method : C:\msdchem\1\methods\T190610E.M
Quant Title :
QLast Update : Tue Jun 11 12:00:51 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.442	128	114511	10.00 ppbv	-0.09
4) 1,4-Difluorobenzene	13.511	114	715345	10.00 ppbv	-0.05
5) Chlorobenzene-d5	15.077	117	639863	10.00 ppbv	#-0.03
System Monitoring Compounds					
2) Propylene-d6	7.180	46	117440	9.96 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 99.60%		
6) Bromofluorobenzene (surr)	15.826	95	422922	10.01 ppbv	-0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.10%		

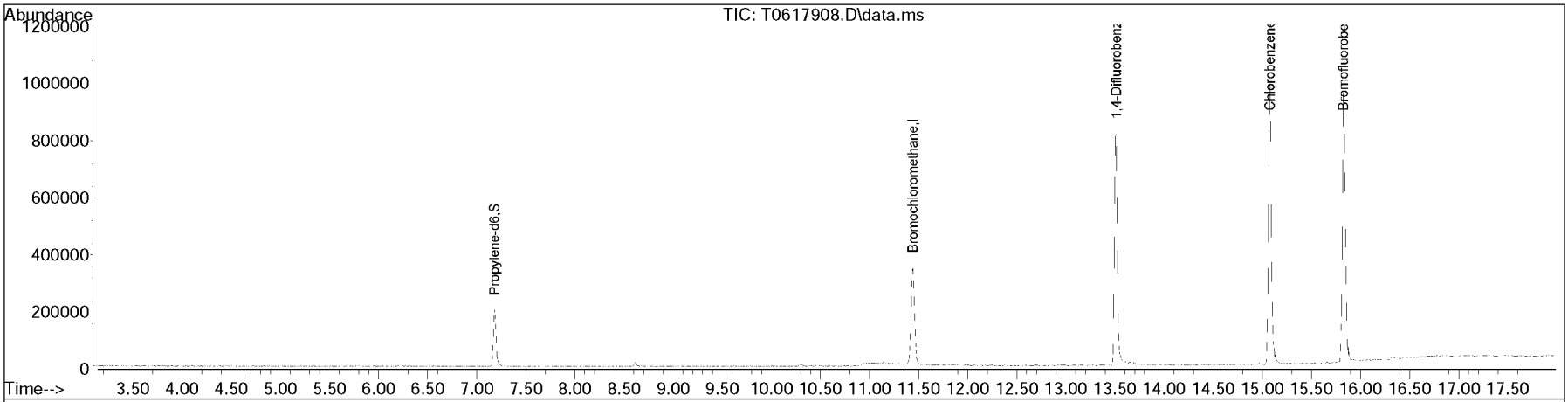
Target Compounds Qvalue

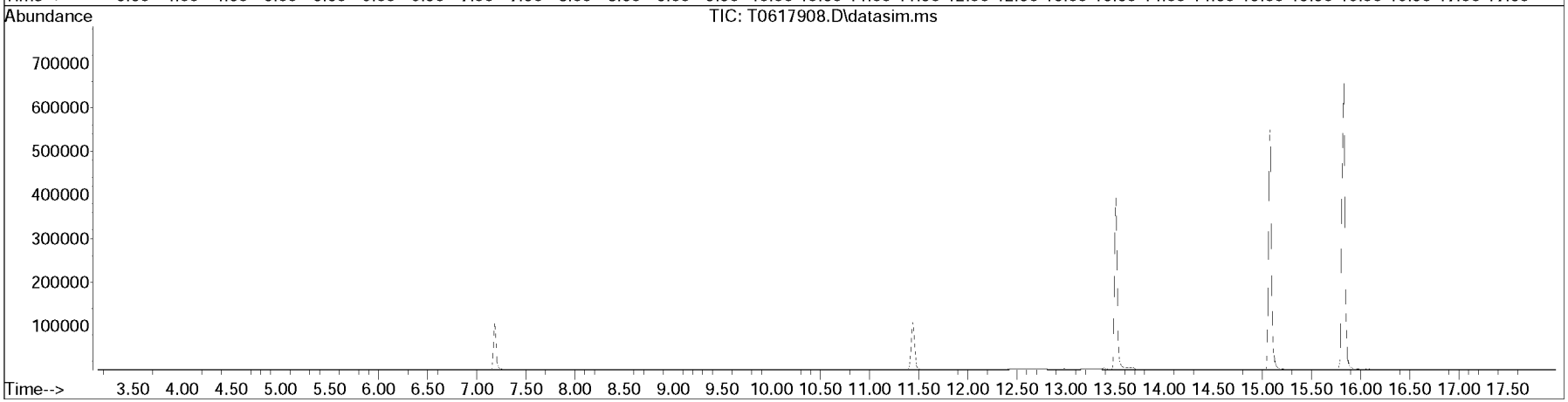
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\06\17\
Data File : T0617908.D
Acq On : 17 Jun 2019 2:21 pm
Operator : BLD
Sample : WAC3469,WG446942-7
Misc : WG446942-7,WG446942,1
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Jun 18 08:43:54 2019
Quant Method : C:\msdchem\1\methods\T190610E.M
Quant Title :
QLast Update : Tue Jun 11 12:00:51 2019
Response via : Initial Calibration





SGS GALSON

TO-15 Canister Cleaning Log

Batch Certified

Report run on: August 19, 2019 2:51 PM

QC Batch No.: **WAC3500**
Cleaning Date: 07/26/19
Canister No. for QC WL047
Can Size: 6 L
Number of Heat Cycles: 6
Number of No-heat Cycles: 0
Timer S/N: 170505574
Held: 30 **mins**
Comments: ETOX

Blank	Analysis	Approved by	Date	Pass/Fail
WG451248-7	IT-ETOX	SPUTRELO	08/01/19 11:47	PASS

Can ID	Initial Press.("Hg)	Initial Press. Date/Time	Final Press.("Hg)	Final Press. Date/Time	Sent in Prep	Ship Press.("Hg)	Ship Press. Date/Time	Sample Number
WL290	-29.48	07/29/19 14:50	-29.68	08/01/19 15:02	PSY539881	-29.68	08/01/19 14:27	L488088-9
WL295	-29.49	07/29/19 14:49	-29.68	08/01/19 15:02	PSY539881	-29.68	08/01/19 14:28	L488088-10
WL274	-29.48	07/29/19 14:53	-29.67	08/01/19 15:02	PSY539881	-29.67	08/01/19 14:26	L488088-11
WL158	-29.47	07/29/19 14:52	-29.67	08/01/19 15:02	PSY539881	-29.67	08/01/19 14:28	L488088-12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30A - Copy\
Data File : T0730929.D
Acq On : 31 Jul 2019 5:03 pm
Operator : BLD
Sample : WAC3500,WG451248
Misc : WG451248-7,WG451248,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 01 11:36:20 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Bromochloromethane	11.755	128	510163	10.00 ppbv	0.07
4) 1,4-Difluorobenzene	13.611	114	2652934	10.00 ppbv	0.03
5) Chlorobenzene-d5	15.069	117	2361108	10.00 ppbv	# 0.00
System Monitoring Compounds					
2) Propylene-d6	7.140	46	492289	9.83 ppbv	0.00
Spiked Amount 10.000	Range 80 - 120		Recovery = 98.30%		
6) Bromofluorobenzene (surr)	15.808	95	1602967	10.05 ppbv	0.02
Spiked Amount 10.000	Range 80 - 120		Recovery = 100.50%		

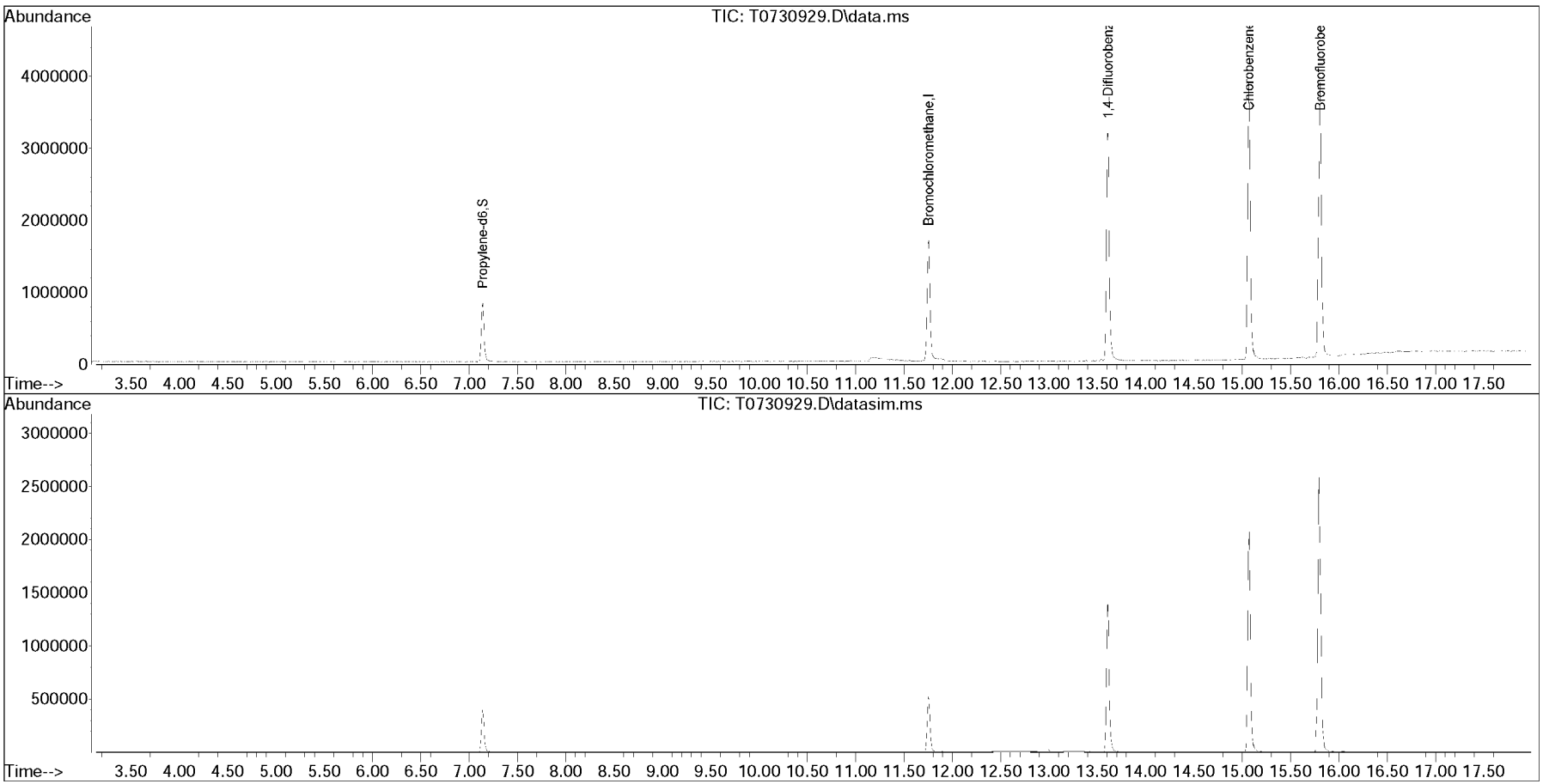
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\2019\07\30A - Copy\
Data File : T0730929.D
Acq On : 31 Jul 2019 5:03 pm
Operator : BLD
Sample : WAC3500,WG451248
Misc : WG451248-7,WG451248,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 01 11:36:20 2019
Quant Method : C:\msdchem\1\methods\T190730E.M
Quant Title :
QLast Update : Wed Jul 31 15:36:01 2019
Response via : Initial Calibration



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GC/MS Incoming Canister Log

Login: L488088

Date: 06-AUG-19

Recorded by: Bethany DiCaprio

Sample #	Can Id	Incoming Pressure	Prep Number	Scan date	Scan user
L488088-1	WL210	-3.8	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-2	WL211	-2.82	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-3	WL027	-2.28	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-4	WL084	-5.35	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-5	WL216	-4.27	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-6	WL279	-.09	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-7	WL004	-3.1	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-8	WL221	-10.77	PSY539508	06-AUG-19	Bethany DiCaprio
L488088-9	WL290	-3.19	PSY539881	06-AUG-19	Bethany DiCaprio
L488088-10	WL295	-2.55	PSY539881	06-AUG-19	Bethany DiCaprio
L488088-11	WL274	-3.85	PSY539881	06-AUG-19	Bethany DiCaprio
L488088-12	WL158	-4.39	PSY539881	06-AUG-19	Bethany DiCaprio

Report run on: August 13, 2019 10:35 AM

Message

From: Shappley, Ned [Shappley.Ned@epa.gov]
Sent: 9/23/2019 1:33:35 PM
To: Weinstock, Lewis [Weinstock.Lewis@epa.gov]; Chen, Xi [Chen.Xi@epa.gov]
Subject: RE: Renee Cipriano Call

Lew, Can I listen?

From: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Sent: Monday, 23 September, 2019 09:30
To: Chen, Xi <Chen.Xi@epa.gov>
Cc: Shappley, Ned <Shappley.Ned@epa.gov>
Subject: Renee Cipriano Call

Doris:

Please join if you can. I am assuming this call is about some EtO testing that the Village of Willowbrook has done around Sterigenics. **Deliberative Process / Ex. 5**

Subject: Renee Cipriano Call
Location: LWO

Start: Mon 9/23/2019 2:00 PM
End: Mon 9/23/2019 2:30 PM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: Weinstock, Lewis
Required Attendees: Chen, Xi

From: Cipriano, Renee <RCipriano@schiffhardin.com>
Sent: Monday, September 23, 2019 9:00 AM
To: Weinstock, Lewis
Subject: Re: RE: Willowbrook-Request for Call

Hi Lew will 2 work? I am in meetings in DC but can step out. I will also forward results to you that we are hoping to post tomorrow or Wednesday. Shall I call you? Thank you Renee

Excuse Typos
Sent from my iPhone

On Sep 23, 2019, at 7:47 AM, Weinstock, Lewis <Weinstock.Lewis@epa.gov> wrote:

Hi Renee:

I'm free today between 1:00 – 3:00 pm EDT. Will that work?

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

From: Cipriano, Renee <RCipriano@schiffhardin.com>
Sent: Friday, September 20, 2019 11:43 AM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Subject: Willowbrook-Request for Call

Hi Lew. I hope this email finds you well. Lew, I wanted to follow up with you on behalf of the Village of Willowbrook regarding some testing performed by GHD, Inc. Will you have time today or Monday for a quick discussion? Thank you Lew. Best, Renee

---

Renee Cipriano

Partner
rcipriano@schiffhardin.com
d +1.312.258.5720 | f +1.312.258.5600

Schiff Hardin LLP
233 South Wacker Drive | Suite 7100 | Chicago, IL 60606
schiffhardin.com | v-card | view bio

This message and any attachments may contain confidential information protected by the attorney-client or other privilege. If you believe that it has been sent to you in error, please reply to the sender that you received the message in error. Then delete it. Thank you.

Message

From: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
Sent: 5/23/2019 2:23:05 PM
To: Chen, Xi [Chen.Xi@epa.gov]
Subject: RE: EtO ambient monitoring document
Attachments: EtO Ambient Sampling 05-23-19 for SharePoint.docx

Last check – made it look a bit prettier and re-added your name as technical contact. Ok to send/post?

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

From: Chen, Xi
Sent: Thursday, May 23, 2019 9:35 AM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>; Noah, Greg <Noah.Greg@epa.gov>; Naess, Liz <Naess.Liz@epa.gov>
Subject: RE: EtO ambient monitoring document

OK, here is the word version of the toolbox document. Please make edits as necessary.

From: Weinstock, Lewis
Sent: Thursday, May 23, 2019 9:07 AM
To: Chen, Xi <Chen.Xi@epa.gov>; Noah, Greg <Noah.Greg@epa.gov>; Naess, Liz <Naess.Liz@epa.gov>
Subject: RE: EtO ambient monitoring document

I would add the information on EtO standards to the toolbox document (or make a stand alone document). I would not include the steps and timeline information; that should be included in a separate planning document that we route through the NATTS communications channels and deliver in concert with training calls through the regions. We can post that at some later date to the toolbox once we have "held the hand" of all the agencies affected by the EtO/NATTS roll-out.

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

From: Chen, Xi
Sent: Thursday, May 23, 2019 8:58 AM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>; Noah, Greg <Noah.Greg@epa.gov>; Naess, Liz <Naess.Liz@epa.gov>
Subject: RE: EtO ambient monitoring document

Hi Lew,
I am thinking to add the "steps and timelines" section. I drafted something. Please see attached. Let me know if we could include this with the other ambient sampling info in the toolbox. I think we might need to include the vendors list as more people are asking about it.

Doris

From: Weinstock, Lewis
Sent: Thursday, May 23, 2019 7:51 AM
To: Chen, Xi <Chen.Xi@epa.gov>
Subject: EtO ambient monitoring document

Doris:

I'd like to send your EtO/TO-15 technical note to AAPCA for distribution (probably NACAA as well – did they ask for it?).

This is the version uploaded to the EtO SharePoint site. Do you want to make any changes before I send it? I'm also thinking we should put some kind of EPA header on it. After your review, could you send me the Word file and I'll add something that makes it clearer that the source is EPA/RTP.

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RESEARCH TRIANGLE PARK, NC 27711

Ethylene Oxide Monitoring in Ambient Air Summary[1]

Technical Note - May 2019

1. Ambient Air Sampling Procedures Using Canisters with Passive Vacuum Regulators

The procedure presented in this document is designed for sampling volatile organic compounds (VOCs) including ethylene oxide in ambient air. This procedure is based on the collection of whole air samples in SUMMA® treated canisters to final pressures below atmospheric. The samples are then analyzed using EPA Compendium Method TO-15 *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS).*

Sampler Installation

1. The sampling system consists of two components: a sample canister and a passive vacuum regulator (Veriflow vacuum regulator with gauge and sample inlet probe). The canisters have been cleaned, tested for contamination (blanked) and evacuated, the passive collection assemblies will have been cleaned, tested for contamination (blanked), and calibrated for 24-hour integrated sampling.
2. The complete sampling system must be securely mounted on a support structure which ensures that the sample inlet meets the siting criteria (See QAPP for details [HYPERLINK "https://www.epa.gov/il/quality-assurance-project-plan"] section 2.1.2).
3. For collocated samplers, horizontal spacing should be between 0 and 4 meters, and inlet heights within 1 meter vertically.

Operating Procedures

A. Equipment and Supplies

1. 6-liter sample collection canister
2. Veriflow vacuum regulator/gauge/inlet probe (passive collection assembly)
3. Chain of Custody (COC) form

B. Sampler and Sample Media Receipt Activities

1. Check parts and components to ensure none is damaged.
2. Ensure all fittings are present and in good condition.

---

[1] For technical assistance, please contact Xi (Doris) Chen, [HYPERLINK "mailto:chen.xi@epa.gov"], 919-541-4957

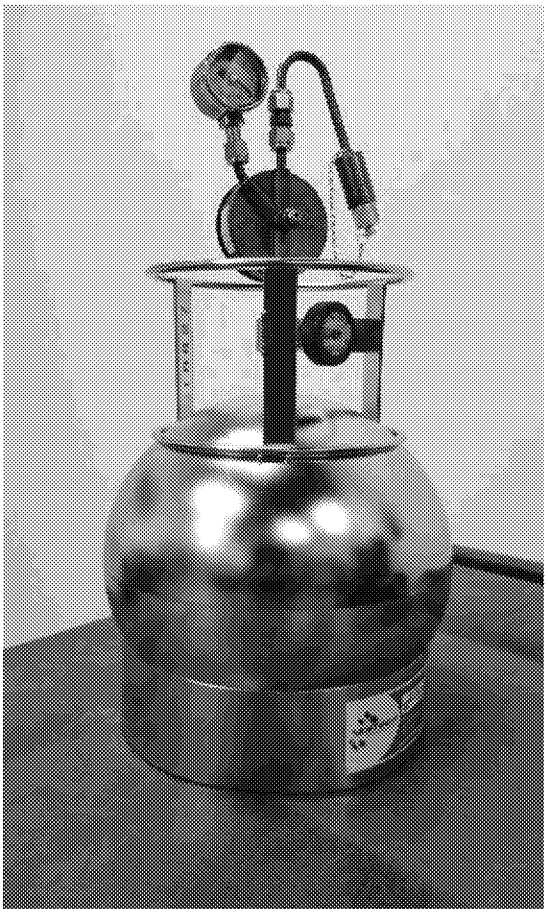
ED_002475A_00000043-00001

3. Prior to sampling keep all sampling system components in a clean area free of contamination.
4. Ensure the canister is not damaged. Confirm that the valve remained in the closed position during transport and that the top plug is secured on the bellows valve inlet fitting.

C. Preparing for a Sampling Event

1. Prepare sample paperwork (See Figure 1.2). On the COC, supply all required information in the "Lab Pre-Sampling" section. Record any pertinent observations in the "Comments" section at the bottom of the form.
2. Remove the plug attached to the bellows valve inlet. Retain the plug in a clean place so that it can be used to reseal the bellows valve inlet after the sampling event.
3. Assemble the complete sampling system. (See Figure 1.1)
   a. Attach the outlet fitting of the Veriflow vacuum controller to the canister bellows valve inlet fitting. *Note: Do not over tighten the fitting nut. When the fitting nut feels snug by hand, another quarter turn should be sufficient to secure the controller inlet to the canister.*
   b. Ensure that the plug at the inlet of the Veriflow remains tight in order to perform a leak check. Perform a leak check by opening and then immediately closing the canister valve. Observe the vacuum reading on the Veriflow gauge. If the vacuum changes by more than 1 in Hg over 5 minutes, ensure that all fittings are tight. To assemble another sampling system using another canister, repeat steps 2 and 3.

ED_002475A_00000043-00002



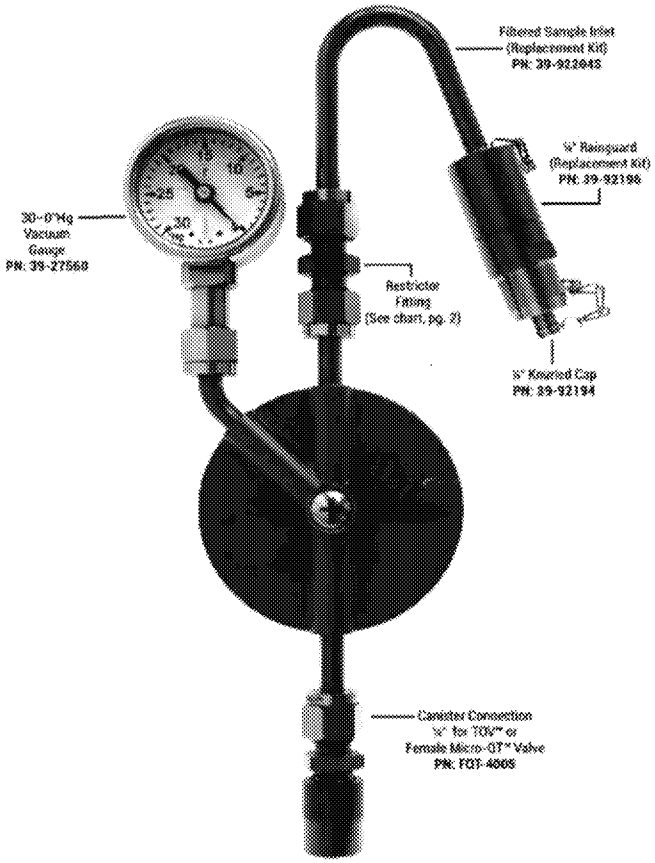


Figure 1.1 SUMMA Canister and Flow Controller

D. Sampling and Data Collection

1. Record the initial collection start time and date in "Setup Date:" in the "Field Setup" section on the COC form. Fully open the canister bellows valve. Observe and record the pressure (i.e., "Hg vacuum) indicated on the gauge.
2. After 24 hours, read the gauge and record the remaining pressure left in the can on the COC and record the reading in the "Field Recovery", "Field Final Can. Press. ("Hg)" blank. If the pressure is zero, note the lack of pressure in the "Comments" section of the form.
3. Close the canister bellows valve fully.
4. Disconnect the canister from Veriflow vacuum controller by unfastening the Veriflow outlet fitting from the canister bellows valve inlet fitting.
5. Replace and secure the retained plug on the canister bellows valve.
6. On the COC, supply all required information in the "Field Recovery" section. Be sure to record any observations that were made during the run period in the "Comments:" section.

AIR TOXICS SAMPLE CHAIN OF CUSTODY

Lab Pre-Sampling

Site Code: _____ Canister Number: _____

City/State: _____ Lab Initial Can. Press. (°Hg): _____

AQS Code: _____ Cleaning Batch # : _____

Collection Date: _____ Date Can. Cleaned: _____

Options:

SNMOC (Y/N): _____ Duplicate Event (Y/N): _____

TOXICS (Y/N): _____ Duplicate Can # : _____

METHANE (Y/N): _____

Relinquished by: _____ Date: _____

Field Setup

Received by: _____ Date: _____

Operator: _____ MFC Setting: _____

System #: _____ Elapsed Timer Reset (Y/N): _____

Setup Date: _____ Canister Valve Opened (Y/N): _____

Field Initial Can. Press.: _____ psig psia °Hg (Circle one)

Field Recovery

Recovery Date: _____ Sample Duration (3 or 24 hr): _____

Operator: _____ Elapsed Time: _____

Field Final Can. Press.: _____ psig psia °Hg (Circle one)

Status: VALID VOID (Circle one) Canister Valve Closed (Y/N): _____

Relinquished by: _____ Date: _____

Lab Recovery

Received by: _____ Date: _____

Lab Final Can. Press.: _____ psig °Hg (Circle one) Converted to psia: _____

Status: VALID VOID (Circle one) Gauge: 1 2 (Circle one)

If void, why: _____

Samples stored in Air Tox Lab (Room 130)

Comments: _____

White: Sample Traveler Canary: Lab Copy Pink: Field Copy

Figure 1.2. Example Chain of Custody/Field Data Sheet

2. Technical Note on Ethylene Oxide analysis by EPA TO-15 Method

Ethylene oxide (EtO) is an emerging pollutant that is quantified using the existing EPA TO-15[2] method with some modifications. The National Air Toxics Trends Sites Technical Assistance Document (NATTS TAD) also has updated guidance for conducting the TO-15 method which EPA has used to enhance the method overall[3]. The typical method setup scans for selected fragment ions (also known as selected ion monitoring mode or SIM) instead of a full spectrum scan in order to increase the analytical sensitivity and efficiency. However, SIM introduces uncertainties and limitations due to decreased collected full scan spectra information. Using SIM, another compound with common fragment ions (primary and secondary) and similar retention time windows as the target compound could be an interferant to the target compound, biasing quantitation results.

The EPA contract laboratory used to research the analysis of ethylene oxide using TO-15 has confirmed that trans-2-butene co-elutes with EtO, creating an interference. The monitoring ions the contract laboratory selected for EtO before October 2018 were 15, 29 and 43; EtO was quantitated based on ion 29. Upon discovery of the interferant, the contract laboratory modified their analytical method to include additional unique confirmatory fragment ions to aid the identification and quantification processes. The modified method is scanning for ions 15, 29, 44, and 41 as well as ion unique to trans-2-butene (ion 56). For quantitation, the most intense ion 29 from EtO is used as the base quantitation peak (ions 15 and 44 as qualifying ions). Although the second most abundant ion (44) is in EtO and absent from trans-2-butene, the lower sensitivity and variable background issues (e.g., carbon dioxide) associated with ion 44 make it less desirable for quantitation of EtO. The contract laboratory has analyzed standards that include EtO and the interferant trans-2-butene and is able to accurately identify and quantitate each compound using the modified method.

See Figures 2.1 and 2.2 for example chromatograms and spectra for samples analyzed by the modified method (scanning for ions, 15, 29, 44, 41 and 56) illustrating a sample with and without the presence of trans-2-butene, respectively.

In Figure 2.1, a prepared standard including the mixture of trans-2-butene and EtO at 0.25ppbv (individual concentration) was analyzed by SIM scanning for ions 15, 29, 44 as well as 41 and 56. At the target retention time window for EtO and trans-2-butene, the sample spectrum captured strong signals for ions 15, 29 and 44 as well as ions 41 and 56, which indicates and confirms the presence of trans-2-butene. In addition, the chromatograms for ions 41 and 56 were further examined to confirm that the first peak is correctly identified as trans-2-butene, and the second peak detected at 12.466 minutes is determined to be EtO and quantitated as such (determined concentration circled in figure as 0.24ppbv).

In Figure 2.2, an ambient sample collected at Willowbrook Village Hall on 19th November, 2018 was analyzed by SIM scanning for ions 15, 29, 44 as well as 41 and 56. At the target retention time window for EtO and trans-2-butene (established by standards), the sample spectrum captured strong signals for ions 15, 29 and 44 but minimal to no signal for ions 41 and 56, which indicates the absence of trans-2-butene. Also, by comparing to the EtO reference spectrum recorded from an EtO standard analyzed by the contract laboratory, the relative ratios of the sample for ions 15,

[2]https://www.epa.gov/sites/production/files/2015-07/documents/epa-to-15_0.pdf
[3]https://www3.epa.gov/ttn/amtic/files/ambient/airtox/NATTS%20TAD%20Revision%203_FINAL%20October%202016.pdf

29 and 44 match closely with the established reference ratios. Coupled with the retention time window, the peak detected at 12.395 minutes is determined to be solely EtO and quantitated as such (determined concentration circled in figure as 3.38ppbv).

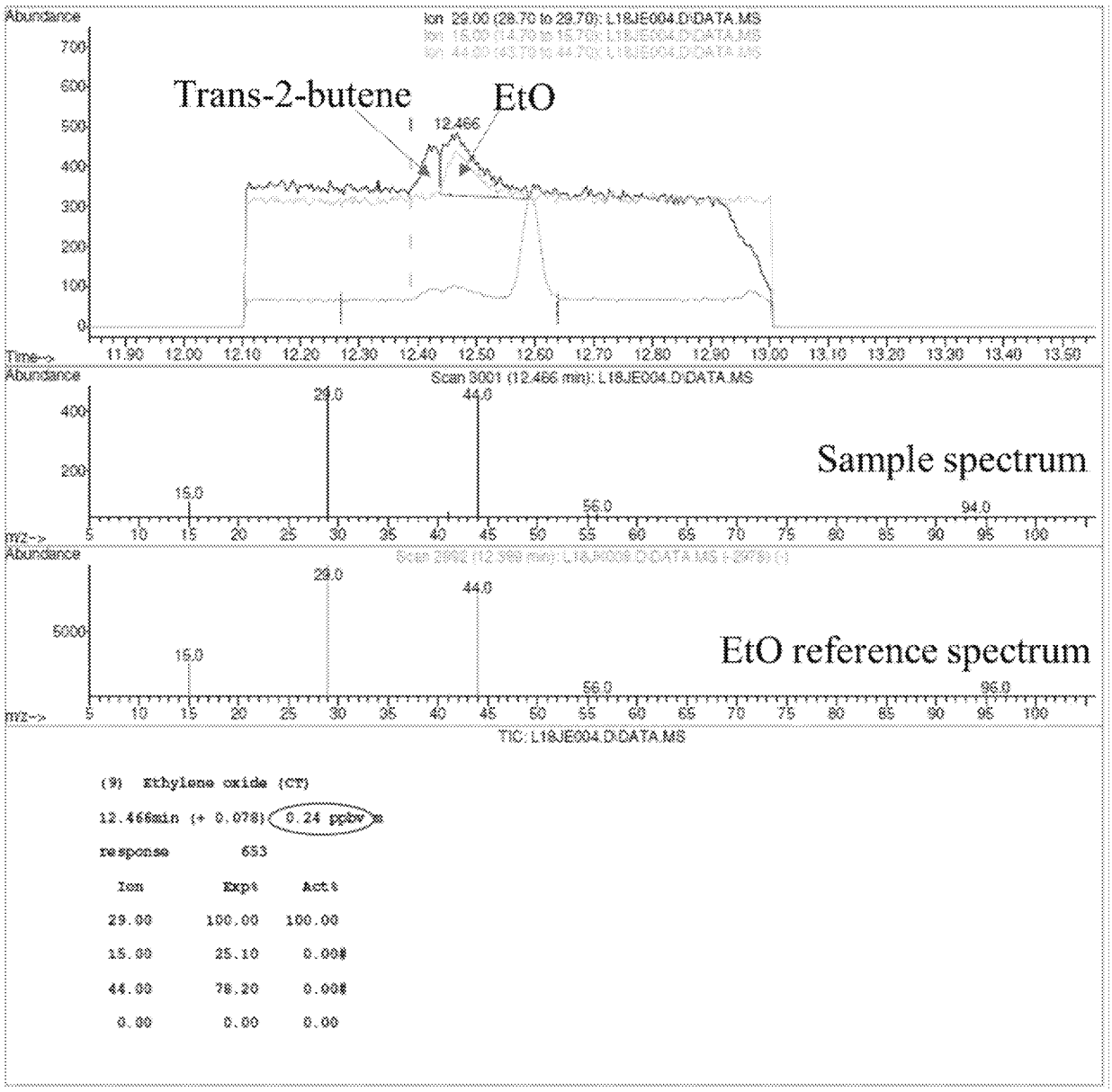


Figure 2.1. Example chromatogram and spectrum for a mixture standard (including both trans-2-butene and EtO) analyzed for EtO by the modified TO-15 method.

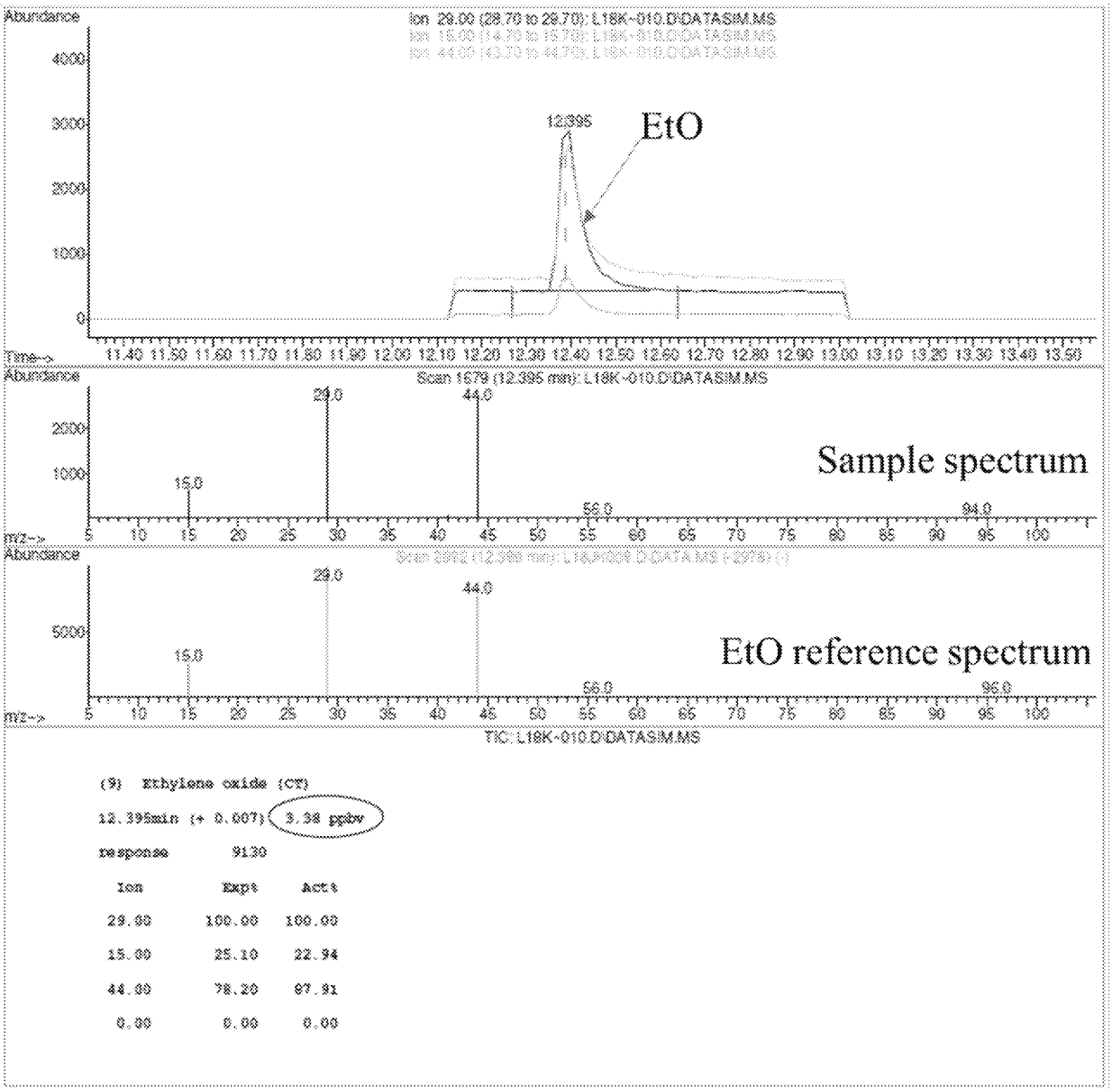


Figure 2.2. Example chromatogram and spectrum for a sample (collected at Willowbrook Village Hall on November 19th, 2018) analyzed for EtO by the modified TO-15 method.

3. Quality Control and Data Validation Requirements for Ethylene Oxide Sampling and TO-15 Analysis

Calibration and Calibration Check Frequency Requirements for Standards and Critical Instruments

Instrument or Standard	Area of Use	Required Calibration Check [a] Frequency and Tolerance	Required Calibration [b] Frequency
Balances	Laboratory – Weighing standard materials, calibration of pipettes, determining mass loss for microwave metals digestion, weighing PAHs sorbent resin (XAD-2)	Each day of use with certified calibration check weights bracketing the balance load; Must be within manufacturer-specified tolerance covering the range of use	Initially, annually, and when calibration checks demonstrate an out of tolerance condition
Certified Weights	Laboratory – Calibration verification of balances	Check not required.	Annual certification by accredited metrology laboratory; Must be within manufacturer-specified tolerance
Mechanical Pipettes	Laboratory – Dispensing liquid volumes	Minimally quarterly, recommended monthly, by weighing delivered volumes of deionized water bracketing those dispensed; Must be within manufacturer-specified tolerance covering the range of use	Initially and when calibration checks demonstrate an out of tolerance condition
Bottletop Dispensers	Laboratory – Dispensing critical liquid volumes	Each day of use by delivery into a To Contain (TC) graduated cylinder Must be within ± 5%	When delivery volumes are set and when calibration checks fail criteria
Thermometers – Laboratory	Laboratory – Temperature monitoring of water baths, metals digestion, refrigerated storage units, canister cleaning ovens, and water for pipette calibration	Check not required.	Annual at temperature range of use or at not-to-exceed temperature – Correction factors applied to match certified standard
Thermometers – Meteorological	Field – Recording environmental conditions during sample collection	Minimally quarterly, monthly recommended Must be within ± 0.5°C of certified standard at working temperature	Initially and when calibration checks indicate readings out of tolerance
Barometers	Field – Recording environmental conditions during sample collection Laboratory – Recording environmental conditions during instrument calibration	Minimally quarterly, monthly recommended Must be within ± 10 mm Hg of certified standard at typical barometric pressure	Initially and when calibration checks indicate readings out of tolerance
Flow Transfer Standards	Field – Critical flow orifices and volumetric flow meters for calibrating and verifying sampling unit flows	Check not required.	Annual; Must be within manufacturer-specified tolerance and cover the range of use

Instrument or Standard	Area of Use	Required Calibration Check [a] Frequency and Tolerance	Required Calibration [b] Frequency
	Built-in thermometers and barometers must be calibrated		
Pressure Gauges or Transducers	Field and Laboratory – Measure canister pressure/vacuum before and after collection, measure final canister vacuum following cleaning	Annual. Must be within 0.5 psi or manufacturer-specified tolerance and cover the range of use	Initially and when calibration checks show out of tolerance. Must cover the range of use
Flow Controllers and Meters – Laboratory	Laboratory – Mass flow controllers (MFCs), flow rotameters, or similar devices for measuring/metering gas flow rates for critical measurements (standard gas mixing)	Minimally quarterly, monthly recommended Flow within ± 2% of certified standards	Initially and when calibration checks demonstrate flows are out of tolerance
VOCs Sampling Units	Field – Collection of VOCs in canisters Flow control (such as MFC) Pressure gauge/transducer	If performed, minimally quarterly, for flow control, annually for pressure gauge/transducer Flow control (check is optional) within ±10% of certified flow If needed for critical measurements (canister starting/ending pressure), pressure gauge/transducer within ± 0.5 pounds per square inch (psi) of certified standard	Flow control - Initially and when components affecting flow are adjusted or replaced, or when calibration checks demonstrate flows are out of tolerance Pressure gauges/transducers – initially and when calibration checks demonstrate flows are out of tolerance
GC/MS for VOCs analysis	Laboratory – Analysis of VOCs from stainless steel canisters	Refer to Table 4.2-3	Initially, following failed continuing calibration verification (CCV) check, following failed bromofluorobenzene (BFB) tune check, or when changes/maintenance to the instrument affect calibration response

Summary of Quality Control Parameters for NATTS VOCs Analysis[TC "Table 4.2-3. Summary of Quality Control Parameters for NATTS VOCs Analysis" \f D \l "1"]

Parameter	Description and Details	Required Frequency	Acceptance Criteria
Instrument Blank (IB)	Analysis of swept carrier gas through the pre concentrator to demonstrate the instrument is sufficiently clean to begin analysis	Prior to ICAL and daily beginning CCV	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower
BFB Tune Check	50 ng injection of BFB for tune verification of quadrupole MS detector	Prior to initial calibration and every 24 hours of analysis thereafter	Abundance criteria listed in Table 4.2-2
Initial Calibration (ICAL)	Analysis of a minimum of five calibration levels covering approximately 0.1 to 5 ppb	Initially, following failed BFB tune check, failed CCV, or when changes/maintenance to the instrument affect calibration response	Average RRF ≤ 30% RSD and each calibration level must be within ± 30% of nominal For quadratic or linear curves, r ≥ 0.995, each calibration level must be within ± 30% of nominal
Secondary Source Calibration Verification (SSCV)	Analysis of a secondary source standard at the mid-range of the calibration curve to verify ICAL accuracy	Immediately after each ICAL	Recovery within ± 30% of nominal or RRF within ±30% of the mean ICAL RRF
Continuing Calibration Verification (CCV)	Analysis of a known standard at the mid-range of the calibration curve to verify ongoing instrument calibration	Following each daily BFB tune check and every 24 hours of analysis; recommended after each ten sample injections and to conclude each sequence	Recovery within ± 30% of nominal or RRF within ±30% of the mean ICAL RRF
Canister Cleaning Batch Blank	A canister selected for analysis from a given batch of clean canisters to ensure acceptable background levels in the batch of cleaned canisters	One canister from each batch of cleaned canisters – Canister chosen must represent no more than 10 total canisters.	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower (All Tier I Core analytes must meet this criterion)
Internal Standards (IS)	Deuterated or not naturally occurring compounds co-analyzed with samples to monitor instrument response and assess matrix effects	Added to all calibration standards, QC samples, and field-collected samples	Area response for each IS compound within ± 40% of the average response of the ICAL
Pre concentrator Leak Check	Pressurizing or evacuating the canister connection to verify as leak-free	Each standard and sample canister connected to the instrument	< 0.2 psi change/minute or manufacturer recommendations
Method Blank (MB)	Canister filled with clean diluent gas	One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower
Laboratory Control Sample (LCS)	Canister spiked with known amount of target analyte at approximately the lower third of the calibration curve	(Recommended) One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's recovery must be 70 to 130% of its nominal spiked amount
Duplicate Sample	Field sample collected through the same inlet probe as the primary sample	10% of primary samples for sites performing duplicate sample	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL

Parameter	Description and Details	Required Frequency	Acceptance Criteria
		collection (as prescribed in workplan)	
Collocated Sample	Field sample collected through a separate inlet probe from the primary sample	10% of primary samples for sites performing collocated sample collection (as prescribed in workplan)	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL
Replicate Analysis	Replicate analysis of a field-collected sample (chosen by analyst)	Once with every analysis sequence (as prescribed in workplan)	Precision ≤ 25% RPD for target VOCs with concentrations ≥ 5x MDL
Retention Time (RT)	RT of each target compound and internal standard	All qualitatively identified compounds and internal standards	Target VOCs within ± 0.06 RRT units of mean ICAL RRT IS compounds within ± 0.33 minutes of the mean ICAL RT

VOCs via EPA Compendium Method TO-15 – Frequencies and Acceptance Criteria

The following table is a distillation of the general quality control guidance and requirements in Section 3 and the individual methods described in Section 4 of the NATTS Technical Assistance Document. More information on each data validation parameter can be located within the text identified in the reference column. Each parameter is assigned a category of importance. The categories in order of decreasing importance are:

1. Critical – Criteria must be met for reported results to be valid – Samples for which these criteria are not met are invalidated.
2. MQO – Required NATTS Measurement Quality Objective which must be attained – Failure to meet these criteria does not necessarily invalidate data,but may compromise data and result in exclusion from trends analysis.
3. Operational – Failure to meet criteria does not invalidate reported results; the results are compromised and on a case-by-case basis may require qualification – refer to Section 3.3.1.3.15 for the list of AQS qualifiers
4. Practical – Failure to meet criteria does not invalidate reported results; results may be compromised but do not require qualification.

[TC "7.1 VOCs via EPA Compendium Method TO-15" \f C \l "2"]

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
		Field Readiness Checks and Collection Activities		
Canister Cleaning Batch Blank	Minimally one canister selected for analysis from a given batch of clean canisters to ensure acceptable background levels in the batch of cleaned canisters - must represent no more than 10 canisters	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower	Section 4.2.6.2.4 TO-15 Section 8.4.1.6	Critical
Canister Viability	All canisters	Canister must be used within 30 days from final evacuation	Section 4.2.6.2 TO-15 Section 1.3	Operational
Sampling Unit Clock/Timer Check	Verified with each sample collection event	Clock/timer accurate to ±5 minute of reference for digital timers, ±15 minutes for mechanical timers, set to local standard time Sample collection period verified to be midnight to midnight	Section 4.2.5.3 and Table 3.3-1	Operational
Canister Starting Pressure Determination	Each canister prior to collection of a field sample or preparation of a calibration standard or laboratory QC sample	Vacuum > 28" Hg as determined with calibrated pressure gauge or transducer	Section 4.2.5.2.1	Critical
Sample Setup Leak Check	Each canister prior to collection - draw vacuum on canister connection	Leak rate must be < 0.2 psi over 5 minutes	Section 4.2.5.2.1	Critical

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Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Sampling Frequency	One sample every six days according to the EPA National Monitoring Schedule	Sample must be valid or a make-up sample should be scheduled (refer to Section 2.1.2.1)	Section 4.2.5.3	Critical and MQO
Sampling Period	All field-collected samples	1380-1500 minutes (24 ± 1 hr) starting and ending at midnight	Section 4.2.5.3	Critical and MQO
Pre-Sample Collection Purge	Each sampling event	Minimum of ten air changes just prior to sample collection	Section 4.2.5.4	Practical
Field-collected Sample Final Pressure	All field-collected samples	Must be determined with a calibrated pressure gauge or transducer per agency quality system specification	Section 4.2.5.2.4	Operational
Sample Receipt				
Chain-of-custody	All field-collected samples including field QC samples	Each canister must be uniquely identified and accompanied by a valid and legible COC with complete sample documentation	Sections 3.3.1.3.7 and 4.2.5.2.4	Critical
Sample Holding Time	All field-collected samples, laboratory QC samples, and standards	Analysis within 30 days of end of collection (field-collected samples) or preparation (QC samples or standards)	Section 4.2.1 TO-15 Sections 1.3, 2.3, and 9.2.8.1	Operational
Canister Receipt Pressure Check	All field-collected samples upon receipt at the laboratory – measured with calibrated pressure gauge or transducer	Pressure change of ≤ 0.5 psi from the final pressure at retrieval	Section 4.2.8	Critical for subambient sample collection, operational for pressurized sample collection
GC/MS Analysis				
Instrument Blank (IB)	Analysis of swept carrier gas through the preconcentrator to demonstrate the instrument is sufficiently clean prior to analysis of ICAL or daily beginning CCV	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower	Section 4.2.10.5.2.2	Operational
BFB Tune Check	50 ng injection of BFB for tune verification of MS detector analyzed prior to initial calibration and every 24 hours of analysis thereafter (for quadrupole MS only)	Must meet abundance criteria listed in Table 4.2-2	Section 4.2.10.5.1 TO-15 Section 10.4.2	Critical

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
GC/MS Multi-Point Initial Calibration (ICAL)	Analysis of a minimum of five calibration levels covering approximately 0.1 to 5 ppb Initially and minimally every three months thereafter, following failed BFB tune check, failed CCV, or when changes to the instrument affect calibration response	Average RRF ≤ 30% RSD and each calibration level must be within ± 30% of nominal For linear regression (with either a linear or quadratic fit), r ≥ 0.995 and each calibration level must be within ± 30% of nominal	Section 4.2.10.5.2.2 TO-15 Section 10.5.5.1	Critical
Secondary Source Calibration Verification (SSCV)	Analysis of a secondary source standard at the mid-range of the calibration curve to verify ICAL accuracy immediately after each ICAL	Recovery within ± 30% of nominal	Section 4.2.10.5.2.3	Critical
Continuing Calibration Verification (CCV)	Analysis of a known standard at the mid-range of the calibration curve to verify ongoing instrument calibration; following each daily BFB tune check and at the conclusion of each analytical sequence	Each target VOC must recover within 70-130% of the nominal spiked amount or the RRF must be within 30% of the mean ICAL RRF	Section 4.2.10.5.2.4 TO-15 Section 10.6.5	Critical
Internal Standards (IS)	Deuterated or non-naturally occurring compounds co-analyzed with all calibration standards, laboratory QC samples, and field-collected samples so as to monitor instrument response and assess matrix effects	Area response for each IS compound within ± 40% of the average response of the ICAL	Section 4.2.10.5.4 TO-15 Section 10.7.5	Critical
Preconcentrator Leak Check	Pressurizing or evacuating each canister connection to the preconcentrator to verify as leak-free prior to analysis	< 0.2 psi change/minute or manufacturer specifications	Section 4.2.10.5.2.1	Operational
Method Blank (MB)	Canister filled with clean humidified diluent gas (gas employed for dilution of standards and /or samples) One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's concentration < 3x MDL or 0.2 ppb, whichever is lower	Section 4.2.10.4.3 TO-15 Section 10.7.5	Operational
Laboratory Control Sample (LCS)	Canister spiked with known amount of target analyte at approximately the lower third of the calibration curve *Recommended:* One with every analysis batch of 20 or fewer field-collected samples	Each target VOC's recovery must be 70 to 130% of its nominal spiked amount	Section 4.2.10.5.2.5	Operational
Retention Time (RT)	RT of each target compound and internal standard for all qualitatively identified compounds and internal standards	Each target VOC's RRT must be within ± 0.06 RRT units of its mean ICAL RRT Each IS RT must be within ± 0.33 minutes of its mean ICAL RT	Sections 4.2.10.5.2.2 and 4.2.10.5.4 TO-15 Sections 10.5.5.2, 10.5.5.3, and 10.5.5.4	Critical

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Compound Identification	Qualitative identification of each target VOC in each standard, blank, QC sample, and field-collected sample (including field QC samples)	Signal-to-noise ≥ 3:1 RT within prescribed window Ion abundances of at least one qualifier ion within 30% of ICAL mean Peak apexes co-maximized (within one scan for quadrupole MS) for quantitation and qualifier ions	Section 4.2.10.5.3	Critical
Replicate Analysis	A single additional analysis of a field-collected canister Once with every analysis sequence (as prescribed in workplan)	Precision ≤ 25% RPD for target VOCs with concentrations ≥ 5x MDL	Section 4.2.10.5.2.5 TO-15 Section 11.1.1	Operational
Duplicate Sample	Field sample collected through the same inlet probe as the primary sample 10% of primary samples for sites performing duplicate sample collection (as prescribed in workplan)	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL	Sections 4.2.4; 4.2.4.1	Operational
Collocated Sample	Field sample collected through a separate inlet probe as the primary sample 10% of primary samples for sites performing duplicate sample collection (as prescribed in workplan	Precision ≤ 25% RPD of primary sample for concentrations ≥ 5x MDL	Sections 4.2.4 and 4.2.4.1	Operational

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Laboratory Readiness and Proficiency				
Method Detection Limit	Determined initially and minimally annually thereafter and when method changes alter instrument sensitivity	MDL determined via 4.1 must be: Acrolein ≤ 0.09 µg/m^3 Benzene ≤ 0.13 µg/m^3 1,3-Butadiene ≤ 0.10 µg/m^3 Carbon Tetrachloride ≤ 0.017 µg/m^3 Chloroform ≤ 0.50 µg/m^3 Tetrachloroethylene ≤ 0.17 µg/m^3 Trichloroethylene ≤ 0.20 µg/m^3 Vinyl Chloride ≤ 0.11 µg/m^3 These MDL MQOs current as of October 2015. Refer to current workplan template for up-to-date MQOs.	Sections 4.1 and 4.2.7	MQO
Stock Standard Gases	Purchased stock standard gases for each target VOC All standards	Certified and accompanied by certificate of analysis Recertified or replaced annually unless a longer expiration is specified by the supplier	Section 4.2.10.3.1	Critical
Proficiency Testing	Blind sample submitted to each laboratory to evaluate laboratory bias Two per calendar year[1]	Each target compound within ± 25% of the assigned target value Failure of one PT must prompt corrective action. Failure of two consecutive PTs (for a specific core analyte) must prompt qualification of the analyte in field collected samples until return to conformance.	Section 2.1.4.1	Operational and MQO
Canister and Sampling Unit Testing and Maintenance				
Canister Leak Test	Testing of the leak tightness of each canister in the agency fleet Annually, may be performed simultaneously with canister zero air check	Leak rate must be ≤ 0.1 psi/day	Section 4.2.6.1.1.1	Operational

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Canister Zero Check	Verification that a canister does not contribute to positive bias over an approximate 30-day period *Strongly Recommended:* Each canister in the agency fleet once annually (or as defined by agency policy) or after major maintenance such as replacement of valve	All Tier I core target compounds must be < 0.2 ppb or < 3x MDL, whichever is lower	Section 4.2.6.1.1.1 TO-15 Section 8.4.3	Operational
Canister Known Standard Gas Check	Verification that a canister does not contribute to bias over an approximate 30-day period *Strongly Recommended:* Each canister in the agency fleet once annually (or as defined by agency policy) or after major maintenance such as replacement of valve	All Tier I core target compounds must be within ± 30% of nominal	Section 4.2.6.1.1.2	Operational
Sampling Unit Flow Calibration	Calibration of sampling unit flow controller Initially and when calibration checks demonstrate flows are out of tolerance, or when components affecting flow are adjusted or replaced	Flow set to match the certified flow primary or transfer standard	Table 3.3-1 TO-15 Section 8.3.5	Practical
Sampling Unit Non-biasing Certification	Verification that the sampling unit does not contribute to bias Prior to field deployment and annually thereafter, or when flow path components are repaired or replaced Sampling units must be subject to a Zero Check and Known Standard Challenge	Zero Check – All Tier I core target analytes < 0.2 ppb or < 3x MDL, whichever is lower Known Standard Challenge – All Tier I core target analytes within ±15% of the reference sample	Section 4.2.5.5	Operational
Sampling Unit Flow Calibration Check or Audit	Verification of sampling unit flow rate Minimally quarterly, monthly recommended	Flow within ±10% of certified primary or transfer standard flow and design flow	Table 3.3-1	Practical
Site Specifications and Maintenance				
Sampling Unit Siting	Verify conformance to requirements Annually	270° unobstructed probe inlet Inlet 2-15 meters above-ground level ≥ 10 meters from drip line of nearest tree Collocated sampling inlets spaced within 4 meters of primary sampling unit inlet	Section 2.4	Operational

Parameter	Description and Required Frequency	Acceptance Criteria	Reference	Category
Sample Probe and Inlet	Sample probe and inlet materials composition Annually	Chromatographic grade stainless steel or borosilicate glass	Section 4.2.3.2	Operational
Sample Inlet Filter	Particulate filter maintenance Minimally annually	Clean or replace the 2-µm sintered stainless steel filter	Section 4.2.3.3 TO-15 Section 7.1.1.5	Operational
Sampling Inlet and Inlet Line Cleaning	Sample inlet and inlet line cleaning or replacement Minimally annually - More often in areas with high airborne particulate levels	Cleaned with distilled water or replaced	Section 4.2.3.1	Operational

Message

From: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
Sent: 5/23/2019 11:51:02 AM
To: Chen, Xi [Chen.Xi@epa.gov]
Subject: EtO ambient monitoring document
Attachments: EtO Ambient Sampling for Toolbox - Mar 2019.pdf

Doris:

I'd like to send your EtO/TO-15 technical note to AAPCA for distribution (probably NACAA as well – did they ask for it?).

This is the version uploaded to the EtO SharePoint site. Do you want to make any changes before I send it? I'm also thinking we should put some kind of EPA header on it. After your review, could you send me the Word file and I'll add something that makes it clearer that the source is EPA/RTP.

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

Message

From: Siegel, Kathryn [siegel.kathryn@epa.gov]
Sent: 10/31/2019 8:18:33 PM
To: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
CC: Chen, Xi [Chen.Xi@epa.gov]
Subject: RE: Level IV data package for WB

It just posted: https://www.willowbrookil.org/DocumentCenter/View/1897/ETO-V-2

-----Original Message-----
From: Siegel, Kathryn
Sent: Thursday, October 31, 2019 3:11 PM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Cc: Chen, Xi <Chen.Xi@epa.gov>
Subject: RE: Level IV data package for WB

Thanks for the clarification, Lew.

I was thinking that having a desk statement ready, should would get questions, would be prudent, but I think you answered what we would say. It's the Village of Willowbrook's study and we can refer any questions to them.

I'll keep an eye on Willowbrook's website, in case they post.

-----Original Message-----
From: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Sent: Thursday, October 31, 2019 2:52 PM
To: Siegel, Kathryn <siegel.kathryn@epa.gov>
Cc: Chen, Xi <Chen.Xi@epa.gov>
Subject: RE: Level IV data package for WB

Right - they never provided anything beyond the basic data package. So Doris' uncertainty about the sample identification (as EtO) remains unresolved.

Given that our role on the Village's monitoring program was tangential at best, my suggestion is to remain silent on their results. They paid for the study and made the decisions about the level of QA, so I think the Village owns any follow ups. Any questions to us should be directed back to Renee and/or the new Village Administrator. That would be my recommendation.

Lew

-----Original Message-----
From: Siegel, Kathryn <siegel.kathryn@epa.gov>
Sent: Thursday, October 31, 2019 2:04 PM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Cc: Chen, Xi <Chen.Xi@epa.gov>
Subject: RE: Level IV data package for WB

Thanks for the update, Lew. Just to clarify, they never sent the chromatograms, spectra and abundance ratios that Doris sent, so there is still some uncertainty that it is really EtO?

I know that Alison is out, but this is probably something that we should prepare a desk statement about. Is that something you can shepherd, maybe with Jenny? Let me know if I can help. Thank you!

Katie Siegel, Chief
Air Toxics and Assessment Branch
Air and Radiation Division
U.S. EPA Region 5
siegel.kathryn@epa.gov
(312) 886-3006

-----Original Message-----
From: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Sent: Thursday, October 31, 2019 12:29 PM
To: Siegel, Kathryn <siegel.kathryn@epa.gov>
Cc: Chen, Xi <Chen.Xi@epa.gov>
Subject: FW: Level IV data package for WB

Hi Katie:

Here is the email that I referenced in our call. I'm now remembering that the Village did some ambient monitoring in early August and recorded an 8.9 ug/m3 reading at either the Police Station or Village Hall. The other readings were typical background values. They asked for our review and we could not come up with anything to explain the high number. Doris reviewed the data package and there were no red flags, although the value itself appears to be a serious outlier with the facility sealed. Now Renee has come back to say that no more information is available and they are ready to post. The situation is different now with the apparent departure of Sterigenics but questions may still be raised about the source for this EtO concentration. At least they gave us a heads up.

Lew

-----Original Message-----
From: Cipriano, Renee <RCipriano@schiffhardin.com>
Sent: Thursday, October 31, 2019 12:43 PM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Subject: RE: Level IV data package for WB

Hi Lew. I hope this e-mail finds you well. The purpose of my email is two-fold. Firstly, GHD has gotten back to us and stated that all of the information they have is in the data package. My colleague was told there is nothing additional to review. Secondly, in the interest of transparency, the Village will be posting today all preliminary sampling results that have not been previously posted. Specifically, the GHD sampling results from February 18-March 7 and August 1-8, 2019 will be posted. The results are preliminary because the Village will not be expending the resources necessary to do a full review of all of the results. I am happy to forward to you the posted data as soon as I receive a copy. As always, Lew, the Village and I truly appreciate all of your hard work on this matter. Best, Renee

Renee Cipriano
Partner

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f: 312.258.5600
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233 South Wacker Drive
Chicago, IL 60606
www.schiffhardin.com

-----Original Message-----
From: Weinstock, Lewis [mailto:Weinstock.Lewis@epa.gov]
Sent: Tuesday, September 24, 2019 6:29 AM
To: Cipriano, Renee <RCipriano@schiffhardin.com>
Cc: Chen, Xi <Chen.Xi@epa.gov>
Subject: [EXT] FW: Level IV data package for WB
Importance: High

Hi Renee:

Here is Doris' evaluation of the data package. Can we get the additional information that Doris mentioned?

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

-----Original Message-----
From: Chen, Xi <Chen.Xi@epa.gov>
Sent: Monday, September 23, 2019 5:00 PM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Subject: RE: Level IV data package

Based on our compound identification criteria, this particular peak might not be EtO. The retention time is off by more than 0.1min, and qualifying ions to target ion ratios seem to be outside the 30% range. With what is provided in the data package, this is just speculation and based on my estimation. We will need to request the chromatograms , spectra and abundance ratios for standards and that particular sample to confirm.

-----Original Message-----
From: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Sent: Monday, September 23, 2019 4:07 PM
To: Chen, Xi <Chen.Xi@epa.gov>
Subject: FW: Level IV data package

Please review and let me know what you find. Thanks!

Lewis Weinstock | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Phone: 919-541-3661|

-----Original Message-----
From: Cipriano, Renee <RCipriano@schiffhardin.com>
Sent: Monday, September 23, 2019 3:23 PM
To: Weinstock, Lewis <Weinstock.Lewis@epa.gov>
Subject: Level IV data package

Attached. Thank you again Renee

This message and any attachments may contain confidential information protected by the attorney-client or other privilege.
If you believe that it has been sent to you in error, please reply to the sender that you received the message in error. Then delete it. Thank you.

Message

From: Julie Swift [Julie.Swift@erg.com]
Sent: 4/11/2019 7:53:19 PM
To: Chen, Xi [Chen.Xi@epa.gov]
CC: Noah, Greg [Noah.Greg@epa.gov]; Weinstock, Lewis [Weinstock.Lewis@epa.gov]; Donna Tedder [donna.tedder@erg.com]; Jennifer.Nash@erg.com; Laura Van Enwyck [laura.vanenwyck@erg.com]
Subject: EtO data results for March 17-April 1, 2019 - 1 of 3
Attachments: willowbrook mar17_apr1 19.pdf; willowbrook mar17_apr1 19.xls; sample receipt R5 log.xlsx; willowbrook sum feb_19.xlsx; sample log R5.xlsx; Data Package N19C!.PDF; Data Package N19DC.PDF

Doris - I have attached the reports for the samples collected through April 1, 2019. Also attached are two of the four data packages (+cal curve).

Please let me know if you have any questions.

Thank you,
Julie

Julie L. Swift
VP/Program Manager/Chemist
ERG
601 Keystone Park Drive, Suite 700, Morrisville, NC 27560
Office - (919) 468-7924 | Fax - (919) 468-7803
julie.swift@erg.com

	A	B	C	D	E	F	G	H	I	J
1	**LabNumber**	**Analysis**	**Sampled**	**Status**	**Project**	**SampleName**	**SampleType**	**SampleComments**	**Canister ID**	**SampleInfo2**
2	8111508-01	TO-15 2018	11/14/18 10:22	Invalid	EtO Region 5	WB Village Hall C1	Collocated - C1	VOID Col 1 Start 10:22 11/13/18 Probe #10314 - >3" difference from field to lab	5079	3.50" Hg
3	8111508-03	TO-15 2018	11/14/18 10:00	Reported	EtO Region 5	WB Warehouse	Field Sample	Start 10:00 11/13/18 Probe #10315	A21028	2.00" Hg
4	8111508-04	TO-15 2018	11/14/18 10:00	Reported	EtO Region 5	WB Trip Blank	Field Sample	Trip Blank	5037	29.50" Hg
5	8111508-02	TO-15 2018	11/14/18 10:23	Invalid	EtO Region 5	WB Village Hall C2	Collocated - C2	VOID Col 2 Start 10:23 11/13/18 Probe #10313 - >3" difference between field and lab	SAT057	1.00" Hg
6	8112012-01	TO-15 2018	11/17/18 10:07	Reported	EtO Region 5	WB Village Hall	Field Sample	Start 10:24 11/16/18 Probe #10313	A21096	2.00" Hg
7	8112012-02	TO-15 2018	11/17/18 09:57	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Start 10:09 11/16/18 Probe #10314	SAT085	2.50" Hg
8	8112012-03	TO-15 2018	11/17/18 09:57	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Start 10:09 11/16/18 Probe #10315	SAT114	3.50" Hg
9	8112113-01	TO-15 2018	11/20/18 09:30	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Start 09:32 11/19/18 Probe #10315	A21102	2.00" Hg
10	8112113-03	TO-15 2018	11/20/18 09:21	Reported	EtO Region 5	WB Warehouse	Field Sample	Start 09:20 11/19/18 Probe #10314	5077	3.50" Hg
11	8112113-04	TO-15 2018	11/20/18 10:36	Reported	EtO Region 5	Gower ES	Field Sample	Start 10:36 11/19/18 Probe #10293	SAT092	3.50" Hg
12	8112113-05	TO-15 2018	11/20/18 09:39	Reported	EtO Region 5	Gower MS	Field Sample	Start 09:46 11/19/18 Probe #10311	18879	2.00" Hg
13	8112113-06	TO-15 2018	11/20/18 10:10	Reported	EtO Region 5	Willow Pond Park	Field Sample	Start 10:10 11/19/18 Probe #10294	SAT089	2.50" Hg
14	8112113-07	TO-15 2018	11/20/18 09:54	Reported	EtO Region 5	Watertower	Field Sample	Start 09:59 11/19/18 Probe #10312	SAT169	2.00" Hg
15	8112113-08	TO-15 2018	11/20/18 10:25	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Start 10:25 11/19/18 Probe #10076	A21051	4.00" Hg
16	8112113-09	TO-15 2018	11/20/18 10:45	Reported	EtO Region 5	West Neighborhood	Field Sample	Start 10:45 11/19/18 Probe #10310	SAT025	3.00" Hg
17	8112113-02	TO-15 2018	11/20/18 09:29	Reported	EtO Region 5	WB Village Hall C2	Collocated - C1	Col 2 Start 09:33 11/19/18 Probe #10315	SAT013	3.50" Hg
18	8112702-04	TO-15 2018	11/24/18 10:35	Reported	EtO Region 5	Gower ES	Field Sample	Start 10:35 11/23/18 Probe #10293	SAT097	4.50" Hg
19	8112702-03	TO-15 2018	11/24/18 09:41	Reported	EtO Region 5	Gower MS	Field Sample	Start 09:36 11/23/18 Probe #10311	SAT135	3.00" Hg
20	8112702-08	TO-15 2018	11/24/18 10:23	Invalid	EtO Region 5	Hinsdale South HS	Field Sample	Start 10:23 11/23/18 Probe #10076	SAT143	5.00" Hg
21	8112702-01	TO-15 2018	11/24/18 09:57	Reported	EtO Region 5	Watertower	Field Sample	Start 09:57 11/23/18 Probe #10312	18877	3.50" Hg
22	8112702-06	TO-15 2018	11/24/18 09:34	Reported	EtO Region 5	WB Village Hall	Field Sample	Start 09:34 11/23/18 Probe #10313	5094	4.00" Hg
23	8112702-07	TO-15 2018	11/24/18 09:23	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Start 09:21 11/23/18 Probe #10314	22327	3.00" Hg
24	8112702-02	TO-15 2018	11/24/18 10:44	Reported	EtO Region 5	West Neighborhood	Field Sample	Start 10:44 11/23/18 Probe #10310	5015	5.00" Hg
25	8112702-05	TO-15 2018	11/24/18 10:09	Reported	EtO Region 5	Willow Pond Park	Field Sample	Start 10:09 11/23/18 Probe #10294	SAT131	3.50" Hg
26	8112702-09	TO-15 2018	11/24/18 09:25	Invalid	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Start 09:25 11/23/18 Probe #10315	3225	4.50" Hg
27	8112702-15	TO-15 2018	11/26/18 10:21	Reported	EtO Region 5	Gower ES	Field Sample	Start 10:15 11/25/18 Probe #10293	5056	4.00" Hg
28	8112702-14	TO-15 2018	11/26/18 09:42	Reported	EtO Region 5	Gower MS	Field Sample	Start 09:27 11/25/18 Probe #10311	5127	2.00" Hg
29	8112702-16	TO-15 2018	11/26/18 10:16	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Start 10:14 11/25/18 Probe #10076	5033	5.00" Hg
30	8112702-10	TO-15 2018	11/26/18 09:52	Invalid	EtO Region 5	Watertower VOID	Field Sample	Void per site operator Start 09:39 11/25/18 Probe #10312	SAT004	18.50" Hg
31	8112702-13	TO-15 2018	11/26/18 09:34	Reported	EtO Region 5	WB Village Hall	Field Sample	Start 09:15 11/25/18 Probe #10314	5133	3.00" Hg
32	8112702-11	TO-15 2018	11/26/18 09:27	Invalid	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Start 09:04 11/25/18 Probe #10315	SAT123	3.00" Hg
33	8120701-10	TO-15 2018	11/26/18 10:30	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:25 11/25/18	5034	4.50" Hg
34	8112702-17	TO-15 2018	11/26/18 10:03	Reported	EtO Region 5	Willow Pond Park	Field Sample	Start 09:50 11/25/18 Probe #10294	SAT037	1.90" Hg
35	8112702-12	TO-15 2018	11/26/18 09:25	Invalid	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Start 09:05 11/25/18 Probe #10313	5146	2.00" Hg
36	8120321-06	TO-15 2018	11/29/18 10:09	Reported	EtO Region 5	Gower ES	Field Sample	Start 10:45 11/28/18 Probe #10293	SAT074	3.00" Hg
37	8120321-08	TO-15 2018	11/29/18 09:27	Reported	EtO Region 5	Gower MS	Field Sample	Start 09:53 11/28/18 Probe #10311	5083	2.00" Hg
38	8120321-03	TO-15 2018	11/29/18 09:59	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Start 10:31 11/28/18 Probe #10076	SAT054	4.00" Hg
39	8120321-04	TO-15 2018	11/29/18 09:37	Reported	EtO Region 5	Watertower	Field Sample	Start 10:05 11/28/18 Probe #10312	SAT023	2.50" Hg
40	8120321-09	TO-15 2018	11/29/18 09:18	Reported	EtO Region 5	WB Village Hall	Field Sample	Start 09:40 11/28/18 Probe #10313	18873	2.10" Hg
41	8120321-01	TO-15 2018	11/29/18 09:10	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Start 09:29 11/28/18 Probe #10314	5102	2.50" Hg
42	8120321-07	TO-15 2018	11/29/18 10:17	Reported	EtO Region 5	West Neighborhood	Field Sample	Start 10:55 11/28/18 Probe #10310	19654	3.00" Hg
43	8120321-05	TO-15 2018	11/29/18 09:46	Reported	EtO Region 5	Willow Pond Park	Field Sample	Start 10:17 11/28/18 Probe #10294	SAT173	3.00" Hg
44	8120321-02	TO-15 2018	11/29/18 09:09	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Start 09:29 11/28/18 Probe #10315	SAT094	3.00" Hg
45	8120701-07	TO-15 2018	12/02/18 10:03	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:31 12/1/18	061	5.50" Hg
46	8120701-01	TO-15 2018	12/02/18 09:29	Reported	EtO Region 5	Grover MS	Field Sample	Probe #10311 Start 09:33 12/01/18	A22244	3.50" Hg
47	8120701-03	TO-15 2018	12/02/18 09:55	Reported	EtO Region 5	Hindale South HS	Field Sample	Probe # 10076 Start 10:18 12/1/18	5135	7.00" Hg
48	8120701-06	TO-15 2018	12/02/18 09:37	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 09:45 12/1/18	406	3.50" Hg
49	8120701-08	TO-15 2018	12/02/18 09:17	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 09:21 12/1/18	SAT079	3.50" Hg
50	8120701-02	TO-15 2018	12/02/18 09:12	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe # 10314 Start 09:11 12/1/18	161	3.50" Hg
51	8120701-05	TO-15 2018	12/02/18 10:10	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:43 12/1/18	EPO92	5.00" Hg
52	8120701-04	TO-15 2018	12/02/18 09:46	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 09:57 12/1/18	082	4.50" Hg
53	8120701-09	TO-15 2018	12/02/18 09:18	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 09:21 12/1/18	101	5.50" Hg
54	8121130-09	TO-15 2018	12/07/18 10:50	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:26 12/06/18	775	1.8" Hg
55	8121130-07	TO-15 2018	12/07/18 09:51	Reported	EtO Region 5	Gower MS	Field Sample	Start 09:42 12/06/18 Probe #10311	077	1.3" Hg
56	8121130-08	TO-15 2018	12/07/18 10:34	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Start 10:15 12/06/18 Probe #10076	5076	4.00" Hg
57	8121130-05	TO-15 2018	12/07/18 10:05	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 09:54 12/06/18	SAT059	2.00" Hg
58	8121130-04	TO-15 2018	12/07/18 09:33	Reported	EtO Region 5	WB Village Hall	Field Sample	Start 09:31 12/06/18 Probe #10313	171	1.5" Hg
59	8121130-01	TO-15 2018	12/07/18 09:15	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Start 09:20 12/06/18 Probe #10314	183	2.00" Hg
60	8121130-06	TO-15 2018	12/07/18 11:04	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:36 12/06/18	A21119	0.9" Hg
61	8121130-03	TO-15 2018	12/07/18 10:21	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:05 12/06/18	707	1.4" Hg

	A	B	C	D	E	F	G	H	I	J
62	8121130-02	TO-15 2018	12/07/18 09:19	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Start 09:21 12/06/18 Probe #10315	711	2.00" Hg
63	8121130-10	TO-15 2018	12/06/18 00:00	Reported	EtO Region 5	Trip Blank	Trip Blank		A22228	30" Hg
64	8121130-17	TO-15 2018	12/08/18 10:26	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:53 12/07/18	0044	3.00" Hg
65	8121130-15	TO-15 2018	12/08/18 09:20	Reported	EtO Region 5	Gower MS	Field Sample	Start 09:54 12/07/18 Probe #10311	18870	2.1" Hg
66	8121130-19	TO-15 2018	12/08/18 10:09	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Start 10:38 12/07/18 Probe #10076	19283	4.50" Hg
67	8121130-18	TO-15 2018	12/08/18 09:39	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:09 12/07/18	5067	3.50" Hg
68	8121130-12	TO-15 2018	12/08/18 09:10	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 09:39 12/07/18	19284	2.00" Hg
69	8121130-11	TO-15 2018	12/08/18 09:03	Reported	EtO Region 5	WB Warehouse	Field Sample	Start 09:23 12/07/18 Probe #10314	A21012	1.00 psi
70	8121130-16	TO-15 2018	12/08/18 10:38	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:06 12/07/18	19661	3.00" Hg
71	8121130-14	TO-15 2018	12/08/18 09:55	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:23 12/07/18	A21033	3.00" Hg
72	8121130-13	TO-15 2018	12/08/18 09:12	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 09:39 12/07/18	SAT101	3.00" Hg
73	8121220-01	TO-15 2018	12/11/18 09:53	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:42 12/10/18	A21022	4.5" Hg
74	8121220-07	TO-15 2018	12/11/18 09:05	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 09:55 12/10/18	050	3.0" Hg
75	8121220-06	TO-15 2018	12/11/18 09:46	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:30 12/10/18	SAT020	5.00" Hg
76	8121220-05	TO-15 2018	12/11/18 09:14	Reported	EtO Region 5	Watertower	Field Sample	Probe #10312 Start 10:07 12/10/18	SAT137	3.50" Hg
77	8121220-02	TO-15 2018	12/11/18 08:57	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:43 12/10/18	5029	3.5" Hg
78	8121220-08	TO-15 2018	12/11/18 08:52	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 09:32 12/10/18	5043	4.00" Hg
79	8121220-03	TO-15 2018	12/11/18 09:58	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:53 12/10/18	A21077	4.0" Hg
80	8121220-04	TO-15 2018	12/11/18 09:22	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:18 12/10/18	555	4.0" Hg
81	8121220-09	TO-15 2018	12/11/18 08:50	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Start 09:32 12/10/18 Probe #10315	SAT084	4.00" Hg
82	8121821-05	TO-15 2018	12/14/18 09:50	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 09:54 12/13/18	SAT057	2.50" Hg
83	8121821-06	TO-15 2018	12/14/18 10:23	Reported	EtO Region 5	Hindale South HS	Field Sample	Probe # 10076 Start 10:44 12/13/18	SAT089	5.50" Hg
84	8121821-02	TO-15 2018	12/14/18 00:00	Reported	EtO Region 5	Trip Blank	Trip Blank	Willow Brook	SAT003	30" Hg
85	8121821-07	TO-15 2018	12/14/18 10:03	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:14 12/13/18	A21042	3.50" Hg
86	8121821-03	TO-15 2018	12/14/18 09:37	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 09:43 12/13/18	SAT002	2.50" Hg
87	8121821-08	TO-15 2018	12/14/18 09:29	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe # 10314 Start 09:22 12/13/18	SAT092	2.50" Hg
88	8121821-09	TO-15 2018	12/14/18 10:45	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:10 12/13/18	SAT114	4.0" Hg
89	8121821-01	TO-15 2018	12/14/18 10:12	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:30 12/13/18	5080	4.50" Hg
90	8121821-04	TO-15 2018	12/14/18 09:37	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 09:43 12/13/18	SAT085	4.00" Hg
91	8121821-11	TO-15 2018	12/14/18 10:33	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:59 12/13/18	A21102	4.5" Hg
92	8121821-15	TO-15 2018	12/17/18 10:04	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 11:04 12/16/18	5103	6.00" Hg
93	8121821-19	TO-15 2018	12/17/18 09:28	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:09 12/16/18	18818	4.00" Hg
94	8121821-12	TO-15 2018	12/17/18 09:57	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:52 12/16/18	SAT069	6.00" Hg
95	8121821-13	TO-15 2018	12/17/18 09:33	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:20 12/16/18	SAT161	4.00" Hg
96	8121821-16	TO-15 2018	12/17/18 09:22	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:59 12/16/18	A21100	3.00" Hg
97	8121821-10	TO-15 2018	12/17/18 09:16	Reported	EtO Region 5	WB Warehouse C1	Collocated - C2	Col 1 Probe # 10314 Start 09:46 12/16/18	19278	4.00" Hg
98	8121821-18	TO-15 2018	12/17/18 10:16	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:14 12/16/18	18819	4.50" Hg
99	8121821-14	TO-15 2018	12/17/18 09:39	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:32 12/16/18	19294	4.50" Hg
100	8121821-17	TO-15 2018	12/17/18 09:17	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 09:48 12/16/18	SAT044	4.50" Hg
101	8122101-04	TO-15 2018	12/20/18 10:00	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:52 12/19/18	096	4.5" Hg
102	8122101-06	TO-15 2018	12/20/18 09:26	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 09:50 12/19/18	A21006	3.50" Hg
103	8122101-09	TO-15 2018	12/20/18 09:52	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:35 12/19/18	A21052	5.50" Hg
104	8122101-02	TO-15 2018	12/20/18 09:36	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:04 12/19/18	SAT109	4.00" Hg
105	8122101-07	TO-15 2018	12/20/18 09:26	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 09:159 12/19/18	5021	3.50" Hg
106	8122101-03	TO-15 2018	12/20/18 09:07	Reported	EtO Region 5	WB Warehouse	Field Sample	Start 09:17 12/19/18 Probe #10314	5024	4" Hg
107	8122101-08	TO-15 2018	12/20/18 10:14	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:03 12/19/18	18810	4.0" Hg
108	8122101-05	TO-15 2018	12/20/18 09:44	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:18 12/19/18	19292	4.00" Hg
109	8122101-01	TO-15 2018	12/20/18 09:17	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe #10315 Start 09:29 12/19/18	SAT153	3.50" Hg
110	8122701-05	TO-15 2018	12/23/18 10:18	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:31 12/22/18	SAT171	5.00" Hg
111	8122701-02	TO-15 2018	12/23/18 09:11	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 09:31 12/22/18	5065	5.50" Hg
112	8122701-01	TO-15 2018	12/23/18 10:03	Reported	EtO Region 5	Hindale South HS	Field Sample	Probe # 10076 Start 10:17 12/22/18	SAT123	6.00" Hg
113	8122701-07	TO-15 2018	12/23/18 09:17	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 09:45 12/22/18	SAT143	3.00" Hg
114	8122701-09	TO-15 2018	12/23/18 09:27	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:02 12/22/18	5146	4.00" Hg
115	8122701-03	TO-15 2018	12/23/18 08:58	Reported	EtO Region 5	WB Warehouse C1	Collocated - C2	Col 1 Probe # 10314 Start 08:57 12/22/18	SAT135	3.50" Hg
116	8122701-08	TO-15 2018	12/23/18 10:27	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:46 12/22/18	18877	4.0" Hg
117	8122701-06	TO-15 2018	12/23/18 09:46	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 09:59 12/22/18	5015	5.50" Hg
118	8122701-04	TO-15 2018	12/23/18 08:57	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 08:55 12/16/18	5085	5.50" Hg
119	8122801-01	TO-15 2018	12/27/18 11:00	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 11:13 12/26/18	AZ41	4.00" Hg
120	8122801-04	TO-15 2018	12/27/18 10:16	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:26 12/26/18	19298	3.50" Hg
121	8122801-02	TO-15 2018	12/27/18 10:52	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:58 12/26/18	SAT010	5.00" Hg
122	8122801-03	TO-15 2018	12/27/18 10:22	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:26 12/26/18	19287	3.50" Hg

	A	B	C	D	E	F	G	H	I	J
123	8122801-08	TO-15 2018	12/27/18 10:07	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 10:13 12/26/18	5060	1.6" Hg
124	8122801-06	TO-15 2018	12/27/18 10:02	Invalid	EtO Region 5	WB Warehouse	Field Sample	Void - Probe # 10314 Start 10:02 12/26/18 P Diff >3.0 Void?	19651	3.00" Hg
125	8122801-05	TO-15 2018	12/27/18 11:07	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:24 12/26/18	A21037	3.50" Hg
126	8122801-07	TO-15 2018	12/27/18 10:27	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:47 12/26/18	2243	4.50" Hg
127	8122801-09	TO-15 2018	12/27/18 10:07	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe #10315 Start 10:13 12/26/18	SAT063	4.00" Hg
128	8123125-03	TO-15 2018	12/29/18 10:45	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:53 12/28/18	AZ52	4.00" Hg
129	8123125-04	TO-15 2018	12/29/18 09:47	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:03 12/28/18	AZ46	3.00" Hg
130	8123125-01	TO-15 2018	12/29/18 10:28	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:39 12/28/18	AZ48	4.50" Hg
131	8123125-09	TO-15 2018	12/29/18 00:00	Reported	EtO Region 5	Water Tower VOID	Field Sample	Probe # 10312 Start 10:14 12/28/18	19646	0.0" Hg
132	8123125-08	TO-15 2018	12/29/18 09:55	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:51 12/28/18	AZ37	2.30" Hg
133	8123125-05	TO-15 2018	12/29/18 09:40	Reported	EtO Region 5	WB Warehouse C1	Collocated - C2	Col 1 Probe # 10315 Start 09:40 12/28/18	SAT073	3.00" Hg
134	8123125-07	TO-15 2018	12/29/18 10:51	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:05 12/28/18	18833	3.00" Hg
135	8123125-02	TO-15 2018	12/29/18 10:17	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:25 12/28/18	18834	3.00" Hg
136	8123125-06	TO-15 2018	12/29/18 09:37	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10314 Start 09:40 12/28/18	19291	2.50" Hg
137	9010401-06	TO-15 2019	01/03/19 10:56	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:42 1/02/18	5059	4.00" Hg
138	9010401-05	TO-15 2019	01/03/19 09:46	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:53 1/02/18	A21078	2.50" Hg
139	9010401-08	TO-15 2019	01/03/19 10:34	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:30 1/02/18	SAT138	4.00" Hg
140	9010401-03	TO-15 2019	01/03/19 10:02	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:05 1/02/18	A21097	2.00" Hg
141	9010401-07	TO-15 2019	01/03/19 09:27	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:40 1/02/18	5072	3.00" Hg
142	9010401-09	TO-15 2019	01/03/19 09:17	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe # 10314 Start 09:29 1/02/18	SAT007	2.00" Hg
143	9010401-01	TO-15 2019	01/03/19 11:10	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:53 1/02/18	A21107	2.50" Hg
144	9010401-02	TO-15 2019	01/03/19 10:20	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:18 1/02/18	A21067	2.50" Hg
145	9010401-04	TO-15 2019	01/03/19 09:17	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 09:21 1/02/18	SAT091	3.50" Hg
146	9010716-03	TO-15 2019	01/04/19 10:52	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 11:04 1/03/19	5014	4.00" Hg
147	9010716-07	TO-15 2019	01/04/19 09:46	Reported	EtO Region 5	Grover MS	Field Sample	Probe #10311 Start 09:55 1/03/19	18873	3.50" Hg
148	9010716-08	TO-15 2019	01/04/19 10:31	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:41 1/03/19	SAT173	5.50" Hg
149	9010716-04	TO-15 2019	01/04/19 09:57	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:12 1/03/19	19667	4.00" Hg
150	9010716-05	TO-15 2019	01/04/19 09:33	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 09:37 1/3/19	SAT077	4.5" Hg
151	9010716-02	TO-15 2019	01/04/19 09:24	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe # 10314 Start 09:21 1/3/19	18889	3.50" Hg
152	9010716-06	TO-15 2019	01/04/19 11:00	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:19 1/03/18	19654	4.00" Hg
153	9010716-01	TO-15 2019	01/04/19 10:21	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:28 1/03/19	5133	5.50" Hg
154	9010808-05	TO-15 2019	01/04/19 09:32	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10313 Start 09:39 1/3/19	SAT088	2.00" Hg
155	9010808-08	TO-15 2019	01/07/19 10:08	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:30 1/06/19	A22244	4.00" Hg
156	9010808-03	TO-15 2019	01/07/19 09:40	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:36 1/06/19	161	3.50" Hg
157	9010808-02	TO-15 2019	01/07/19 10:03	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:17 1/06/19	18869	5.00" Hg
158	9010808-09	TO-15 2019	01/07/19 09:46	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 9:49 1/06/19	406	2.50" Hg
159	9010808-06	TO-15 2019	01/07/19 09:33	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 09:25 1/6/19	082	2.00" Hg
160	9010808-01	TO-15 2019	01/07/19 09:29	Reported	EtO Region 5	WB Warehouse	Field Sample	Start 09:06 1/6/19 Probe #10314	SAT087	2.50" Hg
161	9010808-10	TO-15 2019	01/07/19 10:18	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:40 1/06/18	061	4.00" Hg
162	9010808-04	TO-15 2019	01/07/19 09:58	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:00 1/06/19	101	4.00" Hg
163	9010808-07	TO-15 2019	01/07/19 09:33	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe #10315 Start 9:25 1/6/19	5073	4.50" Hg
164	9011101-05	TO-15 2019	01/10/19 09:08	**Invalid**	EtO Region 5	Gower ES VOID	Field Sample	Probe # 10293 Start 10:28 1/9/19 Void - canister leaked before sampling	3639A	2.20" Hg
165	9011101-06	TO-15 2019	01/10/19 09:54	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 09:38 1/9/19	AZ47	2.50" Hg
166	9011101-03	TO-15 2019	01/10/19 10:19	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:13 1/9/19	SAT037	4.00" Hg
167	9011101-01	TO-15 2019	01/10/19 10:03	Reported	EtO Region 5	Watertower	Field Sample	Probe #10312 Start 09:51 1/9/19	629	1.10" Hg
168	9011101-09	TO-15 2019	01/10/19 09:41	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:28 1/09/19	19277	1.40" Hg
169	9011101-07	TO-15 2019	01/10/19 09:26	**Invalid**	EtO Region 5	WB Warehouse C1 VOID	Collocated - C1	Col 1 Probe # 10314 Start 09:18 1/09/19 Void - Pressure loss >3 inches	5101	2.00" Hg
170	9011101-04	TO-15 2019	01/10/19 10:29	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:38 1/9/19	A21011	2.50" Hg
171	9011101-02	TO-15 2019	01/10/19 10:11	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:02 1/9/19	0053	2.50" Hg
172	9011101-08	TO-15 2019	01/10/19 09:26	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 09:19 1/09/19	A21098	2.50" Hg
173	9011527-03	TO-15 2019	01/13/19 10:22	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:29 1/12/19	A21054	4.00" Hg
174	9011527-04	TO-15 2019	01/13/19 09:38	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 09:39 1/12/19	19666	3.00" Hg
175	9011527-06	TO-15 2019	01/13/19 10:14	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:17 1/12/19	SAT170	3.00" Hg
176	9011527-08	TO-15 2019	01/13/19 09:46	Reported	EtO Region 5	Watertower	Field Sample	Probe #10312 Start 09:52 1/12/19	SAT012	3.00" Hg
177	9011527-01	TO-15 2019	01/13/19 09:29	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 9:27 1/12/19	5142	2.50" Hg
178	9011527-07	TO-15 2019	01/13/19 09:23	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 09:11 1/12/19	19665	2.50" Hg
179	9011527-09	TO-15 2019	01/13/19 10:31	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:40 1/12/19	SAT145	3.50" Hg
180	9011527-05	TO-15 2019	01/13/19 09:55	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:03 1/12/19	19645	3.50" Hg
181	9011527-02	TO-15 2019	01/13/19 09:29	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:27 1/12/19	SAT061	3.50" Hg
182	9011701-07	TO-15 2019	01/16/19 10:36	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:49 1/15/19	077	4.00" Hg
183	9011701-05	TO-15 2019	01/16/19 09:58	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:06 1/15/19	555	3.50" Hg

	A	B	C	D	E	F	G	H	I	J
184	9011701-01	TO-15 2019	01/16/19 10:27	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:39 1/15/19	A21119	4.00" Hg
185	9011701-02	TO-15 2019	01/16/19 10:07	Reported	EtO Region 5	Watertower	Field Sample	Probe #10312 Start 10:17 1/15/19	171	3.50" Hg
186	9011701-04	TO-15 2019	01/16/19 09:49	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:56 1/15/19	711	1.90" Hg
187	9011701-08	TO-15 2019	01/16/19 09:41	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe # 10314 Start 09:47 1/15/19	A22228	5.00" Hg
188	9011701-03	TO-15 2019	01/16/19 10:45	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:00 1/15/19	707	2.50" Hg
189	9011701-06	TO-15 2019	01/16/19 10:18	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:27 1/15/19	050	4.00" Hg
190	9011701-09	TO-15 2019	01/16/19 09:41	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 09:47 1/15/19	183	4.00" Hg
191	9012221-02	TO-15 2019	01/18/19 10:13	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:30 1/17/19	A21034	5.00" Hg
192	9012221-06	TO-15 2019	01/18/19 09:44	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:43 1/17/19	SAT151	4.00" Hg
193	9012221-05	TO-15 2019	01/18/19 10:05	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:17 1/17/19	096	4.50" Hg
194	9012221-03	TO-15 2019	01/18/19 09:51	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 9:54 1/17/19	5026	4.50" Hg
195	9012221-08	TO-15 2019	01/18/19 09:37	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe # 10313 Start 9:31 1/17/19	775	2.30" Hg
196	9012221-01	TO-15 2019	01/18/19 09:30	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 09:21 1/17/19	SAT158	3.50" Hg
197	9012221-07	TO-15 2019	01/18/19 10:26	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:44 1/17/19	SAT029	4.00" Hg
198	9012221-04	TO-15 2019	01/18/19 09:58	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:06 1/17/19	A21109	4.50" Hg
199	9012221-09	TO-15 2019	01/18/19 09:37	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:31 1/17/19	5010	5.50" Hg
200	9012401-02	TO-15 2019	01/23/19 10:40	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:47 1/22/19	SAT159	3.00" Hg
201	9012401-01	TO-15 2019	01/23/19 10:21	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:56 1/22/19	5082	3.50" Hg
202	9012401-07	TO-15 2019	01/23/19 10:35	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:29 1/22/19	18826	3.50" Hg
203	9012401-08	TO-15 2019	01/23/19 10:26	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:09 1/22/19	5069	2.50" Hg
204	9012401-06	TO-15 2019	01/23/19 10:17	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:45 1/22/19	SAT119	1.00" Hg
205	9012401-04	TO-15 2019	01/23/19 09:43	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe # 10314 Start 09:36 1/22/19	A21010	2.00" Hg
206	9012401-09	TO-15 2019	01/23/19 10:44	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:59 1/22/19	A21026	2.50" Hg
207	9012401-03	TO-15 2019	01/23/19 10:31	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:18 1/22/19	19653	3.00" Hg
208	9012401-05	TO-15 2019	01/23/19 09:43	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 09:35 1/22/19	5118	4.00" Hg
209	9012401-10	TO-15 2019	01/23/19 00:00	Reported	EtO Region 5	WB Trip Blank	Field Sample	Trip Blank	A21074	29.00" Hg
210	9012816-01	TO-15 2019	01/25/19 09:59	Reported	EtO Region 5	EPA WB Warehouse	Field Sample	Probe # 10314 Start 09:20 1/24/19 Remeasured pressure	A21073	2.50" Hg
211	9012816-07	TO-15 2019	01/25/19 10:34	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:39 1/24/19	18874	2.50" Hg
212	9012816-02	TO-15 2019	01/25/19 10:08	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:50 1/24/19 Remeasured pressure	A21039	3.50" Hg
213	9012816-06	TO-15 2019	01/25/19 10:27	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:26 1/24/19	SAT047	3.00" Hg
214	9012816-08	TO-15 2019	01/25/19 10:13	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:00 1/24/19	5099	2.00" Hg
215	9012816-04	TO-15 2019	01/25/19 10:02	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 09:36 1/24/19 Remeasured pressure	5053	3.00" Hg
216	9012816-03	TO-15 2019	01/25/19 10:34	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:52 1/24/19	SAT024	2.50" Hg
217	9012816-09	TO-15 2019	01/25/19 10:18	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:11 1/24/19	A21028	2.50" Hg
218	9012816-05	TO-15 2019	01/25/19 10:02	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:36 1/24/19	A21099	3.30" Hg
219	9013003-01	TO-15 2019	01/28/19 10:29	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:43 1/27/19	5009	4.50" Hg
220	9013003-08	TO-15 2019	01/28/19 10:02	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:57 1/27/19	SAT111	2.00" Hg
221	9013003-04	TO-15 2019	01/28/19 10:23	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:25 1/27/19	19293	4.00" Hg
222	9013003-02	TO-15 2019	01/28/19 10:10	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:08 1/27/19	SAT023	2.00" Hg
223	9013003-05	TO-15 2019	01/28/19 09:55	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 09:46 1/27/19	5056	2.20" Hg
224	9013003-06	TO-15 2019	01/28/19 09:50	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe # 10314 Start 09:36 1/27/19	AZ43	1.70" Hg
225	9013003-09	TO-15 2019	01/28/19 10:35	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:52 1/27/19	SAT181	2.50" Hg
226	9013003-03	TO-15 2019	01/28/19 10:16	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:18 1/27/19	5081	4.00" Hg
227	9013003-07	TO-15 2019	01/28/19 09:50	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 09:36 1/27/19	SAT178	3.00" Hg
228	9012816-01	TO-15 2019	01/25/19 09:59	Reported	EtO Region 5	EPA WB Warehouse	Field Sample	Probe # 10314 Start 09:20 1/24/19 Remeasured pressure	A21073	2.50" Hg
229	9012816-07	TO-15 2019	01/25/19 10:34	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:39 1/24/19	18874	2.50" Hg
230	9012816-02	TO-15 2019	01/25/19 10:08	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:50 1/24/19 Remeasured pressure	A21039	3.50" Hg
231	9012816-06	TO-15 2019	01/25/19 10:27	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:26 1/24/19	SAT047	3.00" Hg
232	9012816-08	TO-15 2019	01/25/19 10:13	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:00 1/24/19	5099	2.00" Hg
233	9012816-04	TO-15 2019	01/25/19 10:02	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 09:36 1/24/19 Remeasured pressure	5053	3.00" Hg
234	9012816-03	TO-15 2019	01/25/19 10:34	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:52 1/24/19	SAT024	2.50" Hg
235	9012816-09	TO-15 2019	01/25/19 10:18	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:11 1/24/19	A21028	2.50" Hg
236	9012816-05	TO-15 2019	01/25/19 10:02	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:36 1/24/19	A21099	3.30" Hg
237	9020508-01	TO-15 2019	02/02/19 11:38	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 11:39 2/1/19	SAT021	3.00" Hg
238	9020508-08	TO-15 2019	02/02/19 10:16	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:31 2/1/19	19662	3.00" Hg
239	9020508-09	TO-15 2019	02/02/19 11:17	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 11:26 2/1/19	5046	5.00" Hg
240	9020508-05	TO-15 2019	02/02/19 10:41	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:48 2/1/19	5076	3.50" Hg
241	9020508-03	TO-15 2019	02/02/19 09:36	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 10:16 2/1/19	SAT057	2.00" Hg
242	9020508-02	TO-15 2019	02/02/19 09:44	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 10:03 2/1/19	A21055	2.50" Hg
243	9020508-06	TO-15 2019	02/02/19 11:54	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:49 2/1/19	5079	3.50" Hg
244	9020508-04	TO-15 2019	02/02/19 10:58	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 11:02 2/1/19	5080	4.50" Hg

	A	B	C	D	E	F	G	H	I	J
245	9020508-19	TO-15 2019	02/02/19 09:36	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 10:16 2/1/19	SAT086	4.50" Hg
246	9020508-07	TO-15 2019	02/02/19 00:00	Reported	EtO Region 5	Trip Blank	Trip Blank	Willow Brook	18831	30" Hg
247	9020508-16	TO-15 2019	02/03/19 11:28	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 11:46 2/2/19	A21065	4.50" Hg
248	9020508-17	TO-15 2019	02/03/19 10:21	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:35 2/2/19	5115	5.50" Hg
249	9020508-18	TO-15 2019	02/03/19 11:08	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 11:27 2/2/19	18878	5.50" Hg
250	9020508-10	TO-15 2019	02/03/19 10:28	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:50 2/2/19	SAT026	4.00" Hg
251	9020508-11	TO-15 2019	02/03/19 10:13	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 10:07 2/2/19	5130	3.50" Hg
252	9020508-13	TO-15 2019	02/03/19 10:05	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe # 10314 Start 09:56 2/2/19	5136	4.00" Hg
253	9020508-12	TO-15 2019	02/03/19 11:46	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 12:12 2/2/19	2240	4.50" Hg
254	9020508-15	TO-15 2019	02/03/19 10:51	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 11:10 2/2/19	A21072	5.00" Hg
255	9020508-14	TO-15 2019	02/03/19 10:05	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 09:56 2/2/19	5044	6.00" Hg
256	9021313-08	TO-15 2019	02/09/19 10:40	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:49 2/8/19 received without brass cap	5007	3.00" Hg
257	9021313-01	TO-15 2019	02/09/19 09:51	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:02 2/8/19	SAT172	2.00" Hg
258	9021313-05	TO-15 2019	02/09/19 10:30	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:38 2/8/19	19340	3.50" Hg
259	9021313-03	TO-15 2019	02/09/19 10:05	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:12 2/8/19	19290	1.90" Hg
260	9021313-09	TO-15 2019	02/09/19 09:30	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 9:51 2/8/19	19641	0.90" Hg
261	9021313-06	TO-15 2019	02/09/19 09:20	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 9:40 2/8/19	2527	1.50" Hg
262	9021313-04	TO-15 2019	02/09/19 10:45	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:50 2/8/19	18880	2.20" Hg
263	9021313-02	TO-15 2019	02/09/19 10:15	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:25 2/8/19	5100	4.00" Hg
264	9021313-07	TO-15 2019	02/09/19 09:20	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe # 10315 Start 9:40 2/8/19	SAT164	3.00" Hg
265	9021401-01	TO-15 2019	02/12/19 10:01	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:39 2/11/19	077	4.50" Hg
266	9021401-02	TO-15 2019	02/12/19 09:32	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:52 2/11/19	707	2.50" Hg
267	9021401-08	TO-15 2019	02/12/19 09:54	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:28 2/11/19	A21119	4.00" Hg
268	9021401-06	TO-15 2019	02/12/19 09:40	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:04 2/11/19	061	3.50" Hg
269	9021401-03	TO-15 2019	02/12/19 09:24	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 9:29 2/11/19	3639A	4.50" Hg
270	9021401-09	TO-15 2019	02/12/19 09:17	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 9:18 2/11/19	629	2.40" Hg
271	9021401-07	TO-15 2019	02/12/19 10:06	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:48 2/11/19	171	4.50" Hg
272	9021401-05	TO-15 2019	02/12/19 09:48	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:16 2/11/19	711	4.00" Hg
273	9021401-04	TO-15 2019	02/12/19 09:24	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:29 2/11/19 3 inch Hg difference from field once warm	A22228	2.00" Hg
274	9022025-02	TO-15 2019	02/15/19 11:10	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 11:42 2/14/19	EP092	5.00" Hg
275	9022025-06	TO-15 2019	02/15/19 10:49	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:49 2/14/19	5135	5.50" Hg
276	9022025-04	TO-15 2019	02/15/19 11:05	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 11:30 2/14/19	SAT176	6.00" Hg
277	9022025-05	TO-15 2019	02/15/19 10:54	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 11:01 2/14/19	183	3.50" Hg
278	9022025-01	TO-15 2019	02/15/19 10:44	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 10:38 2/14/19	5091	4.00" Hg
279	9022025-07	TO-15 2019	02/15/19 10:39	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10315 Start 10:27 2/14/19	SAT151	4.50" Hg
280	9022025-09	TO-15 2019	02/15/19 11:14	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:53 2/14/19	19280	4.00" Hg
281	9022025-03	TO-15 2019	02/15/19 10:59	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 11:13 2/14/19	050	5.50" Hg
282	9022025-08	TO-15 2019	02/15/19 10:39	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10077 Start 10:27 2/14/19	SAT147	5.50" Hg
283	9022202-07	TO-15 2019	02/20/19 10:53	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:48 2/19/19	A21022	3.50" Hg
284	9022202-01	TO-15 2019	02/20/19 09:55	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:05 2/19/19	5034	4.50" Hg
285	9022202-06	TO-15 2019	02/20/19 10:40	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:37 2/19/19	SAT047	5.50" Hg
286	9022202-05	TO-15 2019	02/20/19 10:10	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:16 2/19/19	SAT161	3.00" Hg
287	9022202-10	TO-15 2019	02/20/19 00:00	Reported	EtO Region 5	WB Trip Blank	Field Sample	Trip Blank	SAT163	30.00" Hg
288	9022202-02	TO-15 2019	02/20/19 09:23	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 9:53 2/19/19	5114	3.50" Hg
289	9022202-08	TO-15 2019	02/20/19 09:37	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 9:35 2/19/19	5063	3.50" Hg
290	9022202-09	TO-15 2019	02/20/19 11:06	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:57 2/19/19	5050	4.00" Hg
291	9022202-04	TO-15 2019	02/20/19 10:26	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:27 2/19/19	555	4.50" Hg
292	9022202-03	TO-15 2019	02/20/19 09:23	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:44 2/19/19	A22329	5.00" Hg
293	9022202-12	TO-15 2019	02/21/19 10:26	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10293 Start 10:02 2/20/19	SAT166	4.50" Hg
294	9022202-11	TO-15 2019	02/21/19 10:09	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:04 2/20/19	A21039	4.00" Hg
295	9022202-13	TO-15 2019	02/21/19 10:21	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 10:46 2/20/19	A21044	5.50" Hg
296	9022202-16	TO-15 2019	02/21/19 11:35	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 11:45 2/20/19	5015	4.50" Hg
297	9022202-17	TO-15 2019	02/21/19 10:03	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 9:33 2/20/19	5051	2.50" Hg
298	9022202-18	TO-15 2019	02/21/19 09:58	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10315 Start 9:50 2/20/19	5017	5.00" Hg
299	9022202-14	TO-15 2019	02/21/19 10:30	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:14 2/20/19	18873	4.00" Hg
300	9022202-15	TO-15 2019	02/21/19 10:15	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:33 2/20/19	SAT096	5.00" Hg
301	9022202-19	TO-15 2019	02/21/19 09:57	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10314 Start 9:48 2/20/19	SAT007	3.00" Hg
302	9022616-03	TO-15 2019	02/22/19 11:21	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 11:31 2/21/19	A21106	2.00" Hg
303	9022616-01	TO-15 2019	02/22/19 11:15	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 11:21 2/21/19	SAT178	3.00" Hg
304	9022616-02	TO-15 2019	02/22/19 11:15	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10315 Start 11:20 2/21/19	5009	6.00" Hg
305	9022616-04	TO-15 2019	02/23/19 11:26	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 12:12 2/22/19	5114	3.50" Hg

	A	B	C	D	E	F	G	H	I	J
306	9022616-05	TO-15 2019	02/23/19 11:26	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 12:12 2/22/19	A22329	5.00" Hg
307	9022616-06	TO-15 2019	02/23/19 11:36	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10313 Start 11:54 2/22/19	096	3.00" Hg
308	9022616-15	TO-15 2019	02/24/19 00:00	Reported	EtO Region 5	Trip Blank	Trip Blank	Trip Blank	18874	30" Hg
309			2/24/2019 0:00	Reported		Gower ES	Field Sample	VOID - CAN FAILED LEAK CHECK		
310	9022616-12	TO-15 2019	02/24/19 10:31	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:19 2/23/19	SAT114	4.50" Hg
311	9022616-13	TO-15 2019	02/24/19 10:45	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10076 Start 11:00 2/23/19	SAT049	6.00" Hg
312	9022616-08	TO-15 2019	02/24/19 10:35	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:31 2/23/19	5043	3.50" Hg
313	9022616-14	TO-15 2019	02/24/19 11:21	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10314 Start 11:36 2/23/19	18872	4.00" Hg
314	9022616-09	TO-15 2019	02/24/19 11:53	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10313 Start 11:49 2/23/19	5067	4.00" Hg
315	9022616-07	TO-15 2019	02/24/19 11:05	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:23 2/23/19	SAT111	3.00" Hg
316	9022616-11	TO-15 2019	02/24/19 10:40	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:47 2/23/19	A21006	5.00" Hg
317	9022616-10	TO-15 2019	02/24/19 11:53	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10315 Start 11:52 2/23/19	775	4.50" Hg
318	9030101-05	TO-15 2019	02/27/19 10:53	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 11:53 2/26/19	19657	6.00" Hg
319	9030101-06	TO-15 2019	02/27/19 10:01	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:30 2/26/19	SAT084	4.00" Hg
320	9030101-09	TO-15 2019	02/27/19 10:26	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe #10294 Start 11:13 2/26/19	5089	5.50" Hg
321	9030101-04	TO-15 2019	02/27/19 10:06	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:41 2/26/19	SAT120	3.00" Hg
322	9030101-07	TO-15 2019	02/27/19 09:16	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 10:18 2/26/19	5074	4.00" Hg
323	9030101-03	TO-15 2019	02/27/19 09:12	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 10:03 2/26/19	SAT046	3.50" Hg
324	9030101-01	TO-15 2019	02/27/19 10:34	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:32 2/26/19	5058	4.50" Hg
325	9030101-02	TO-15 2019	02/27/19 10:11	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10076 Start 10:52 2/26/19	A21042	5.00" Hg
326	9030101-08	TO-15 2019	02/27/19 09:16	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 10:12 2/26/19	SAT067	5.50" Hg
327	9030101-10	TO-15 2019	02/26/19 00:00	Reported	EtO Region 5	Trip Blank	Trip Blank	Trip Blank	A21033	30" Hg
328	9030524-06	TO-15 2019	03/02/19 10:04	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 10:38 3/1/19	SAT171	6.50" Hg
329	9030524-05	TO-15 2019	03/02/19 09:46	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:51 3/1/19	SAT106	4.00" Hg
330	9030524-01	TO-15 2019	03/02/19 09:59	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 10:27 3/1/19	5143	6.50" Hg
331	9030524-09	TO-15 2019	03/02/19 09:50	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:01 3/1/19	SAT059	3.00" Hg
332	9030524-04	TO-15 2019	03/02/19 09:42	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 9:40 3/1/19	5005	3.00" Hg
333	9030524-07	TO-15 2019	03/02/19 09:38	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 9:31 3/1/19	SAT117	3.00" Hg
334	9030524-03	TO-15 2019	03/02/19 10:07	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:47 3/1/19	18884	4.00" Hg
335	9030524-02	TO-15 2019	03/02/19 09:55	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:11 3/1/19	SAT129	5.00" Hg
336	9030524-08	TO-15 2019	03/02/19 09:38	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10315 Start 9:31 3/1/19	5076	5.50" Hg
337	9030618-08	TO-15 2019	03/05/19 11:34	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 12:13 3/4/19	A21051	6.50" Hg
338	9030618-06	TO-15 2019	03/05/19 10:35	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:52 3/4/19	A21055	3.50" Hg
339	9030618-09	TO-15 2019	03/05/19 11:27	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 11:58 3/4/19	ER025	4.50" Hg
340	9030618-03	TO-15 2019	03/05/19 10:44	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 11:18 3/4/19	SAT026	2.00" Hg
341	9030618-04	TO-15 2019	03/05/19 10:24	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 10:37 3/4/19	A22228	2.30" Hg
342	9030618-07	TO-15 2019	03/05/19 10:17	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 10:21 3/4/19	707	1.60" Hg
343	9030618-02	TO-15 2019	03/05/19 11:41	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 12:27 3/4/19	5046	4.00" Hg
344	9030618-01	TO-15 2019	03/05/19 10:51	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 11:33 3/4/19	A21013	4.50" Hg
345	9030618-05	TO-15 2019	03/05/19 10:24	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 10:37 3/4/19	3639A	4.50" Hg
346	9031131-01	TO-15 2019	03/08/19 00:00	Reported	EtO Region 5	Trip Blank	Trip Blank	Trip Blank	SAT141	30" Hg
347	9031131-07	TO-15 2019	03/08/19 10:45	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 11:35 3/7/19	18834	7.50" Hg
348	9031131-09	TO-15 2019	03/08/19 10:16	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:37 3/7/19	161	4.50" Hg
349	9031131-08	TO-15 2019	03/08/19 10:38	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 11:23 3/7/19	101	5.00" Hg
350	9031131-05	TO-15 2019	03/08/19 10:21	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:49 3/7/19	A21094	3.00" Hg
351	9031131-06	TO-15 2019	03/08/19 10:09	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 10:24 3/7/19	A22244	2.00" Hg
352	9031131-03	TO-15 2019	03/08/19 10:04	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 10:13 3/7/19	SAT086	2.50" Hg
353	9031131-10	TO-15 2019	03/08/19 10:51	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:47 3/7/19	A21001	4.00" Hg
354	9031131-02	TO-15 2019	03/08/19 10:27	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 11:02 3/7/19	5103	5.50" Hg
355	9031131-04	TO-15 2019	03/08/19 10:04	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10315 Start 10:14 3/7/19	077	5.00" Hg
356	9031220-05	TO-15 2019	03/11/19 10:05	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 10:37 3/10/19	061	7.00" Hg
357	9031220-09	TO-15 2019	03/11/19 09:22	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:51 3/10/19	A21119	3.50" Hg
358	9031220-01	TO-15 2019	03/11/19 09:56	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 10:25 3/10/19	629	4.00" Hg
359	9031220-04	TO-15 2019	03/11/19 09:28	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:02 3/10/19	711	7.50" Hg
360	9031220-02	TO-15 2019	03/11/19 09:12	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 9:40 3/10/19 Pressure Dif >3 inches	5019	3.50" Hg
361	9031220-08	TO-15 2019	03/11/19 09:07	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 9:31 3/10/19	171	3.50" Hg
362	9031220-06	TO-15 2019	03/11/19 10:11	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:46 3/10/19	SAT029	4.00" Hg
363	9031220-07	TO-15 2019	03/11/19 09:36	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:14 3/10/19	SAT088	4.50" Hg
364	9031220-03	TO-15 2019	03/11/19 09:12	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:40 3/10/19	A22304	5.00" Hg
365	9031501-02	TO-15 2019	03/14/19 10:55	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 11:11 3/13/19	A21067	8.50" Hg
366	9031501-03	TO-15 2019	03/14/19 10:29	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:26 3/13/19	SAT173	5.50" Hg

	A	B	C	D	E	F	G	H	I	J
367	9031501-07	TO-15 2019	03/14/19 10:49	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 11:00 3/13/19	19647	6.50" Hg
368	9031501-06	TO-15 2019	03/14/19 10:34	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:38 3/13/19	SAT077	5.00" Hg
369	9031501-08	TO-15 2019	03/14/19 10:24	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 10:14 3/13/19	5013	4.50" Hg
370	9031501-04	TO-15 2019	03/14/19 10:20	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 10:06 3/13/19	18869	4.00" Hg
371	9031501-01	TO-15 2019	03/14/19 10:59	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 11:22 3/13/19	SAT150	5.00" Hg
372	9031501-09	TO-15 2019	03/14/19 10:45	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:48 3/13/19	19654	6.00" Hg
373	9031501-05	TO-15 2019	03/14/19 10:20	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10315 Start 10:06 3/13/19	SAT107	6.50" Hg
374	9032522-04	TO-15 2019	03/17/19 09:52	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 10:00 3/16/19	50	7.00" Hg
375	9032522-05	TO-15 2019	03/17/19 09:28	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:19 3/16/19	5029	4.50" Hg
376	9032522-02	TO-15 2019	03/17/19 09:44	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 9:49 3/16/19	A210369	5.00" Hg
377	9032522-09	TO-15 2019	03/17/19 09:32	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 9:29 3/16/19	775	2.00" Hg
378	9032522-07	TO-15 2019	03/17/19 09:22	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 9:09 3/16/19	5051	2.50" Hg
379	9032522-03	TO-15 2019	03/17/19 09:19	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 9:00 3/16/19	AZ41	2.50" Hg
380	9032522-06	TO-15 2019	03/17/19 09:55	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:10 3/16/19	555	3.00" Hg
381	9032522-01	TO-15 2019	03/17/19 09:37	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 9:39 3/16/19	5050	5.50" Hg
382	9032522-08	TO-15 2019	03/17/19 09:23	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:09 3/16/19	18873	4.50" Hg
383	9032106-03	TO-15 2019	03/20/19 00:00	Received	EtO Region 5	Trip Blank	Trip Blank	Trip Blank	SAT120	29.50" Hg
384	9032106-04	TO-15 2019	03/20/19 10:51	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 11:50 3/19/19	A21084	8.00" Hg
385	9032106-10	TO-15 2019	03/20/19 10:05	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:29 3/19/19	18872	4.50" Hg
386	9032106-06	TO-15 2019	03/20/19 10:38	Reported	EtO Region 5	Hindale South HS	Field Sample	Probe # 10076 Start 11:34 3/19/19	SAT100	6.00" Hg
387	9032106-02	TO-15 2019	03/20/19 10:12	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:50 3/19/19	18877	4.50" Hg
388	9032106-08	TO-15 2019	03/20/19 09:58	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 10:05 3/19/19	5043	4.50" Hg
389	9032106-07	TO-15 2019	03/20/19 09:54	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 9:52 3/19/19	18874	3.50" Hg
390	9032106-01	TO-15 2019	03/20/19 11:07	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 12:03 3/19/19	19649	4.50" Hg
391	9032106-05	TO-15 2019	03/20/19 10:18	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 11:07 3/19/19	3256	6.00" Hg
392	9032106-09	TO-15 2019	03/20/19 09:58	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 10:05 3/19/19	19279	5.50" Hg
393	9032613-07	TO-15 2019	03/23/19 10:26	Received	EtO Region 5	Gower ES	Field Sample	Probe # 10076 Start 10:47 3/22/19	A21081	7.50" Hg
394	9032613-09	TO-15 2019	03/23/19 09:58	Received	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 10:01 3/22/19	18828	4.50" Hg
395	9032613-01	TO-15 2019	03/23/19 10:19	Received	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 10:37 3/22/19	5054	6.50" Hg
396	9032613-04	TO-15 2019	03/23/19 10:02	Received	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:12 3/22/19	SAT054	3.50" Hg
397	9032613-02	TO-15 2019	03/23/19 09:53	Received	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 9:50 3/22/19	96	3.00" Hg
398	9032613-05	TO-15 2019	03/23/19 09:50	Received	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 9:41 3/22/19	SAT111	3.50" Hg
399	9032613-03	TO-15 2019	03/23/19 10:42	Received	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:57 3/22/19	SAT067	3.50" Hg
400	9032613-08	TO-15 2019	03/23/19 10:07	Received	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:26 3/22/19	5058	6.50" Hg
401	9032613-06	TO-15 2019	03/23/19 09:50	Received	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10315 Start 9:41 3/22/19	SAT114	5.50" Hg
402	9032719-04	TO-15 2019	03/26/19 10:24	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 10:36 3/25/19	19288	8.00" Hg
403	9032719-06	TO-15 2019	03/26/19 09:46	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:49 3/25/19	183	4.50" Hg
404	9032719-03	TO-15 2019	03/26/19 10:11	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 10:25 3/25/19	SAT033	6.00" Hg
405	9032719-09	TO-15 2019	03/26/19 09:51	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 10:00 3/25/19	19296	2.50" Hg
406	9032719-07	TO-15 2019	03/26/19 09:40	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 9:35 3/25/19	19660	2.50" Hg
407	9032719-01	TO-15 2019	03/26/19 09:33	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 9:26 3/25/19 Backup generator operating at collection	A21052	3.50" Hg
408	9032719-05	TO-15 2019	03/26/19 10:29	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:45 3/25/19	A21025	4.50" Hg
409	9032719-02	TO-15 2019	03/26/19 10:00	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 10:12 3/25/19	SAT170	5.50" Hg
410	9032719-08	TO-15 2019	03/26/19 10:41	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:36 3/25/19	5127	6.50" Hg
411	9040216-09	TO-15 2019	03/29/19 10:03	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 10:12 3/28/19	A21065	8.00" Hg
412	9040216-04	TO-15 2019	03/29/19 09:44	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:28 3/28/19	SAT108	5.00" Hg
413	9040216-01	TO-15 2019	03/29/19 09:59	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 10:01 3/28/19	SAT139	6.50" Hg
414	9040216-02	TO-15 2019	03/29/19 09:48	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 9:38 3/28/19	18831	4.50" Hg
415	9040216-05	TO-15 2019	03/29/19 09:40	Reported	EtO Region 5	WB Village Hall	Field Sample	Probe #10313 Start 9:18 3/28/19	19299	3.00" Hg
416	9040216-07	TO-15 2019	03/29/19 09:36	Reported	EtO Region 5	WB Warehouse C1	Collocated - C1	Col 1 Probe #10314 Start 10:10 3/28/19	A21098	4.00" Hg
417	9040216-06	TO-15 2019	03/29/19 10:07	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:21 3/28/19	19287	4.50" Hg
418	9040216-03	TO-15 2019	03/29/19 09:53	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 9:48 3/28/19	EP092	6.50" Hg
419	9040216-08	TO-15 2019	03/29/19 09:36	Reported	EtO Region 5	WB Warehouse C2	Collocated - C2	Col 2 Probe #10315 Start 10:10 3/28/19	SAT110	6.00" Hg
420	9040216-16	TO-15 2019	04/01/19 09:58	Reported	EtO Region 5	Gower ES	Field Sample	Probe # 10077 Start 9:57 3/31/19	5005	7.50" Hg
421	9040216-12	TO-15 2019	04/01/19 09:31	Reported	EtO Region 5	Gower MS	Field Sample	Probe #10311 Start 9:13 3/31/19	SAT117	3.50" Hg
422	9040216-11	TO-15 2019	04/01/19 09:51	Reported	EtO Region 5	Hinsdale South HS	Field Sample	Probe 10076 Start 9:46 3/31/19	SAT171	4.50" Hg
423	9040216-10	TO-15 2019	04/01/19 09:36	Reported	EtO Region 5	Water Tower	Field Sample	Probe # 10312 Start 9:25 3/31/19	ER025	2.50" Hg
424	9040216-17	TO-15 2019	04/01/19 09:23	Reported	EtO Region 5	WB Village Hall C1	Collocated - C1	Col 1 Probe #10313 Start 9:01 3/31/19	18884	1.10" Hg
425	9040216-13	TO-15 2019	04/01/19 09:20	Reported	EtO Region 5	WB Warehouse	Field Sample	Probe #10314 Start 8:43 3/31/19	SAT026	7.00" Hg
426	9040216-14	TO-15 2019	04/01/19 10:02	Reported	EtO Region 5	West Neighborhood	Field Sample	Probe # 10310 Start 10:06 3/31/19	5023	4.00" Hg
427	9040216-15	TO-15 2019	04/01/19 09:47	Reported	EtO Region 5	Willow Pond Park	Field Sample	Probe # 10294 Start 9:35 3/31/19	5133	5.00" Hg

	A	B	C	D	E	F	G	H	I	J
428	9040216-18	TO-15 2019	04/01/19 09:24	Reported	EtO Region 5	WB Village Hall C2	Collocated - C2	Col 2 Probe # 10315 Start 9:02 3/31/19	5066	5.50" Hg
429	9040216-19	TO-15 2019	04/01/19 00:00	Reported	EtO Region 5	Trip Blank	Trip Blank	Trip Blank	SAT049	29.50" Hg

Date	Site	Probe	field	"Hg unless otherwise specified	converted to "Hg	lab	"Hg unless otherwise specified	29.92-psia(2.036) = "Hg difference
11/14	Village Hall	10313	0.5			3.5		-3.0
	WB Warehouse	10314	4.5			2		2.5
	WB Village Hall C2	10315	5			1		4.0
	TB							0.0
11/17	Village Hall	10313	4			2		2.0
	WB Warehouse	10314	5			2.5		2.5
	WB Village Hall C2	10315	6			3.5		2.5
11/20	Gower ES	10293	4			3.5		0.5
	Gower MS	10311	3.5			2		1.5
	Hinsdale South HS	10076	5			4		1.0
	Village Hall	10313	5			3.5		1.5
	Water Tower	10312	3			2		1.0
	WB Village Hall C2	10315	3			2		1.0
	WB Warehouse	10314	5			3.5		1.5
	West Neighborhood	10310	4			3		1.0
	Willow Pond Park	10294	3.5			2.5		1.0
11/23	Gower ES	10293	4			4.5		-0.5
	Gower MS	10311	4.5			3		1.5
	Hinsdale South HS	10076	5.5			5		0.5
	Village Hall	10313	4			4		0.0
	Water Tower	10312	3			3.5		-0.5
	WB Warehouse C2	10315	5.5			4.5		1.0
	WB Warehouse	10314	5			3		2.0
	West Neighborhood	10310	5			5		0.0
	Willow Pond Park	10294	4			3.5		0.5
11/26	Gower ES	10293	5			4		1.0
	Gower MS	10311	4.5			2		2.5
	Hinsdale South HS	10076	6			5		1.0
	WB Warehouse	10313	6			3		3.0
	Water Tower	10312						0.0
	WB Warehouse C2	10315	5			3		2.0
	Village Hall	10314	4			2		2.0
	West Neighborhood	10310	5			4.5		0.5
	Willow Pond Park	10294	3			1.9		1.1
11/29	Gower ES	10293	4.5			3		1.5
	Gower MS	10311	5			2		3.0
	Hinsdale South HS	10076	5.5			4		1.5
	Village Hall	10313	3.2			2.1		1.1
	Water Tower	10312	3.9			2.5		1.4
	WB Warehouse C2	10315	5.1			3		2.1
	WB Warehouse	10314	5.2			2.5		2.7
	West Neighborhood	10310	4			3		1.0
	Willow Pond Park	10294	4.8			3		1.8

12/2	Gower ES	10293	4.5	5.5	-1.0
	Gower MS	10311	4	3.5	0.5
	Hinsdale South HS	10076	6.5	7	-0.5
	Village Hall	10313	3	3.5	-0.5
	Water Tower	10312	3	3.5	-0.5
	Village Hall C2	10315	5	5.5	-0.5
	WB Warehouse	10314	4.5	3.5	1.0
	West Neighborhood	10310	4.5	5	-0.5
	Willow Pond Park	10294	4	4.5	-0.5
12/7	Gower ES	10293	2.5	1.8	0.7
	Gower MS	10311	3.8	1.3	2.5
	Hinsdale South HS	10076	2	4	-2.0
	Village Hall	10313	2.5	1.5	1.0
	Water Tower	10312	3	2	1.0
	WB Warehouse C2	10315	4	2	2.0
	WB Warehouse	10314	4.5	2	2.5
	West Neighborhood	10310	2	0.9	1.1
	Willow Pond Park	10294	2.5	1.4	1.1
12/8	Gower ES	10293	4.5	3	1.5
	Gower MS	10311	5	2.1	2.9
	Hinsdale South HS	10076	6	4.5	1.5
	Village Hall	10313	3.5	2	1.5
	Water Tower	10312	5	3.5	1.5
	WB Village Hall	10315	6	3	3.0
	WB Warehouse	10314	2	1	1.0
	West Neighborhood	10310	4	3	1.0
	Willow Pond Park	10294	4	3	1.0
12/11	Gower ES	10293	5	4.5	0.5
	Gower MS	10311	5	3	2.0
	Hinsdale South HS	10076	6	5	1.0
	Village Hall	10313	5	3.5	1.5
	Water Tower	10312	4.5	3.5	1.0
	WB Village Hall	10315	6.1	4	2.1
	WB Warehouse	10314	5	4	1.0
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	5	4	1.0
12/14	Gower ES	10293	5	4.5	0.5
	Gower MS	10311	5	2.5	2.5
	Hinsdale South HS	10076	7	5.5	1.5
	Village Hall	10313	4	2.5	1.5
	Water Tower	10312	5	3.5	1.5
	Village Hall C2	10315	6	4	2.0
	WB Warehouse	10314	5	2.5	2.5
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	6	4.5	1.5
12/17	Gower ES	10293	6.5	6	0.5
	Gower MS	10311	6.5	4	2.5

	Hinsdale South HS	10076	7	6	1.0
	Village Hall	10313	4	3	1.0
	Water Tower	10312	5	4	1.0
	WB Warehouse C2	10315	6	4.5	1.5
	WB Warehouse	10314	6	4	2.0
	West Neighborhood	10310	5	4.5	0.5
	Willow Pond Park	10294	6	4.5	1.5
12/20	Gower ES	10293	5.5	4.5	1.0
	Gower MS	10311	6	3.5	2.5
	Hinsdale South HS	10076	7	5.5	1.5
	Village Hall	10315	4.5	3.5	1.0
	Water Tower	10312	5	4	1.0
	WB Warehouse	10314	7	4	3.0
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	6	4	2.0
	Village Hall C2	10313	6	3.5	2.5
12/23	Gower ES	10293	4.5	5	-0.5
	Gower MS	10311	6	5.5	0.5
	Hinsdale South HS	10076	3.5	6	-2.5
	Village Hall	10313	4.5	4	0.5
	Water Tower	10312	4	3	1.0
	WB Warehouse	10314	5	3.5	1.5
	West Neighborhood	10310	4.3	4	0.3
	Willow Pond Park	10294	6	5.5	0.5
	Warehouse C2	10315	6.2	5.5	0.7
12/26	Gower ES	10293	4	4	0.0
	Gower MS	10311	6	3.5	2.5
	Hinsdale South HS	10076	6	5	1.0
	Village Hall	10313	3.5	1.6	1.9
	Water Tower	10312	4.5	3.5	1.0
	WB Warehouse	10314	6.5	3	3.5
	West Neighborhood	10310	4	3.5	0.5
	Willow Pond Park	10294	5	4.5	0.5
	Village Hall C2	10315	6	4	2.0
12/29	Gower ES	10293	4.5	4	0.5
	Gower MS	10311	6	3	3.0
	Hinsdale South HS	10076	6	4.5	1.5
	Village Hall	10313	3.5	2.3	1.2
	Water Tower	10312	0	0	0.0
	WB Warehouse	10315	4	3	1.0
	West Neighborhood	10310	5	3	2.0
	Willow Pond Park	10294	3	3	0.0
	WB Warehouse C2	10314	4.5	2.5	2.0
1/1	Gower ES	10293	4	4	0.0
	Gower MS	10311	5	2.5	2.5
	Hinsdale South HS	10076	5	4	1.0
	Village Hall	10313	4	3	1.0

	Water Tower	10312	3	2	1.0
	WB Warehouse	10314	5	2	3.0
	West Neighborhood	10310	3	2.5	0.5
	Willow Pond Park	10294	3	2.5	0.5
	WB Warehouse C2	10315	5	3.5	1.5
1/4	Gower ES	10293	4	4	0.0
	Gower MS	10311	5	3.5	1.5
	Hinsdale South HS	10076	5.5	5	0.5
	Village Hall	10313	3	2	1.0
	Water Tower	10312	3	2.5	0.5
	WB Warehouse	10314	4	2.5	1.5
	West Neighborhood	10310	4	4	0.0
	Willow Pond Park	10294	4	4	0.0
	Village Hall C2	10315	6	4.5	1.5
1/7	Gower ES	10293	4	4	0.0
	Gower MS	10311	5	3.5	1.5
	Hinsdale South HS	10076	5.5	5	0.5
	Village Hall	10313	3	2	1.0
	Water Tower	10312	3	2.5	0.5
	WB Warehouse	10314	4	2.5	1.5
	West Neighborhood	10310	4	4	0.0
	Willow Pond Park	10294	4	4	0.0
	Village Hall C2	10315	6	4.5	1.5
1/10	Gower ES	10293	3	2.2	0.8
	Gower MS	10311	5	2.5	2.5
	Hinsdale South HS	10076	5	4	1.0
	Village Hall	10313	3	1.4	1.6
	Water Tower	10312	2	1.1	0.9
	WB Warehouse	10314	6	2	4.0
	West Neighborhood	10310	4	2.5	1.5
	Willow Pond Park	10294	4	2.5	1.5
	Warehouse C2	10315	5	2.5	2.5
1/13	Gower ES	10293	4.5	4	0.5
	Gower MS	10311	5.5	3	2.5
	Hinsdale South HS	10076	5.5	3	2.5
	Village Hall	10313	5	2.5	2.5
	Water Tower	10312	4	3	1.0
	WB Warehouse	10314	5	2.5	2.5
	West Neighborhood	10310	3.5	4	-0.5
	Willow Pond Park	10294	4.5	3.5	1.0
	Village Hall C2	10315	6	3.5	2.5
1/16	Gower ES	10293	4	4	0.0
	Gower MS	10311	5	3.5	1.5
	Hinsdale South HS	10076	4.5	4	0.5
	Village Hall	10313	2	1.9	0.1
	Water Tower	10312	4	3.5	0.5
	WB Warehouse	10314	5	5	0.0

	West Neighborhood	10310	3	2.5	0.5
	Willow Pond Park	10294	4	4	0.0
	WB Warehouse C2	10315	6	4	2.0
1/18	Gower ES	10293	5	5	0.0
	Gower MS	10311	6	4	2.0
	Hinsdale South HS	10076	5	4.5	0.5
	Village Hall	10313	2.5	2.3	0.2
	Water Tower	10312	5	4.5	0.5
	WB Warehouse	10314	5	3.5	1.5
	West Neighborhood	10310	4.5	4	0.5
	Willow Pond Park	10294	5	4.5	0.5
	Village Hall C2	10315	7	5.5	1.5
1/23	Gower ES	10293	4	3	1.0
	Gower MS	10311	6	3.5	2.5
	Hinsdale South HS	10076	5	3.5	1.5
	Village Hall	10313	2.5	1	1.5
	Water Tower	10312	4	2.5	1.5
	WB Warehouse	10314	5	2	3.0
	West Neighborhood	10310	4	2.5	1.5
	Willow Pond Park	10294	4	3	1.0
	WB Warehouse C2	10315	6.5	4	2.5
1/25	Gower ES	10293	4	2.5	1.5
	Gower MS	10311	5.8	3.5	2.3
	Hinsdale South HS	10076	6	3	3.0
	Village Hall	10313	6	3	3.0
	Water Tower	10312	4.8	2	2.8
	WB Warehouse	10314	5	2.5	2.5
	West Neighborhood	10310	4.5	2.5	2.0
	Willow Pond Park	10294	5	2.5	2.5
	Village Hall C2	10315	4	3.3	0.7
1/28	Gower ES	10293	4	4.5	-0.5
	Gower MS	10311	4.5	2	2.5
	Hinsdale South HS	10076	4.5	4	0.5
	Village Hall	10313	2	2.2	-0.2
	Water Tower	10312	2.5	2	0.5
	WB Warehouse	10314	3	1.7	1.3
	West Neighborhood	10310	3	2.5	0.5
	Willow Pond Park	10294	5	4	1.0
	WB Warehouse C2	10315	4.5	3	1.5
2/1	Gower ES	10293	3	3	0.0
	Gower MS	10311	5.5	3	2.5
	Hinsdale South HS	10076	6	5	1.0
	Village Hall	10313	3	2	1.0
	Water Tower	10312	4	3.5	0.5
	WB Warehouse	10314	5	2.5	2.5
	West Neighborhood	10310	4	3.5	0.5
	Willow Pond Park	10294	5.5	4.5	1.0

	Village Hall C2	10315	6.5	4.5	2.0
2/2	Gower ES	10293	4	4.5	-0.5
	Gower MS	10311	7	5.5	1.5
	Hinsdale South HS	10076	6	5.5	0.5
	Village Hall	10313	4	3.5	0.5
	Water Tower	10312	4	4	0.0
	WB Warehouse	10314	6.2	4	2.2
	West Neighborhood	10310	4.5	4.5	0.0
	Willow Pond Park	10294	5.8	5	0.8
	WB Warehouse C2	10315	7	6	1.0
2/5	Gower ES	10293	5	4	1.0
	Gower MS	10311	6.8	4	2.8
	Hinsdale South HS	10076	7	5	2.0
	Village Hall	10313	3.8	2	1.8
	Water Tower	10312	5.9	4.5	1.4
	WB Warehouse	10314	5.8	3	2.8
	West Neighborhood	10310	5.9	3.5	2.4
	Willow Pond Park	10294	6.1	4.5	1.6
	Village Hall C2	10315	6.8	5	1.8
2/8	Gower ES	10293	4.7	3	1.7
	Gower MS	10311	6.5	2	4.5
	Hinsdale South HS	10076	5.8	3.5	2.3
	Village Hall	10313	3.5	1.9	1.6
	Water Tower	10312	3.5	1.9	1.6
	WB Warehouse	10314	3	1.5	1.5
	West Neighborhood	10310	4	2.2	1.8
	Willow Pond Park	10294	6.5	4	2.5
	WB Warehouse C2	10315	2.5	3	-0.5
2/11	Gower ES	10293	4.9	4.5	0.4
	Gower MS	10311	5.1	2.5	2.6
	Hinsdale South HS	10076	5	4	1.0
	Village Hall	10313	3.9	4.5	-0.6
	Water Tower	10312	4.9	3.5	1.4
	WB Warehouse	10314	4.1	2.4	1.7
	West Neighborhood	10310	5	4.5	0.5
	Willow Pond Park	10294	4.9	4	0.9
	Village Hall C2	10315	5	2	3.0
2/14	Gower ES	10293	5	5	0.0
	Gower MS	10311	8	5.5	2.5
	Hinsdale South HS	10076	7	6	1.0
	Village Hall	10313	5.5	4	1.5
	Water Tower	10312	5	3.5	1.5
	WB Warehouse	10314	7	5.5	1.5
	West Neighborhood	10310	5.5	4	1.5
	Willow Pond Park	10294	5.5	5.5	0.0
	WB Warehouse C2	10315	6	4	2.0
2/19	Gower ES	10293	4	3.5	0.5

	Gower MS	10311	7.2		4.5	2.7
	Hinsdale South HS	10076	6		5.5	0.5
	Village Hall	10313	5		3.5	1.5
	Water Tower	10312	4.5		3	1.5
	WB Warehouse	10314	6.1		3.5	2.6
	West Neighborhood	10310	4.3		4	0.3
	Willow Pond Park	10294	5		4.5	0.5
	Village Hall C2	10315	6.5		5	1.5
2/22	Gower ES	10293	5		4.5	0.5
	Gower MS	10311	6.5		4	2.5
	Hinsdale South HS	10076	6.2		5.5	0.7
	Village Hall	10313	4		2.5	1.5
	Water Tower	10312	5		4.5	0.5
	WB Warehouse	10314	5.5		3	2.5
	West Neighborhood	10310	5		4	1.0
	Willow Pond Park	10294	6		5	1.0
	WB Warehouse C2	10315	6		5	1.0
2/25	Gower ES	10293	5		4.5	0.5
	Gower MS	10311	6.5		4	2.5
	Hinsdale South HS	10076	6.2		5.5	0.7
	Village Hall	10313	4		2.5	1.5
	Water Tower	10312	5		4.5	0.5
	WB Warehouse	10314	5.5		3	2.5
	West Neighborhood	10310	5		4	1.0
	Willow Pond Park	10294	6		5	1.0
	WB Warehouse C2	10315	6		5	1.0
2/21	Gower ES	10293				0.0
	Gower MS	10311				0.0
	Hinsdale South HS	10076				0.0
	Village Hall	10313	3		2	1.0
	Water Tower	10312				0.0
	WB Warehouse	10314	5		3	2.0
	West Neighborhood	10310				0.0
	Willow Pond Park	10294				0.0
	WB Warehouse C2	10315	7		6	1.0
2/22	Gower ES	10293				0.0
	Gower MS	10311				0.0
	Hinsdale South HS	10076				0.0
	Village Hall	10314	6.5		4	2.5
	Water Tower	10312				0.0
	WB Warehouse	10313	6		3	3.0
	West Neighborhood	10310				0.0
	Willow Pond Park	10294				0.0
	WB Warehouse C2	10315	8		7	1.0
2/23	Gower ES	10293				0.0
	Gower MS	10311	7		4.5	2.5
	Hinsdale South HS	10076	7		6	1.0

	Village Hall	10314	7	4	3.0
	Water Tower	10312	5.8	3.5	2.3
	WB Warehouse	10313	5	4.5	0.5
	West Neighborhood	10310	5	3	2.0
	Willow Pond Park	10294	6.2	5	1.2
	WB Warehouse C2	10315	6	4.5	1.5
2/26	Gower ES	10077	7	6	1.0
	Gower MS	10311	7	4	3.0
	Hinsdale South HS	10294	7.5	5.5	2.0
	Village Hall	10313	5.5	4	1.5
	Water Tower	10312	5	3	2.0
	WB Warehouse	10314	6	3.5	2.5
	West Neighborhood	10310	6.5	4.5	2.0
	Willow Pond Park	10076	7	5	2.0
	Village Hall C2	10315	8	5.5	2.5
3/1	Gower ES	10077	7.5	6.5	1.0
	Gower MS	10311	6	4	2.0
	Hinsdale South HS	10076	8	6.5	1.5
	Village Hall	10313	5	3	2.0
	Water Tower	10312	5	3	2.0
	WB Warehouse	10314	6	3	3.0
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	6	5	1.0
	WB Warehouse C2	10315	7.5	5.5	2.0
3/4	Gower ES	10077	7	6.5	0.5
	Gower MS	10311	4.8	3.5	1.3
	Hinsdale South HS	10076	5.5	4.5	1.0
	Village Hall	10313	3.5	2.3	1.2
	Water Tower	10312	3.5	2	1.5
	WB Warehouse	10314	4	1.6	2.4
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	6	4.5	1.5
	Village Hall C2	10315	6	4.5	1.5
3/7	Gower ES	10293	8	7.5	0.5
	Gower MS	10311	7	4.5	2.5
	Hinsdale South HS	10076	6.5	5	1.5
	Village Hall	10313	4	2	2.0
	Water Tower	10312	4	3	1.0
	WB Warehouse	10314	5.5	2.5	3.0
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	6.8	5.5	1.3
	WB Warehouse C2	10315	6.5	5	1.5
3/10	Gower ES	10293	8	7	1.0
	Gower MS	10311	6.2	3.5	2.7
	Hinsdale South HS	10076	6	4	2.0
	Village Hall	10313	7.5	3.5	4.0
	Water Tower	10312	5	7.5	-2.5

	WB Warehouse	10314	6.5	3.5	3.0
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	6.8	4.5	2.3
	Village Hall C2	10315	5.5	5	0.5
3/13	Gower ES	10077	7.5	8.5	-1.0
	Gower MS	10311	6.5	5.5	1.0
	Hinsdale South HS	10076	6.2	6.5	-0.3
	Village Hall	10313	4.2	4.5	-0.3
	Water Tower	10312	4.5	5	-0.5
	WB Warehouse	10314	4	5	-1.0
	West Neighborhood	10310	4.5	5	-0.5
	Willow Pond Park	10294	6	6	0.0
	WB Warehouse C2	10315	6	6.5	-0.5
3/19	Gower ES	10077	9	8	1.0
	Gower MS	10311	7	4.5	2.5
	Hinsdale South HS	10076	7	6	1.0
	Village Hall	10313	5	4.5	0.5
	Water Tower	10312	5.5	4.5	1.0
	WB Warehouse	10314	6	3.5	2.5
	West Neighborhood	10310	5.5	4.5	1.0
	Willow Pond Park	10294	7	6	1.0
	Village Hall C2	10315	7	5.5	1.5
3/16	Gower ES	10077	7	7	0.0
	Gower MS	10311	7	4.5	2.5
	Hinsdale South HS	10076	6	5	1.0
	Village Hall	10313	4	2.5	1.5
	Water Tower	10312	3	2	1.0
	WB Warehouse	10314	5.5	2.5	3.0
	West Neighborhood	10310	4	3	1.0
	Willow Pond Park	10294	6.5	5.5	1.0
	Village Hall C2	10315	6	4.5	1.5
3/22	Gower ES	10077	7	7.5	-0.5
	Gower MS	10311	6.5	4.5	2.0
	Hinsdale South HS	10076	6.5	6.5	0.0
	Village Hall	10313	3	3	0.0
	Water Tower	10312	4	3.5	0.5
	WB Warehouse	10314	5	3.5	1.5
	West Neighborhood	10310	3.5	3.5	0.0
	Willow Pond Park	10294	6.7	6.5	0.2
	WB Warehouse C2	10315	6.2	5.5	0.7
3/25	Gower ES	10077	7.5	8	-0.5
	Gower MS	10311	6.2	4.5	1.7
	Hinsdale South HS	10076	5.8	6	-0.2
	Village Hall	10313	3.5	2.5	1.0
	Water Tower	10312	4	2.5	1.5
	WB Warehouse	10314	5.5	3.5	2.0
	West Neighborhood	10310	4	4.5	-0.5

	Willow Pond Park	10294	5	5.5	-0.5
	Village Hall C2	10315	7.2	6.5	0.7
3/28	Gower ES	10077	8	8	0.0
	Gower MS	10311	7	5	2.0
	Hinsdale South HS	10076	6	6.5	-0.5
	Village Hall	10313	4	3	1.0
	Water Tower	10312	5	4.5	0.5
	WB Warehouse	10314	6	4	2.0
	West Neighborhood	10310	5	4.5	0.5
	Willow Pond Park	10294	6	6.5	-0.5
	WB Warehouse C2	10315	7	6	1.0
3/31	Gower ES	10077	8	7.5	0.5
	Gower MS	10311	6	3.5	2.5
	Hinsdale South HS	10076	6	4.5	1.5
	Village Hall	10313	3	1.1	1.9
	Water Tower	10312	3.5	2.5	1.0
	WB Warehouse	10314	5	7	-2.0
	West Neighborhood	10310	5	4	1.0
	Willow Pond Park	10294	6	5	1.0
	Village Hall C2	10315	7	5.5	1.5
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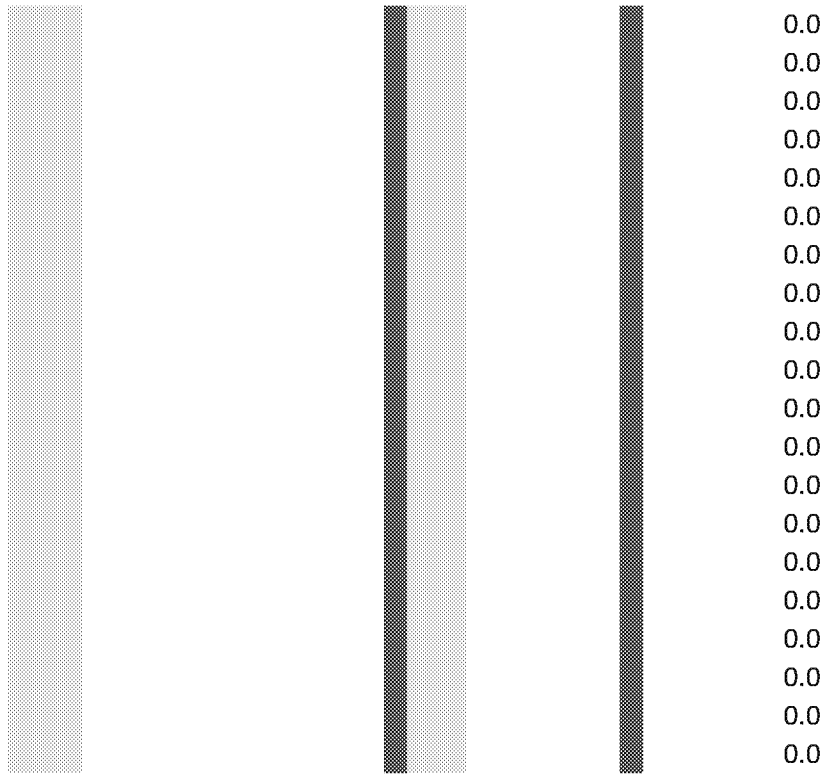
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439	**= count**		

void per lab - Internal Standard issue

void per lab - Internal Standard issue

void per lab - Internal Standard issue
void per site operator
void per lab - Internal Standard issue

P Diff >3.0 Void?

void - received at vacuum at site

void - low pressure in field at start of sampling

void - pressure loss >3" Hg

2.1 in lab, cooled canister and re-read vacuum

2.6 in lab, cooled canister and re-read vacuum

1.1 in lab, cooled canister and re-read vacuum

void - pressure loss >3" Hg

29.92-psia(2.036) = "Hg

Eastern Research Group
601 Keystone Park Drive
Suite 700
Morrisville, NC 27560

April 10, 2019

Ms. Doris Chen & Lewis Weinstock
U.S. Environmental Protection Agency - OAQPS
109 T.W. Alexander Drive, Mail Code: C304-06
RTP, NC 27709
Project Name: EtO Region 5

Dear Ms. Doris Chen & Lewis Weinstock,

This report contains the analytical results for the sample(s) received under chain(s) of custody by Eastern Research Group on 03/21/19 10:43 through 04/02/19 10:04.

The test results in this report are in compliance with NELAC accreditation requirements for the certified parameters. All analyses were performed as described in the US EPA-approved QAPP, under the contract for UATMP, NATTS, CSATAM, PAMS and NMOC support (US EPA Contract No. EP-D-14-030). This cover page is an integral part of this report, and any exceptions or comments are noted on the last page.

Release of the data contained in this data package and in the data submitted in the electronic data deliverable, has been authorized by the Program Manager, or the Program Manager's designee as verified by the following signature.

The issuance of the final Certificate of Analysis takes precedence over any previous Report. If you have any questions, please contact me at 919-468-7924.

Sincerely,

Julie Swift
Program Manager
julie.swift@erg.com

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CERTIFICATE OF ANALYSIS

U.S. Environmental Protection Agency - OAQPS
109 T.W. Alexander Drive, Mail Code: C304-C
RTP, NC 27709
ATTN: Ms. Doris Chen & Lewis Weinstock
PHONE: (919) 541-4957 **FAX:** -

FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

ANALYTICAL REPORT FOR SAMPLES

SampleName	LabNumber	Matrix	Sampled	Received
Trip Blank	9032106-03	Air	03/20/19 00:00	03/21/19 10:43
Willow Pond Park	9032522-01	Air	03/17/19 09:37	03/25/19 10:50
Hinsdale South HS	9032522-02	Air	03/17/19 09:44	03/25/19 10:50
WB Warehouse	9032522-03	Air	03/17/19 09:19	03/25/19 10:50
Gower ES	9032522-04	Air	03/17/19 09:52	03/25/19 10:50
Gower MS	9032522-05	Air	03/17/19 09:28	03/25/19 10:50
West Neighborhood	9032522-06	Air	03/17/19 09:55	03/25/19 10:50
WB Village Hall C1	9032522-07	Air	03/17/19 09:22	03/25/19 10:50
WB Village Hall C2	9032522-08	Air	03/17/19 09:23	03/25/19 10:50
Water Tower	9032522-09	Air	03/17/19 09:32	03/25/19 10:50
Hinsdale South HS	9032613-01	Air	03/23/19 10:19	03/26/19 09:57
WB Village Hall	9032613-02	Air	03/23/19 09:53	03/26/19 09:57
West Neighborhood	9032613-03	Air	03/23/19 10:42	03/26/19 09:57
Water Tower	9032613-04	Air	03/23/19 10:02	03/26/19 09:57
WB Warehouse C1	9032613-05	Air	03/23/19 09:50	03/26/19 09:57
WB Warehouse C2	9032613-06	Air	03/23/19 09:50	03/26/19 09:57
Gower ES	9032613-07	Air	03/23/19 10:26	03/26/19 09:57
Willow Pond Park	9032613-08	Air	03/23/19 10:07	03/26/19 09:57
Gower MS	9032613-09	Air	03/23/19 09:58	03/26/19 09:57
WB Warehouse	9032719-01	Air	03/26/19 09:33	03/27/19 10:25
Willow Pond Park	9032719-02	Air	03/26/19 10:00	03/27/19 10:25
Hinsdale South HS	9032719-03	Air	03/26/19 10:11	03/27/19 10:25
Gower ES	9032719-04	Air	03/26/19 10:24	03/27/19 10:25

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AQS SITE CODE:
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West Neighborhood	9032719-05	Air	03/26/19 10:29	03/27/19 10:25
Gower MS	9032719-06	Air	03/26/19 09:46	03/27/19 10:25
WB Village Hall C1	9032719-07	Air	03/26/19 09:40	03/27/19 10:25
WB Village Hall C2	9032719-08	Air	03/26/19 10:41	03/27/19 10:25
Water Tower	9032719-09	Air	03/26/19 09:51	03/27/19 10:25
Hinsdale South HS	9040216-01	Air	03/29/19 09:59	04/02/19 10:04
Water Tower	9040216-02	Air	03/29/19 09:48	04/02/19 10:04
Willow Pond Park	9040216-03	Air	03/29/19 09:53	04/02/19 10:04
Gower MS	9040216-04	Air	03/29/19 09:44	04/02/19 10:04
WB Village Hall	9040216-05	Air	03/29/19 09:40	04/02/19 10:04
West Neighborhood	9040216-06	Air	03/29/19 10:07	04/02/19 10:04
WB Warehouse C1	9040216-07	Air	03/29/19 09:36	04/02/19 10:04
WB Warehouse C2	9040216-08	Air	03/29/19 09:36	04/02/19 10:04
Gower ES	9040216-09	Air	03/29/19 10:03	04/02/19 10:04
Water Tower	9040216-10	Air	04/01/19 09:36	04/02/19 10:04
Hinsdale South HS	9040216-11	Air	04/01/19 09:51	04/02/19 10:04
Gower MS	9040216-12	Air	04/01/19 09:31	04/02/19 10:04
WB Warehouse	9040216-13	Air	04/01/19 09:20	04/02/19 10:04
West Neighborhood	9040216-14	Air	04/01/19 10:02	04/02/19 10:04
Willow Pond Park	9040216-15	Air	04/01/19 09:47	04/02/19 10:04
Gower ES	9040216-16	Air	04/01/19 09:58	04/02/19 10:04
WB Village Hall C1	9040216-17	Air	04/01/19 09:23	04/02/19 10:04
WB Village Hall C2	9040216-18	Air	04/01/19 09:24	04/02/19 10:04
Trip Blank	9040216-19	Air	04/01/19 00:00	04/02/19 10:04

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SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Trip Blank
Pressure @ Receipt: 29.50" Hg
Comments: Trip Blank

Lab ID: 9032106-03
Canister #: SAT120

Sampled: 03/20/19 00:00
Received: 03/21/19 10:43
Analyzed: 03/28/19 13:05

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	ND	ND	U	0.0366

Eastern Research Group

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AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Willow Pond Park
Pressure @ Receipt: 5.50" Hg
Comments: Probe # 10294 Start 9:39 3/16/19

Lab ID: 9032522-01
Canister #: 5050

Sampled: 03/17/19 09:37
Received: 03/25/19 10:50
Analyzed: 03/28/19 14:07

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**0.178**	**0.32**	LK	**0.0366**

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REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Hinsdale South HS
Pressure @ Receipt: 5.00" Hg
Comments: Probe 10076 Start 9:49 3/16/19

Lab ID: 9032522-02
Canister #: A210369

Sampled: 03/17/19 09:44
Received: 03/25/19 10:50
Analyzed: 03/28/19 15:08

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**0.0562**	**0.10**	LK	**0.0366**

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Warehouse
Pressure @ Receipt: 2.50" Hg
Comments: Probe #10314 Start 9:00 3/16/19

Lab ID: 9032522-03
Canister #: AZ41

Sampled: 03/17/19 09:19
Received: 03/25/19 10:50
Analyzed: 03/28/19 16:10

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**0.0946**	**0.17**	LK	**0.0366**

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower ES
Pressure @ Receipt: 7.00" Hg
Comments: Probe # 10077 Start 10:00 3/16/19

Lab ID: 9032522-04
Canister #: 050

Sampled: 03/17/19 09:52
Received: 03/25/19 10:50
Analyzed: 03/28/19 17:11

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0312	0.06	U	0.0366

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SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower MS
Pressure @ Receipt: 4.50" Hg
Comments: Probe #10311 Start 9:19 3/16/19

Lab ID: 9032522-05
Canister #: 5029

Sampled: 03/17/19 09:28
Received: 03/25/19 10:50
Analyzed: 03/28/19 18:13

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.148	0.27		0.0366

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FILE #: 0344.00
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SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: West Neighborhood **Lab ID:** 9032522-06 **Sampled:** 03/17/19 09:55
Pressure @ Receipt: 3.00" Hg **Canister #:** 555 **Received:** 03/25/19 10:50
Comments: Probe # 10310 Start 10:10 3/16/19 **Analyzed:** 03/28/19 19:15

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0603	0.11		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall C1 **Lab ID:** 9032522-07 **Sampled:** 03/17/19 09:22
Pressure @ Receipt: 2.50" Hg **Canister #:** 5051 **Received:** 03/25/19 10:50
Comments: Col 1 Probe #10313 Start 9:09 3/16/19 **Analyzed:** 03/28/19 20:17

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.255	0.46	LK	0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall C2 **Lab ID:** 9032522-08 **Sampled:** 03/17/19 09:23
Pressure @ Receipt: 4.50" Hg **Canister #:** 18873 **Received:** 03/25/19 10:50
Comments: Col 2 Probe # 10315 Start 9:09 3/16/19 **Analyzed:** 03/28/19 22:21

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0320	0.06	LK, U	0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Water Tower
Pressure @ Receipt: 2.00" Hg
Comments: Probe # 10312 Start 9:29 3/16/19

Lab ID: 9032522-09
Canister #: 775

Sampled: 03/17/19 09:32
Received: 03/25/19 10:50
Analyzed: 03/29/19 00:24

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0352	0.06	LK, U	0.0366

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REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Hinsdale South HS
Pressure @ Receipt: 6.50" Hg
Comments: Probe 10076 Start 10:37 3/22/19

Lab ID: 9032613-01
Canister #: 5054

Sampled: 03/23/19 10:19
Received: 03/26/19 09:57
Analyzed: 03/29/19 12:07

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.124	0.22		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall
Pressure @ Receipt: 3.00" Hg
Comments: Probe #10313 Start 9:50 3/22/19

Lab ID: 9032613-02
Canister #: 096

Sampled: 03/23/19 09:53
Received: 03/26/19 09:57
Analyzed: 03/29/19 13:09

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0329	0.06	U, LK	0.0366

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AQS SITE CODE:
SITE CODE: EtO Region 5

Description: West Neighborhood **Lab ID:** 9032613-03 **Sampled:** 03/23/19 10:42
Pressure @ Receipt: 3.50" Hg **Canister #:** SAT067 **Received:** 03/26/19 09:57
Comments: Probe # 10310 Start 10:57 3/22/19 **Analyzed:** 03/29/19 14:10

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.109	0.20	LK	0.0366

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AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Water Tower
Pressure @ Receipt: 3.50" Hg
Comments: Probe # 10312 Start 10:12 3/22/19

Lab ID: 9032613-04
Canister #: SAT054

Sampled: 03/23/19 10:02
Received: 03/26/19 09:57
Analyzed: 03/29/19 15:12

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**0.0417**	**0.08**	LK	**0.0366**

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AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Warehouse C1 **Lab ID:** 9032613-05 **Sampled:** 03/23/19 09:50
Pressure @ Receipt: 3.50" Hg **Canister #:** SAT111 **Received:** 03/26/19 09:57
Comments: Col 1 Probe #10314 Start 9:41 3/22/19 **Analyzed:** 03/29/19 16:14

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0648	0.12		0.0366

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AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Warehouse C2 **Lab ID:** 9032613-06 **Sampled:** 03/23/19 09:50
Pressure @ Receipt: 5.50" Hg **Canister #:** SAT114 **Received:** 03/26/19 09:57
Comments: Col 2 Probe #10315 Start 9:41 3/22/19 **Analyzed:** 03/29/19 18:18

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.114	0.21		0.0366

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AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower ES
Pressure @ Receipt: 7.50" Hg
Comments: Probe # 10076 Start 10:47 3/22/19

Lab ID: 9032613-07
Canister #: A21081

Sampled: 03/23/19 10:26
Received: 03/26/19 09:57
Analyzed: 03/29/19 20:21

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0999	0.18		0.0366

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FILE #: 0344.00
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AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Willow Pond Park
Pressure @ Receipt: 6.50" Hg
Comments: Probe # 10294 Start 10:26 3/22/19

Lab ID: 9032613-08
Canister #: 5058

Sampled: 03/23/19 10:07
Received: 03/26/19 09:57
Analyzed: 03/29/19 21:23

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0980	0.18		0.0366

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AQS SITE CODE:
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Description: Gower MS
Pressure @ Receipt: 4.50" Hg
Comments: Probe #10311 Start 10:01 3/22/19

Lab ID: 9032613-09
Canister #: 18828

Sampled: 03/23/19 09:58
Received: 03/26/19 09:57
Analyzed: 03/29/19 22:25

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0376	0.07		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Warehouse **Lab ID:** 9032719-01 **Sampled:** 03/26/19 09:33
Pressure @ Receipt: 3.50" Hg **Canister #:** A21052 **Received:** 03/27/19 10:25
Comments: Probe #10314 Start 9:26 3/25/19 Backup generator operatin **Analyzed:** 03/29/19 23:27

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**0.0740**	**0.13**	LK	**0.0366**

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Willow Pond Park
Pressure @ Receipt: 5.50" Hg
Comments: Probe # 10294 Start 10:12 3/25/19

Lab ID: 9032719-02
Canister #: SAT170

Sampled: 03/26/19 10:00
Received: 03/27/19 10:25
Analyzed: 03/30/19 00:28

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0719	0.13		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Hinsdale South HS
Pressure @ Receipt: 6.00" Hg
Comments: Probe 10076 Start 10:25 3/25/19

Lab ID: 9032719-03
Canister #: SAT033

Sampled: 03/26/19 10:11
Received: 03/27/19 10:25
Analyzed: 03/30/19 01:30

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0735	0.13		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower ES
Pressure @ Receipt: 8.00" Hg
Comments: Probe # 10077 Start 10:36 3/25/19

Lab ID: 9032719-04
Canister #: 19288

Sampled: 03/26/19 10:24
Received: 03/27/19 10:25
Analyzed: 03/30/19 02:32

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0584	0.11		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: West Neighborhood **Lab ID:** 9032719-05 **Sampled:** 03/26/19 10:29
Pressure @ Receipt: 4.50" Hg **Canister #:** A21025 **Received:** 03/27/19 10:25
Comments: Probe # 10310 Start 10:45 3/25/19 **Analyzed:** 03/30/19 03:34

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0566	0.10		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower MS
Pressure @ Receipt: 4.50" Hg
Comments: Probe #10311 Start 9:49 3/25/19

Lab ID: 9032719-06
Canister #: 183

Sampled: 03/26/19 09:46
Received: 03/27/19 10:25
Analyzed: 03/30/19 04:36

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0464	0.08		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall C1 **Lab ID:** 9032719-07 **Sampled:** 03/26/19 09:40
Pressure @ Receipt: 2.50" Hg **Canister #:** 19660 **Received:** 03/27/19 10:25
Comments: Col 1 Probe #10313 Start 9:35 3/25/19 **Analyzed:** 03/30/19 05:37

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0432	0.08	LK	0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall C2 **Lab ID:** 9032719-08 **Sampled:** 03/26/19 10:41
Pressure @ Receipt: 6.50" Hg **Canister #:** 5127 **Received:** 03/27/19 10:25
Comments: Col 2 Probe # 10315 Start 9:36 3/25/19 **Analyzed:** 03/30/19 07:41

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.101	0.18		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Water Tower
Pressure @ Receipt: 2.50" Hg
Comments: Probe # 10312 Start 10:00 3/25/19

Lab ID: 9032719-09
Canister #: 19296

Sampled: 03/26/19 09:51
Received: 03/27/19 10:25
Analyzed: 04/02/19 16:13

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0513	0.09		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Hinsdale South HS
Pressure @ Receipt: 6.50" Hg
Comments: Probe 10076 Start 10:01 3/28/19

Lab ID: 9040216-01
Canister #: SAT139

Sampled: 03/29/19 09:59
Received: 04/02/19 10:04
Analyzed: 04/02/19 17:15

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0967	0.18		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Water Tower
Pressure @ Receipt: 4.50" Hg
Comments: Probe # 10312 Start 9:38 3/28/19

Lab ID: 9040216-02
Canister #: 18831

Sampled: 03/29/19 09:48
Received: 04/02/19 10:04
Analyzed: 04/02/19 18:16

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0508	0.09		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Willow Pond Park
Pressure @ Receipt: 6.50" Hg
Comments: Probe # 10294 Start 9:48 3/28/19

Lab ID: 9040216-03
Canister #: EP092

Sampled: 03/29/19 09:53
Received: 04/02/19 10:04
Analyzed: 04/02/19 19:18

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0835	0.15		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower MS
Pressure @ Receipt: 5.00" Hg
Comments: Probe #10311 Start 9:28 3/28/19

Lab ID: 9040216-04
Canister #: SAT108

Sampled: 03/29/19 09:44
Received: 04/02/19 10:04
Analyzed: 04/02/19 20:20

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.129	0.23		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall
Pressure @ Receipt: 3.00" Hg
Comments: Probe #10313 Start 9:18 3/28/19

Lab ID: 9040216-05
Canister #: 19299

Sampled: 03/29/19 09:40
Received: 04/02/19 10:04
Analyzed: 04/02/19 21:22

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0631	0.11		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: West Neighborhood **Lab ID:** 9040216-06 **Sampled:** 03/29/19 10:07
Pressure @ Receipt: 4.50" Hg **Canister #:** 19287 **Received:** 04/02/19 10:04
Comments: Probe # 10310 Start 10:21 3/28/19 **Analyzed:** 04/02/19 22:23

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0663	0.12		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Warehouse C1 **Lab ID:** 9040216-07 **Sampled:** 03/29/19 09:36
Pressure @ Receipt: 4.00" Hg **Canister #:** A21098 **Received:** 04/02/19 10:04
Comments: Col 1 Probe #10314 Start 10:10 3/28/19 **Analyzed:** 04/02/19 23:25

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.100	0.18		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Warehouse C2 **Lab ID:** 9040216-08 **Sampled:** 03/29/19 09:36
Pressure @ Receipt: 6.00" Hg **Canister #:** SAT110 **Received:** 04/02/19 10:04
Comments: Col 2 Probe #10315 Start 10:10 3/28/19 **Analyzed:** 04/03/19 01:29

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.124	0.22		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower ES
Pressure @ Receipt: 8.00" Hg
Comments: Probe # 10077 Start 10:12 3/28/19

Lab ID: 9040216-09
Canister #: A21065

Sampled: 03/29/19 10:03
Received: 04/02/19 10:04
Analyzed: 04/03/19 03:33

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0961	0.17		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Water Tower
Pressure @ Receipt: 2.50" Hg
Comments: Probe # 10312 Start 9:25 3/31/19

Lab ID: 9040216-10
Canister #: ER025

Sampled: 04/01/19 09:36
Received: 04/02/19 10:04
Analyzed: 04/03/19 15:42

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0482	0.09		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Hinsdale South HS
Pressure @ Receipt: 4.50" Hg
Comments: Probe 10076 Start 9:46 3/31/19

Lab ID: 9040216-11
Canister #: SAT171

Sampled: 04/01/19 09:51
Received: 04/02/19 10:04
Analyzed: 04/03/19 16:44

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**0.0397**	**0.07**	LK	**0.0366**

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower MS
Pressure @ Receipt: 3.50" Hg
Comments: Probe #10311 Start 9:13 3/31/19

Lab ID: 9040216-12
Canister #: SAT117

Sampled: 04/01/19 09:31
Received: 04/02/19 10:04
Analyzed: 04/03/19 17:45

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**0.0549**	**0.10**	LK	**0.0366**

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Warehouse
Pressure @ Receipt: 7.00" Hg
Comments: Probe #10314 Start 8:43 3/31/19

Lab ID: 9040216-13
Canister #: SAT026

Sampled: 04/01/19 09:20
Received: 04/02/19 10:04
Analyzed: 04/03/19 18:47

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0204	0.04	U, LK	0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: West Neighborhood **Lab ID:** 9040216-14 **Sampled:** 04/01/19 10:02
Pressure @ Receipt: 4.00" Hg **Canister #:** 5023 **Received:** 04/02/19 10:04
Comments: Probe # 10310 Start 10:06 3/31/19 **Analyzed:** 04/03/19 19:49

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.134	0.24		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Willow Pond Park
Pressure @ Receipt: 5.00" Hg
Comments: Probe # 10294 Start 9:35 3/31/19

Lab ID: 9040216-15
Canister #: 5133

Sampled: 04/01/19 09:47
Received: 04/02/19 10:04
Analyzed: 04/03/19 20:51

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0754	0.14		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Gower ES
Pressure @ Receipt: 7.50" Hg
Comments: Probe # 10077 Start 9:57 3/31/19

Lab ID: 9040216-16
Canister #: 5005

Sampled: 04/01/19 09:58
Received: 04/02/19 10:04
Analyzed: 04/03/19 21:52

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0763	0.14		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall C1 **Lab ID:** 9040216-17 **Sampled:** 04/01/19 09:23
Pressure @ Receipt: 1.10" Hg **Canister #:** 18884 **Received:** 04/02/19 10:04
Comments: Col 1 Probe #10313 Start 9:01 3/31/19 **Analyzed:** 04/03/19 22:54

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0316	0.06	U, LK	0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: WB Village Hall C2 **Lab ID:** 9040216-18 **Sampled:** 04/01/19 09:24
Pressure @ Receipt: 5.50" Hg **Canister #:** 5066 **Received:** 04/02/19 10:04
Comments: Col 2 Probe # 10315 Start 9:02 3/31/19 **Analyzed:** 04/04/19 00:58

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0619	0.11		0.0366

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FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Description: Trip Blank
Pressure @ Receipt: 29.50" Hg
Comments: Trip Blank

Lab ID: 9040216-19
Canister #: SAT049

Sampled: 04/01/19 00:00
Received: 04/02/19 10:04
Analyzed: 04/04/19 03:01

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	0.0387	0.07		0.0366

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PHONE: (919) 541-4957 **FAX:** -

FILE #: 0344.00
REPORTED: 04/10/19 14:11
SUBMITTED: 03/21/19 to 04/02/19
AQS SITE CODE:
SITE CODE: EtO Region 5

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
Air Toxics by EPA Compendium Method TO-15 - Quality Control						
Batch B9C2803 - Summa Canister Prep						
Blank (B9C2803-BLK1)			Prepared & Analyzed: 03/28/19			
Ethylene oxide	ND	ppbv				U
Duplicate (B9C2803-DUP1)		**Source: 9032522-07**	Prepared: 03/17/19 Analyzed: 03/28/19			
Ethylene oxide	0.278	ppbv	0.26	8.59	25	LK
Duplicate (B9C2803-DUP2)		**Source: 9032522-08**	Prepared: 03/17/19 Analyzed: 03/28/19			
Ethylene oxide	ND	ppbv	ND		25	LK, U
Batch B9C2904 - Summa Canister Prep						
Blank (B9C2904-BLK1)			Prepared & Analyzed: 03/29/19			
Ethylene oxide	ND	ppbv				U
Duplicate (B9C2904-DUP1)		**Source: 9032613-05**	Prepared: 03/23/19 Analyzed: 03/29/19			
Ethylene oxide	0.0803	ppbv	0.06	21.4	25	
Duplicate (B9C2904-DUP2)		**Source: 9032613-06**	Prepared: 03/23/19 Analyzed: 03/29/19			
Ethylene oxide	0.112	ppbv	0.11	1.78	25	
Duplicate (B9C2904-DUP3)		**Source: 9032719-07**	Prepared: 03/26/19 Analyzed: 03/30/19			
Ethylene oxide	0.0367	ppbv	0.04	16.3	25	
Duplicate (B9C2904-DUP4)		**Source: 9032719-08**	Prepared: 03/26/19 Analyzed: 03/30/19			
Ethylene oxide	0.0987	ppbv	0.10	2.01	25	
Batch B9D0303 - Summa Canister Prep						
Blank (B9D0303-BLK1)			Prepared & Analyzed: 04/02/19			
Ethylene oxide	ND	ppbv				U
Duplicate (B9D0303-DUP1)		**Source: 9040216-07**	Prepared: 03/29/19 Analyzed: 04/03/19			
Ethylene oxide	0.0954	ppbv	0.10	4.71	25	
Duplicate (B9D0303-DUP2)		**Source: 9040216-08**	Prepared: 03/29/19 Analyzed: 04/03/19			
Ethylene oxide	0.136	ppbv	0.12	9.24	25	
Batch B9D0306 - Summa Canister Prep						
Blank (B9D0306-BLK1)			Prepared & Analyzed: 04/03/19			
Ethylene oxide	ND	ppbv				U
Duplicate (B9D0306-DUP1)		**Source: 9040216-17**	Prepared: 04/01/19 Analyzed: 04/03/19			
Ethylene oxide	ND	ppbv	ND		25	LK, U
Duplicate (B9D0306-DUP2)		**Source: 9040216-18**	Prepared: 04/01/19 Analyzed: 04/04/19			
Ethylene oxide	0.0512	ppbv	0.06	18.9	25	

The results in this report apply only to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CERTIFICATE OF ANALYSIS

U.S. Environmental Protection Agency - OAQPS
109 T.W. Alexander Drive, Mail Code: C304-C
RTP, NC 27709
ATTN: Ms. Doris Chen & Lewis Weinstock
PHONE: (919) 541-4957 **FAX:** -

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Analyte	Result	Units	% Difference	Limit (%)	Notes
Air Toxics by EPA Compendium Method TO-15 - Quality Control					
Sequence 1903057					
Calibration Check (1903057-CCV1)			Prepared & Analyzed: 03/21/19		
Ethylene oxide	2.38	ppbv	-4.8	30.00	
Sequence 1903071					
Calibration Check (1903071-CCV1)			Prepared & Analyzed: 03/28/19		
Ethylene oxide	2.03	ppbv	-18.9	30.00	
Sequence 1903076					
Calibration Check (1903076-CCV1)			Prepared & Analyzed: 03/29/19		
Ethylene oxide	2.04	ppbv	-18.6	30.00	
Sequence 1904008					
Calibration Check (1904008-CCV1)			Prepared & Analyzed: 04/02/19		
Ethylene oxide	2.01	ppbv	-19.6	30.00	
Sequence 1904010					
Calibration Check (1904010-CCV1)			Prepared & Analyzed: 04/03/19		
Ethylene oxide	2.17	ppbv	-13.2	30.00	

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FILE #: 0344.00
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Notes and Definitions

U	Under Detection Limit
LK	Analyte identified; Reported value may be biased high.
ND	Analyte NOT DETECTED
NR	Not Reported
MDL	Method Detection Limit
RPD	Relative Percent Difference

Note: The test results meet all requirements of NELAC; however the following analytes are not accredited: 1,2,4-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,3-butadiene, acetylene, acrolein, bromochloromethane, bromodichloromethane, bromoform, carbon disulfide, dibromochloromethane, dichlorodifluoromethane, dichlorotetrafluoroethane, ethyl acrylate, ethyl tert butyl ether, ethylene oxide, hexachloro-1,3-butadiene, n-octane, propylene, tert amyl methyl ether, tetrachloroethylene, trans-1,2-dichloroethylene, trichlorofluoromethane, and trichlorotrufluoroethane.

SAMPLENAME	LABSAMPID	SAMPDATE	PREPDATE	ANADATE	ANALYTE
Trip Blank	9032106-03	3/20/2019	3/20/2019	3/28/2019 13:05	Ethylene oxide
Gower ES	9032522-04	3/17/2019 9:52	3/17/2019 9:52	3/28/2019 17:11	Ethylene oxide
Gower MS	9032522-05	3/17/2019 9:28	3/17/2019 9:28	3/28/2019 18:13	Ethylene oxide
Hinsdale South HS	9032522-02	3/17/2019 9:44	3/17/2019 9:44	3/28/2019 15:08	Ethylene oxide
Water Tower	9032522-09	3/17/2019 9:32	3/17/2019 9:32	3/29/2019 0:24	Ethylene oxide
WB Village Hall C1	9032522-07	3/17/2019 9:22	3/17/2019 9:22	3/28/2019 20:17	Ethylene oxide
WB Warehouse	9032522-03	3/17/2019 9:19	3/17/2019 9:19	3/28/2019 16:10	Ethylene oxide
West Neighborhood	9032522-06	3/17/2019 9:55	3/17/2019 9:55	3/28/2019 19:15	Ethylene oxide
Willow Pond Park	9032522-01	3/17/2019 9:37	3/17/2019 9:37	3/28/2019 14:07	Ethylene oxide
WB Village Hall C2	9032522-08	3/17/2019 9:23	3/17/2019 9:23	3/28/2019 22:21	Ethylene oxide
Gower ES	9032613-07	3/23/2019 10:26	3/23/2019 10:26	3/29/2019 20:21	Ethylene oxide
Gower MS	9032613-09	3/23/2019 9:58	3/23/2019 9:58	3/29/2019 22:25	Ethylene oxide
Hinsdale South HS	9032613-01	3/23/2019 10:19	3/23/2019 10:19	3/29/2019 12:07	Ethylene oxide
Water Tower	9032613-04	3/23/2019 10:02	3/23/2019 10:02	3/29/2019 15:12	Ethylene oxide
WB Village Hall	9032613-02	3/23/2019 9:53	3/23/2019 9:53	3/29/2019 13:09	Ethylene oxide
WB Warehouse C1	9032613-05	3/23/2019 9:50	3/23/2019 9:50	3/29/2019 16:14	Ethylene oxide
West Neighborhood	9032613-03	3/23/2019 10:42	3/23/2019 10:42	3/29/2019 14:10	Ethylene oxide
Willow Pond Park	9032613-08	3/23/2019 10:07	3/23/2019 10:07	3/29/2019 21:23	Ethylene oxide
WB Warehouse C2	9032613-06	3/23/2019 9:50	3/23/2019 9:50	3/29/2019 18:18	Ethylene oxide
Gower ES	9032719-04	3/26/2019 10:24	3/26/2019 10:24	3/30/2019 2:32	Ethylene oxide
Gower MS	9032719-06	3/26/2019 9:46	3/26/2019 9:46	3/30/2019 4:36	Ethylene oxide
Hinsdale South HS	9032719-03	3/26/2019 10:11	3/26/2019 10:11	3/30/2019 1:30	Ethylene oxide
Water Tower	9032719-09	3/26/2019 9:51	3/26/2019 9:51	4/2/2019 16:13	Ethylene oxide
WB Village Hall C1	9032719-07	3/26/2019 9:40	3/26/2019 9:40	3/30/2019 5:37	Ethylene oxide
WB Warehouse	9032719-01	3/26/2019 9:33	3/26/2019 9:33	3/29/2019 23:27	Ethylene oxide
West Neighborhood	9032719-05	3/26/2019 10:29	3/26/2019 10:29	3/30/2019 3:34	Ethylene oxide
Willow Pond Park	9032719-02	3/26/2019 10:00	3/26/2019 10:00	3/30/2019 0:28	Ethylene oxide
WB Village Hall C2	9032719-08	3/26/2019 10:41	3/26/2019 10:41	3/30/2019 7:41	Ethylene oxide
Gower ES	9040216-09	3/29/2019 10:03	3/29/2019 10:03	4/3/2019 3:33	Ethylene oxide
Gower MS	9040216-04	3/29/2019 9:44	3/29/2019 9:44	4/2/2019 20:20	Ethylene oxide
Hinsdale South HS	9040216-01	3/29/2019 9:59	3/29/2019 9:59	4/2/2019 17:15	Ethylene oxide
Water Tower	9040216-02	3/29/2019 9:48	3/29/2019 9:48	4/2/2019 18:16	Ethylene oxide
WB Village Hall	9040216-05	3/29/2019 9:40	3/29/2019 9:40	4/2/2019 21:22	Ethylene oxide
WB Warehouse C1	9040216-07	3/29/2019 9:36	3/29/2019 9:36	4/2/2019 23:25	Ethylene oxide
West Neighborhood	9040216-06	3/29/2019 10:07	3/29/2019 10:07	4/2/2019 22:23	Ethylene oxide
Willow Pond Park	9040216-03	3/29/2019 9:53	3/29/2019 9:53	4/2/2019 19:18	Ethylene oxide
WB Warehouse C2	9040216-08	3/29/2019 9:36	3/29/2019 9:36	4/3/2019 1:29	Ethylene oxide
Gower ES	9040216-16	4/1/2019 9:58	4/1/2019 9:58	4/3/2019 21:52	Ethylene oxide
Gower MS	9040216-12	4/1/2019 9:31	4/1/2019 9:31	4/3/2019 17:45	Ethylene oxide
Hinsdale South HS	9040216-11	4/1/2019 9:51	4/1/2019 9:51	4/3/2019 16:44	Ethylene oxide
Water Tower	9040216-10	4/1/2019 9:36	4/1/2019 9:36	4/3/2019 15:42	Ethylene oxide
WB Village Hall C1	9040216-17	4/1/2019 9:23	4/1/2019 9:23	4/3/2019 22:54	Ethylene oxide
WB Warehouse	9040216-13	4/1/2019 9:20	4/1/2019 9:20	4/3/2019 18:47	Ethylene oxide
West Neighborhood	9040216-14	4/1/2019 10:02	4/1/2019 10:02	4/3/2019 19:49	Ethylene oxide
Willow Pond Park	9040216-15	4/1/2019 9:47	4/1/2019 9:47	4/3/2019 20:51	Ethylene oxide
WB Village Hall C2	9040216-18	4/1/2019 9:24	4/1/2019 9:24	4/4/2019 0:58	Ethylene oxide

Trip Blank	9040216-19	4/1/2019	4/1/2019	4/4/2019 3:01	Ethylene oxide

CASNUMBER	RESULT	ANOTE	DL	UNITS	LABNAME
75-21-8	ND	U	0.0366	ppbv	Eastern Research Group
75-21-8	0.0312	U	0.0366	ppbv	Eastern Research Group
75-21-8	0.148		0.0366	ppbv	Eastern Research Group
75-21-8	0.0562	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0352	LK, U	0.0366	ppbv	Eastern Research Group
75-21-8	0.255	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0946	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0603		0.0366	ppbv	Eastern Research Group
75-21-8	0.178	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.032	LK, U	0.0366	ppbv	Eastern Research Group
75-21-8	0.0999		0.0366	ppbv	Eastern Research Group
75-21-8	0.0376		0.0366	ppbv	Eastern Research Group
75-21-8	0.124		0.0366	ppbv	Eastern Research Group
75-21-8	0.0417	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0329	U, LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0648		0.0366	ppbv	Eastern Research Group
75-21-8	0.109	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.098		0.0366	ppbv	Eastern Research Group
75-21-8	0.114		0.0366	ppbv	Eastern Research Group
75-21-8	0.0584		0.0366	ppbv	Eastern Research Group
75-21-8	0.0464		0.0366	ppbv	Eastern Research Group
75-21-8	0.0735		0.0366	ppbv	Eastern Research Group
75-21-8	0.0513		0.0366	ppbv	Eastern Research Group
75-21-8	0.0432	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.074	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0566		0.0366	ppbv	Eastern Research Group
75-21-8	0.0719		0.0366	ppbv	Eastern Research Group
75-21-8	0.101		0.0366	ppbv	Eastern Research Group
75-21-8	0.0961		0.0366	ppbv	Eastern Research Group
75-21-8	0.129		0.0366	ppbv	Eastern Research Group
75-21-8	0.0967		0.0366	ppbv	Eastern Research Group
75-21-8	0.0508		0.0366	ppbv	Eastern Research Group
75-21-8	0.0631		0.0366	ppbv	Eastern Research Group
75-21-8	0.1		0.0366	ppbv	Eastern Research Group
75-21-8	0.0663		0.0366	ppbv	Eastern Research Group
75-21-8	0.0835		0.0366	ppbv	Eastern Research Group
75-21-8	0.124		0.0366	ppbv	Eastern Research Group
75-21-8	0.0763		0.0366	ppbv	Eastern Research Group
75-21-8	0.0549	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0397	LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0482		0.0366	ppbv	Eastern Research Group
75-21-8	0.0316	U, LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.0204	U, LK	0.0366	ppbv	Eastern Research Group
75-21-8	0.134		0.0366	ppbv	Eastern Research Group
75-21-8	0.0754		0.0366	ppbv	Eastern Research Group
75-21-8	0.0619		0.0366	ppbv	Eastern Research Group

75-21-8	0.0387	0.0366 ppbv	Eastern Research Group

SOURCEID	QCTYPE	PREPDATE	ANADATE	ANALYTE	RESULT	ANOTE
9032522-07	Replicate	3/17/2019 9:22	3/28/2019 21:19	Ethylene oxide	0.278	LK
9032522-08	Replicate	3/17/2019 9:23	3/28/2019 23:22	Ethylene oxide	0.0345	LK, U
9032613-05	Replicate	3/23/2019 9:50	3/29/2019 17:16	Ethylene oxide	0.0803	
9032613-06	Replicate	3/23/2019 9:50	3/29/2019 19:19	Ethylene oxide	0.112	
9032719-07	Replicate	3/26/2019 9:40	3/30/2019 6:39	Ethylene oxide	0.0367	
9032719-08	Replicate	3/26/2019 10:41	3/30/2019 8:43	Ethylene oxide	0.0987	
9040216-07	Replicate	3/29/2019 9:36	4/3/2019 0:27	Ethylene oxide	0.0954	
9040216-08	Replicate	3/29/2019 9:36	4/3/2019 2:31	Ethylene oxide	0.136	
9040216-17	Replicate	4/1/2019 9:23	4/3/2019 23:56	Ethylene oxide	0.0306	LK, U
9040216-18	Replicate	4/1/2019 9:24	4/4/2019 1:59	Ethylene oxide	0.0512	
	Blank	3/28/2019 9:15	3/28/2019 12:04	Ethylene oxide	ND	U
	Blank	3/29/2019 8:14	3/29/2019 11:05	Ethylene oxide	ND	U
	Blank	4/2/2019 12:14	4/2/2019 15:11	Ethylene oxide	ND	U
	Blank	4/3/2019 12:34	4/3/2019 14:40	Ethylene oxide	ND	U
	Calibration Check	3/21/2019 12:34	3/21/2019 14:37	Ethylene oxide	2.38	
	Calibration Check	3/28/2019 9:26	3/28/2019 10:05	Ethylene oxide	2.03	
	Calibration Check	3/29/2019 9:17	3/29/2019 10:03	Ethylene oxide	2.04	
	Calibration Check	4/2/2019 8:16	4/2/2019 13:15	Ethylene oxide	2.01	
	Calibration Check	4/3/2019 12:36	4/3/2019 13:38	Ethylene oxide	2.17	

SOURCERES	SPIKELEVEL	RECOVERY	RPD	DL	UNITS	LABNAME
0.255			8.59	0.0366	ppbv	Eastern Research Group
ND				0.0366	ppbv	Eastern Research Group
0.0648			21.4	0.0366	ppbv	Eastern Research Group
0.114			1.78	0.0366	ppbv	Eastern Research Group
0.0432			16.3	0.0366	ppbv	Eastern Research Group
0.101			2.01	0.0366	ppbv	Eastern Research Group
0.1			4.71	0.0366	ppbv	Eastern Research Group
0.124			9.24	0.0366	ppbv	Eastern Research Group
ND				0.0366	ppbv	Eastern Research Group
0.0619			18.9	0.0366	ppbv	Eastern Research Group
				0.0366	ppbv	Eastern Research Group
				0.0366	ppbv	Eastern Research Group
				0.0366	ppbv	Eastern Research Group
				0.0366	ppbv	Eastern Research Group
	2.5	95.2			ppbv	Eastern Research Group
	2.5	81.1			ppbv	Eastern Research Group
	2.5	81.4			ppbv	Eastern Research Group
	2.5	80.4			ppbv	Eastern Research Group
	2.5	86.8			ppbv	Eastern Research Group

QUALIFIER	DESCRIPTION
LK	Analyte identified; Reported value may be biased high.
U	Under Detection Limit

	A	B	C	D	E	F	G	H	I
1	ND & Less than ND = 1/2 MDL	Sample Start Date	13-Nov-18	16-Nov-18	19-Nov-18	23-Nov-18	25-Nov-18	28-Nov-18	1-Dec-18
2	Rolling average from 11/13/18 to present	Sample End Date	14-Nov-18	17-Nov-18	20-Nov-18	24-Nov-18	26-Nov-18	29-Nov-18	2-Dec-18
3	SAMPLENAME	Rolling avg (µg/m3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)
4	Gower ES	0.260			0.164	0.202	0.411	0.474	0.464
5	Gower MS	0.318			0.155	0.197	0.360	0.656	0.140
6	Hinsdale South HS	0.314			0.253		0.665	0.376	0.629
7	Watertower	0.90			0.246	0.893		0.699	0.0409
8	WB Village Hall	2.04		0.824	6.21	0.284	4.10	1.83	1.79
9	WB Warehouse	2.15	2.37	1.81	6.62	0.180		0.694	0.456
10	West Neighborhood	0.447			0.125	0.205	0.261	0.041	0.804
11	Willow Pond Park	0.344			0.105	0.286	0.345	0.455	0.211
12									
13	Average RPD for collocates =	14.8%	NA	0.0%	3.2%	NA	NA	129%	12.0%
14	Average CV for collocates =	10.5%	NA	0.0%	2.3%	NA	NA	91.0%	8.5%
15									
16	Collocate criteria ±25 RPD for compounds >5 times the MDL = NA								
17	Not Applicable =	NA							
18									
19	Relative Percent Difference =	RPD							
20									
21	METHOD DETECTION LIMIT								
22	Method detection limit (ppbv) = 0.0453	0.0453							
23	Method detection limit (µg/m^3) =	0.0819							
24	1/2 Method detection limit (µg/m^3) =	0.0409							
25									
26	Mol. Weight	44.1							
27	Factor	1.81							

	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	**6-Dec-18**	**7-Dec-18**	**10-Dec-18**	**13-Dec-18**	**16-Dec-18**	**19-Dec-18**	**22-Dec-18**	**26-Dec-18**	**28-Dec-18**	**2-Jan-19**	**3-Jan-19**	**6-Jan-19**	**9-Jan-19**
2	**7-Dec-18**	**8-Dec-18**	**11-Dec-18**	**14-Dec-18**	**17-Dec-18**	**20-Dec-18**	**23-Dec-18**	**27-Dec-18**	**29-Dec-18**	**3-Jan-19**	**4-Jan-19**	**7-Jan-19**	**10-Jan-19**
3	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
4	0.0409	0.164	0.138	0.401	0.732	0.311	0.360	0.497	0.133	0.210	0.6326	0.249	
5	0.605	0.112	0.0409	0.255	0.593	0.360	0.522	0.0409	0.175	0.0409	0.041	0.0409	0.354
6	0.486	0.0409	0.213	0.244	0.511	0.267	0.376	0.566	0.264	0.0409	0.4283	0.249	0.295
7	0.389	0.273	0.248	0.211	0.535	1.67	0.441	0.151		0.0409	0.041	0.0409	0.0409
8	5.39	0.780	0.302	2.09	0.871	0.429	0.981	10.7	0.672	0.251	0.314	7.10	3.81
9	11.1	2.26	0.336	0.436	2.15	0.345	2.83		1.31	0.316	0.041	0.0409	0.685
10	0.254	0.0409	0.213	1.06	0.604	0.197	0.235	1.17	0.0409	0.0409	0.0409	1.56	0.115
11	0.041	0.403	0.0409	0.365	0.334	0.546	0.116	0.166	0.0409	0.217	0.0409	0.0409	0.219
12													
13	10.9%	10.9%	NA	4.3%	3.4%	NA	18.5%	2.9%	18.0%	NA	NA	13.7%	NA
14	7.7%	7.7%	NA	3.1%	2.4%	NA	13.1%	2.0%	12.7%	NA	NA	9.7%	NA
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													

	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
1	**12-Jan-19**	**15-Jan-19**	**17-Jan-19**	**22-Jan-19**	**24-Jan-19**	**27-Jan-19**	**1-Feb-19**	**2-Feb-19**	**5-Feb-19**	**8-Feb-19**	**11-Feb-19**	**14-Feb-19**	**19-Feb-19**
2	**13-Jan-19**	**16-Jan-19**	**18-Jan-19**	**23-Jan-19**	**25-Jan-19**	**28-Jan-19**	**2-Feb-19**	**3-Feb-19**	**6-Feb-19**	**9-Feb-19**	**12-Feb-19**	**15-Feb-19**	**20-Feb-19**
3	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
4	0.237	0.0409	0.0409	0.598	0.0947	0.293	0.157	0.215	1.38	0.202	0.398	0.0409	0.0409
5	0.0409	0.918	1.66	0.349	0.0409	0.155	0.101	0.371	3.29	0.439	0.114	0.286	0.202
6	0.264	0.239	0.134	0.349	0.0409	3.29	0.322	0.131	0.237	0.347	0.309	0.258	0.162
7	0.307	0.0409	0.316	10.8	0.0821	1.75	9.49	7.48	0.208	0.233	0.0409	0.495	0.222
8	1.61	0.672	0.554	1.51	0.210	19.3	0.918	0.383	16.4	0.725	4.35	0.178	0.218
9	0.0409	14.3	13.1	4.08	0.280	1.18	0.133	0.239	26.4	4.67	0.0409	0.677	0.150
10	0.727	0.119	0.151	1.07	0.0409	1.65	0.129	0.160	5.35	0.275	1.32	0.0409	0.298
11	0.0409	0.107	0.144	2.21	0.114	0.813	3.71	1.40	0.174	0.213	0.0886	0.244	0.0409
12													
13	5.1%	0.6%	13.4%	1.3%	NA	13.1%	7.9%	9.8%	10.5%	15.9%	17.0%	20.0%	NA
14	3.6%	0.4%	9.5%	0.9%	NA	9.3%	5.6%	6.9%	7.4%	11.2%	12.1%	14.2%	NA
15													
16													
17													
18													
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21													
22													
23													
24													
25													
26													
27													

	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1	**20-Feb-19**	**21-Feb-19**	**22-Feb-19**	**23-Feb-19**	**26-Feb-19**	**1-Mar-19**	**4-Mar-19**	**7-Mar-19**	**10-Mar-19**	**13-Mar-19**	**16-Mar-19**	**19-Mar-19**	**22-Mar-19**
2	**21-Feb-19**	**22-Feb-19**	**23-Feb-19**	**24-Feb-19**	**27-Feb-19**	**2-Mar-19**	**5-Mar-19**	**8-Mar-19**	**11-Mar-19**	**14-Mar-19**	**17-Mar-19**	**20-Mar-19**	**23-Mar-19**
3	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
4	0.148				0.0409	0.145	0.124	0.0307	0.0974	0.394	0.0564	0.215	0.181
5	0.0409			0.164	0.0409	0.0409	0.0409	0.0925	0.171	0.246	0.267	0.0815	0.0680
6	0.0409			0.282	0.188	0.125	0.122	0.0307	0.102	0.139	0.102	0.0824	0.224
7	0.0409			0.179	0.0844	0.142	0.0409	0.165	0.0808	0.219	0.0636	0.0793	0.0754
8	0.260	0.144	0.170	0.128	0.103	0.0409	0.101	0.0990	0.204	0.204	0.461	0.136	0.0595
9	0.178	0.0409	0.121	0.0867	0.119	0.124	0.0409	0.0903	0.0754	0.181	0.171	0.0562	0.117
10	0.0409			0.165	0.114	0.0409	0.113	0.112	0.201	0.195	0.109	0.0374	0.197
11	0.111			0.171	0.0409	0.148	0.108	0.122	0.244	0.147	0.322	0.206	0.177
12													
13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15													
16													
17													
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25													
26													
27													

	AW	AX	AY
1	**25-Mar-19**	**28-Mar-19**	**31-Mar-19**
2	**26-Mar-19**	**29-Mar-19**	**1-Apr-19**
3	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
4	0.106	0.174	0.138
5	0.0839	0.233	0.0992
6	0.133	0.175	0.0718
7	0.0927	0.0918	0.0871
8	0.0781	0.114	0.0571
9	0.134	0.181	0.0369
10	0.102	0.120	0.242
11	0.130	0.151	0.136
12			
13	NA	NA	NA
14	NA	NA	NA
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			

	A	B	C	D	E	F	G	H	I
1		Sample Start Date	13-Nov-18	16-Nov-18	19-Nov-18	23-Nov-18	25-Nov-18	28-Nov-18	1-Dec-18
2		Sample End Date	14-Nov-18	17-Nov-18	20-Nov-18	24-Nov-18	26-Nov-18	29-Nov-18	2-Dec-18
3	**SAMPLENAME**		**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**
4	Gower ES	**REPORTED VALUES REPORTED IN PPBV**	--	--	0.0907	0.112	0.228	0.262	0.257
5	Gower MS		--	--	0.0860	0.109	0.199	0.363	0.0776
6	Hinsdale South HS		--	--	0.140	Invalid	0.368	0.208	0.348
7	Watertower		--	--	0.136	0.494	Invalid	0.387	ND
8	WB Village Hall		Invalid	0.456	3.38	0.157	2.27	1.01	0.931
9	WB Warehouse		1.31	1.00	3.66	0.0994	Invalid	0.137	0.252
10	West Neighborhood		--	--	0.0691	0.114	0.145	ND	0.445
11	Willow Pond Park		--	--	0.0580	0.158	0.191	0.252	0.117
12									
13	Gower ES C2	**REPORTED VALUES REPORTED IN PPBV**	--	--	--	--	--	--	--
14	Gower MS C2		--	--	--	--	--	--	--
15	Hinsdale South HS C2		--	--	--	--	--	--	--
16	Watertower C2		--	--	--	--	--	--	--
17	WB Village Hall C2		--	--	3.49	--	--	--	1.05
18	WB Warehouse C2		--	1.00	--	Invalid	Invalid	0.631	--
19	West Neighborhood C2		--	--	--	--	--	--	--
20	Willow Pond Park C2		--	--	--	--	--	--	--
21									
22									
23			**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
24	Gower ES	**REPORTED VALUES REPORTED IN µg/m3**	--	--	0.164	0.202	0.411	0.474	0.464
25	Gower MS		--	--	0.155	0.197	0.360	0.656	0.140
26	Hinsdale South HS		--	--	0.253	Invalid	0.665	0.376	0.629
27	Watertower		--	--	0.246	0.893	Invalid	0.699	ND
28	WB Village Hall		--	0.824	6.11	0.284	4.10	1.83	1.68
29	WB Warehouse		2.37	1.81	6.62	0.18	Invalid	0.248	0.456
30	West Neighborhood		--	--	0.125	0.205	0.261	ND	0.804
31	Willow Pond Park		--	--	0.105	0.286	0.345	0.455	0.211
32									
33	Gower ES C2	**REPORTED VALUES**	--	--	--	--	--	--	--
34	Gower MS C2		--	--	--	--	--	--	--
35	Hinsdale South HS C2		--	--	--	--	--	--	--
36	Watertower C2		--	--	--	--	--	--	--

	A	B	C	D	E	F	G	H	I
37	WB Village Hall C2	**REPORTED IN**	--	--	6.31	--	--	--	1.90
38	WB Warehouse C2	**µg/m3**	--	1.81	--	Invalid	Invalid	1.14	--
39	West Neighborhood C2		--	--	--	--	--	--	--
40	Willow Pond Park C2		--	--	--	--	--	--	--
41									
42									
43									
44									
45	**ND & Less than ND = 1/2 MDL**		0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409
46		**Rolling avg**							
47	**SAMPLENAME**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
48	Gower ES	0.260			0.164	0.202	0.411	0.474	0.464
49	Gower MS	0.318			0.155	0.197	0.360	0.656	0.140
50	Hinsdale South HS	0.314			0.253		0.665	0.376	0.629
51	Watertower	0.90			0.246	0.893		0.699	0.0409
52	WB Village Hall	2.11		0.824	6.11	0.284	4.10	1.83	1.68
53	WB Warehouse	2.19	2.37	1.81	6.62	0.1797		0.248	0.456
54	West Neighborhood	0.447			0.125	0.205	0.261	0.0409	0.804
55	Willow Pond Park	0.344			0.105	0.286	0.345	0.455	0.211
56									
57	Gower ES C2	#DIV/0!							
58	Gower MS C2	#DIV/0!							
59	Hinsdale South HS C2	#DIV/0!							
60	Watertower C2	#DIV/0!							
61	WB Village Hall C2	2.33			6.31				1.90
62	WB Warehouse C2	2.04		1.81				1.14	
63	West Neighborhood C2	#DIV/0!							
64	Willow Pond Park C2	#DIV/0!							
65									
66	**RPD between Samples & Collocate**								
67	**SAMPLENAME**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**
68									
69	Gower ES C2	#DIV/0!	--	--	--	--	--	--	--
70	Gower MS C2	#DIV/0!	--	--	--	--	--	--	--
71	Hinsdale South HS C2	#DIV/0!	--	--	--	--	--	--	--
72	Watertower C2	#DIV/0!	--	--	--	--	--	--	--

	A	B	C	D	E	F	G	H	I
73	WB Village Hall C2	9.2%	--	--	3.2%	NA	--	--	12.0%
74	WB Warehouse C2	20.0%	--	0.0%	--	--	--	129%	--
75	West Neighborhood C2	#DIV/0!	--	--	--	--	--	--	--
76	Willow Pond Park C2	#DIV/0!	--	--	--	--	--	--	--
77	**Average RPD for collocates =**	14.8%	NA	0.0%	3.2%	NA	NA	129%	12.0%
78	**Average CV for collocates =**	10.5%	NA	0.0%	2.3%	NA	NA	91.0%	8.5%
79									
80	**Collocate criteria ±25 RPD for compounds >5 times the MDL = NA**								
81	**No sample rec'd in lab =**	---							
82	**Sample Was Invalid =**	**Invalid**							
83	**Nondetect =**	**ND**							
84	**Not Applicable =**	**NA**							
85	***Italicized* =**	**Under the MDL**							
86	**Bold =**	**Diluted**							
87	**Underlined =**	**Co-eluter**							
88									
89	**Relative Percent Difference =**	**RPD**							
90	**=**	**[(C1-C2)/(average (C1,C2)] x 100**							
91	**C1 =**	**Primary Sample**							
92	**C2 =**	**Collocated Sample**							
93	**METHOD DETECTION LIMIT**								
94	**2018**								
95	Method detection limit (ppbv) = 0.0453	0.0453							
96	Method detection limit (µg/m^3) =	0.0819							
97	1/2 Method detection limit (µg/m^3) =	0.0409							
98	Method detection limit x 5 (µg/m^3) =	0.4094							
99	**2019**	Inst 1	Inst 4						
100	Method detection limit (ppbv) = 0.0366 or 0.0614	0.0614	0.0366						
101	Method detection limit (µg/m^3) =	0.111	0.0662						
102	1/2 Method detection limit (µg/m^3) =	0.0555	0.0331						
103	Method detection limit x 5 (µg/m^3) =	0.555	0.331						
104	Mol. Weight	44.1							
105	Factor	1.81							

	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	6-Dec-18	7-Dec-18	10-Dec-18	13-Dec-18	16-Dec-18	19-Dec-18	22-Dec-18	26-Dec-18	28-Dec-18	2-Jan-19	3-Jan-19	6-Jan-19	9-Jan-19
2	7-Dec-18	8-Dec-18	11-Dec-18	14-Dec-18	17-Dec-18	20-Dec-18	23-Dec-18	27-Dec-18	29-Dec-18	3-Jan-19	4-Jan-19	7-Jan-19	10-Jan-19
3	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)
4	ND	0.0909	0.0766	0.222	0.405	0.172	0.199	0.275	0.0734	0.116	0.350	0.138	Invalid
5	0.335	0.0622	ND	0.141	0.328	0.199	0.289	ND	0.0970	ND	ND	ND	0.196
6	0.269	ND	0.118	0.135	0.283	0.148	0.208	0.313	0.146	ND	0.237	0.138	0.163
7	0.215	0.151	0.137	0.117	0.296	0.925	0.244	0.0835	Invalid	ND	ND	ND	ND
8	2.98	0.408	0.167	1.13	0.482	0.288	0.543	5.99	0.372	0.139	0.206	4.20	2.11
9	6.48	1.25	0.149	0.241	1.17	0.191	1.71	Invalid	0.788	0.131	ND	ND	Invalid
10	0.140	ND	0.118	0.589	0.334	0.109	0.130	0.649	ND	ND	ND	0.865	0.0634
11	ND	0.223	ND	0.202	0.185	0.302	0.0641	0.0916	ND	0.120	ND	ND	0.121
12													
13	--	--	--	--	--	--	--	--	--	--	--	--	--
14	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--
16	--	--	--	--	--	--	--	--	--	--	--	--	--
17	--	0.455	--	1.18	--	0.187	--	5.82	--	--	0.142	3.66	--
18	5.81	--	0.223	--	1.21	--	1.42	--	0.658	0.219	--	--	0.379
19	--	--	--	--	--	--	--	--	--	--	--	--	--
20	--	--	--	--	--	--	--	--	--	--	--	--	--
21													
22													
23	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)
24	ND	0.164	0.138	0.401	0.732	0.311	0.360	0.497	0.133	0.210	0.633	0.249	Invalid
25	0.605	0.112	ND	0.255	0.593	0.360	0.522	ND	0.175	ND	ND	ND	0.354
26	0.486	ND	0.213	0.244	0.511	0.267	0.376	0.566	0.264	ND	0.428	0.249	0.295
27	0.389	0.273	0.248	0.211	0.535	1.67	0.441	0.151	Invalid	ND	ND	ND	ND
28	5.39	0.737	0.30	2.04	0.871	0.521	0.981	10.8	0.672	0.251	0.372	7.59	3.81
29	11.7	2.26	0.269	0.436	2.11	0.345	3.09	Invalid	1.42	0.237	ND	ND	Invalid
30	0.254	ND	0.213	1.06	0.604	0.197	0.235	1.17	ND	ND	ND	1.56	0.115
31	ND	0.403	ND	0.365	0.334	0.546	0.116	0.166	ND	0.217	ND	ND	0.219
32													
33	--	--	--	--	--	--	--	--	--	--	--	--	--
34	--	--	--	--	--	--	--	--	--	--	--	--	--
35	--	--	--	--	--	--	--	--	--	--	--	--	--
36	--	--	--	--	--	--	--	--	--	--	--	--	--

	J	K	L	M	N	O	P	Q	R	S	T	U	V
37	--	0.822	--	2.13	--	0.338	--	10.5	--	--	0.257	6.62	--
38	10.5	--	0.403	--	2.19	--	2.57	--	1.19	0.396	--	--	0.685
39	--	--	--	--	--	--	--	--	--	--	--	--	--
40	--	--	--	--	--	--	--	--	--	--	--	--	--
41													
42													
43													
44													
45	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409
46													
47	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
48	0.0409	0.164	0.138	0.401	0.732	0.311	0.360	0.497	0.133	0.210	0.6326	0.249	
49	0.605	0.112	0.0409	0.255	0.593	0.360	0.522	0.0409	0.175	0.0409	0.041	0.0409	0.354
50	0.486	0.0409	0.213	0.244	0.511	0.267	0.376	0.566	0.264	0.0409	0.4283	0.249	0.295
51	0.389	0.273	0.248	0.211	0.535	1.67	0.441	0.151		0.0409	0.041	0.0409	0.0409
52	5.39	0.737	0.302	2.04	0.871	0.521	0.981	10.8	0.672	0.251	0.3723	7.59	3.81
53	11.7	2.26	0.269	0.436	2.11	0.345	3.09		1.42	0.237	0.041	0.0409	
54	0.254	0.0409	0.213	1.06	0.604	0.197	0.235	1.17	0.0409	0.0409	0.0409	1.56	0.115
55	0.0409	0.403	0.0409	0.365	0.334	0.546	0.116	0.166	0.0409	0.217	0.0409	0.0409	0.219
56													
57													
58													
59													
60													
61		0.822		2.13		0.338		10.5			0.257	6.62	
62	10.5		0.403		2.19		2.57		1.19	0.396			0.685
63													
64													
65													
66													
67	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**
68													
69	--	--	--	--	--	--	--	--	--	--	--	--	--
70	--	--	--	--	--	--	--	--	--	--	--	--	--
71	--	--	--	--	--	--	--	--	--	--	--	--	--
72	--	--	--	--	--	--	--	--	--	--	--	--	--

	J	K	L	M	N	O	P	Q	R	S	T	U	V
73	--	10.9%	--	4.3%	--	NA	--	2.9%	--	--	NA	13.7%	--
74	10.9%	--	NA	--	3.4%	--	18.5%	--	18.0%	NA	--	--	NA
75	--	--	--	--	--	--	--	--	--	--	--	--	--
76	--	--	--	--	--	--	--	--	--	--	--	--	--
77	10.9%	10.9%	NA	4.3%	3.4%	NA	18.5%	2.9%	18.0%	NA	NA	13.7%	NA
78	7.7%	7.7%	NA	3.1%	2.4%	NA	13.1%	2.0%	12.7%	NA	NA	9.7%	NA
79													
80													
81													
82													
83													
84													
85													
86													
87													
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96													
97													
98													
99													
100													
101													
102													
103													
104													
105													

	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
1	**12-Jan-19**	**15-Jan-19**	**17-Jan-19**	**22-Jan-19**	**24-Jan-19**	**27-Jan-19**	**1-Feb-19**	**2-Feb-19**	**5-Feb-19**	**8-Feb-19**	**11-Feb-19**	**14-Feb-19**	**19-Feb-19**
2	**13-Jan-19**	**16-Jan-19**	**18-Jan-19**	**23-Jan-19**	**25-Jan-19**	**28-Jan-19**	**2-Feb-19**	**3-Feb-19**	**6-Feb-19**	**9-Feb-19**	**12-Feb-19**	**15-Feb-19**	**20-Feb-19**
3	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**
4	0.131	ND	ND	0.331	0.0524	0.162	0.0868	0.119	0.764	0.112	0.220	ND	ND
5	ND	0.508	0.919	0.193	*0.0423*	0.0857	0.0560	0.205	1.82	0.243	0.0630	0.158	0.112
6	0.146	0.132	0.0743	0.193	ND	1.82	0.178	0.0724	0.131	0.192	0.171	0.143	0.0899
7	0.170	ND	0.175	5.99	0.0454	0.967	5.25	4.14	0.115	0.129	ND	0.274	0.123
8	0.866	0.372	0.286	0.838	0.145	**10.7**	0.528	0.212	9.56	0.401	2.20	0.0983	0.132
9	ND	7.86	7.23	2.27	0.155	0.612	0.0736	0.126	**14.6**	2.79	ND	0.412	0.0829
10	0.402	0.0660	0.0835	0.590	*0.0333*	0.913	0.0716	0.0888	2.96	0.152	0.728	ND	0.165
11	ND	0.0594	0.0795	1.22	0.0629	0.450	2.05	0.772	0.0963	0.118	0.0490	0.135	ND
12													
13	--	--	--	--	--	--	--	--	--	--	--	--	--
14	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--
16	--	--	--	--	--	--	--	--	--	--	--	--	--
17	0.911	--	0.327	--	0.0873	--	0.488	--	8.61	--	2.61	--	0.109
18	--	7.91	--	2.24	--	0.698	--	0.139	--	2.38	--	0.337	--
19	--	--	--	--	--	--	--	--	--	--	--	--	--
20	--	--	--	--	--	--	--	--	--	--	--	--	--
21													
22													
23	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
24	0.237	ND	ND	0.598	0.0947	0.293	0.157	0.215	1.38	0.202	0.398	ND	ND
25	ND	0.918	1.66	0.349	0.0765	0.155	0.101	0.371	3.29	0.439	0.114	0.286	0.202
26	0.264	0.239	0.134	0.349	ND	3.29	0.322	0.131	0.237	0.347	0.309	0.258	0.162
27	0.307	ND	0.316	10.8	0.0821	1.75	9.49	7.48	0.208	0.233	ND	0.495	0.222
28	1.57	0.672	0.517	1.51	0.262	19.3	0.954	0.383	17.3	0.725	3.98	0.178	0.239
29	ND	14.2	13.1	4.10	0.280	1.11	0.133	0.228	26.4	5.04	ND	0.745	0.150
30	0.727	0.119	0.151	1.07	0.0602	1.65	0.129	0.160	5.35	0.275	1.32	ND	0.298
31	ND	0.107	0.144	2.21	0.114	0.813	3.71	1.40	0.174	0.213	0.0886	0.244	ND
32													
33	--	--	--	--	--	--	--	--	--	--	--	--	--
34	--	--	--	--	--	--	--	--	--	--	--	--	--
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36	--	--	--	--	--	--	--	--	--	--	--	--	--

	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
37	1.65	--	0.591	--	0.158	--	0.882	--	15.6	--	4.72	--	0.197
38	--	14.3	--	4.05	--	1.26	--	0.251	--	4.30	--	0.609	--
39	--	--	--	--	--	--	--	--	--	--	--	--	--
40	--	--	--	--	--	--	--	--	--	--	--	--	--
41													
42													
43													
44													
45	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409
46													
47	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
48	0.237	0.0409	0.0409	0.598	0.0947	0.293	0.157	0.215	1.38	0.202	0.398	0.0409	0.0409
49	0.0409	0.918	1.66	0.349	0.0409	0.155	0.101	0.371	3.29	0.439	0.114	0.286	0.202
50	0.264	0.239	0.134	0.349	0.0409	3.29	0.322	0.131	0.237	0.347	0.309	0.258	0.162
51	0.307	0.0409	0.316	10.8	0.0821	1.75	9.49	7.48	0.208	0.233	0.0409	0.495	0.222
52	1.57	0.672	0.517	1.51	0.262	19.3	0.954	0.383	17.3	0.725	3.98	0.178	0.239
53	0.0409	14.2	13.1	4.10	0.280	1.11	0.133	0.228	26.4	5.04	0.0409	0.745	0.150
54	0.727	0.119	0.151	1.07	0.0409	1.65	0.129	0.160	5.35	0.275	1.32	0.0409	0.298
55	0.0409	0.107	0.144	2.21	0.114	0.813	3.71	1.40	0.174	0.213	0.0886	0.244	0.0409
56													
57													
58													
59													
60													
61	1.65		0.591		0.158		0.882		15.6		4.72		0.197
62		14.3		4.05		1.26		0.251		4.30		0.609	
63													
64													
65													
66													
67	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**
68													
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71	--	--	--	--	--	--	--	--	--	--	--	--	--
72	--	--	--	--	--	--	--	--	--	--	--	--	--

	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
73	5.1%	--	13.4%	--	NA	--	7.9%	--	10.5%	--	17.0%	--	NA
74	--	0.6%	--	1.3%	--	13.1%	--	9.8%	--	15.9%	--	20.0%	--
75	--	--	--	--	--	--	--	--	--	--	--	--	--
76	--	--	--	--	--	--	--	--	--	--	--	--	--
77	5.1%	0.6%	13.4%	1.3%	NA	13.1%	7.9%	9.8%	10.5%	15.9%	17.0%	20.0%	NA
78	3.6%	0.4%	9.5%	0.9%	NA	9.3%	5.6%	6.9%	7.4%	11.2%	12.1%	14.2%	NA
79													
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	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1	**20-Feb-19**	**21-Feb-19**	**22-Feb-19**	**23-Feb-19**	**26-Feb-19**	**1-Mar-19**	**4-Mar-19**	**7-Mar-19**	**10-Mar-19**	**13-Mar-19**	**16-Mar-19**	**19-Mar-19**	**22-Mar-19**
2	**21-Feb-19**	**22-Feb-19**	**23-Feb-19**	**24-Feb-19**	**27-Feb-19**	**2-Mar-19**	**5-Mar-19**	**8-Mar-19**	**11-Mar-19**	**14-Mar-19**	**17-Mar-19**	**20-Mar-19**	**23-Mar-19**
3	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**	**(ppbv)**
4	0.0819			INVALID	ND	0.0805	0.0684	ND	0.0539	0.218	*0.0312*	0.119	0.0999
5	ND			0.0907	ND	ND	ND	*0.051*	0.0944	0.136	0.148	0.0451	0.0376
6	ND			0.156	0.104	0.0693	0.0674	ND	0.0563	0.0770	0.0562	0.0456	0.124
7	ND			0.0990	0.0467	0.0788	ND	0.091	0.0447	0.121	*0.0352*	0.0439	0.0417
8	0.144	0.0795	0.0682	0.0708	0.0917	ND	0.0892	*0.055*	Invalid	0.113	0.255	0.0755	*0.0329*
9	0.0877	ND	0.0670	0.0733	0.0656	*0.0571*	ND	*0.053*	0.0417	0.0676	0.0946	*0.0311*	0.0648
10	ND			0.0915	0.0631	ND	*0.0623*	0.062	0.111	0.108	0.0603	*0.0207*	0.109
11	0.0613			0.0947	ND	0.0817	*0.0599*	0.068	0.135	0.0813	0.178	0.114	0.0980
12													
13	--	--	--	--	--	--	--	--	--	--	--	--	--
14	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--
16	--	--	--	--	--	--	--	--	--	--	--	--	--
17	--	--	0.12	--	ND	--	0.0377	--	0.113	--	*0.032*	0.0501	--
18	0.109	ND	--	ND	--	0.0798	--	*0.0468*	--	0.133	--	--	0.114
19	--	--	--	--	--	--	--	--	--	--	--	--	--
20	--	--	--	--	--	--	--	--	--	--	--	--	--
21													
22													
23	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
24	0.148			INVALID	ND	0.145	0.124	ND	0.0974	0.394	0.0564	0.215	0.181
25	ND			0.164	ND	ND	ND	0.0925	0.171	0.246	0.267	0.0815	0.0680
26	ND			0.282	0.188	0.125	0.122	ND	0.102	0.139	0.102	0.0824	0.224
27	ND			0.179	0.0844	0.142	ND	0.165	0.0808	0.219	0.0636	0.0793	0.0754
28	0.260	0.144	0.123	0.128	0.166	ND	0.161	0.0990	Invalid	0.204	0.461	0.136	0.0595
29	0.159	ND	0.121	0.132	0.119	0.103	ND	0.0960	0.0754	0.122	0.171	0.0562	0.117
30	ND			0.165	0.114	ND	0.113	0.112	0.201	0.195	0.109	0.0374	0.197
31	0.111			0.171	ND	0.148	0.108	0.122	0.244	0.147	0.322	0.206	0.177
32													
33	--	--	--	--	--	--	--	--	--	--	--	--	--
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	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
37	--	--	0.217	--	ND	--	0.0681	--	0.204	--	0.0578	0.0905	--
38	0.197	ND	--	ND	--	0.144	--	0.0846	--	0.240	--	--	0.206
39	--	--	--	--	--	--	--	--	--	--	--	--	--
40	--	--	--	--	--	--	--	--	--	--	--	--	--
41													
42													
43													
44													
45	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0409	0.0307	0.0183	0.0183	0.0183	0.0183	0.0183
46													
47	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
48	0.148				0.0409	0.145	0.124	0.0307	0.0974	0.394	0.0564	0.215	0.181
49	0.0409			0.164	0.0409	0.0409	0.0409	0.0925	0.171	0.246	0.267	0.0815	0.0680
50	0.0409			0.282	0.188	0.125	0.122	0.0307	0.102	0.139	0.102	0.0824	0.224
51	0.0409			0.179	0.0844	0.142	0.0409	0.165	0.0808	0.219	0.0636	0.0793	0.0754
52	0.260	0.144	0.123	0.128	0.166	0.0409	0.161	0.0990		0.204	0.461	0.136	0.0595
53	0.159	0.0409	0.121	0.132	0.119	0.103	0.0409	0.0960	0.0754	0.122	0.171	0.0562	0.117
54	0.0409			0.165	0.114	0.0409	0.113	0.112	0.201	0.195	0.109	0.0374	0.197
55	0.111			0.171	0.0409	0.148	0.108	0.122	0.244	0.147	0.322	0.206	0.177
56													
57													
58													
59													
60													
61			0.217		0.0409		0.0409		0.204		0.0578	0.0905	
62	0.197	0.0409		0.0409		0.144		0.0846		0.240			0.206
63													
64													
65													
66													
67	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**	**RPD**
68													
69	--	--	--	--	--	--	--	--	--	--	--	--	--
70	--	--	--	--	--	--	--	--	--	--	--	--	--
71	--	--	--	--	--	--	--	--	--	--	--	--	--
72	--	--	--	--	--	--	--	--	--	--	--	--	--

	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
73	--	--	NA	--	NA	--	NA	--	NA	--	NA	NA	--
74	NA	NA	--	NA	--	NA	--	NA	--	NA	--	--	NA
75	--	--	--	--	--	--	--	--	--	--	--	--	--
76	--	--	--	--	--	--	--	--	--	--	--	--	--
77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
79													
80													
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	AW	AX	AY
1	**25-Mar-19**	**28-Mar-19**	**31-Mar-19**
2	**26-Mar-19**	**29-Mar-19**	**1-Apr-19**
3	**(ppbv)**	**(ppbv)**	**(ppbv)**
4	0.0584	0.0961	0.0763
5	0.0464	0.129	0.0549
6	0.0735	0.0967	0.0397
7	0.0513	0.0508	0.0482
8	0.0432	0.0631	*0.0316*
9	0.0740	0.100	*0.0204*
10	0.0566	0.0663	0.134
11	0.0719	0.0835	0.0754
12			
13	--	--	--
14	--	--	--
15	--	--	--
16	--	--	--
17	0.101	--	0.0619
18	--	0.124	--
19	--	--	--
20	--	--	--
21			
22			
23	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
24	0.106	0.174	0.138
25	0.0839	0.233	0.0992
26	0.133	0.175	0.0718
27	0.0927	0.0918	0.0871
28	0.0781	0.114	0.0571
29	0.134	0.181	0.0369
30	0.102	0.120	0.242
31	0.130	0.151	0.136
32			
33	--	--	--
34	--	--	--
35	--	--	--
36	--	--	--

	AW	AX	AY
37	0.183	--	0.112
38	--	0.224	--
39	--	--	--
40	--	--	--
41			
42			
43			
44			
45	0.0183	0.0183	0.0183
46			
47	**(µg/m^3)**	**(µg/m^3)**	**(µg/m^3)**
48	0.106	0.174	0.138
49	0.0839	0.233	0.0992
50	0.133	0.175	0.0718
51	0.0927	0.0918	0.0871
52	0.0781	0.114	0.0571
53	0.134	0.181	0.0369
54	0.102	0.120	0.242
55	0.130	0.151	0.136
56			
57			
58			
59			
60			
61	0.183		0.112
62		0.224	
63			
64			
65			
66			
67	**RPD**	**RPD**	**RPD**
68			
69	--	--	--
70	--	--	--
71	--	--	--
72	--	--	--

	AW	AX	AY
73	NA	--	NA
74	--	NA	--
75	--	--	--
76	--	--	--
77	NA	NA	NA
78	NA	NA	NA
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SAMPLENAME	LABSAMPID	SAMPDATE	PREPDATE	ANADATE	ANALYTE	CASNUMBER
WB Trip Blank	8111508-04	11/14/2018	11/14/2018	11/27/2018	Ethylene oxide	75-21-8
Trip Blank	8121130-10	12/6/2018	12/6/2018	12/28/2018	Ethylene oxide	75-21-8
Trip Blank	8121821-02	12/14/2018	12/14/2018	12/28/2018	Ethylene oxide	75-21-8
WB Trip Blank	9012401-10	1/23/2019	1/23/2019	2/1/2019	Ethylene oxide	75-21-8
Trip Blank	9020508-07	2/2/2019	2/2/2019	2/13/2019	Ethylene oxide	75-21-8
WB Trip Blank	9022202-10	2/20/2019	2/20/2019	3/1/2019	Ethylene oxide	75-21-8
Trip Blank	9022616-15	2/24/2019	2/27/2019	3/1/2019	Ethylene oxide	75-21-8
Trip Blank	9030101-10	2/26/2019	2/26/2019	3/6/2019	Ethylene oxide	75-21-8
Trip Blank	9031131-01	3/8/2019	3/14/2019	3/18/2019	Ethylene oxide	75-21-8
Trip Blank	9032106-03	3/20/2019	3/20/2019	3/28/2019	Ethylene oxide	75-21-8
Trip Blank	9040216-19	4/1/2019	4/1/2019	4/4/2019	Ethylene oxide	75-21-8

RESULT	ANOTE	DL	UNITS	LABNAME
ND	U	0.0453	ppbv	Eastern Research Group
ND	A-01	0.0453	ppbv	Eastern Research Group
ND	U	0.0453	ppbv	Eastern Research Group
ND	U	0.0453	ppbv	Eastern Research Group
ND	U	0.0453	ppbv	Eastern Research Group
ND	U	0.0453	ppbv	Eastern Research Group
ND	U	0.0453	ppbv	Eastern Research Group
ND	U	0.0614	ppbv	Eastern Research Group
ND	U	0.0366	ppbv	Eastern Research Group
ND	U	0.0366	ppbv	Eastern Research Group
0.0387		0.0366	ppbv	Eastern Research Group

COMMENT

Trip Blank passed blank criteria; standard dilution system air used to fill trip blank appears to have small amount of TO-15

	A	B	C	D	E	F	G
1	**SOURCEID**	**QCTYPE**	**PREPDATE**	**ANADATE**	**ANALYTE**	**RESULT**	**ANOTE**
2	8112012-02	Replicate	11/17/2018	11/27/2018	Ethylene oxide	0.999	
3	8112012-03	Replicate	11/17/2018	11/27/2018	Ethylene oxide	1.03	
4	8112113-01	Replicate	11/20/2018	11/27/2018	Ethylene oxide	3.37	
5	8112113-02	Replicate	11/20/2018	11/27/2018	Ethylene oxide	3.4	
6	B8K2604-BLK1	Blank	11/20/2018	11/26/2018	Ethylene oxide	ND	U
7	B8K2704-BLK1	Blank	11/20/2018	11/27/2018	Ethylene oxide	ND	U
8	1811061-CCV1	Calibration Check	11/26/2018	11/26/2018	Ethylene oxide	2.79	
9	1811063-CCV1	Calibration Check	11/27/2018	11/27/2018	Ethylene oxide	2.74	
10	8112702-07	Replicate	11/24/2018	11/30/2018	Ethylene oxide	ND	U
11	B8K2905-BLK1	Blank	11/26/2018	11/29/2018	Ethylene oxide	ND	U
12	1811073-CCV1	Calibration Check	11/29/2018	11/29/2018	Ethylene oxide	2.67	
13	8120321-02	Replicate	11/29/2018	12/20/2018	Ethylene oxide	0.584	
14	8120321-01	Replicate	11/29/2018	12/20/2018	Ethylene oxide	0.137	
15	B8L2003-BLK1	Blank	12/13/2018	12/20/2018	Ethylene oxide	ND	U
16	1812045-CCV1	Calibration Check	12/20/2018	12/20/2018	Ethylene oxide	2.06	
17	8120701-08	Replicate	12/2/2018	12/22/2018	Ethylene oxide	0.93	
18	8120701-09	Replicate	12/2/2018	12/22/2018	Ethylene oxide	1.02	
19	B8L2103-BLK1	Blank	12/18/2018	12/21/2018	Ethylene oxide	ND	U
20	1812046-CCV1	Calibration Check	12/21/2018	12/21/2018	Ethylene oxide	2.1	
21	8121130-01	Replicate	12/7/2018	12/27/2018	Ethylene oxide	6.36	
22	8121130-02	Replicate	12/7/2018	12/27/2018	Ethylene oxide	6.2	
23	8121130-12	Replicate	12/8/2018	12/28/2018	Ethylene oxide	0.413	
24	8121130-13	Replicate	12/8/2018	12/28/2018	Ethylene oxide	0.465	
25	8121220-08	Replicate	12/11/2018	12/27/2018	Ethylene oxide	0.117	
26	8121220-09	Replicate	12/11/2018	12/27/2018	Ethylene oxide	0.211	
27	8121821-03	Replicate	12/14/2018	12/28/2018	Ethylene oxide	1.05	
28	8121821-04	Replicate	12/14/2018	12/28/2018	Ethylene oxide	1.13	
29	8121821-10	Replicate	12/17/2018	1/3/2019	Ethylene oxide	1.15	
30	8121821-17	Replicate	12/17/2018	1/3/2019	Ethylene oxide	1.07	
31	8122101-01	Replicate	12/20/2018	1/3/2019	Ethylene oxide	0.215	
32	8122101-07	Replicate	12/20/2018	1/3/2019	Ethylene oxide	0.249	
33	8122701-03	Replicate	12/23/2018	1/4/2019	Ethylene oxide	1.69	
34	8122701-04	Replicate	12/23/2018	1/4/2019	Ethylene oxide	1.56	
35	8122801-08	Replicate	12/27/2018	1/5/2019	Ethylene oxide	6.1	
36	8122801-09	Replicate	12/27/2018	1/5/2019	Ethylene oxide	6.1	
37		Blank	12/18/2018	12/26/2018	Ethylene oxide	ND	U
38		Blank	12/18/2018	12/27/2018	Ethylene oxide	ND	U
39		Blank	12/18/2018	12/28/2018	Ethylene oxide	ND	U
40		Blank	12/18/2018	1/2/2019	Ethylene oxide	ND	U
41		Blank	12/28/2018	1/3/2019	Ethylene oxide	ND	U
42		Blank	12/28/2018	1/4/2019	Ethylene oxide	ND	U
43		Calibration Check	12/21/2018	12/21/2018	Ethylene oxide	2.1	
44		Calibration Check	12/26/2018	12/26/2018	Ethylene oxide	2.01	
45		Calibration Check	12/27/2018	12/27/2018	Ethylene oxide	1.82	
46		Calibration Check	12/28/2018	12/28/2018	Ethylene oxide	1.79	
47		Calibration Check	1/2/2019	1/2/2019	Ethylene oxide	1.84	
48		Calibration Check	1/3/2019	1/3/2019	Ethylene oxide	1.93	
49		Calibration Check	1/4/2019	1/4/2019	Ethylene oxide	1.99	
50	8123125-05	Replicate	12/29/2018	1/8/2019	Ethylene oxide	0.686	
51	8123125-06	Replicate	12/29/2018	1/8/2019	Ethylene oxide	0.647	

	A	B	C	D	E	F	G
52		Blank	12/28/2018	1/4/2019	Ethylene oxide	ND	U
53		Blank	1/3/2019	1/8/2019	Ethylene oxide	ND	U
54		Calibration Check	1/4/2019	1/4/2019	Ethylene oxide	1.99	
55		Calibration Check	1/8/2019	1/8/2019	Ethylene oxide	2.49	
56	9010401-04	Replicate	1/3/2019	1/15/2019	Ethylene oxide	0.229	
57	9010401-09	Replicate	1/3/2019	1/15/2019	Ethylene oxide	0.171	
58		Blank	1/11/2019	1/15/2019	Ethylene oxide	ND	U
59		Calibration Check	1/15/2019	1/15/2019	Ethylene oxide	2.24	
60	9010716-05	Replicate	1/4/2019	1/17/2019	Ethylene oxide	0.208	
61	9010808-05	Replicate	1/4/2019	1/17/2019	Ethylene oxide	0.168	
62	9010808-06	Replicate	1/7/2019	1/17/2019	Ethylene oxide	4.04	
63	9010808-07	Replicate	1/7/2019	1/17/2019	Ethylene oxide	3.84	
64	9011101-07	Replicate	1/10/2019	1/18/2019	Ethylene oxide	0.437	
65	9011101-08	Replicate	1/10/2019	1/18/2019	Ethylene oxide	0.347	
66	9011527-01	Replicate	1/13/2019	1/18/2019	Ethylene oxide	0.952	
67	9011527-02	Replicate	1/13/2019	1/18/2019	Ethylene oxide	0.962	
68	9011701-08	Replicate	1/16/2019	1/23/2019	Ethylene oxide	8.02	
69	9011701-09	Replicate	1/16/2019	1/23/2019	Ethylene oxide	7.73	
70	9012221-08	Replicate	1/18/2019	1/24/2019	Ethylene oxide	0.246	
71	9012221-09	Replicate	1/18/2019	1/24/2019	Ethylene oxide	0.321	
72		Blank	1/11/2019	1/15/2019	Ethylene oxide	ND	U
73		Blank	1/14/2019	1/16/2019	Ethylene oxide	ND	U
74		Blank	1/14/2019	1/17/2019	Ethylene oxide	ND	U
75		Blank	1/14/2019	1/18/2019	Ethylene oxide	ND	U
76		Blank	1/16/2019	1/23/2019	Ethylene oxide	ND	U
77		Calibration Check	1/15/2019	1/15/2019	Ethylene oxide	2.24	
78		Calibration Check	1/16/2019	1/16/2019	Ethylene oxide	2.38	
79		Calibration Check	1/17/2019	1/17/2019	Ethylene oxide	2.53	
80		Calibration Check	1/18/2019	1/18/2019	Ethylene oxide	2.39	
81		Calibration Check	1/23/2019	1/23/2019	Ethylene oxide	1.85	
82	9012401-04	Replicate	1/23/2019	1/31/2019	Ethylene oxide	2.14	
83	9012401-05	Replicate	1/23/2019	1/31/2019	Ethylene oxide	2.21	
84	9012816-04	Replicate	1/25/2019	2/1/2019	Ethylene oxide	0.164	
85	9012816-05	Replicate	1/25/2019	2/1/2019	Ethylene oxide	0.055	
86	9013003-06	Replicate	1/28/2019	2/2/2019	Ethylene oxide	0.678	
87	9013003-07	Replicate	1/28/2019	2/2/2019	Ethylene oxide	0.658	
88	9020508-03	Replicate	2/2/2019	2/7/2019	Ethylene oxide	0.563	
89	9020508-13	Replicate	2/3/2019	2/13/2019	Ethylene oxide	0.129	
90	9020508-14	Replicate	2/3/2019	2/13/2019	Ethylene oxide	0.154	
91	9020508-19	Replicate	2/2/2019	2/7/2019	Ethylene oxide	0.498	
92	9020702-03	Replicate	2/6/2019	2/14/2019	Ethylene oxide	8.66	
93	9020702-04	Replicate	2/6/2019	2/14/2019	Ethylene oxide	9.31	
94	9021313-06	Replicate	2/9/2019	2/15/2019	Ethylene oxide	2.67	
95	9021313-07	Replicate	2/9/2019	2/15/2019	Ethylene oxide	2.33	
96		Blank	1/25/2019	1/31/2019	Ethylene oxide	ND	U
97		Blank	1/31/2019	2/1/2019	Ethylene oxide	ND	U
98		Blank	2/6/2019	2/7/2019	Ethylene oxide	ND	U
99		Blank	2/6/2019	2/13/2019	Ethylene oxide	ND	U
100		Blank	2/14/2019	2/15/2019	Ethylene oxide	ND	U
101		Calibration Check	1/31/2019	1/31/2019	Ethylene oxide	1.96	
102		Calibration Check	2/1/2019	2/1/2019	Ethylene oxide	1.94	

	A	B	C	D	E	F	G
103		Calibration Check	2/7/2019	2/7/2019	Ethylene oxide	1.96	
104		Calibration Check	2/13/2019	2/13/2019	Ethylene oxide	2.5	
105		Calibration Check	2/15/2019	2/15/2019	Ethylene oxide	2.21	
106	9021401-03	Replicate	2/12/2019	2/16/2019	Ethylene oxide	2.32	
107	9021401-04	Replicate	2/12/2019	2/16/2019	Ethylene oxide	2.68	
108		Blank	2/14/2019	2/15/2019	Ethylene oxide	ND	U
109		Blank	2/14/2019	2/19/2019	Ethylene oxide	ND	U
110		Calibration Check	2/15/2019	2/15/2019	Ethylene oxide	2.21	
111		Calibration Check	2/19/2019	2/19/2019	Ethylene oxide	2.3	
112	9022025-07	Replicate	2/15/2019	2/23/2019	Ethylene oxide	0.315	
113	9022025-08	Replicate	2/15/2019	2/23/2019	Ethylene oxide	0.393	
114	9022202-02	Replicate	2/20/2019	2/25/2019	Ethylene oxide	0.11	
115	9022202-03	Replicate	2/20/2019	2/25/2019	Ethylene oxide	0.116	
116	9022202-18	Replicate	2/21/2019	2/27/2019	Ethylene oxide	0.109	
117	9022202-19	Replicate	2/21/2019	2/27/2019	Ethylene oxide	0.108	
118	9022616-01	Replicate	2/22/2019	2/27/2019	Ethylene oxide	ND	U
119	9022616-02	Replicate	2/22/2019	2/27/2019	Ethylene oxide	ND	U
120	9022616-04	Replicate	2/23/2019	2/28/2019	Ethylene oxide	0.0779	
121	9022616-05	Replicate	2/23/2019	2/28/2019	Ethylene oxide	0.113	
122	9022616-09	Replicate	2/24/2019	2/28/2019	Ethylene oxide	0.0952	
123	9022616-10	Replicate	2/24/2019	2/28/2019	Ethylene oxide	0.048	
124	9022616-14	Replicate	2/24/2019	2/28/2019	Ethylene oxide	0.0792	
125	9030101-07	Replicate	2/27/2019	3/2/2019	Ethylene oxide	0.0945	
126	9030101-08	Replicate	2/27/2019	3/2/2019	Ethylene oxide	0.0645	
127		Blank	2/21/2019	2/22/2019	Ethylene oxide	ND	U
128		Blank	2/21/2019	2/25/2019	Ethylene oxide	ND	U
129		Blank	2/25/2019	2/27/2019	Ethylene oxide	ND	U
130		Blank	2/25/2019	2/28/2019	Ethylene oxide	ND	U
131		Blank	2/25/2019	3/1/2019	Ethylene oxide	ND	U
132		Calibration Check	2/22/2019	2/22/2019	Ethylene oxide	2.07	
133		Calibration Check	2/25/2019	2/25/2019	Ethylene oxide	2.08	
134		Calibration Check	2/27/2019	2/27/2019	Ethylene oxide	1.88	
135		Calibration Check	2/28/2019	2/28/2019	Ethylene oxide	1.99	
136		Calibration Check	3/1/2019	3/1/2019	Ethylene oxide	1.96	
137	9030524-07	Replicate	3/2/2019	3/6/2019	Ethylene oxide	0.0693	
138	9030524-08	Replicate	3/2/2019	3/6/2019	Ethylene oxide	0.0992	
139	9030618-04	Replicate	3/5/2019	3/6/2019	Ethylene oxide	0.0631	
140	9030618-05	Replicate	3/5/2019	3/7/2019	Ethylene oxide	0.033	U
141		Blank	3/4/2019	3/5/2019	Ethylene oxide	ND	U
142		Blank	3/4/2019	3/6/2019	Ethylene oxide	ND	U
143		Calibration Check	3/1/2019	3/1/2019	Ethylene oxide	1.96	
144		Calibration Check	3/5/2019	3/5/2019	Ethylene oxide	1.79	
145		Calibration Check	3/6/2019	3/6/2019	Ethylene oxide	1.85	
146	9031131-03	Replicate	3/8/2019	3/12/2019	Ethylene oxide	0.0984	
147	9031131-04	Replicate	3/8/2019	3/12/2019	Ethylene oxide	ND	U
148	9031220-02	Replicate	3/11/2019	3/13/2019	Ethylene oxide	0.118	
149	9031220-03	Replicate	3/11/2019	3/13/2019	Ethylene oxide	0.0969	
150	9031501-04	Replicate	3/14/2019	3/19/2019	Ethylene oxide	0.0484	
151	9031501-05	Replicate	3/14/2019	3/19/2019	Ethylene oxide	0.118	
152	9032106-08	Replicate	3/20/2019	3/22/2019	Ethylene oxide	0.0749	
153	9032106-09	Replicate	3/20/2019	3/22/2019	Ethylene oxide	0.0385	U

	A	B	C	D	E	F	G
154		Blank	3/11/2019	3/12/2019	Ethylene oxide	ND	U
155		Blank	3/13/2019	3/13/2019	Ethylene oxide	ND	U
156		Blank	3/18/2019	3/18/2019	Ethylene oxide	ND	U
157		Blank	3/21/2019	3/21/2019	Ethylene oxide	ND	U
158		Calibration Check	3/12/2019	3/12/2019	Ethylene oxide	1.96	
159		Calibration Check	3/13/2019	3/13/2019	Ethylene oxide	2.36	
160		Calibration Check	3/18/2019	3/18/2019	Ethylene oxide	2.23	
161		Calibration Check	3/21/2019	3/21/2019	Ethylene oxide	2.38	
162	9032522-07	Replicate	3/17/2019	3/28/2019	Ethylene oxide	0.278	LK
163	9032522-08	Replicate	3/17/2019	3/28/2019	Ethylene oxide	0.0345	LK, U
164	9032613-05	Replicate	3/23/2019	3/29/2019	Ethylene oxide	0.0803	
165	9032613-06	Replicate	3/23/2019	3/29/2019	Ethylene oxide	0.112	
166	9032719-07	Replicate	3/26/2019	3/30/2019	Ethylene oxide	0.0367	
167	9032719-08	Replicate	3/26/2019	3/30/2019	Ethylene oxide	0.0987	
168	9040216-07	Replicate	3/29/2019	4/3/2019	Ethylene oxide	0.0954	
169	9040216-08	Replicate	3/29/2019	4/3/2019	Ethylene oxide	0.136	
170	9040216-17	Replicate	4/1/2019	4/3/2019	Ethylene oxide	0.0306	LK, U
171	9040216-18	Replicate	4/1/2019	4/4/2019	Ethylene oxide	0.0512	
172		Blank	3/28/2019	3/28/2019	Ethylene oxide	ND	U
173		Blank	3/29/2019	3/29/2019	Ethylene oxide	ND	U
174		Blank	4/2/2019	4/2/2019	Ethylene oxide	ND	U
175		Blank	4/3/2019	4/3/2019	Ethylene oxide	ND	U
176		Calibration Check	3/21/2019	3/21/2019	Ethylene oxide	2.38	
177		Calibration Check	3/28/2019	3/28/2019	Ethylene oxide	2.03	
178		Calibration Check	3/29/2019	3/29/2019	Ethylene oxide	2.04	
179		Calibration Check	4/2/2019	4/2/2019	Ethylene oxide	2.01	
180		Calibration Check	4/3/2019	4/3/2019	Ethylene oxide	2.17	
181							
182							
183							
184							
185							

	H	I	J	K	L	M	N
1	**SOURCERES**	**SPIKELEVEL**	**RECOVERY**	**RPD**		**DL**	**UNITS**
2	1			0.06		0.0453	ppbv
3	1			2.4		0.0453	ppbv
4	3.38			0.329		0.0453	ppbv
5	3.49			2.42		0.0453	ppbv
6						0.0453	ppbv
7						0.0453	ppbv
8		2.55	110				ppbv
9		2.5	110				ppbv
10	ND					0.0453	ppbv
11						0.0453	ppbv
12		2.5	107				ppbv
13	0.631			7.8		0.0453	ppbv
14	0.137			0		0.0453	ppbv
15						0.0453	ppbv
16		2.5	82.3				ppbv
17	0.931			1.14		0.0453	ppbv
18	1.05			2.87		0.0453	ppbv
19						0.0453	ppbv
20		2.5	83.9				ppbv
21	6.48			1.89		0.0453	ppbv
22	5.81			6.38		0.0453	ppbv
23	0.408			1.22		0.0453	ppbv
24	0.455			2.24		0.0453	ppbv
25	0.149			24		0.0453	ppbv
26	0.223			5.54		0.0453	ppbv
27	1.13			7.17		0.0453	ppbv
28	1.18			4.72		0.0453	ppbv
29	1.17			1.17		0.0453	ppbv
30	1.21			11.9		0.0453	ppbv
31	0.187			13.8		0.0453	ppbv
32	0.288			14.5		0.0453	ppbv
33	1.71			0.824		0.0453	ppbv
34	1.42			9.48		0.0453	ppbv
35	5.99			1.87		0.0453	ppbv
36	5.82			4.69		0.0453	ppbv
37						0.0453	ppbv
38						0.0453	ppbv
39						0.0453	ppbv
40						0.0453	ppbv
41						0.0453	ppbv
42						0.0453	ppbv
43		2.5	83.9				ppbv
44		2.5	80.6				ppbv
45		2.5	72.9				ppbv
46		2.5	71.7				ppbv
47		2.5	73.5				ppbv
48		2.5	77.3				ppbv
49		2.5	79.8				ppbv
50	0.788			13.8		0.0453	ppbv
51	0.658			1.59		0.0453	ppbv

	H	I	J	K	L	M	N
52						0.0453	ppbv
53						0.0453	ppbv
54		2.5	79.8				ppbv
55		2.5	99.6				ppbv
56	0.219			4.6		0.0453	ppbv
57	0.131			26		0.0453	ppbv
58						0.0453	ppbv
59		2.5	89.6				ppbv
60	0.142			37.8		0.0453	ppbv
61	0.206			20.4		0.0453	ppbv
62	4.2			3.94		0.0453	ppbv
63	3.66			4.78		0.0453	ppbv
64	0.362			18.9		0.0453	ppbv
65	0.379			8.78		0.0453	ppbv
66	0.866			9.47		0.0453	ppbv
67	0.911			5.36		0.0453	ppbv
68	7.86			2.02		0.0453	ppbv
69	7.91			2.42		0.0453	ppbv
70	0.286			15.1		0.0453	ppbv
71	0.327			1.82		0.0453	ppbv
72						0.0453	ppbv
73						0.0453	ppbv
74						0.0453	ppbv
75						0.0453	ppbv
76						0.0453	ppbv
77		2.5	89.6				ppbv
78		2.5	95.3				ppbv
79		2.5	101				ppbv
80		2.5	95.6				ppbv
81		2.5	74.2				ppbv
82	2.27			6.24		0.0453	ppbv
83	2.24			1.16		0.0453	ppbv
84	0.145			12.2		0.0453	ppbv
85	0.0873			45.4		0.0453	ppbv
86	0.612			10.3		0.0453	ppbv
87	0.698			5.89		0.0453	ppbv
88	0.528			6.36		0.0453	ppbv
89	0.126			2.28		0.0453	ppbv
90	0.139			9.96		0.0453	ppbv
91	0.488			2.15		0.0453	ppbv
92	9.56			9.89		0.0453	ppbv
93	8.61			7.81		0.0453	ppbv
94	2.79			4.47		0.0453	ppbv
95	2.38			2.12		0.0453	ppbv
96						0.0453	ppbv
97						0.0453	ppbv
98						0.0453	ppbv
99						0.0453	ppbv
100						0.0453	ppbv
101		2.5	78.3				ppbv
102		2.5	77.7				ppbv

	H	I	J	K	L	M	N
103		2.5	78.4				ppbv
104		2.5	100				ppbv
105		2.5	88.6				ppbv
106	2.2			5.38		0.0453	ppbv
107	2.61			2.67		0.0453	ppbv
108						0.0453	ppbv
109						0.0453	ppbv
110		2.5	88.6				ppbv
111		2.5	92.1				ppbv
112	0.337			6.5		0.0453	ppbv
113	0.412			4.65		0.0453	ppbv
114	0.132			17.8		0.0453	ppbv
115	0.109			5.42		0.0453	ppbv
116	0.0877			21.7		0.0453	ppbv
117	0.109			0.735		0.0453	ppbv
118	ND					0.0453	ppbv
119	ND					0.0453	ppbv
120	0.0682			13.3		0.0453	ppbv
121	0.12			5.66		0.0453	ppbv
122	0.0733			26		0.0453	ppbv
123	ND					0.0453	ppbv
124	0.0708			11.2		0.0453	ppbv
125	0.0917			3.01		0.0453	ppbv
126	ND					0.0453	ppbv
127						0.0453	ppbv
128						0.0453	ppbv
129						0.0453	ppbv
130						0.0453	ppbv
131						0.0453	ppbv
132		2.5	82.8				ppbv
133		2.5	83.2				ppbv
134		2.5	75.1				ppbv
135		2.5	79.7				ppbv
136		2.5	78.3				ppbv
137	ND					0.0614	ppbv
138	0.0798			21.7		0.0614	ppbv
139	0.0892			34.3		0.0614	ppbv
140	ND					0.0614	ppbv
141						0.0614	ppbv
142						0.0614	ppbv
143		2.5	78.3				ppbv
144		2.5	71.7				ppbv
145		2.5	74.1				ppbv
146	ND					0.0614	ppbv
147	ND					0.0614	ppbv
148	0.131			11		0.0366	ppbv
149	0.113			15.7		0.0366	ppbv
150	0.0676			33.1		0.0366	ppbv
151	0.133			12.2		0.0366	ppbv
152	0.0755			0.798		0.0614	ppbv
153	ND					0.0614	ppbv

	H	I	J	K	L	M	N
154						0.0614	ppbv
155						0.0366	ppbv
156						0.0366	ppbv
157						0.0614	ppbv
158		2.5	78.6				ppbv
159		2.5	94.2				ppbv
160		2.5	89.2				ppbv
161		2.5	95.2				ppbv
162	0.255			8.59		0.0366	ppbv
163	ND					0.0366	ppbv
164	0.0648			21.4		0.0366	ppbv
165	0.114			1.78		0.0366	ppbv
166	0.0432			16.3		0.0366	ppbv
167	0.101			2.01		0.0366	ppbv
168	0.1			4.71		0.0366	ppbv
169	0.124			9.24		0.0366	ppbv
170	ND					0.0366	ppbv
171	0.0619			18.9		0.0366	ppbv
172						0.0366	ppbv
173						0.0366	ppbv
174						0.0366	ppbv
175						0.0366	ppbv
176		2.5	95.2				ppbv
177		2.5	81.1				ppbv
178		2.5	81.4				ppbv
179		2.5	80.4				ppbv
180		2.5	86.8				ppbv
181							
182							
183							
184							
185			**Average Replicate RPD**	**9.355804878**			

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1		**LABNAME**
2		Eastern Research Group
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QUALIFIER
U
A-01

DESCRIPTION
Under Detection Limit
Trip Blank passed blank criteria; standard dilution system air used to fill trip blank appears to have small amount of TO-15

Message

From: Chen, Xi [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB29E8E6F2064817A3A722F52E000F2B-CHEN, XI]
Sent: 4/12/2019 2:55:28 PM
To: McBrian, Jenia [McBrian.Jenia@epa.gov]
Subject: FW: EtO data results for March 17-April 1, 2019 - 1 of 3
Attachments: willowbrook mar17_apr1 19.pdf; willowbrook mar17_apr1 19.xls; sample receipt R5 log.xlsx; willowbrook sum feb_19.xlsx; sample log R5.xlsx; Data Package N19C!.PDF; Data Package N19DC.PDF

FYI

From: Julie Swift <Julie.Swift@erg.com>
Sent: Thursday, April 11, 2019 3:53 PM
To: Chen, Xi <Chen.Xi@epa.gov>
Cc: Noah, Greg <Noah.Greg@epa.gov>; Weinstock, Lewis <Weinstock.Lewis@epa.gov>; Donna Tedder <donna.tedder@erg.com>; Jennifer.Nash@erg.com; Laura Van Enwyck <laura.vanenwyck@erg.com>
Subject: EtO data results for March 17-April 1, 2019 - 1 of 3

Doris - I have attached the reports for the samples collected through April 1, 2019. Also attached are two of the four data packages (+cal curve).

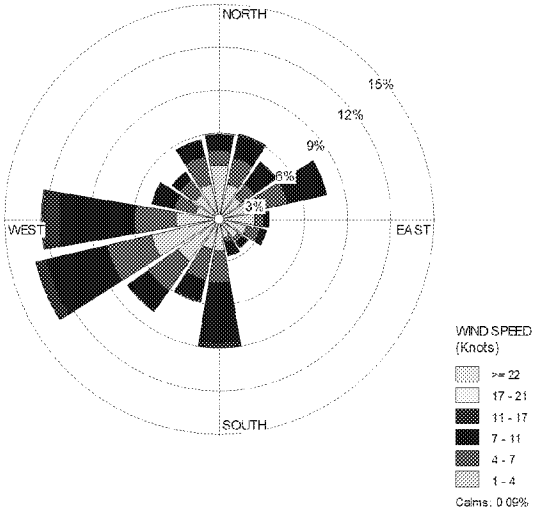
Please let me know if you have any questions.

Thank you,
Julie

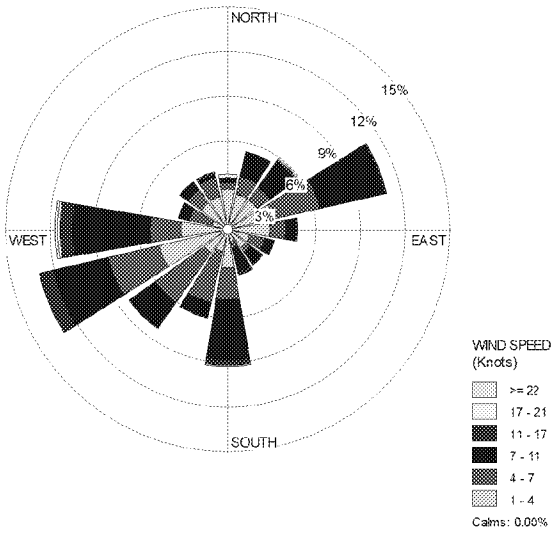
Julie L. Swift
VP/Program Manager/Chemist
ERG
601 Keystone Park Drive, Suite 700, Morrisville, NC 27560
Office - (919) 468-7924 | Fax - (919) 468-7803
julie.swift@erg.com

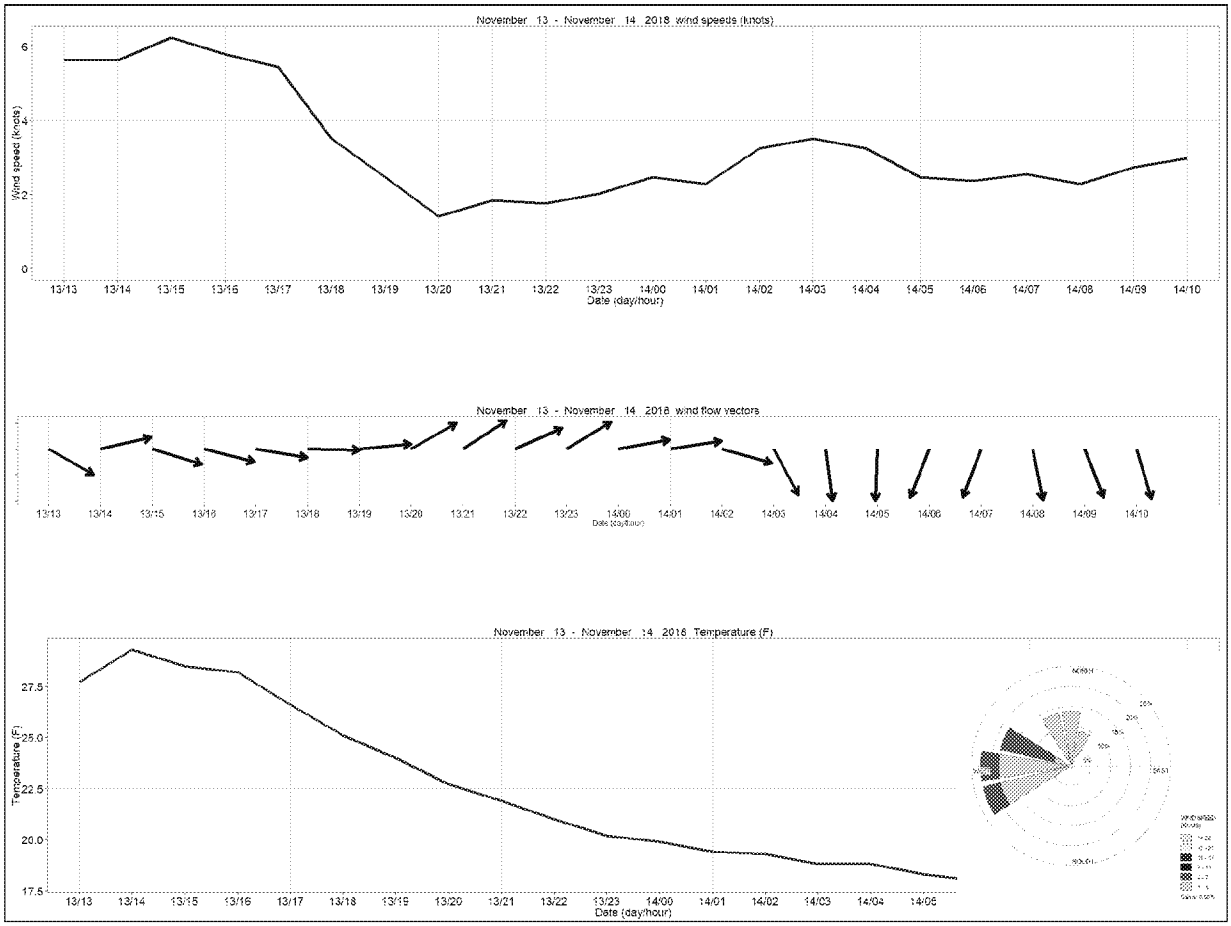
Willowbrook Study Wind Roses for Nov 13, 2018 – Mar 31, 2019

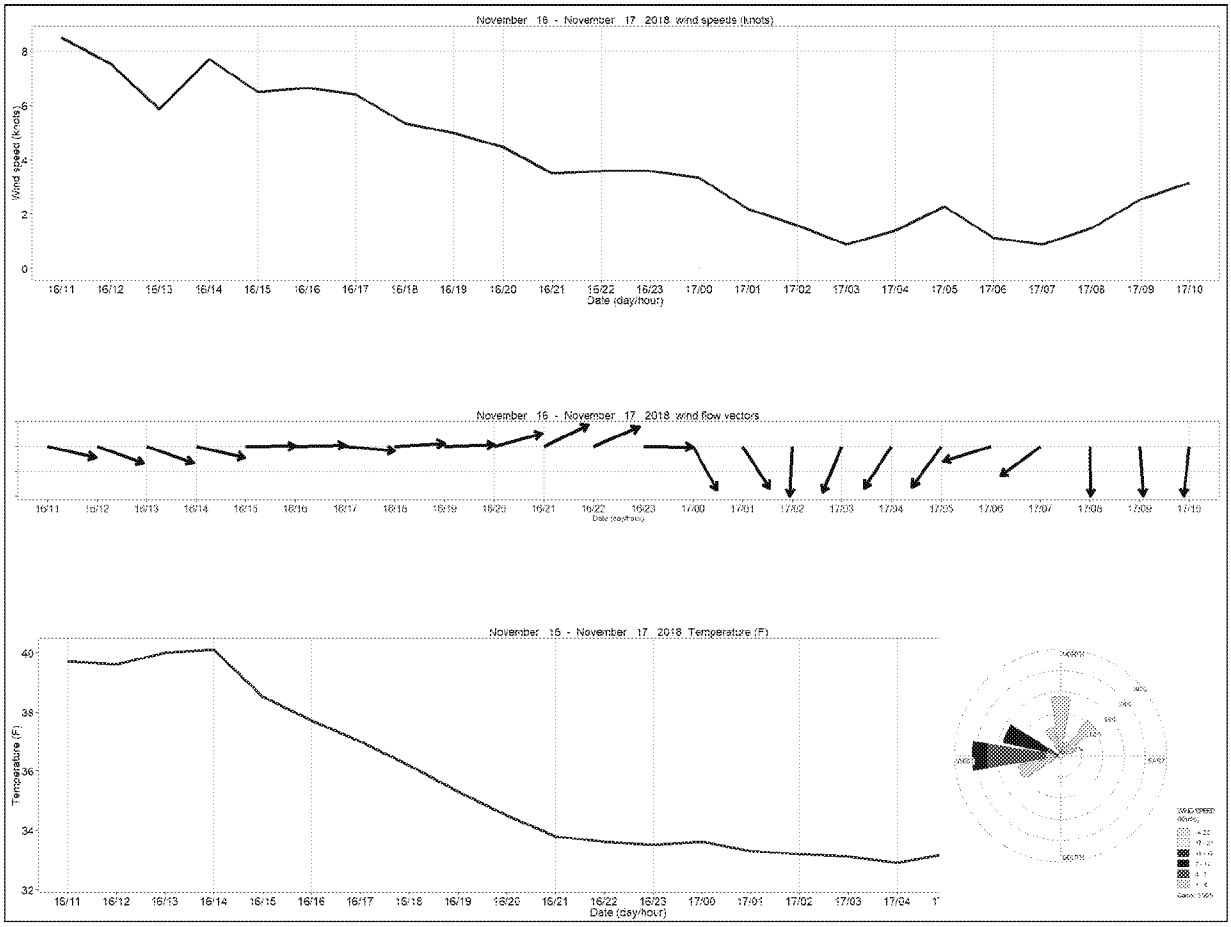
All Days

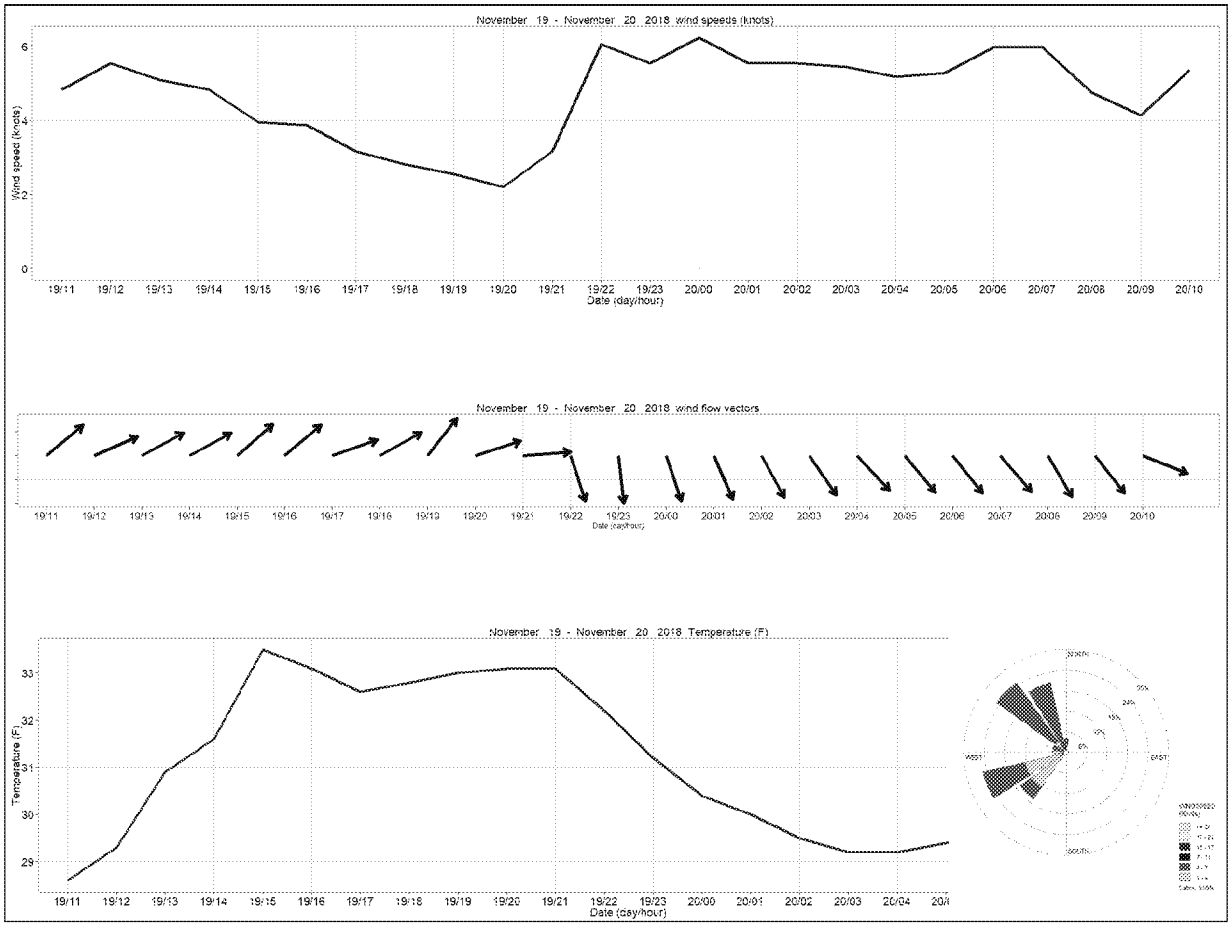


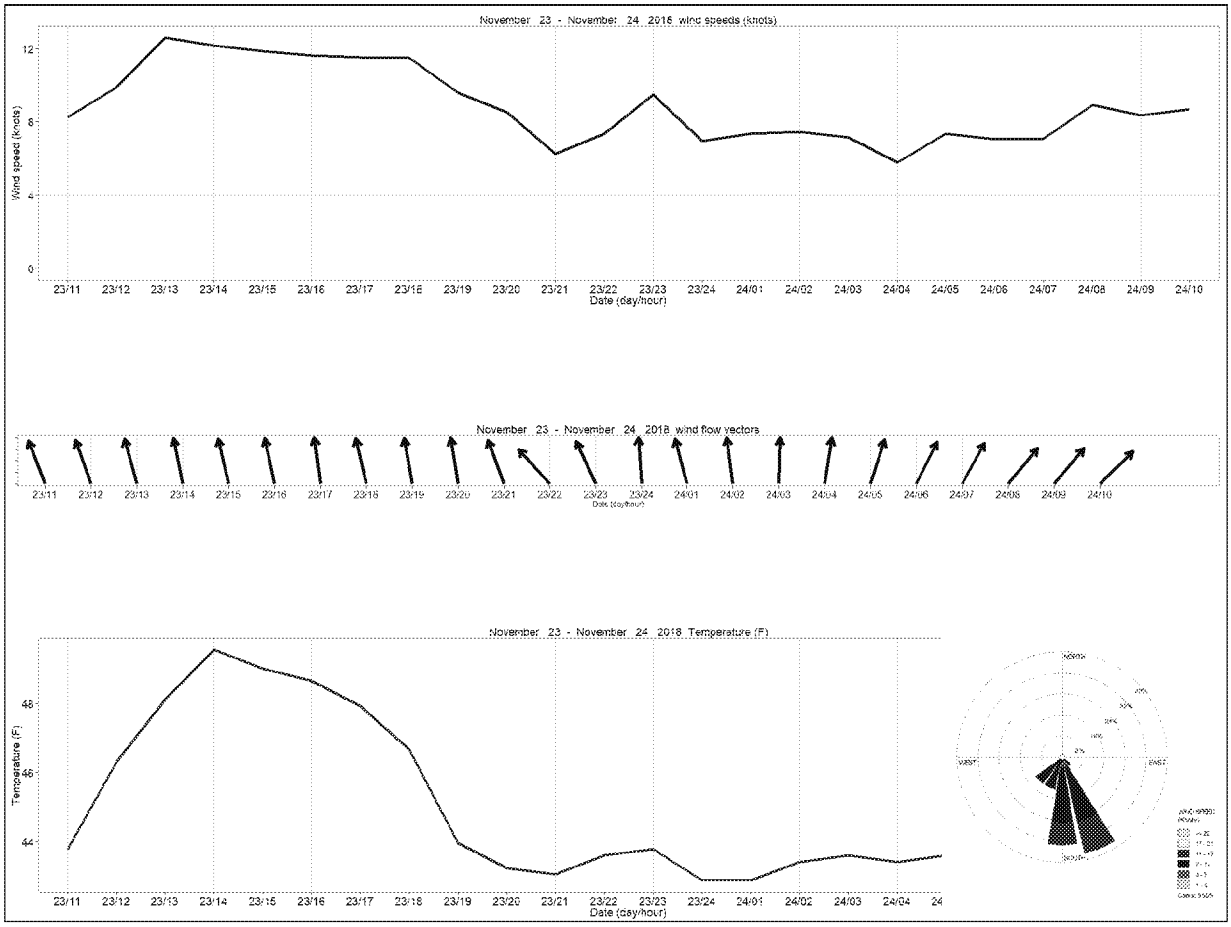
Sampling Days

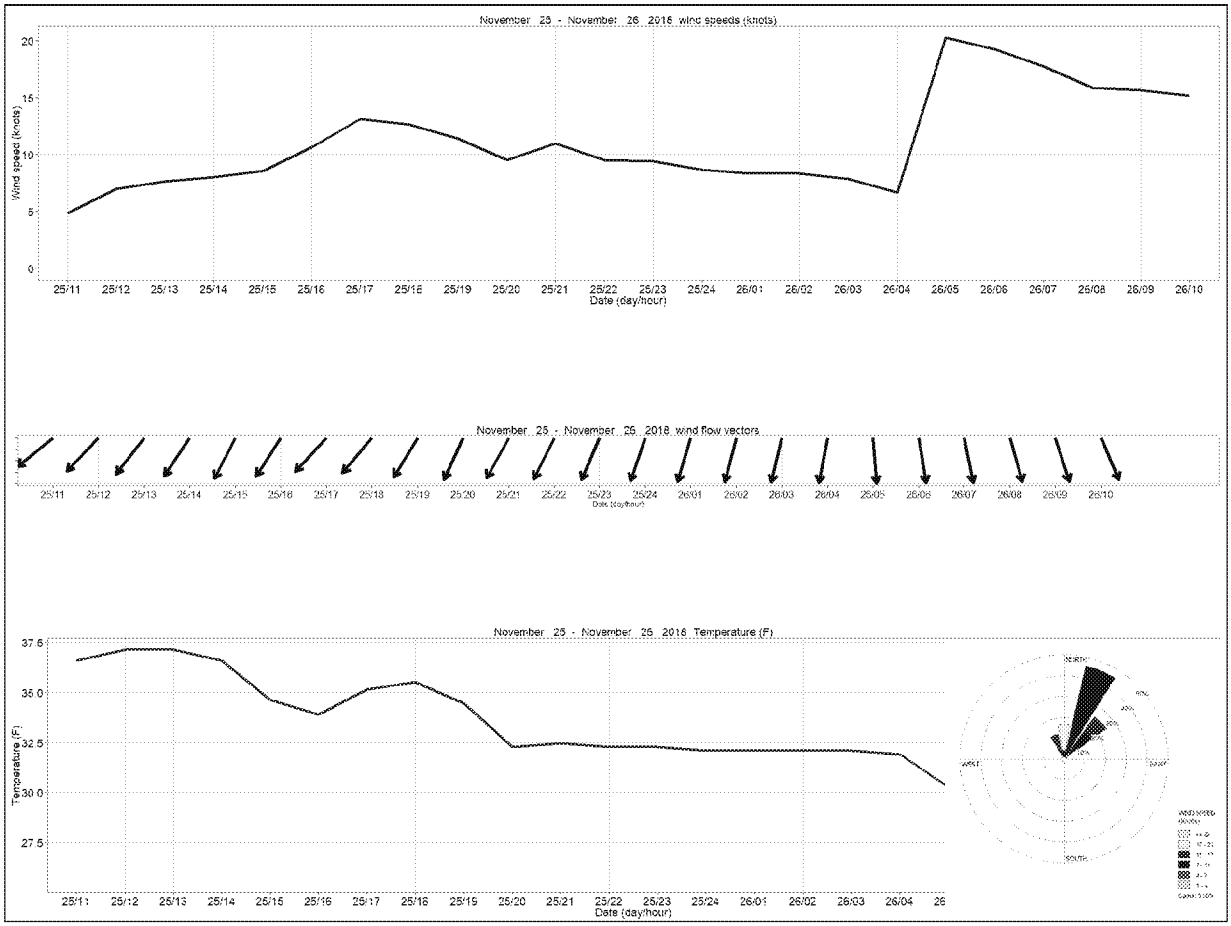


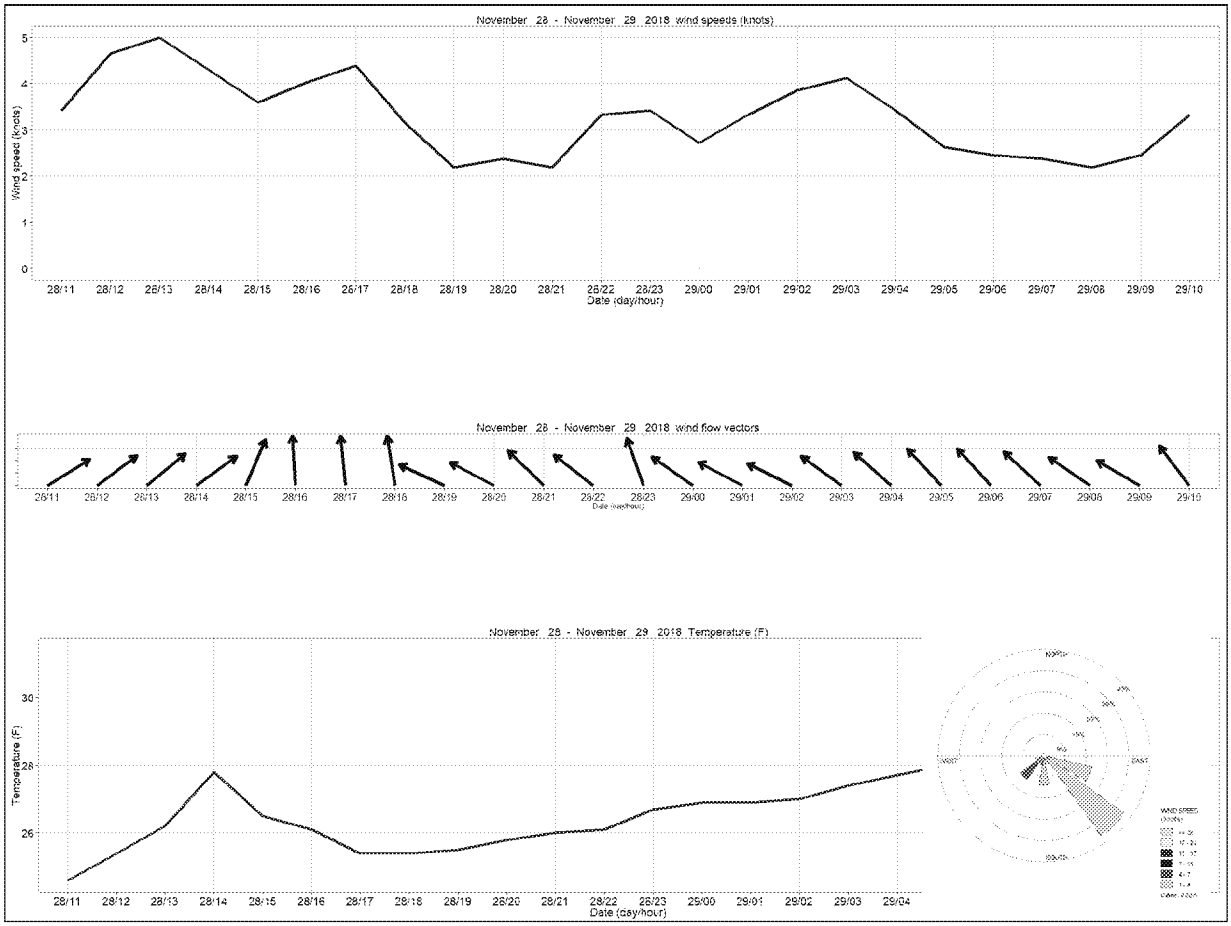

November 13 - November 14 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
November 13 - November 14 2018 wind flow vectors
Date (day/hour)
November 13 - November 14 2018 Temperature (F)
Temperature (F)
Date (day/hour)

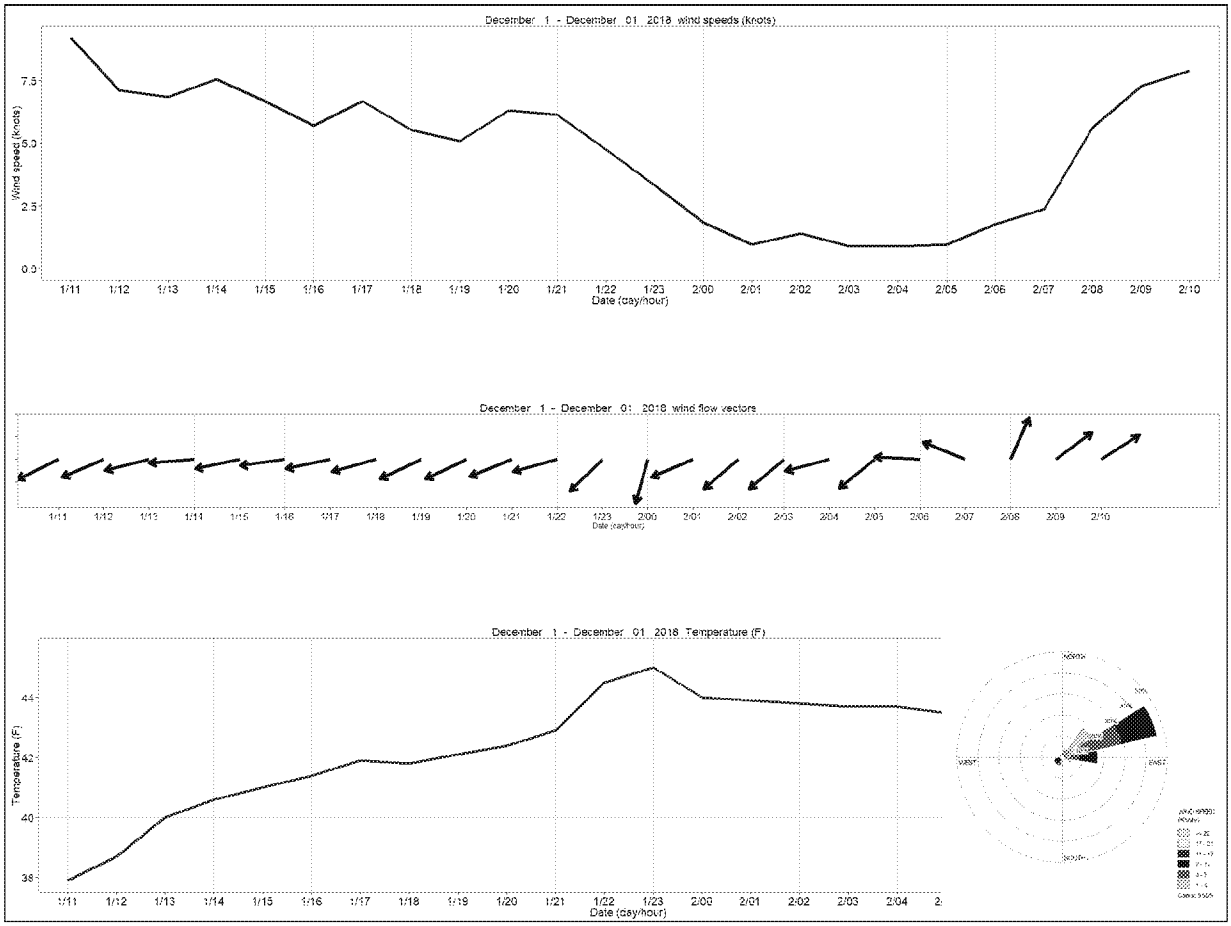

November 16 - November 17 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
November 16 - November 17 2018 wind flow vectors
November 16 - November 17 2018 Temperature (F)
Temperature (F)
Date (day/hour)

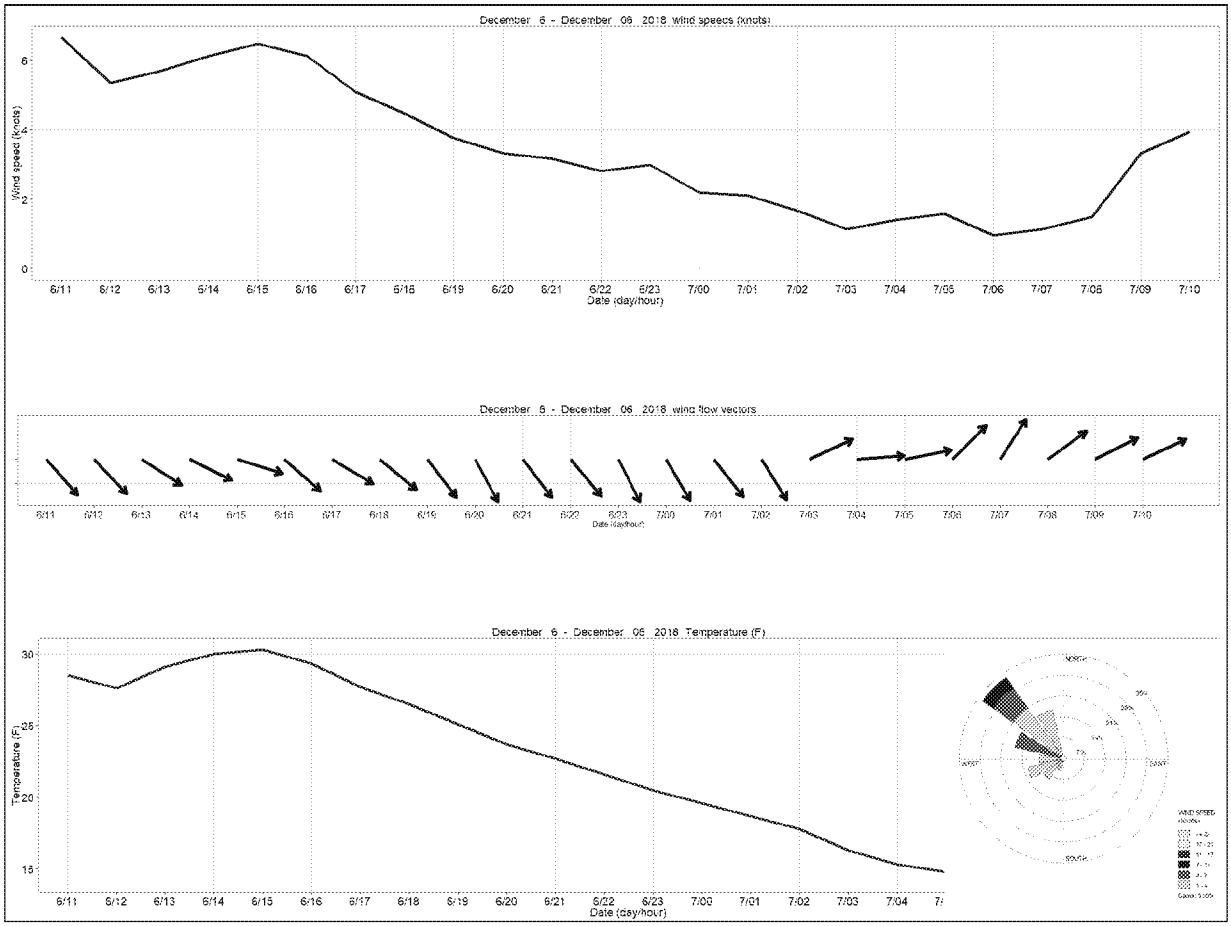

November 19 - November 20 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
November 19 - November 20 2018 wind flow vectors
Date (day/hour)
November 19 - November 20 2018 Temperature (F)
Temperature (F)
Date (day/hour)

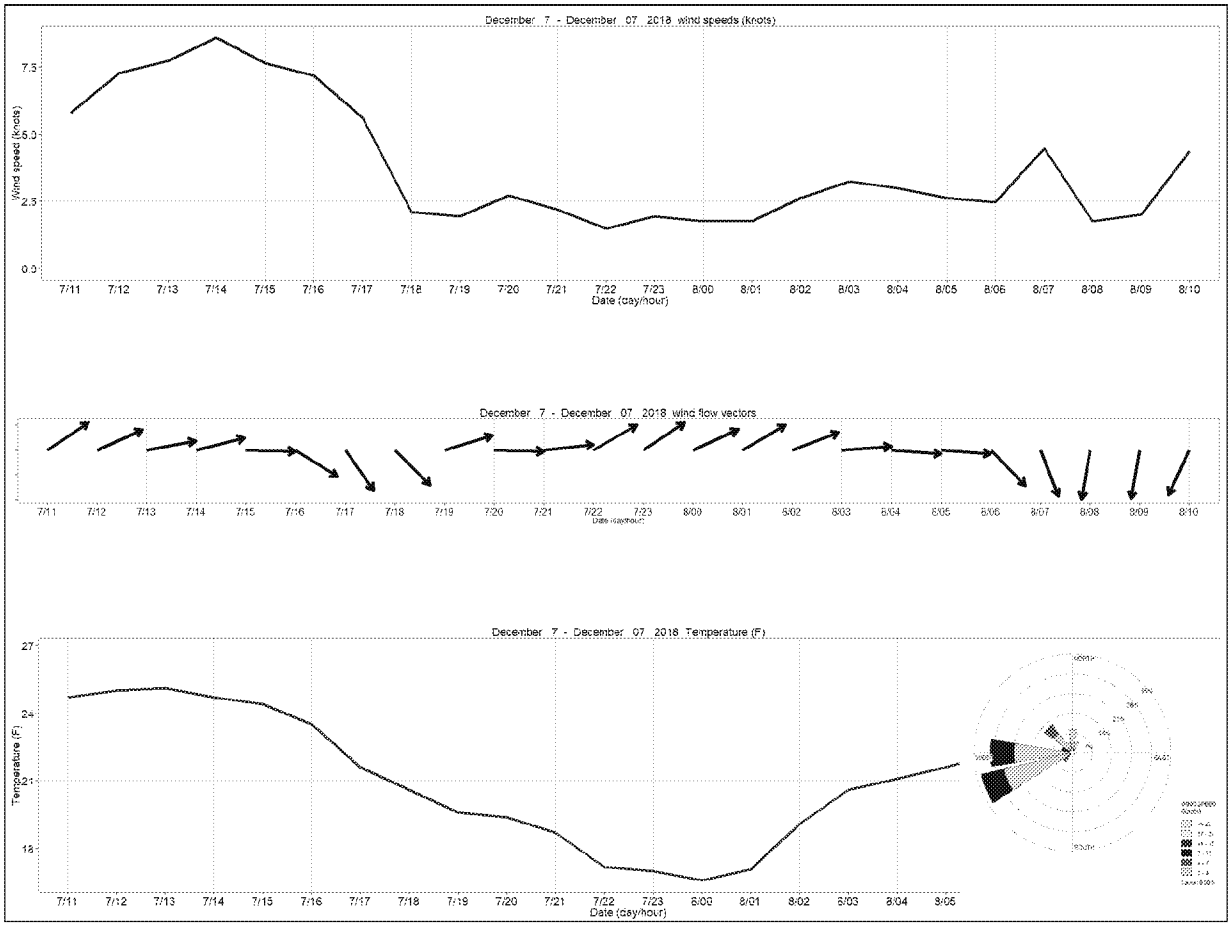

November 23 - November 24 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
November 23 - November 24 2018 wind flow vectors
November 23 - November 24 2018 Temperature (F)
Temperature (F)
Date (day/hour)

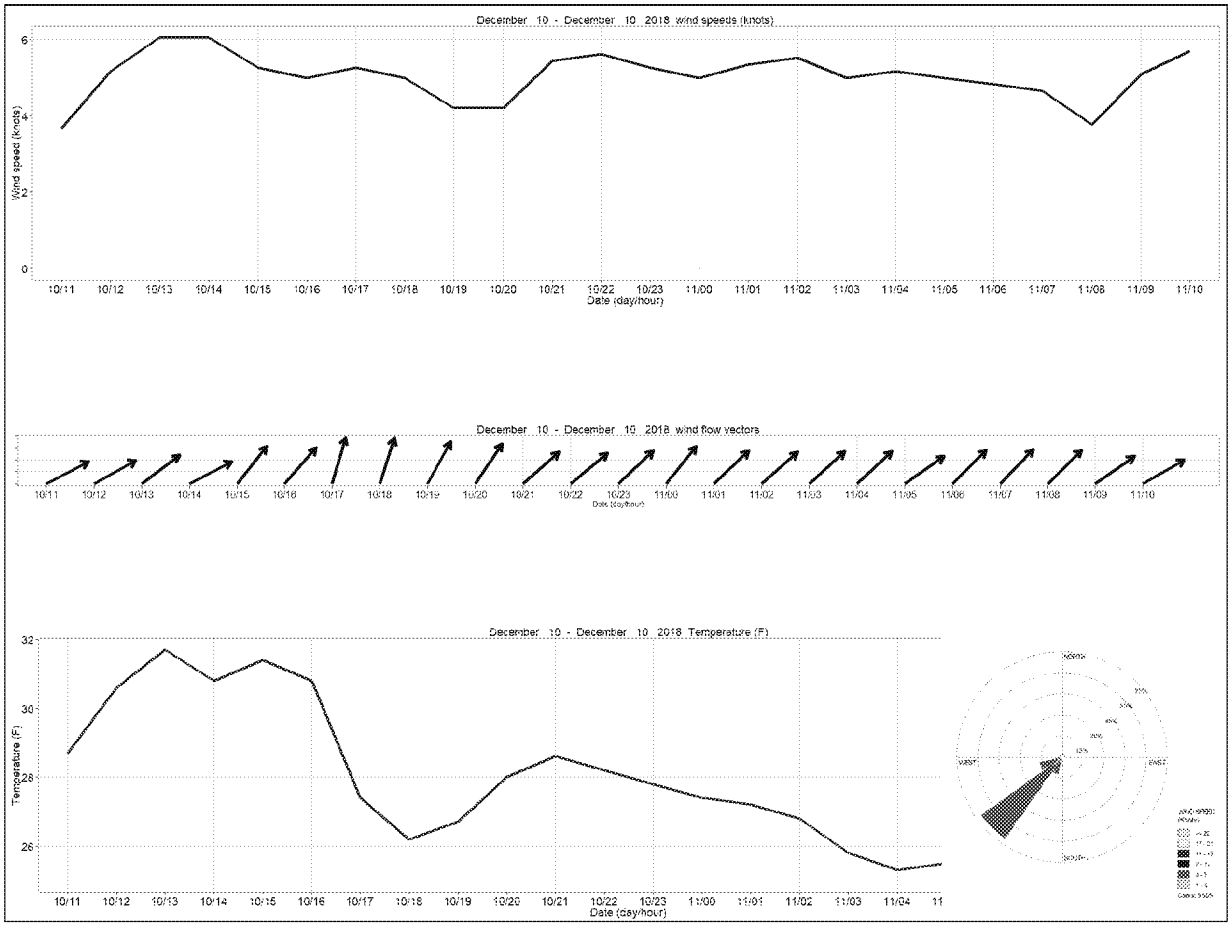

November 25 - November 26 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
November 25 - November 26 2018 wind flow vectors
Date (day/hour)
November 25 - November 26 2018 Temperature (F)
Temperature (F)
Date (day/hour)
NORTH
WEST
SOUTH

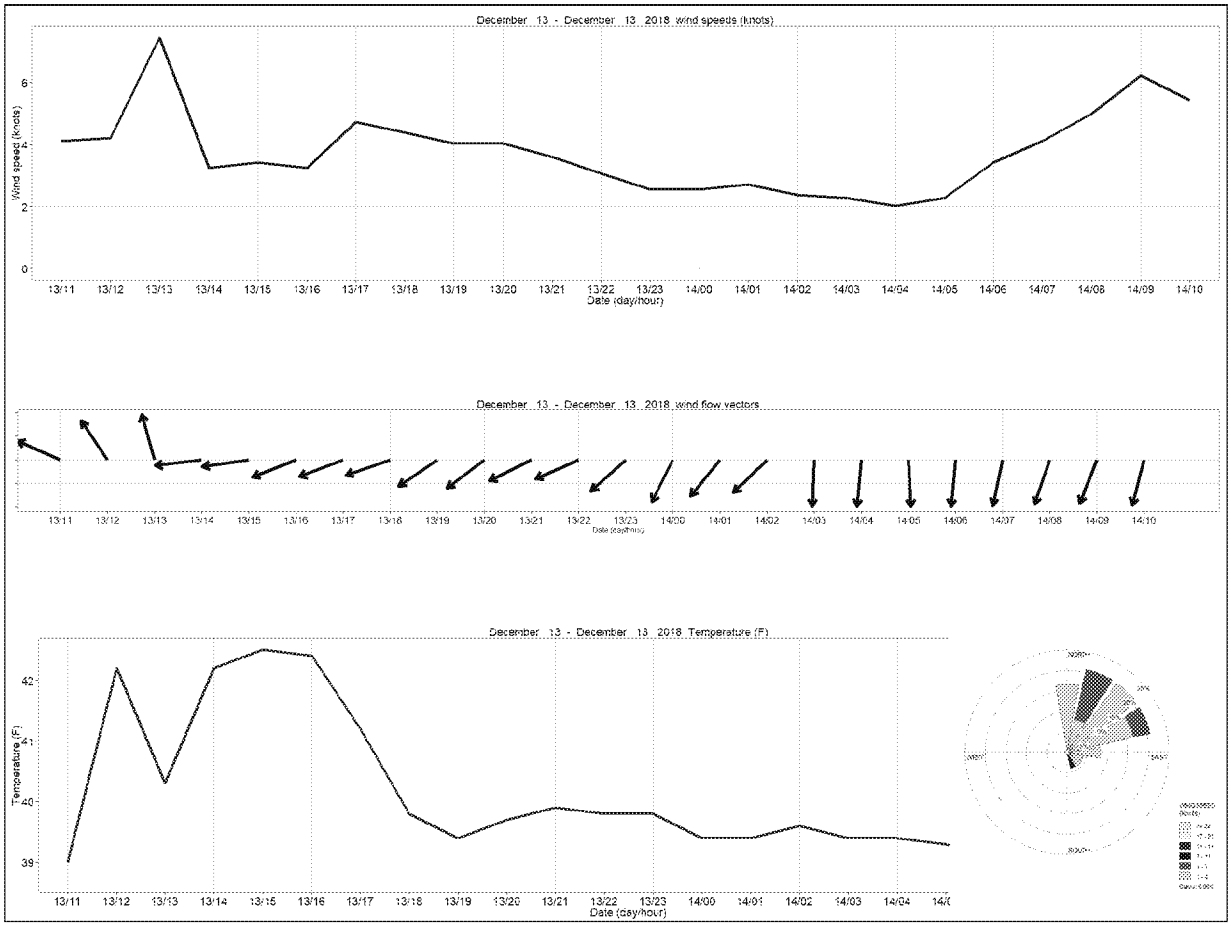

November 28 - November 29 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
November 28 - November 29 2018 wind flow vectors
November 28 - November 29 2018 Temperature (F)
Temperature (F)
Date (day/hour)

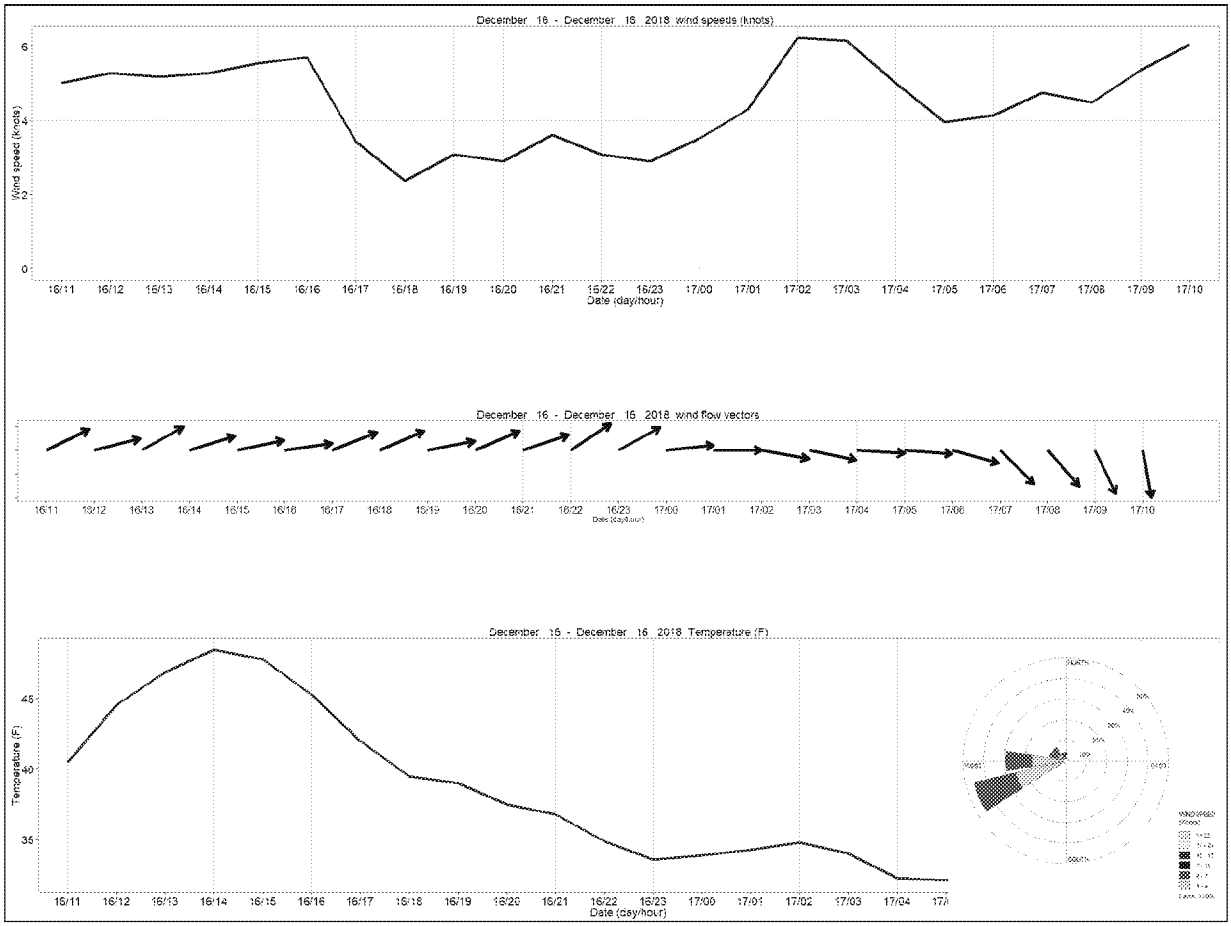

December 1 - December 01 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 1 - December 01 2018 wind flow vectors
Date (day/hour)
December 1 - December 01 2018 Temperature (F)
Temperature (F)
Date (day/hour)

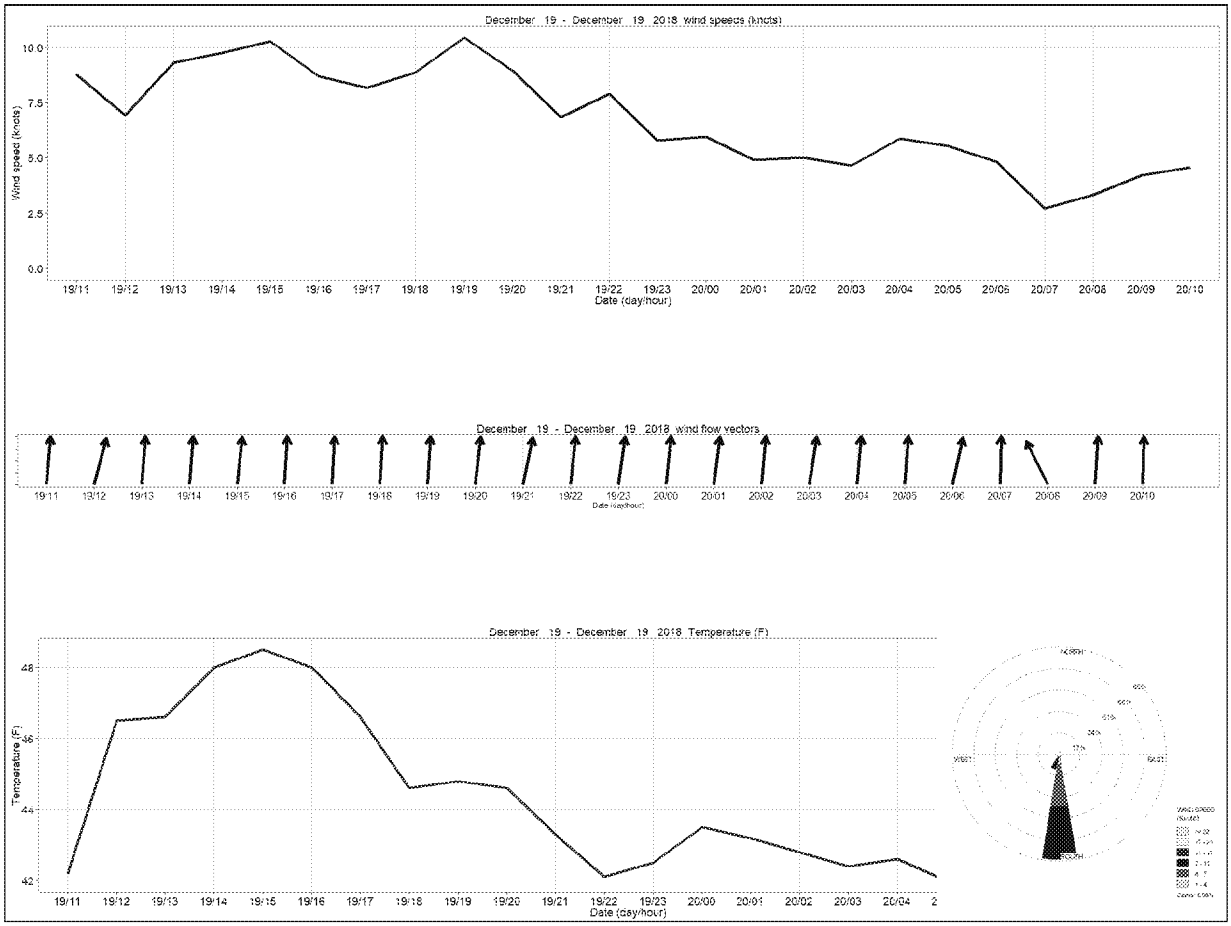

December 6 - December 06 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 6 - December 06 2018 wind flow vectors
Date (day/hour)
December 6 - December 06 2018 Temperature (F)
Temperature (F)
Date (day/hour)

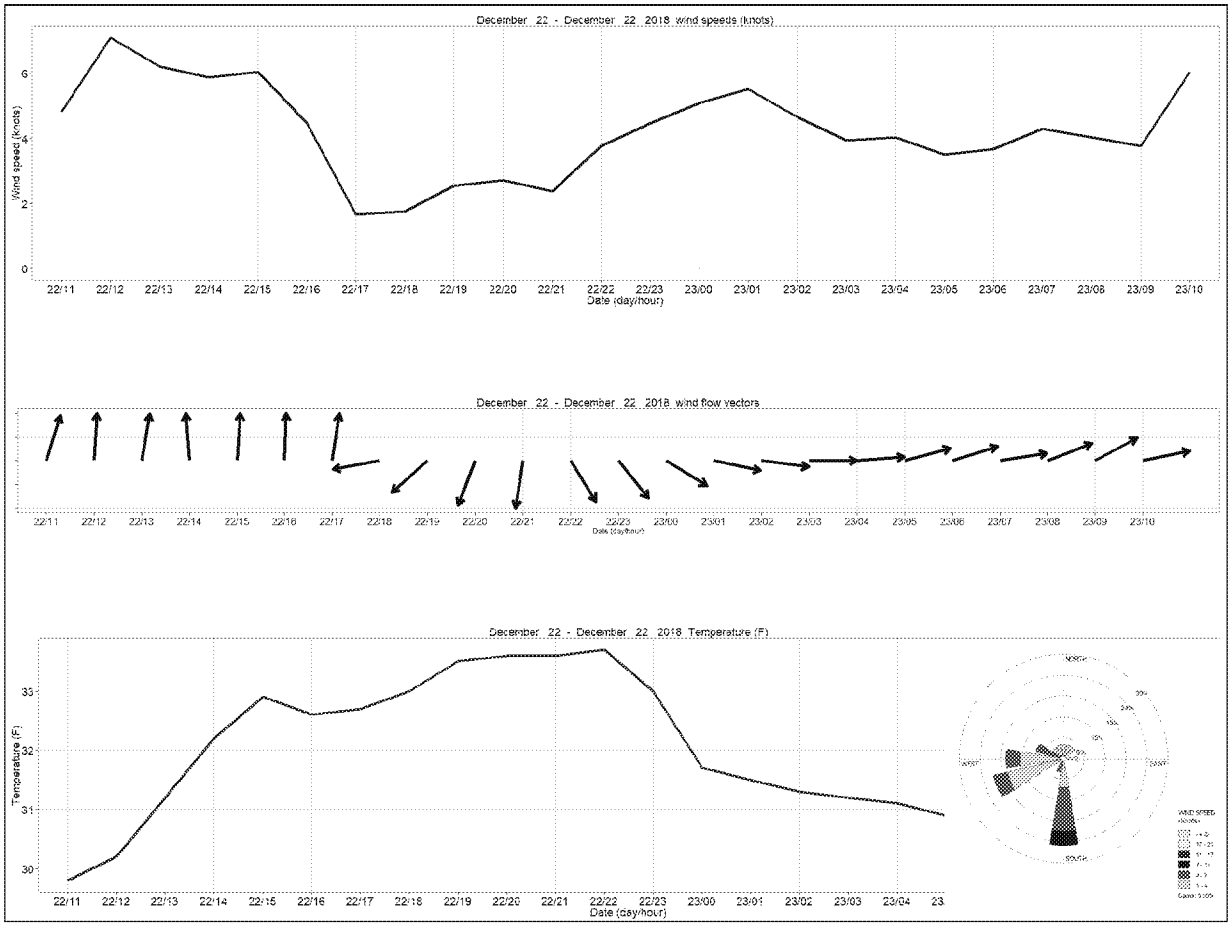

December 7 - December 07 2018 wind speeds (knots)
Wind speed (knots)
7.5
5.0
2.5
0.0
7/11 7/12 7/13 7/14 7/15 7/16 7/17 7/18 7/19 7/20 7/21 7/22 7/23 8/00 8/01 8/02 8/03 8/04 8/05 8/06 8/07 8/08 8/09 8/10
Date (day/hour)
December 7 - December 07 2018 wind flow vectors
7/11 7/12 7/13 7/14 7/15 7/16 7/17 7/18 7/19 7/20 7/21 7/22 7/23 8/00 8/01 8/02 8/03 8/04 8/05 8/06 8/07 8/08 8/09 8/10
December 7 - December 07 2018 Temperature (F)
Temperature (F)
27
24
21
18
7/11 7/12 7/13 7/14 7/15 7/16 7/17 7/18 7/19 7/20 7/21 7/22 7/23 8/00 8/01 8/02 8/03 8/04 8/05
Date (day/hour)

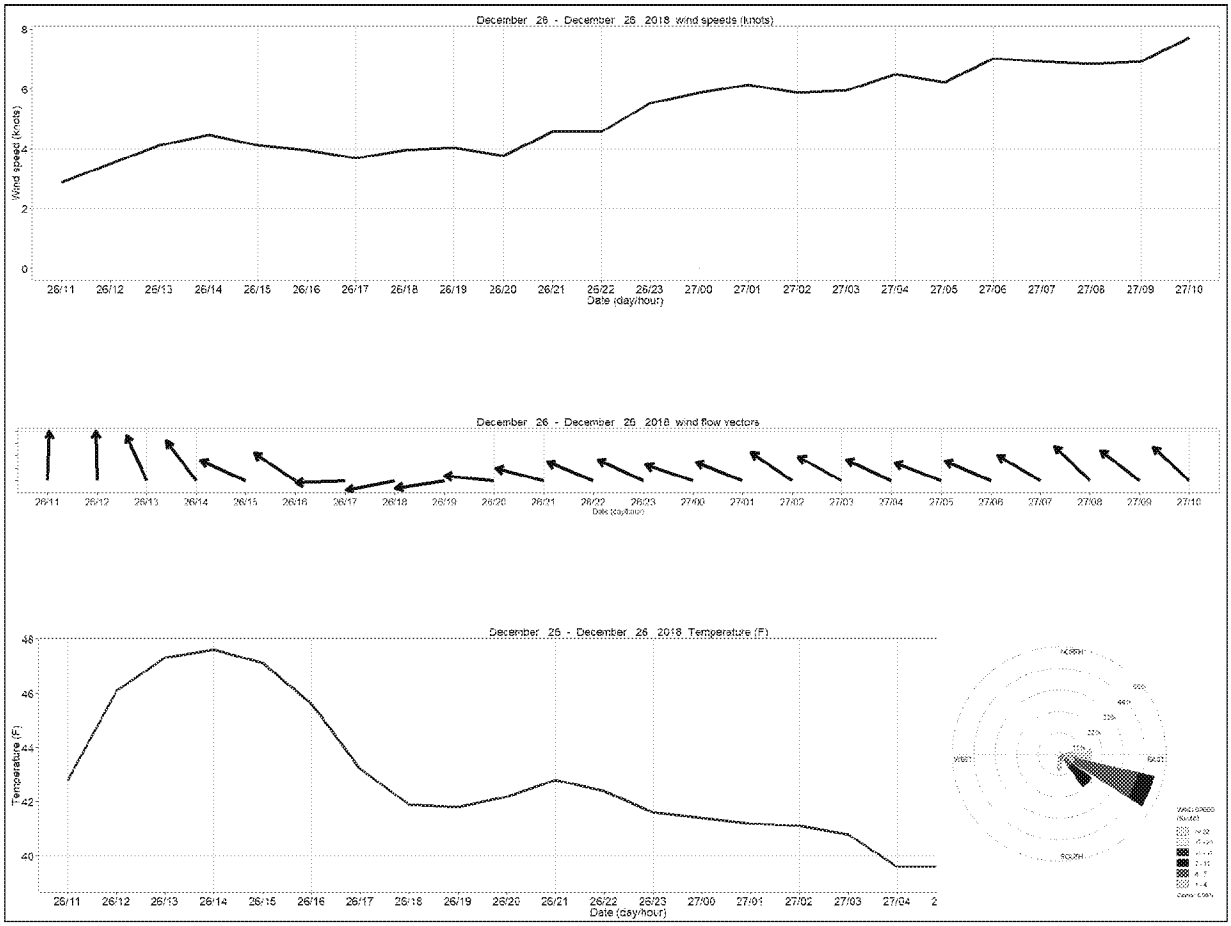

December 10 - December 10 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 10 - December 10 2018 wind flow vectors
Date (day/hour)
December 10 - December 10 2018 Temperature (F)
Temperature (F)
Date (day/hour)

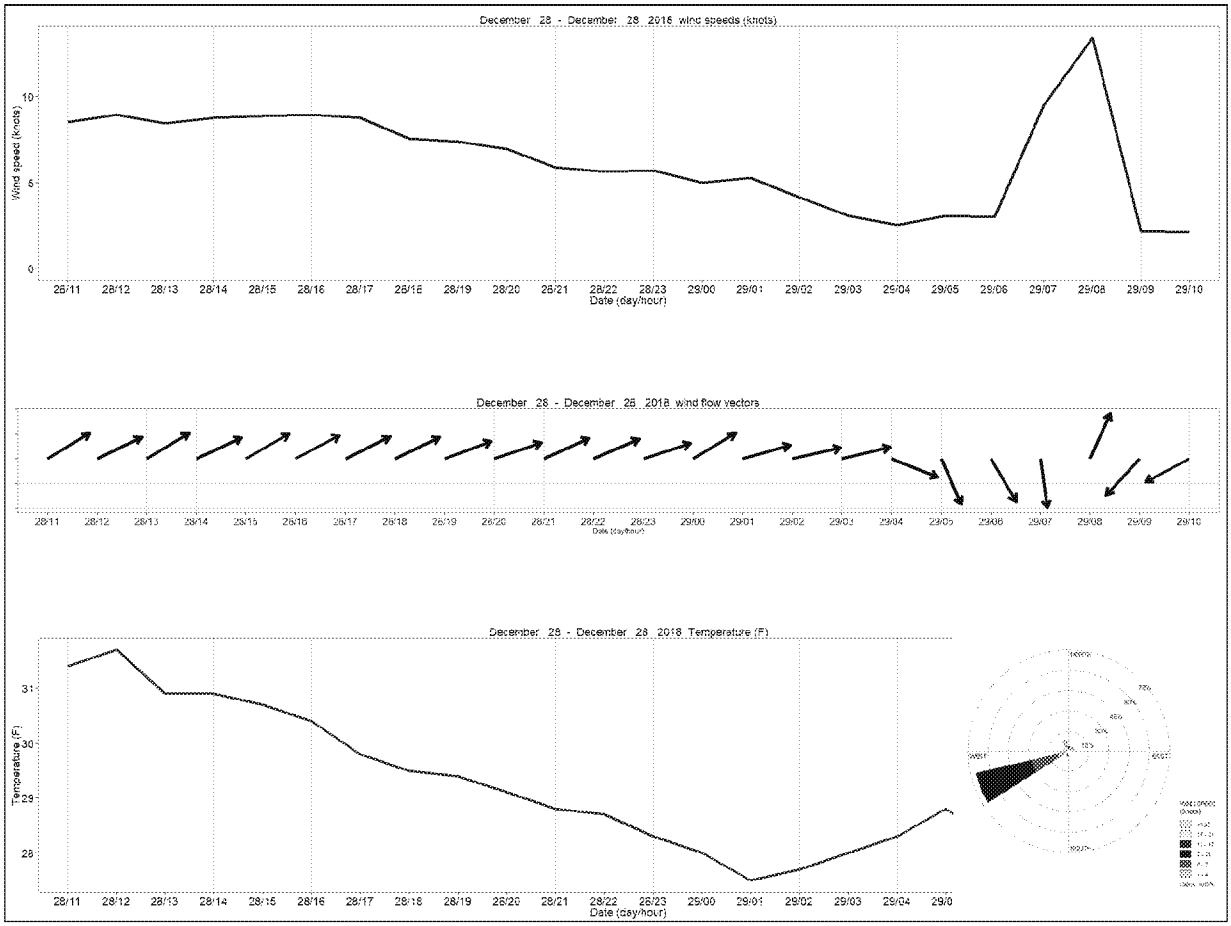

December 13 - December 13, 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 13 - December 13, 2018 wind flow vectors
December 13 - December 13, 2018 Temperature (F)
Temperature (F)
Date (day/hour)

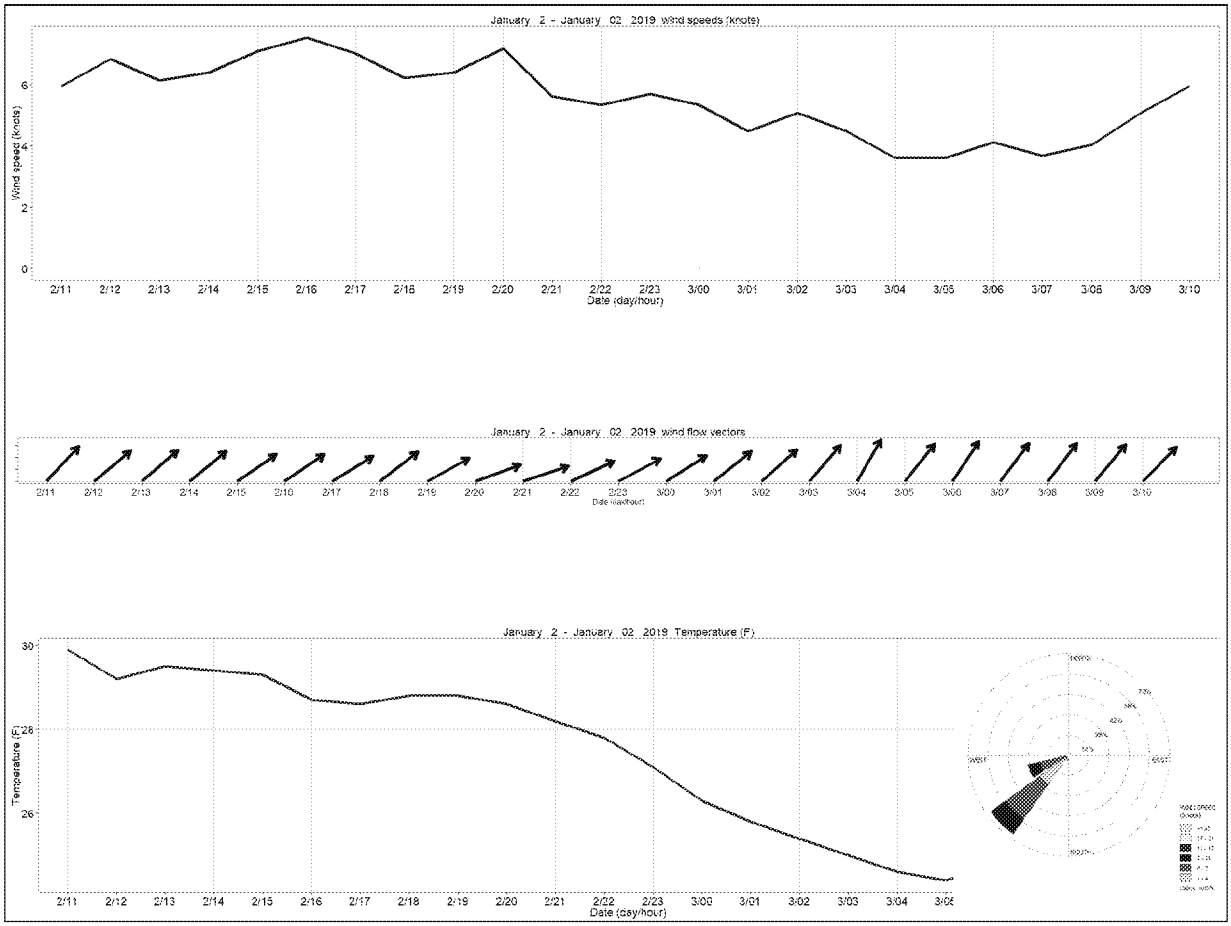

December 16 - December 16 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 16 - December 16 2018 wind flow vectors
December 16 - December 16 2018 Temperature (F)
Temperature (F)
Date (day/hour)

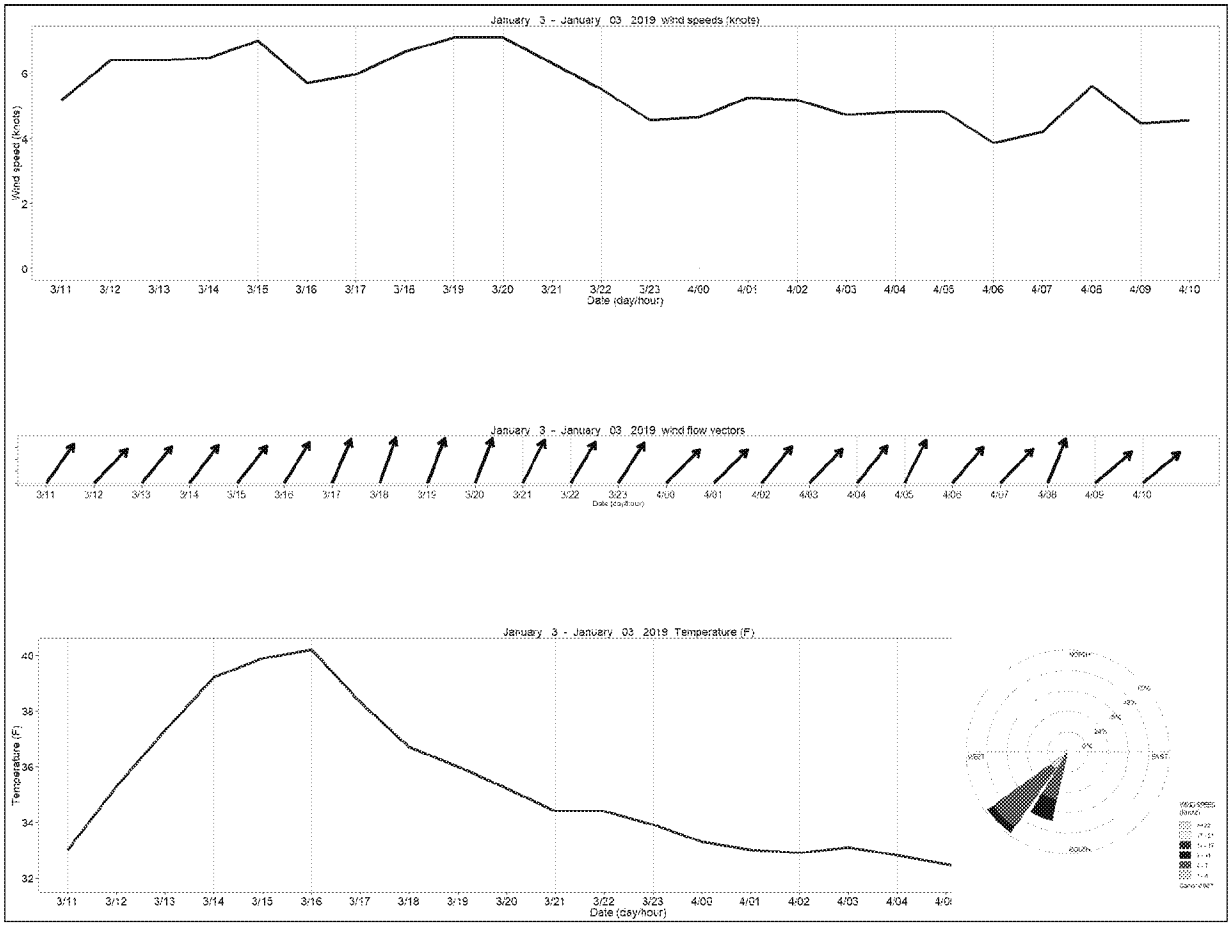

December 19 - December 19 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 19 - December 19 2018 wind flow vectors
December 19 - December 19 2018 Temperature (F)
Temperature (F)
Date (day/hour)

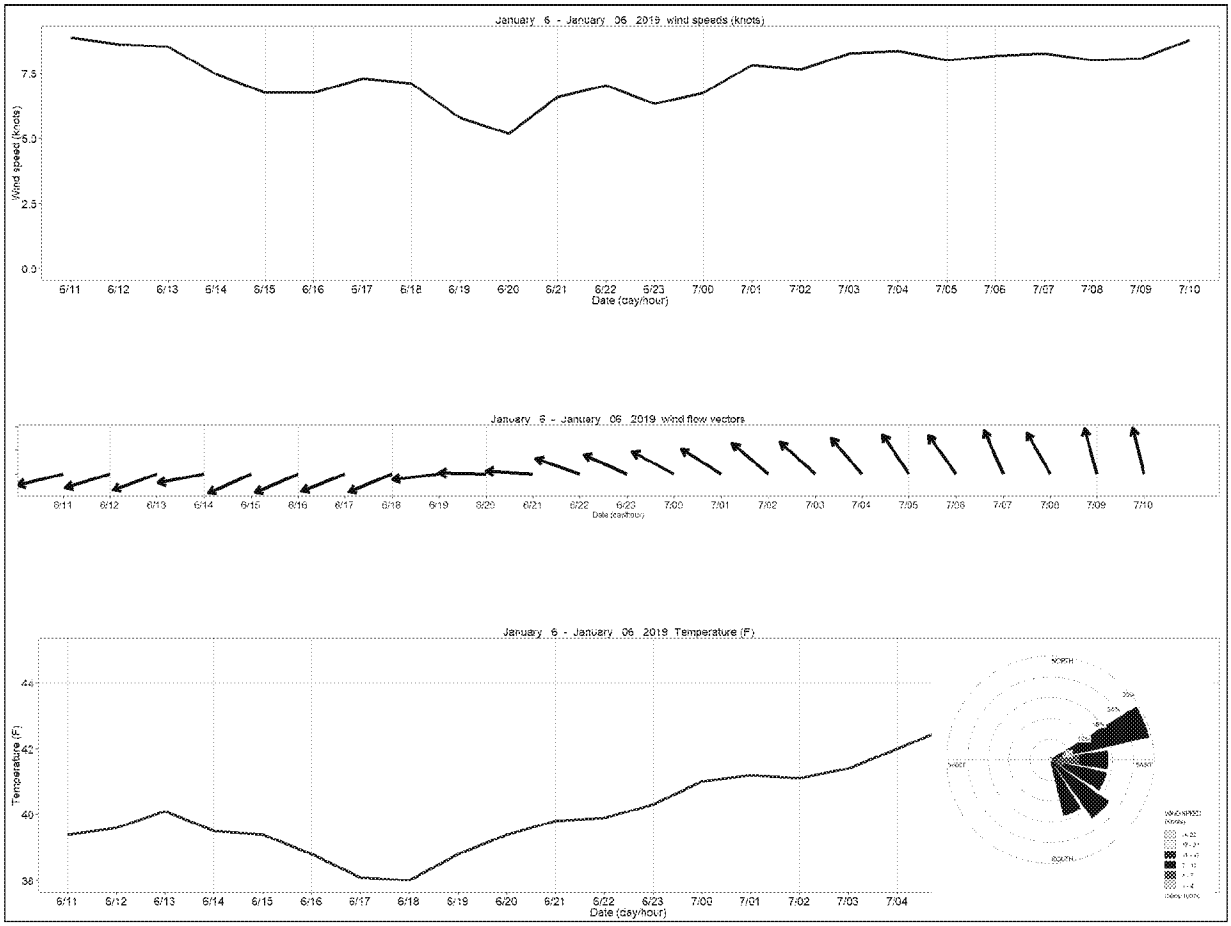

December 22 - December 22 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 22 - December 22 2018 wind flow vectors
Date (day/hour)
December 22 - December 22 2018 Temperature (F)
Temperature (F)
Date (day/hour)

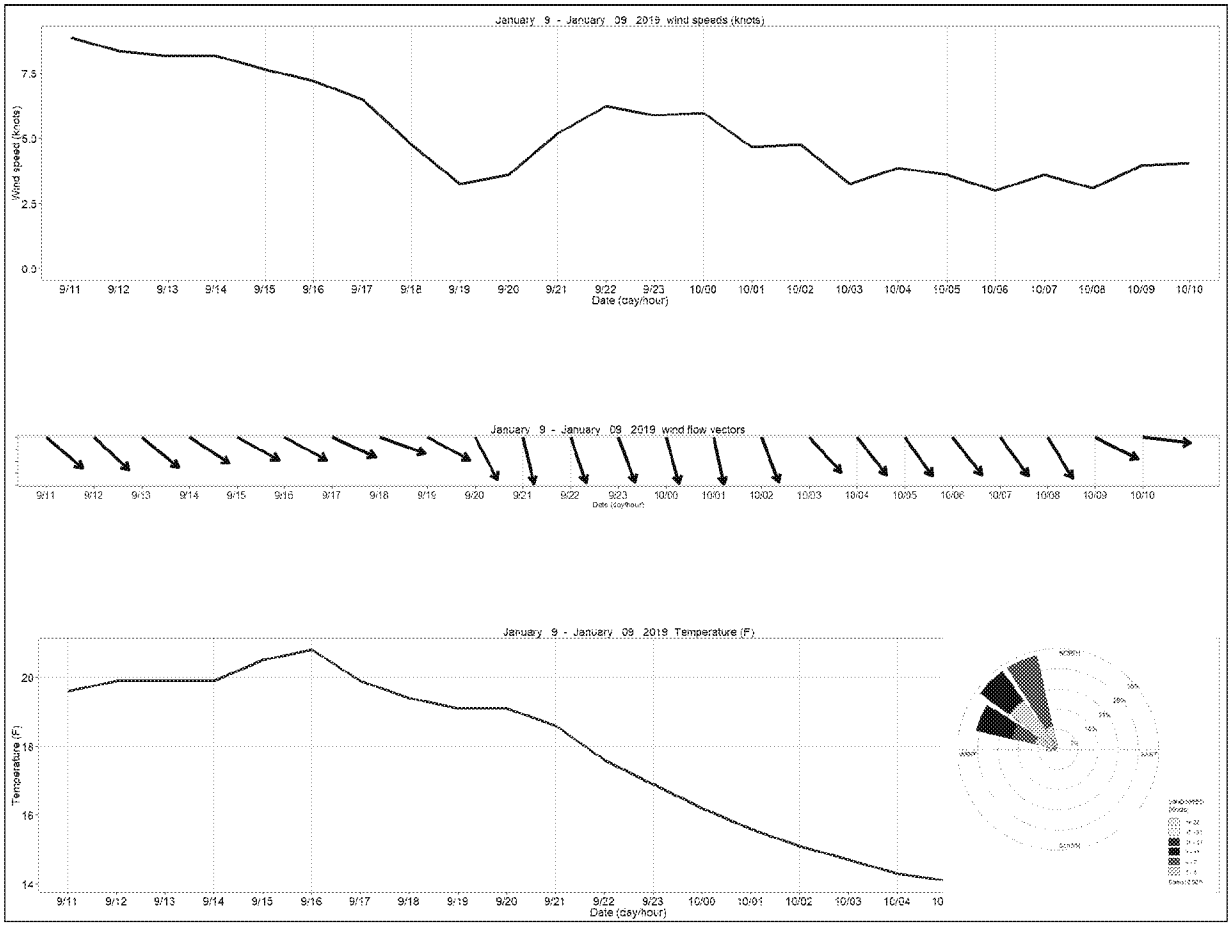

December 26 - December 26 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 26 - December 26 2018 wind flow vectors
December 26 - December 26 2018 Temperature (F)
Temperature (F)
Date (day/hour)

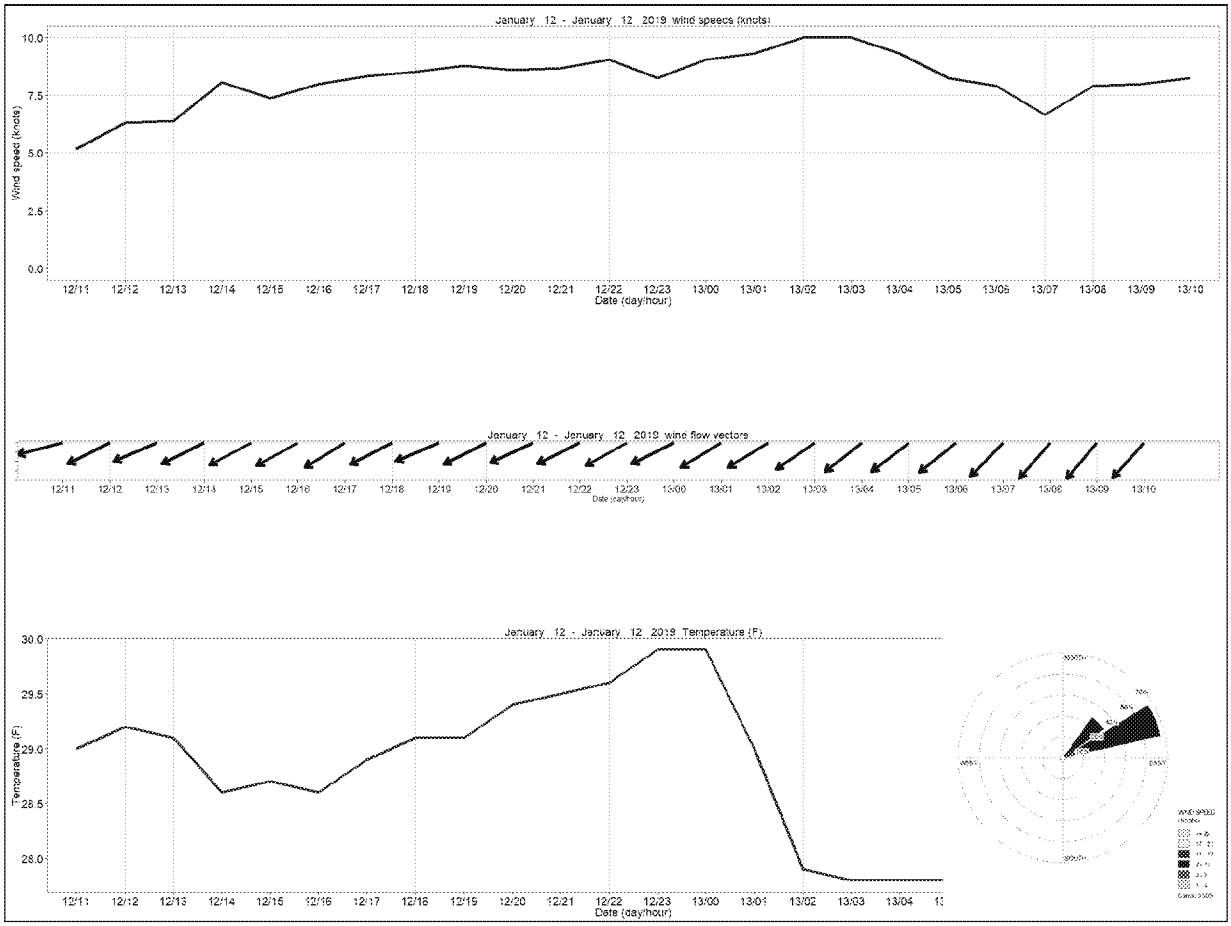

December 28 - December 28 2018 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
December 28 - December 28 2018 wind flow vectors
Date (day/hour)
December 28 - December 28 2018 Temperature (F)
Temperature (F)
Date (day/hour)

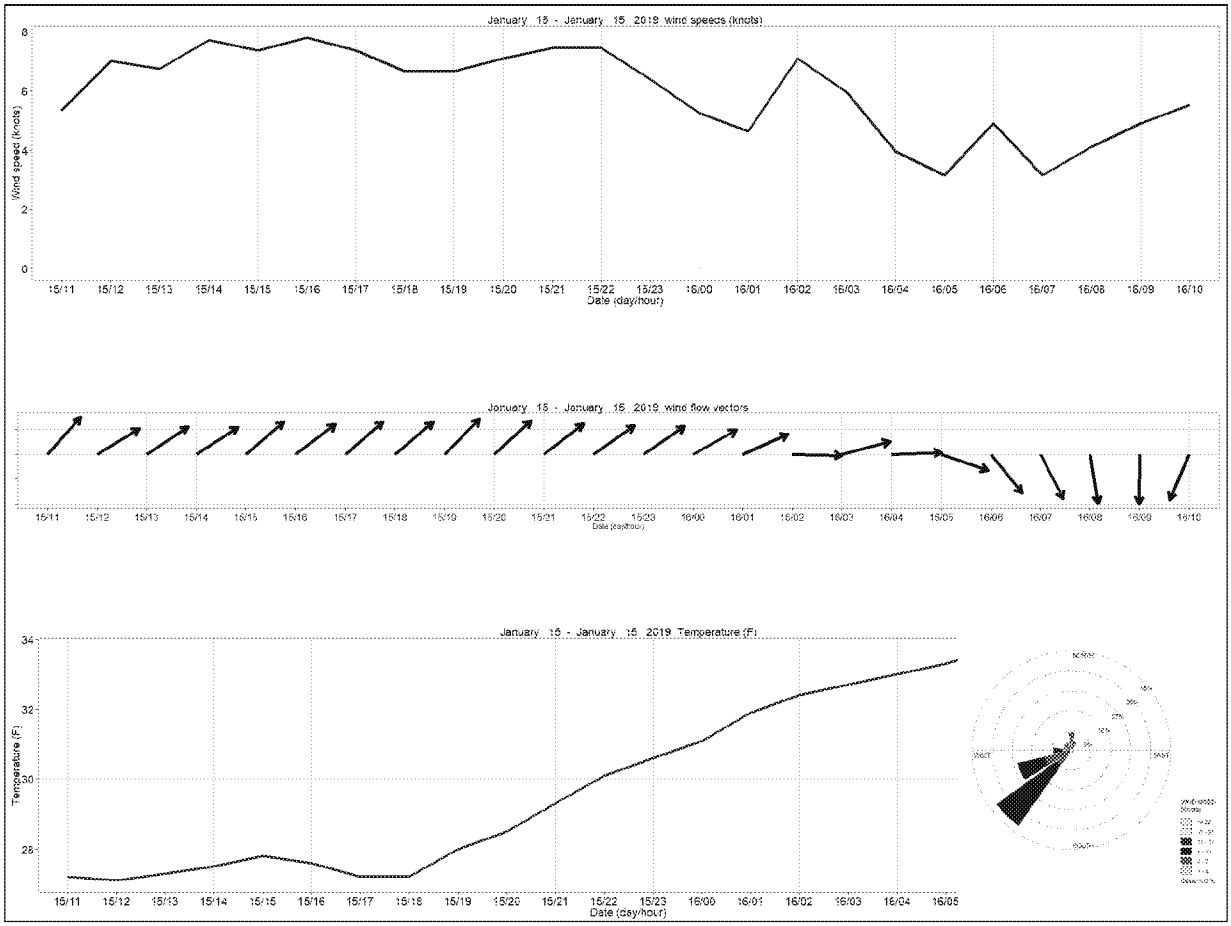

January 2 - January 02 2019 wind speeds (knots)
Wind speed (knots)
0
2
4
6
2/11 2/12 2/13 2/14 2/15 2/16 2/17 2/18 2/19 2/20 2/21 2/22 2/23 3/00 3/01 3/02 3/03 3/04 3/05 3/06 3/07 3/08 3/09 3/10
Date (day/hour)
January 2 - January 02 2019 wind flow vectors
2/11 2/12 2/13 2/14 2/15 2/16 2/17 2/18 2/19 2/20 2/21 2/22 2/23 3/00 3/01 3/02 3/03 3/04 3/05 3/06 3/07 3/08 3/09 3/10
Date (day/hour)
January 2 - January 02 2019 Temperature (F)
Temperature (F)
26
28
30
2/11 2/12 2/13 2/14 2/15 2/16 2/17 2/18 2/19 2/20 2/21 2/22 2/23 3/00 3/01 3/02 3/03 3/04
Date (day/hour)

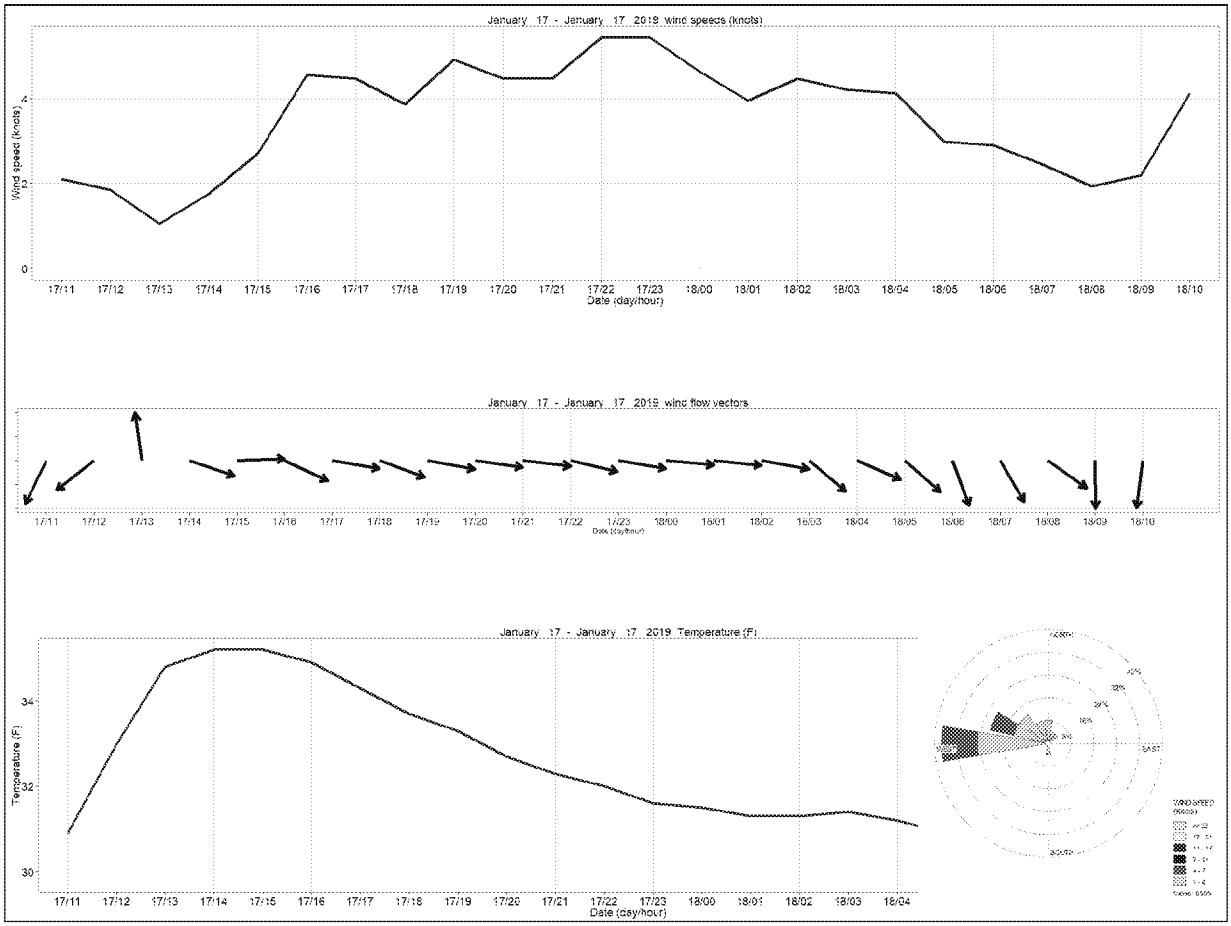

January 3 - January 03 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
January 3 - January 03 2019 wind flow vectors
January 3 - January 03 2019 Temperature (F)
Temperature (F)
Date (day/hour)

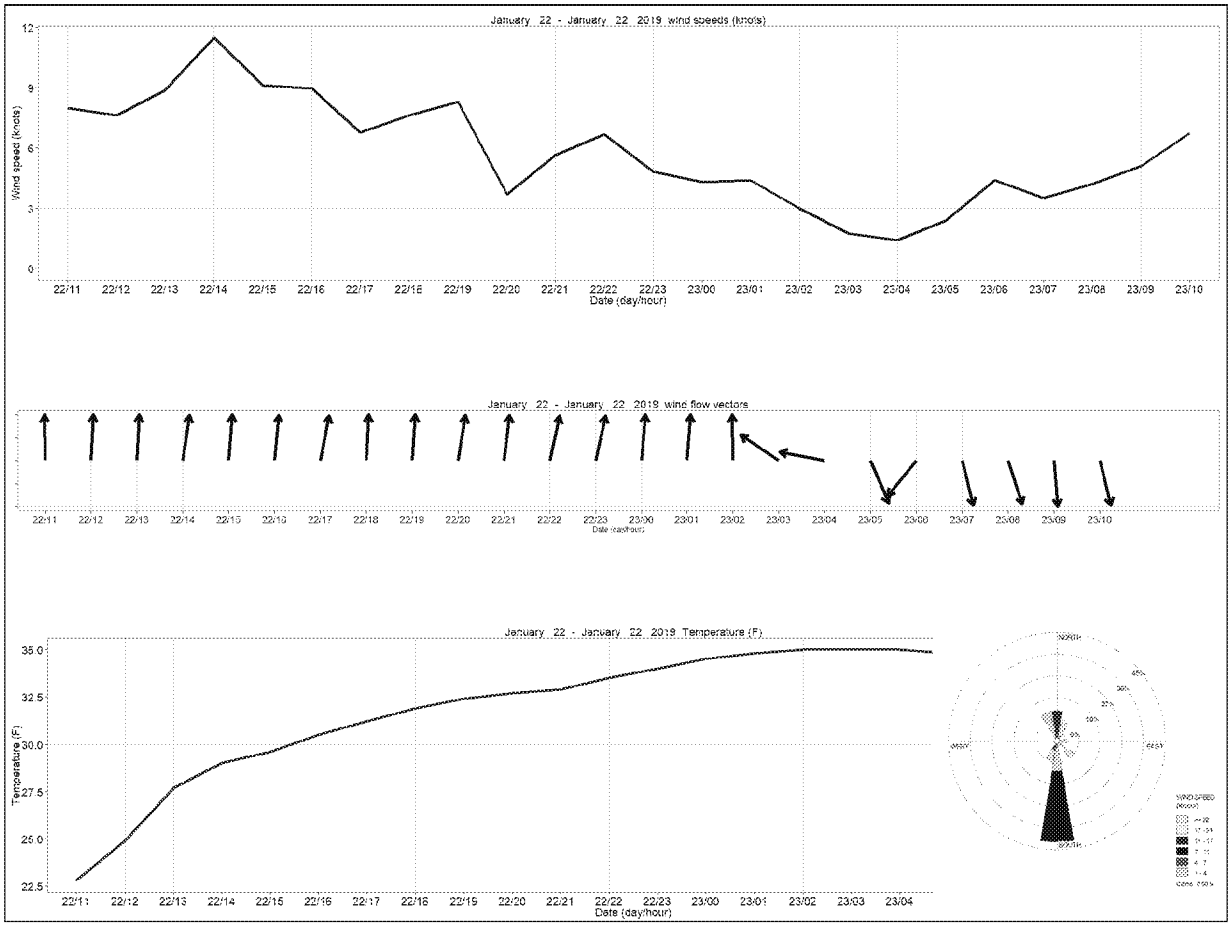

January 6 - January 06 2019 wind speeds (knots)
Wind speed (knots)
0.0
2.5
5.0
7.5
6/11 6/12 6/13 6/14 6/15 6/16 6/17 6/18 6/19 6/20 6/21 6/22 6/23 7/00 7/01 7/02 7/03 7/04 7/05 7/06 7/07 7/08 7/09 7/10
Date (day/hour)
January 6 - January 06 2019 wind flow vectors
6/11 6/12 6/13 6/14 6/15 6/16 6/17 6/18 6/19 6/20 6/21 6/22 6/23 7/00 7/01 7/02 7/03 7/04 7/05 7/06 7/07 7/08 7/09 7/10
January 6 - January 06 2019 Temperature (F)
Temperature (F)
38
40
42
44
6/11 6/12 6/13 6/14 6/15 6/16 6/17 6/18 6/19 6/20 6/21 6/22 6/23 7/00 7/01 7/02 7/03 7/04
Date (day/hour)
NORTH
SOUTH
WEST
EAST

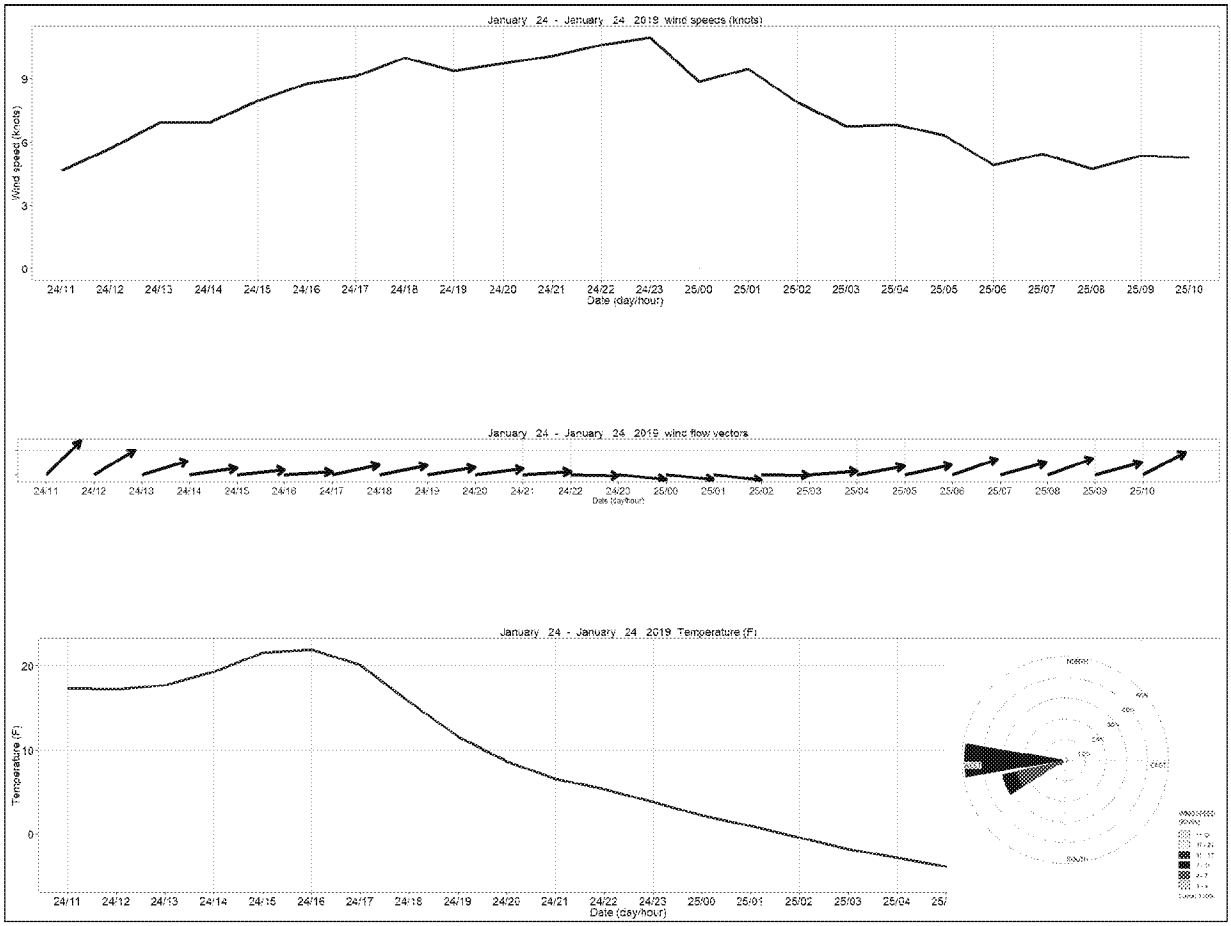

January 9 - January 09 2019 wind speeds (knots)
Wind speed (knots)
7.5
5.0
2.5
0.0
9/11 9/12 9/13 9/14 9/15 9/16 9/17 9/18 9/19 9/20 9/21 9/22 9/23 10/00 10/01 10/02 10/03 10/04 10/05 10/06 10/07 10/08 10/09 10/10
Date (day/hour)
January 9 - January 09 2019 wind flow vectors
9/11 9/12 9/13 9/14 9/15 9/16 9/17 9/18 9/19 9/20 9/21 9/22 9/23 10/00 10/01 10/02 10/03 10/04 10/05 10/06 10/07 10/08 10/09 10/10
January 9 - January 09 2019 Temperature (F)
Temperature (F)
20
18
16
14
9/11 9/12 9/13 9/14 9/15 9/16 9/17 9/18 9/19 9/20 9/21 9/22 9/23 10/00 10/01 10/02 10/03 10/04 10
Date (day/hour)

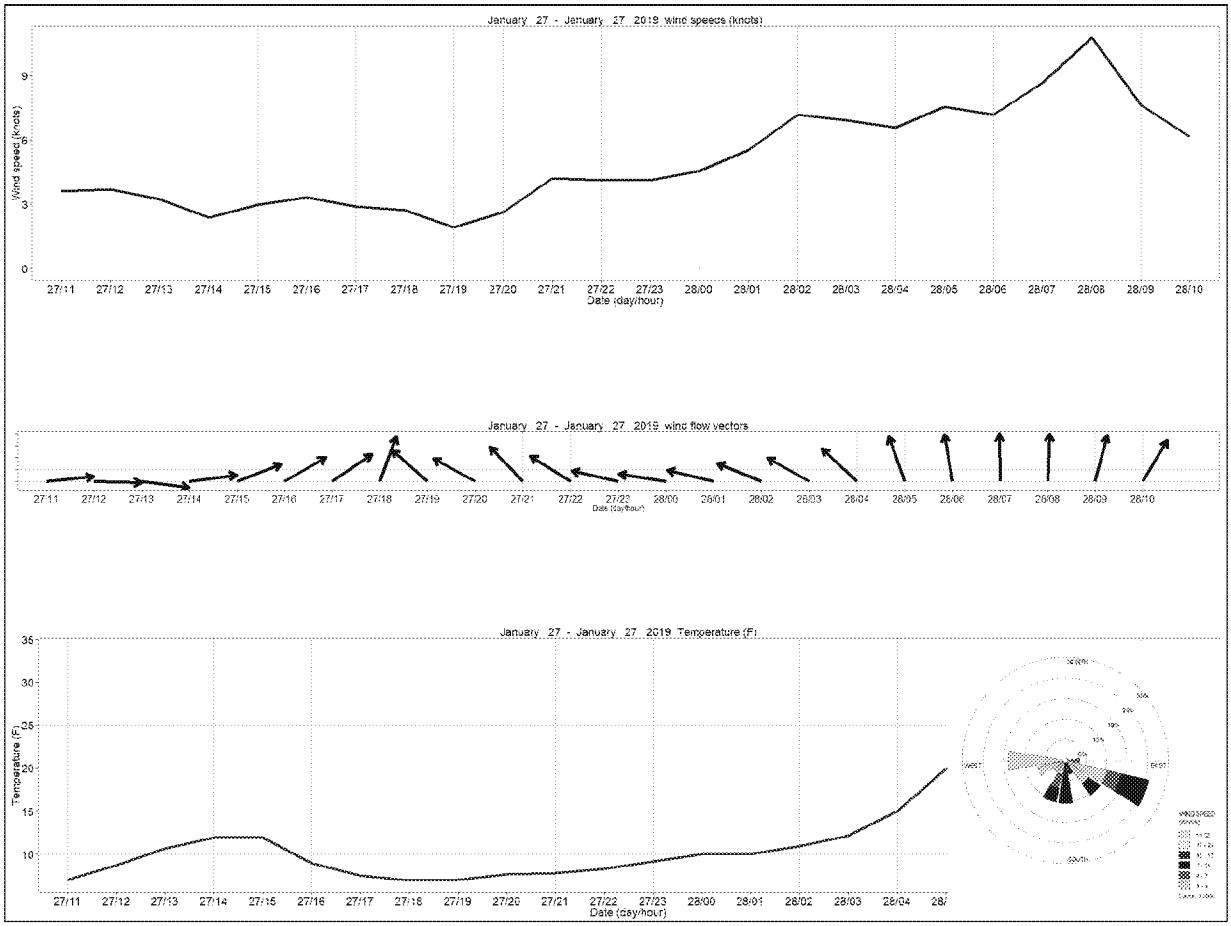

January 12 - January 12 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
January 12 - January 12 2019 wind flow vectors
January 12 - January 12 2019 Temperature (F)
Temperature (F)
Date (day/hour)

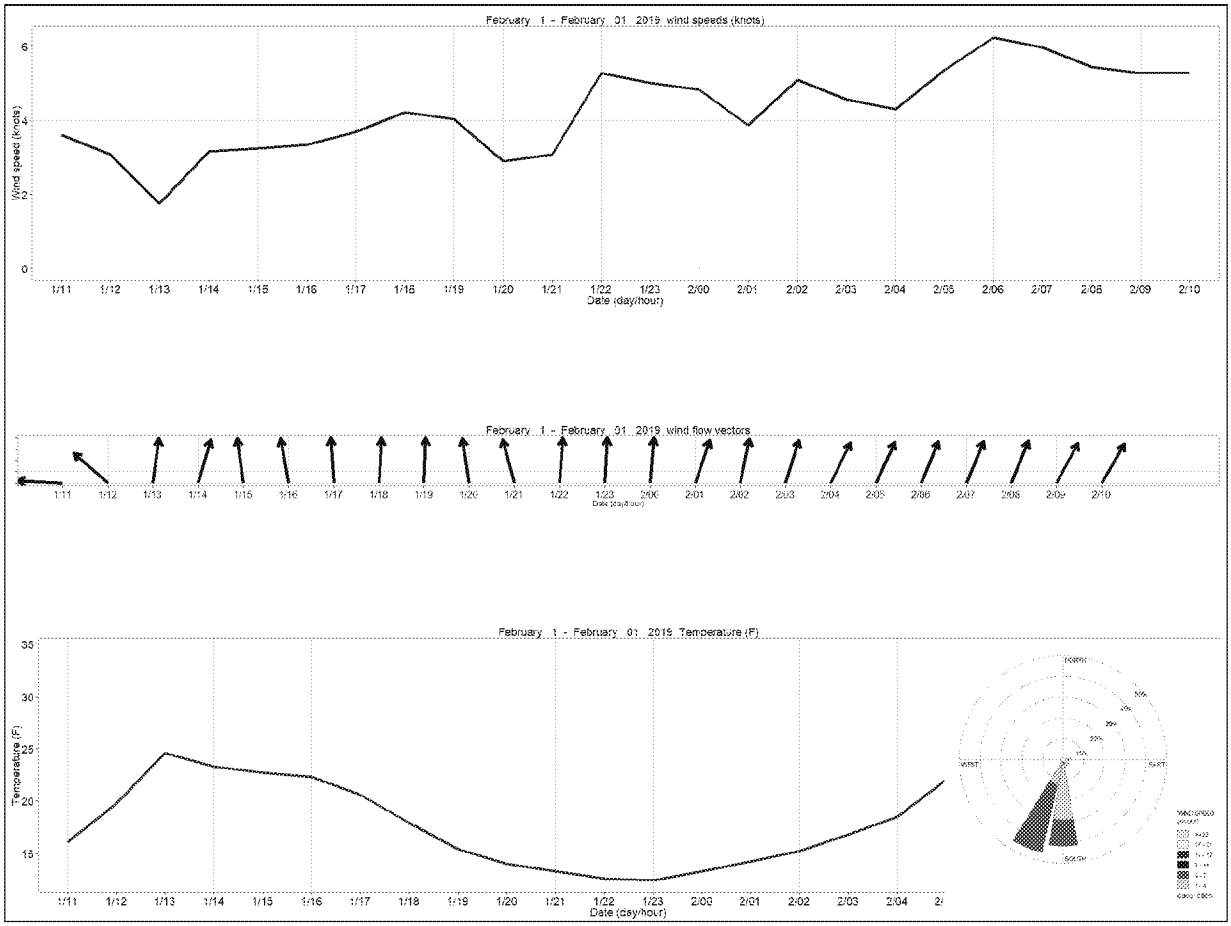

January 15 - January 15 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
January 15 - January 15 2019 wind flow vectors
Date (day/hour)
January 15 - January 15 2019 Temperature (F)
Temperature (F)
Date (day/hour)

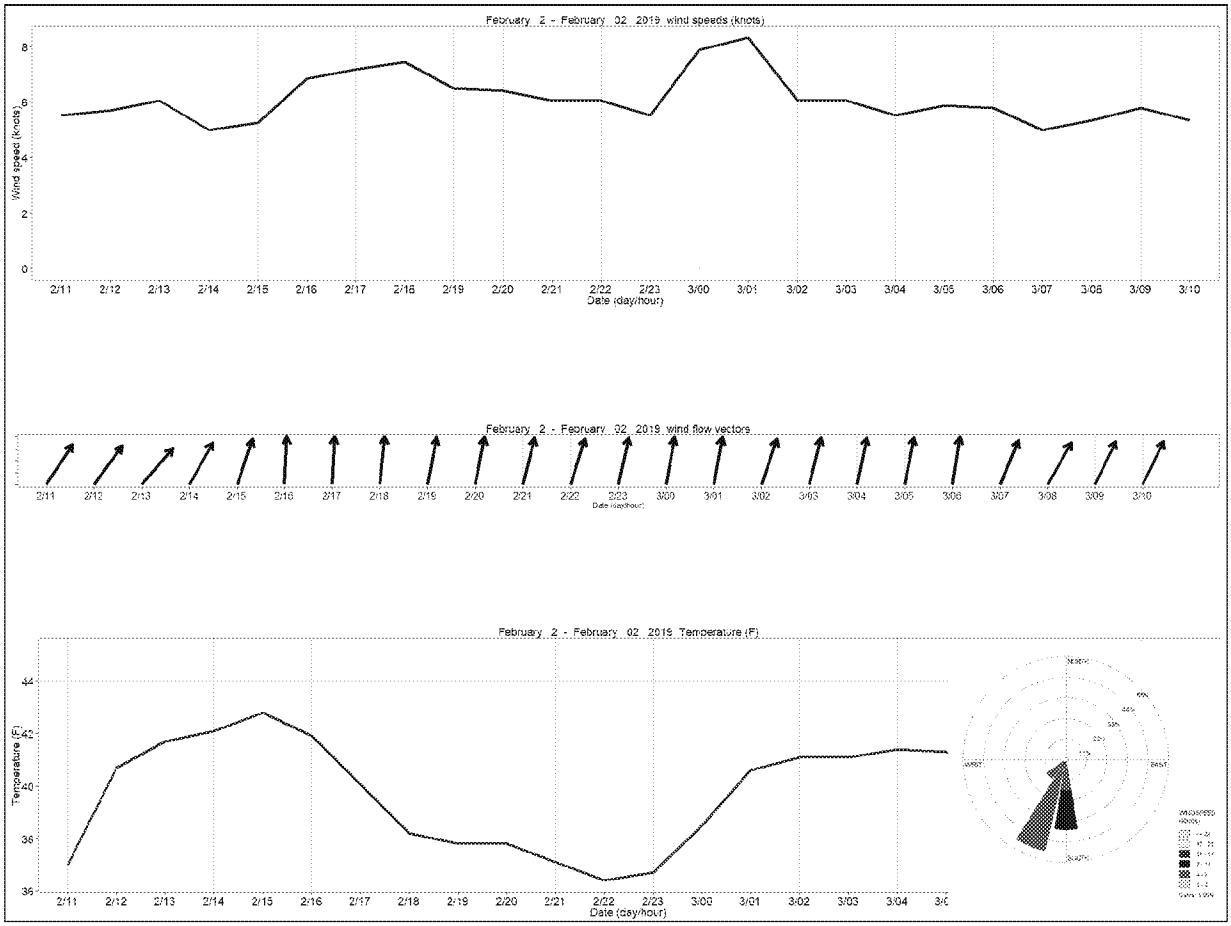

January 17 - January 17 2019 wind speeds (knots)
Wind speed (knots)
0
5
10
17/11 17/12 17/13 17/14 17/15 17/16 17/17 17/18 17/19 17/20 17/21 17/22 17/23 18/00 18/01 18/02 18/03 18/04 18/05 18/06 18/07 18/08 18/09 18/10
Date (day/hour)
January 17 - January 17 2019 wind flow vectors
17/11 17/12 17/13 17/14 17/15 17/16 17/17 17/18 17/19 17/20 17/21 17/22 17/23 18/00 18/01 18/02 18/03 18/04 18/05 18/06 18/07 18/08 18/09 18/10
January 17 - January 17 2019 Temperature (F)
Temperature (F)
30
32
34
17/11 17/12 17/13 17/14 17/15 17/16 17/17 17/18 17/19 17/20 17/21 17/22 17/23 18/00 18/01 18/02 18/03 18/04
Date (day/hour)

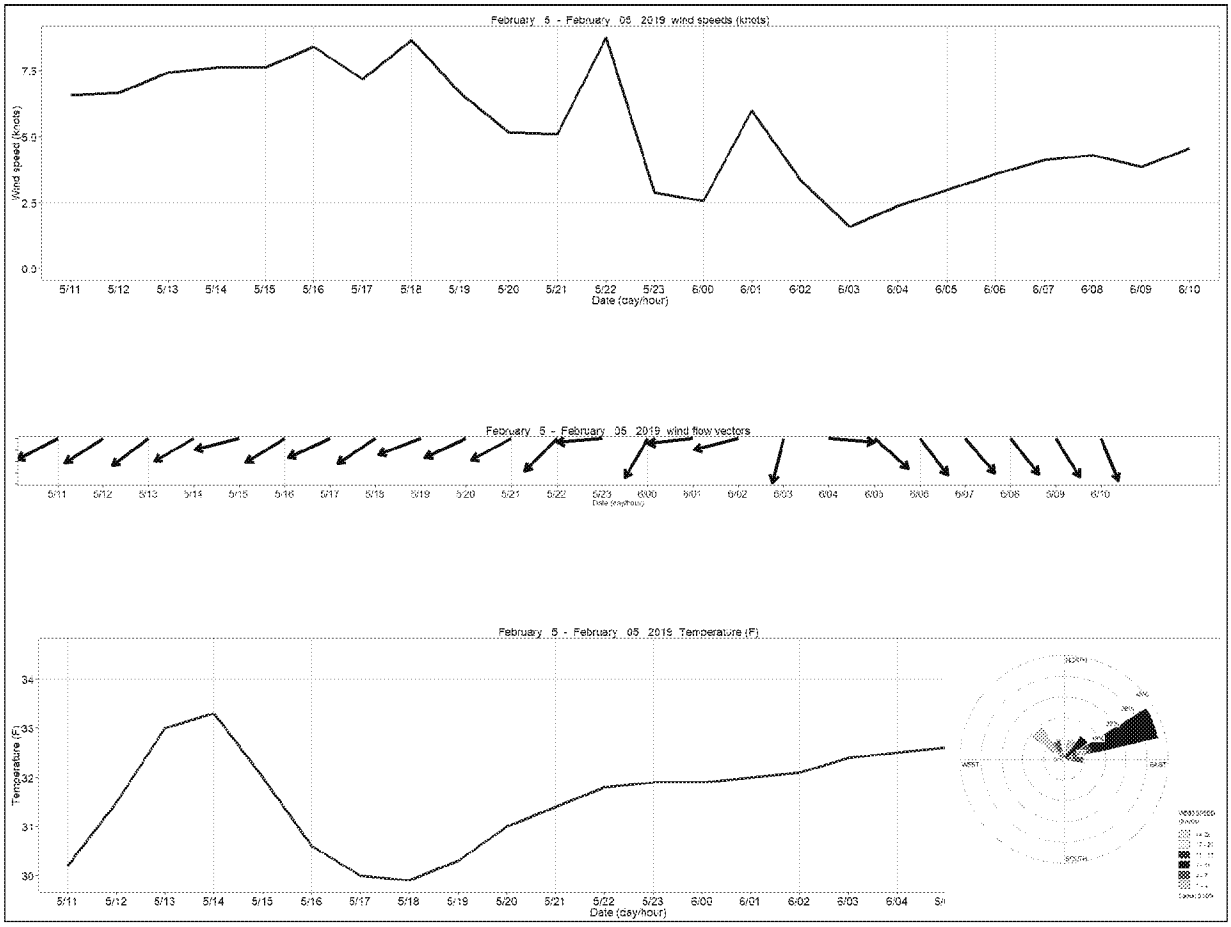

January 22 - January 22 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
January 22 - January 22 2019 wind flow vectors
January 22 - January 22 2019 Temperature (F)
Temperature (F)
Date (day/hour)

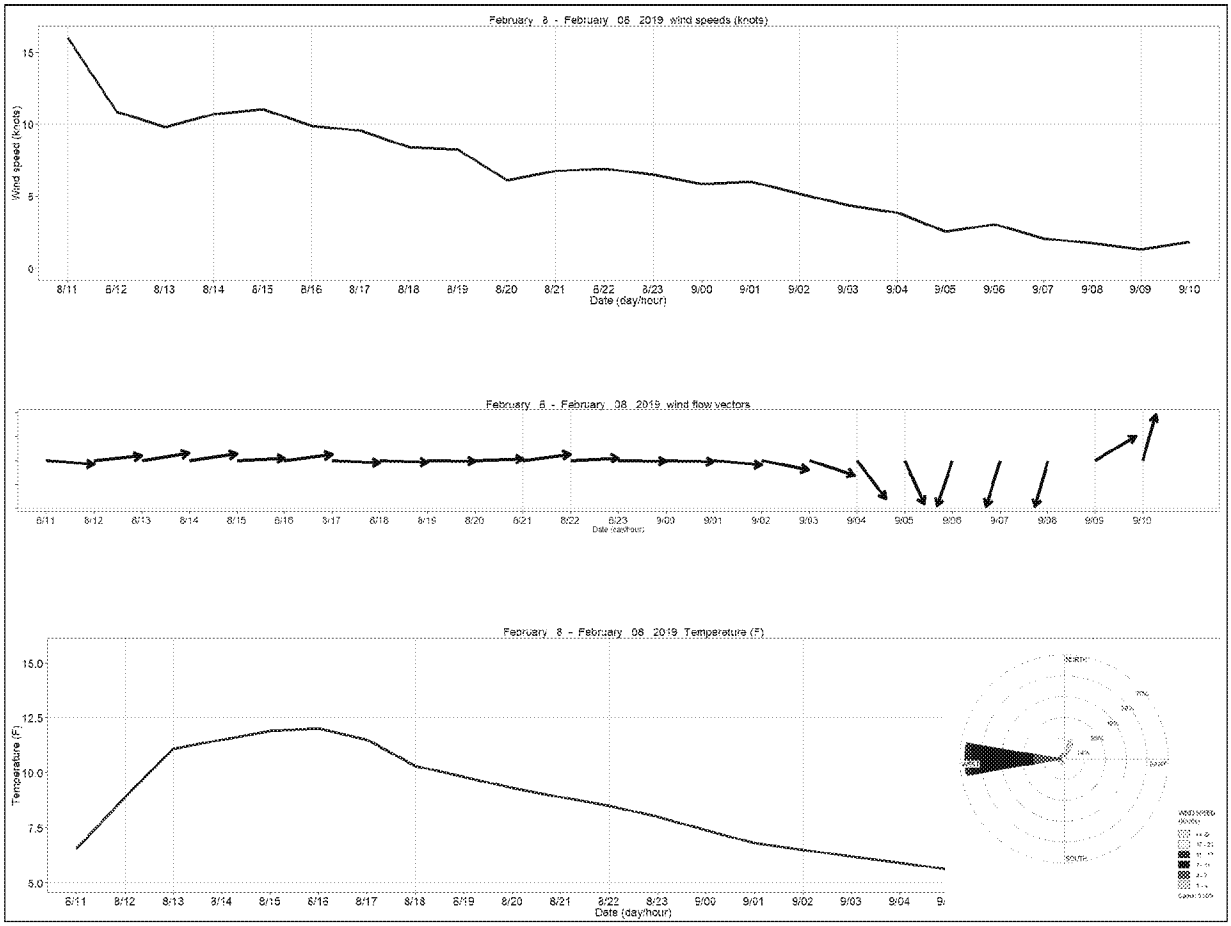

January 24 - January 24 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
January 24 - January 24 2019 wind flow vectors
January 24 - January 24 2019 Temperature (F)
Temperature (F)
Date (day/hour)

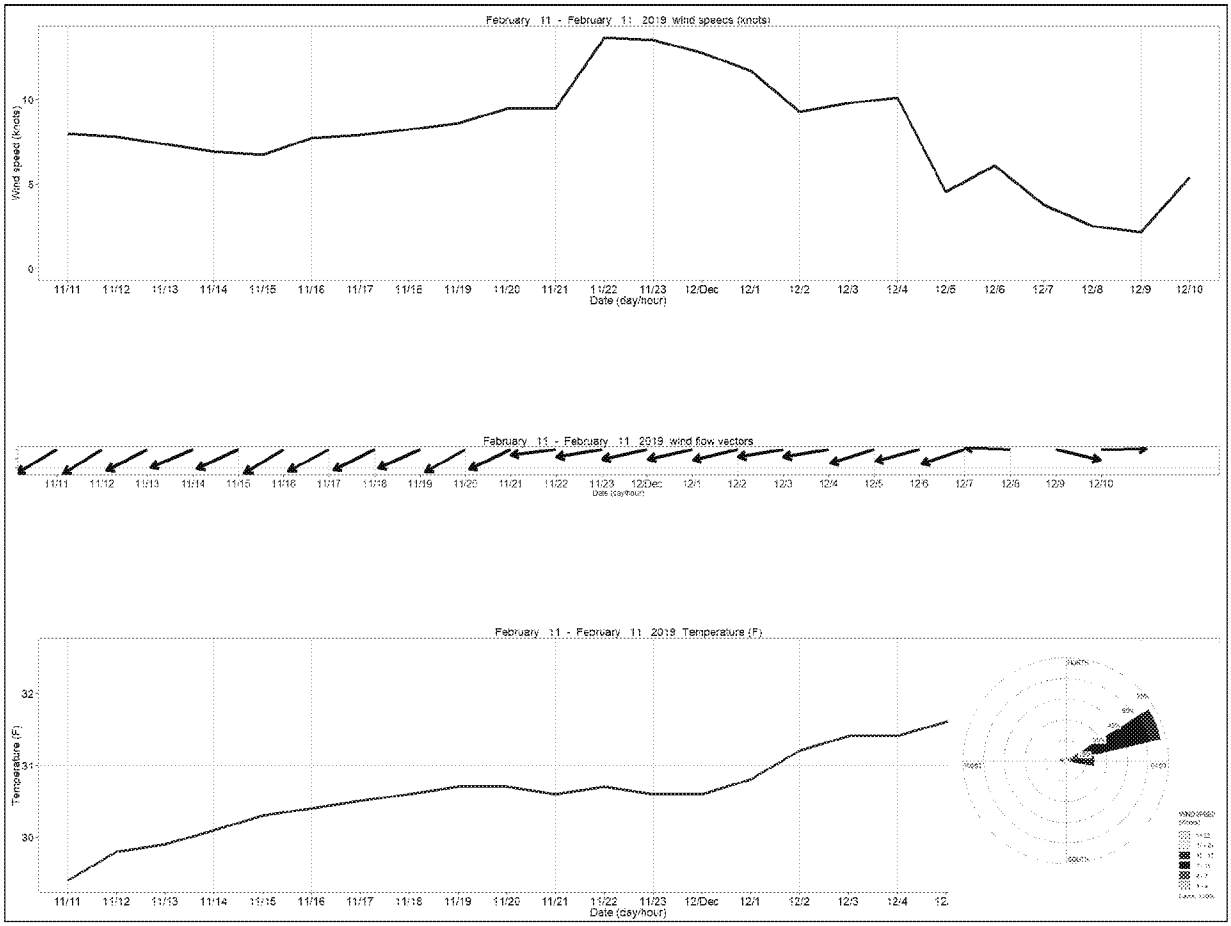

January 27 - January 27 2019 wind speeds (knots)
Wind speed (knots)
0
3
6
9
27/11 27/12 27/13 27/14 27/15 27/16 27/17 27/18 27/19 27/20 27/21 27/22 27/23 28/00 28/01 28/02 28/03 28/04 28/05 28/06 28/07 28/08 28/09 28/10
Date (day/hour)
January 27 - January 27 2019 wind flow vectors
27/11 27/12 27/13 27/14 27/15 27/16 27/17 27/18 27/19 27/20 27/21 27/22 27/23 28/00 28/01 28/02 28/03 28/04 28/05 28/06 28/07 28/08 28/09 28/10
Date (day/hour)
January 27 - January 27 2019 Temperature (F)
Temperature (F)
10
15
20
25
30
35
27/11 27/12 27/13 27/14 27/15 27/16 27/17 27/18 27/19 27/20 27/21 27/22 27/23 28/00 28/01 28/02 28/03 28/04
Date (day/hour)

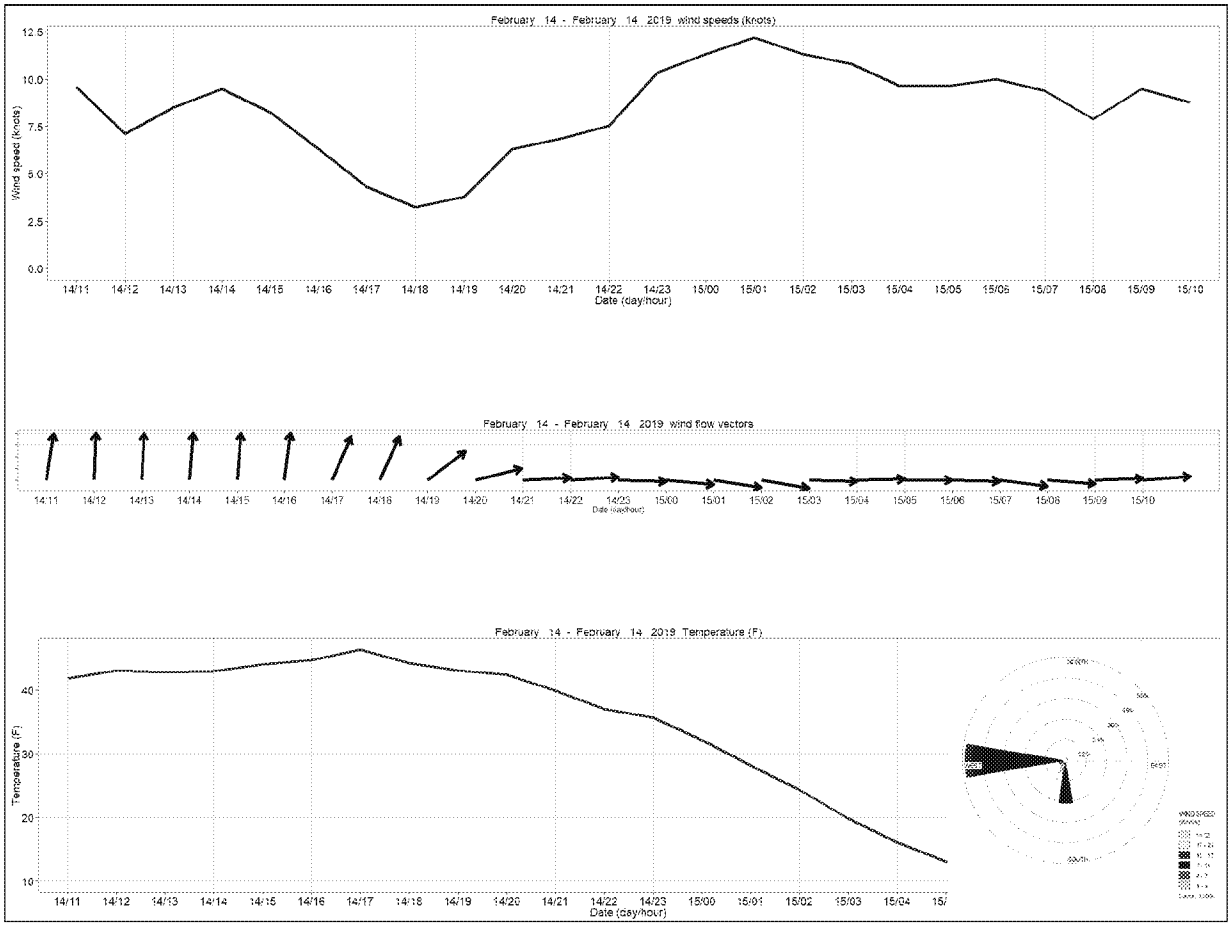

February 1 - February 01, 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 1 - February 01, 2019 wind flow vectors
February 1 - February 01, 2019 Temperature (F)
Temperature (F)
Date (day/hour)

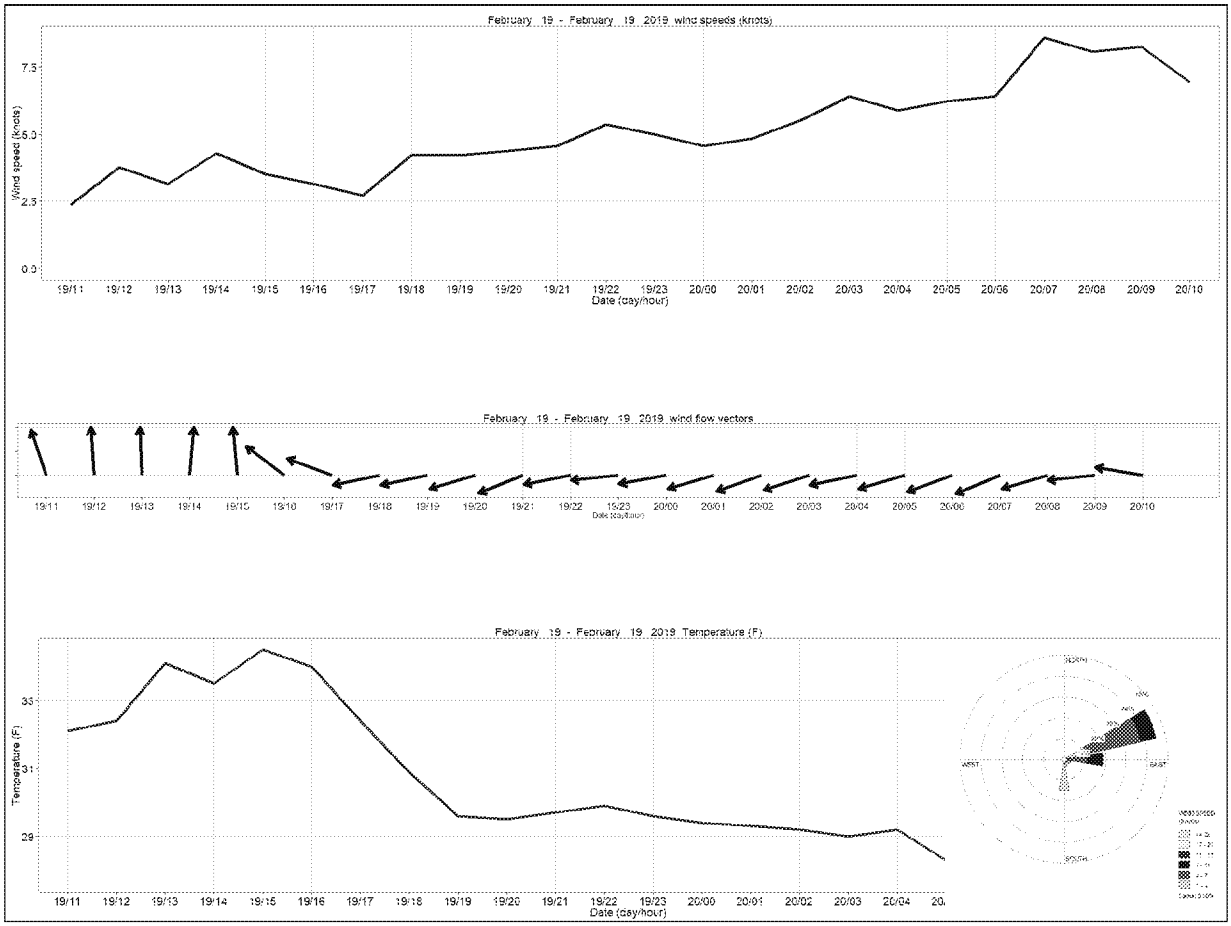

February 2 - February 02 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 2 - Feoruary 02 2019 wind flow vectors
Date (day/hour)
February 2 - February 02 2019 Temperature (F)
Temperature (F)
Date (day/hour)

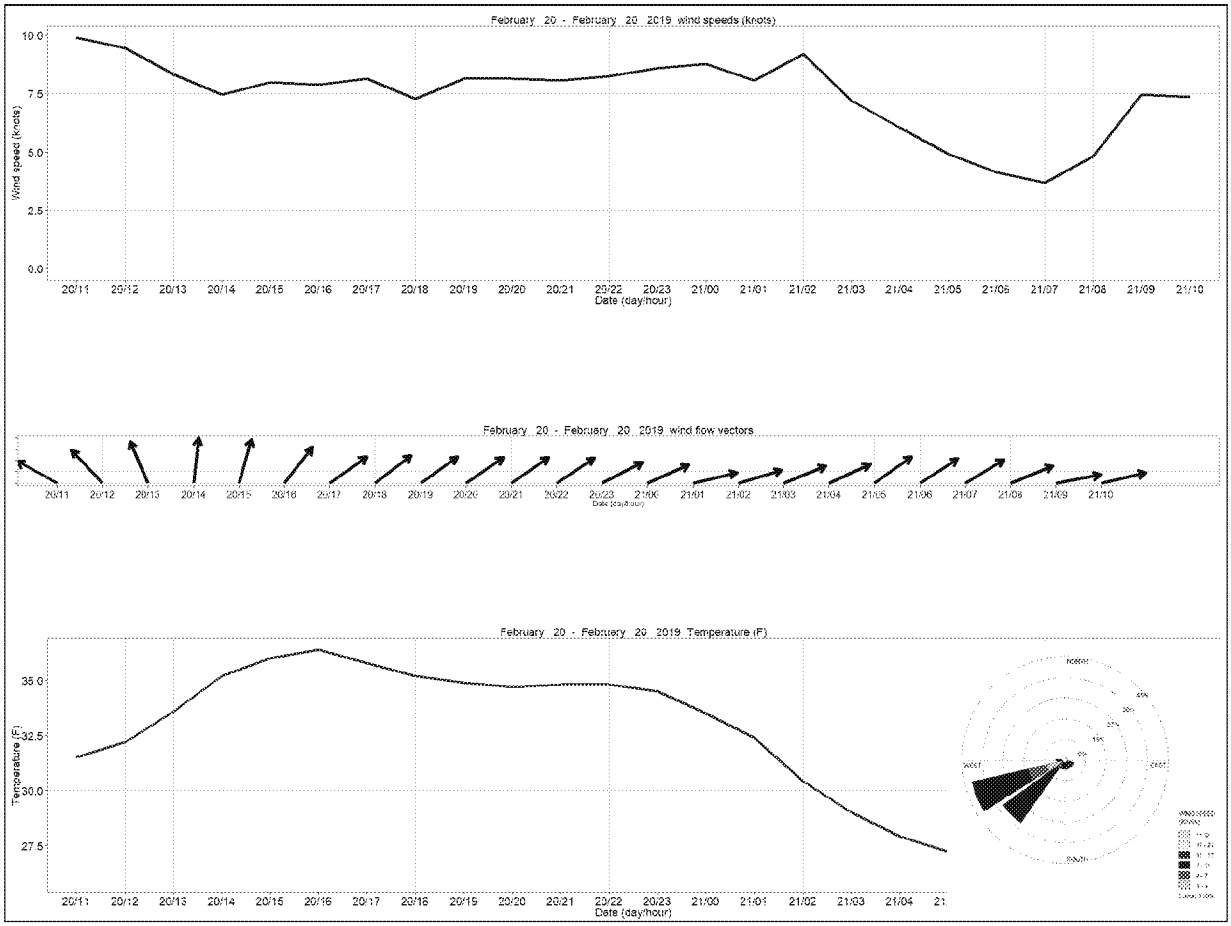

February 5 - February 05 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 5 - February 05 2019 wind flow vectors
February 5 - February 05 2019 Temperature (F)
Temperature (F)
Date (day/hour)

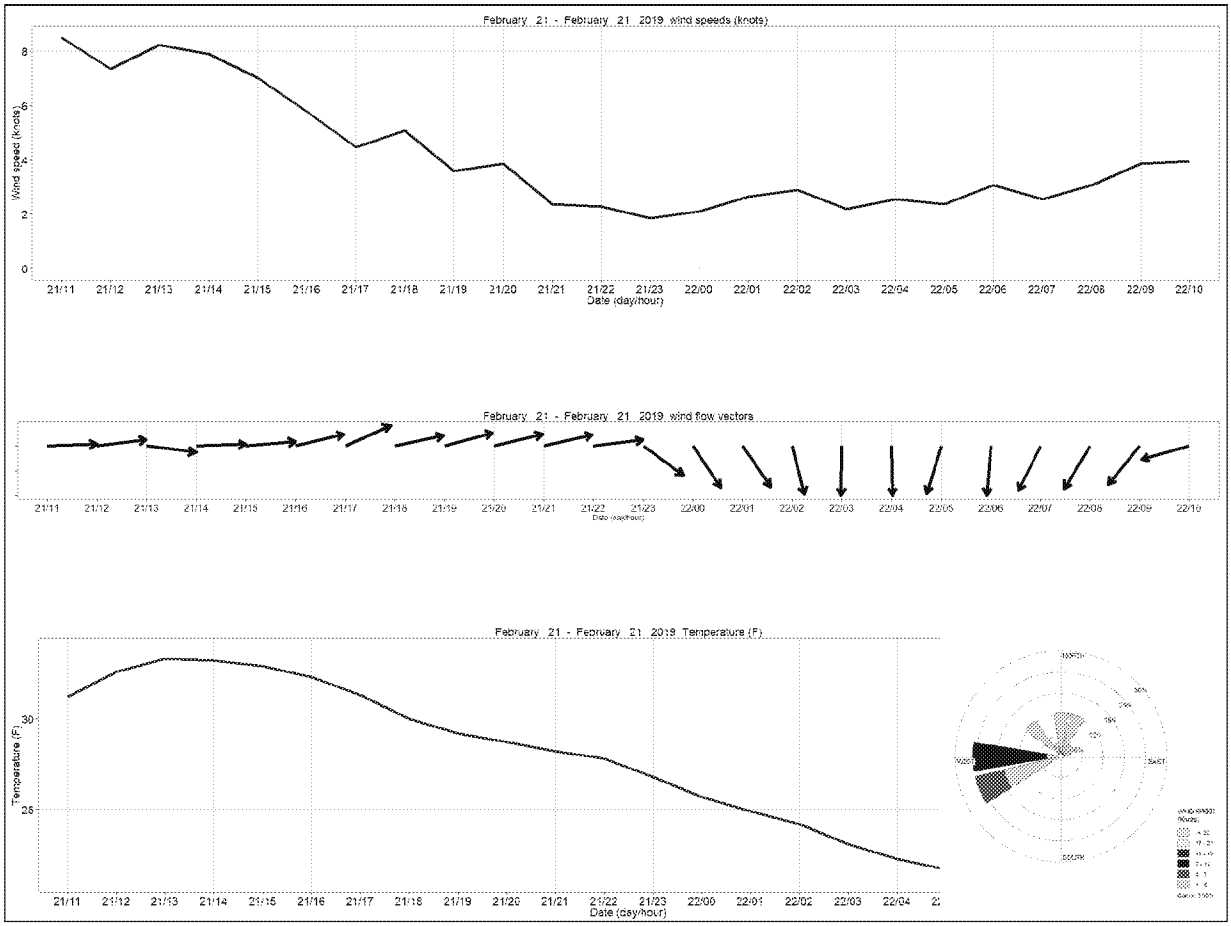

February 8 - February 08 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 8 - February 08 2019 wind flow vectors
February 8 - February 08 2019 Temperature (F)
Temperature (F)
Date (day/hour)

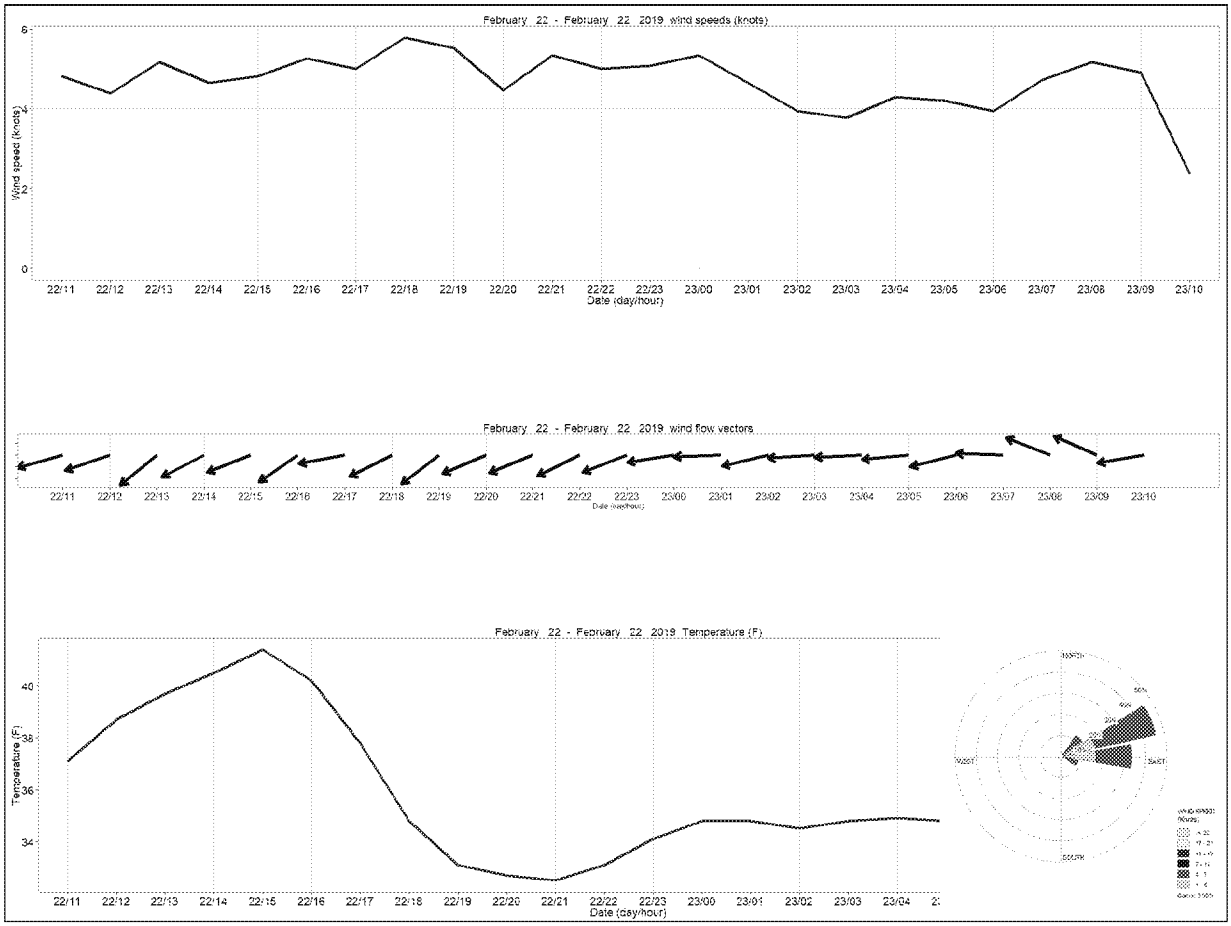

February 11 - February 11, 2019 wind speeds (knots)
Wind speed (knots)
0
5
10
11/11 11/12 11/13 11/14 11/15 11/16 11/17 11/18 11/19 11/20 11/21 11/22 11/23 12/Dec 12/1 12/2 12/3 12/4 12/5 12/6 12/7 12/8 12/9 12/10
Date (day/hour)
February 11 - February 11, 2019 wind flow vectors
11/11 11/12 11/13 11/14 11/15 11/16 11/17 11/18 11/19 11/20 11/21 11/22 11/23 12/Dec 12/1 12/2 12/3 12/4 12/5 12/6 12/7 12/8 12/9 12/10
February 11 - February 11, 2019 Temperature (F)
Temperature (F)
30
31
32
11/11 11/12 11/13 11/14 11/15 11/16 11/17 11/18 11/19 11/20 11/21 11/22 11/23 12/Dec 12/1 12/2 12/3 12/4 12/
Date (day/hour)

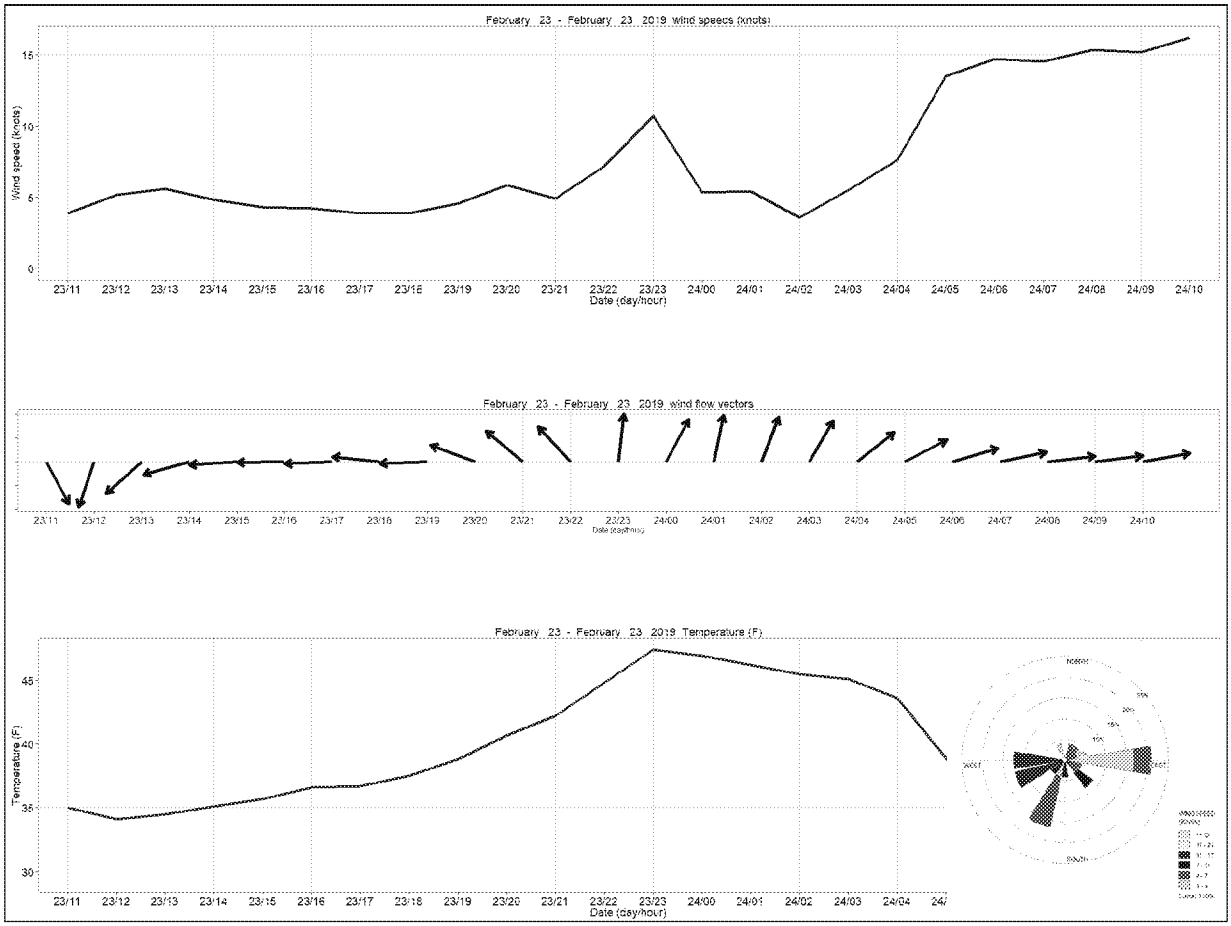

February 14 - February 14 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 14 - February 14 2019 wind flow vectors
Date (day/hour)
February 14 - February 14 2019 Temperature (F)
Temperature (F)
Date (day/hour)

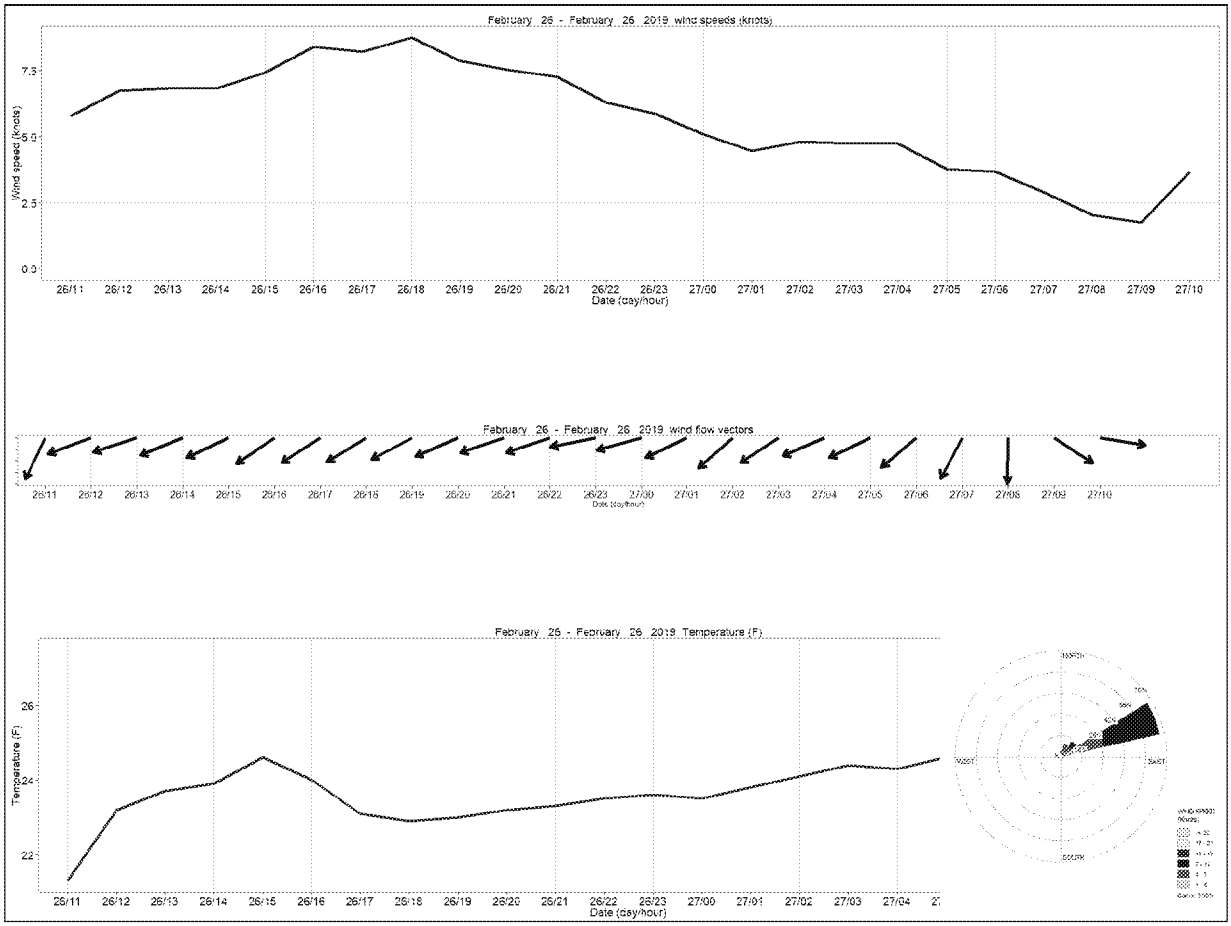

February 19 - February 19 2019 wind speeds (knots)
Wind speed (knots)
7.5
5.0
2.5
0.0
19/11 19/12 19/13 19/14 19/15 19/16 19/17 19/18 19/19 19/20 19/21 19/22 19/23 20/00 20/01 20/02 20/03 20/04 20/05 20/06 20/07 20/08 20/09 20/10
Date (day/hour)
February 19 - February 19 2019 wind flow vectors
19/11 19/12 19/13 19/14 19/15 19/16 19/17 19/18 19/19 19/20 19/21 19/22 19/23 20/00 20/01 20/02 20/03 20/04 20/05 20/06 20/07 20/08 20/09 20/10
February 19 - February 19 2019 Temperature (F)
Temperature (F)
33
31
29
19/11 19/12 19/13 19/14 19/15 19/16 19/17 19/18 19/19 19/20 19/21 19/22 19/23 20/00 20/01 20/02 20/03 20/04
Date (day/hour)

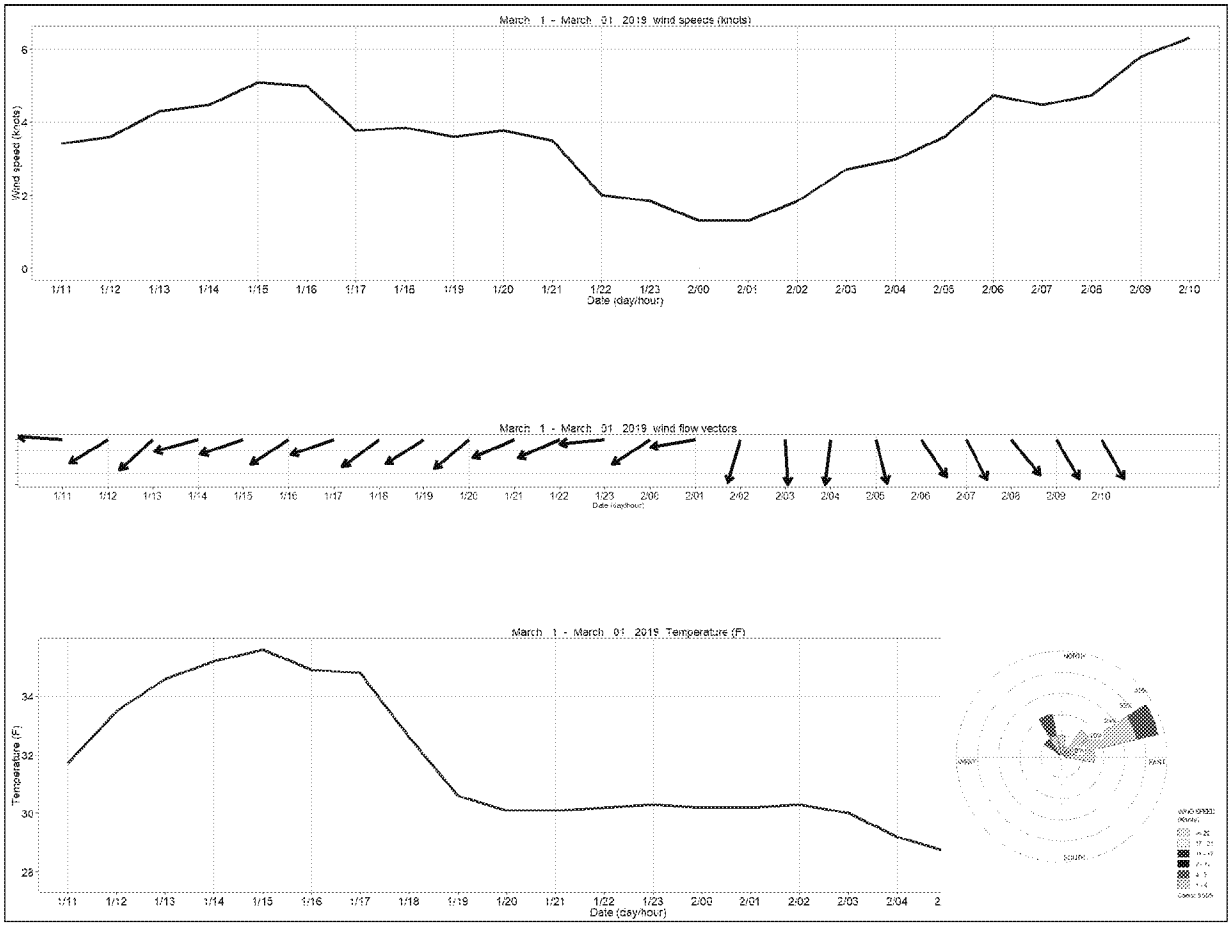

February 20 - February 20 2019 wind speeds (knots)
Wind speed (knots)
10.0
7.5
5.0
2.5
0.0
20/11 20/12 20/13 20/14 20/15 20/16 20/17 20/18 20/19 20/20 20/21 20/22 20/23 21/00 21/01 21/02 21/03 21/04 21/05 21/06 21/07 21/08 21/09 21/10
Date (day/hour)
February 20 - February 20 2019 wind flow vectors
February 20 - February 20 2019 Temperature (F)
Temperature (F)
35.0
32.5
30.0
27.5
20/11 20/12 20/13 20/14 20/15 20/16 20/17 20/18 20/19 20/20 20/21 20/22 20/23 21/00 21/01 21/02 21/03 21/04
Date (day/hour)

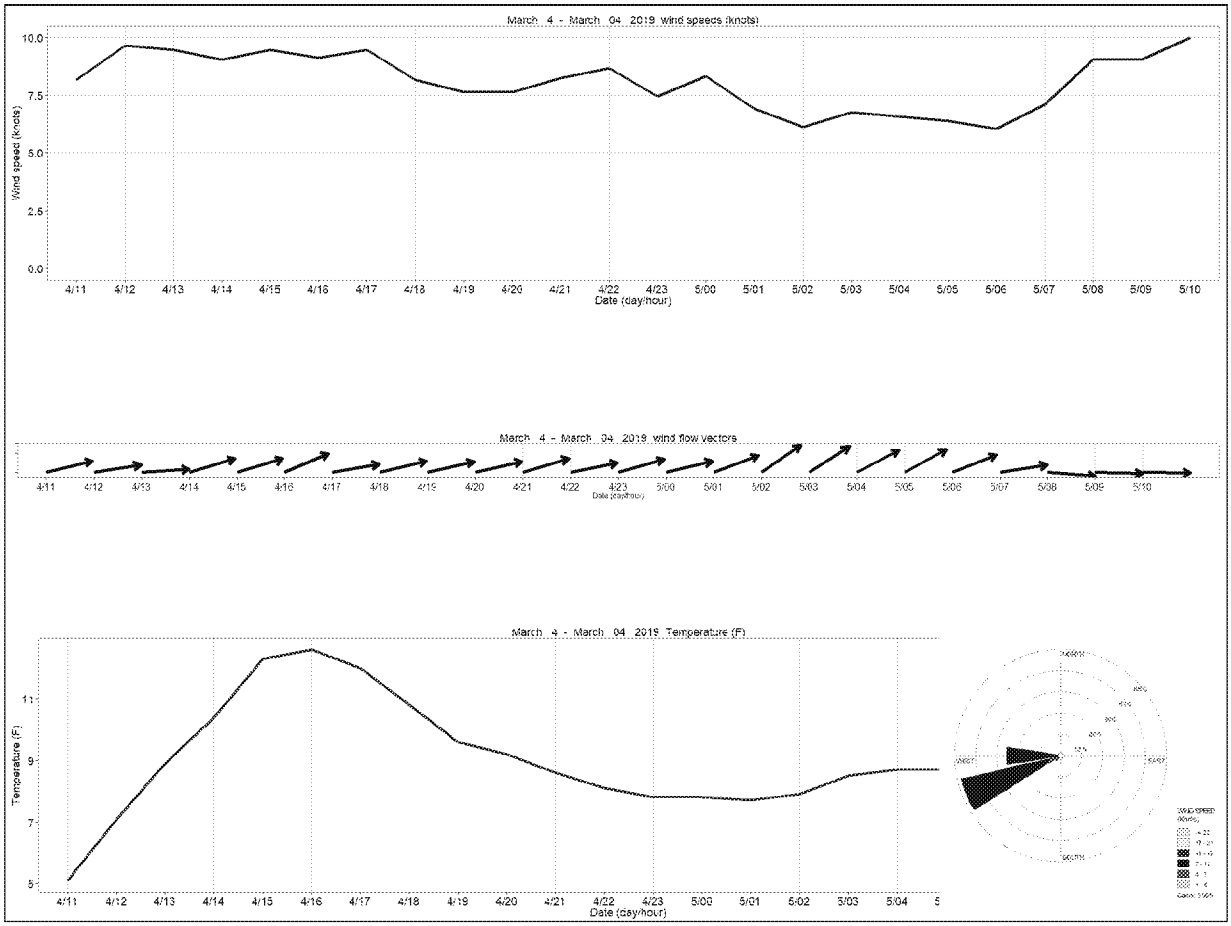

February 21 - February 21 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 21 - February 21 2019 wind flow vectors
February 21 - February 21 2019 Temperature (F)
Temperature (F)
Date (day/hour)

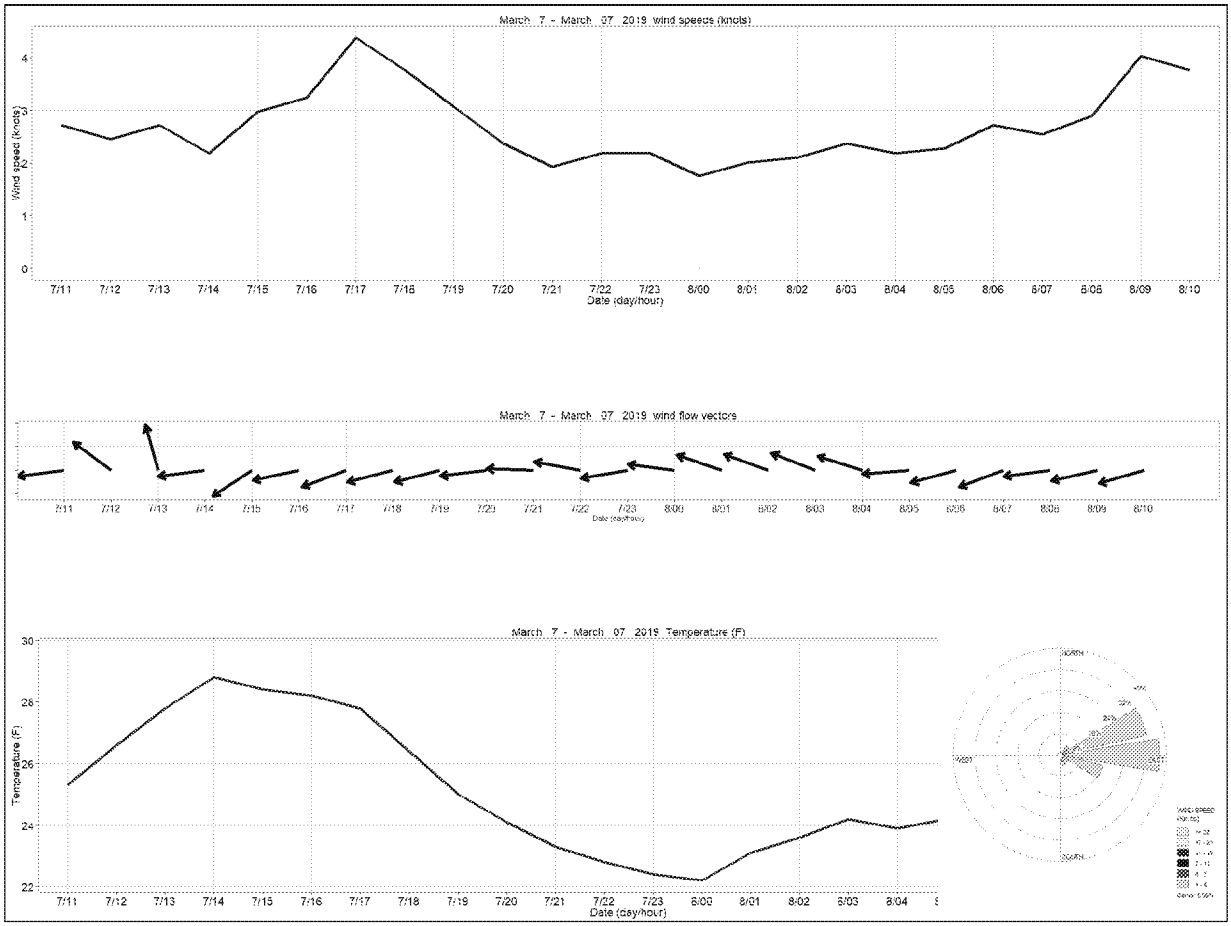

February 22 - February 22 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 22 - February 22 2019 wind flow vectors
February 22 - February 22 2019 Temperature (F)
Temperature (F)
Date (day/hour)

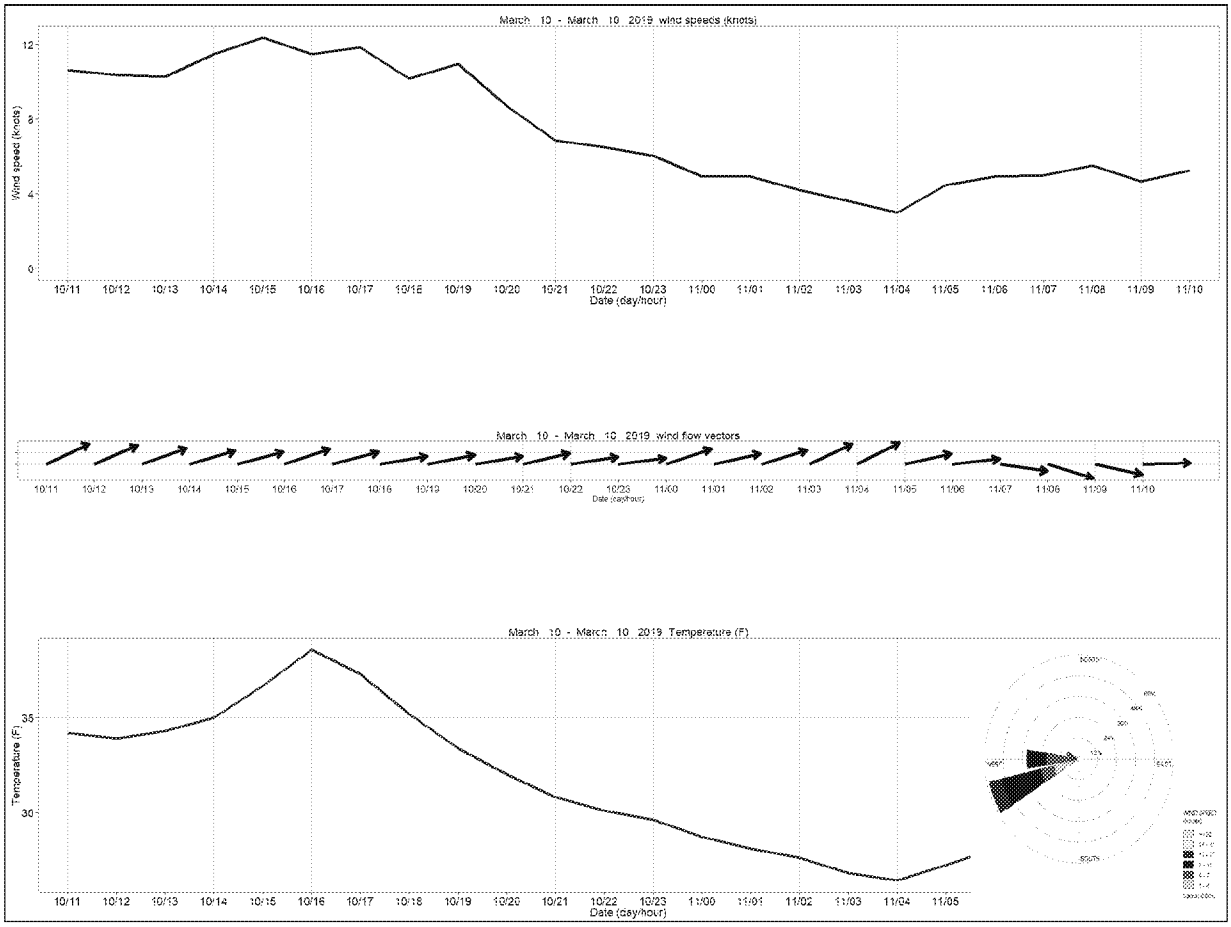

February 23 - February 23, 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 23 - February 23, 2019 wind flow vectors
February 23 - February 23, 2019 Temperature (F)
Temperature (F)
Date (day/hour)

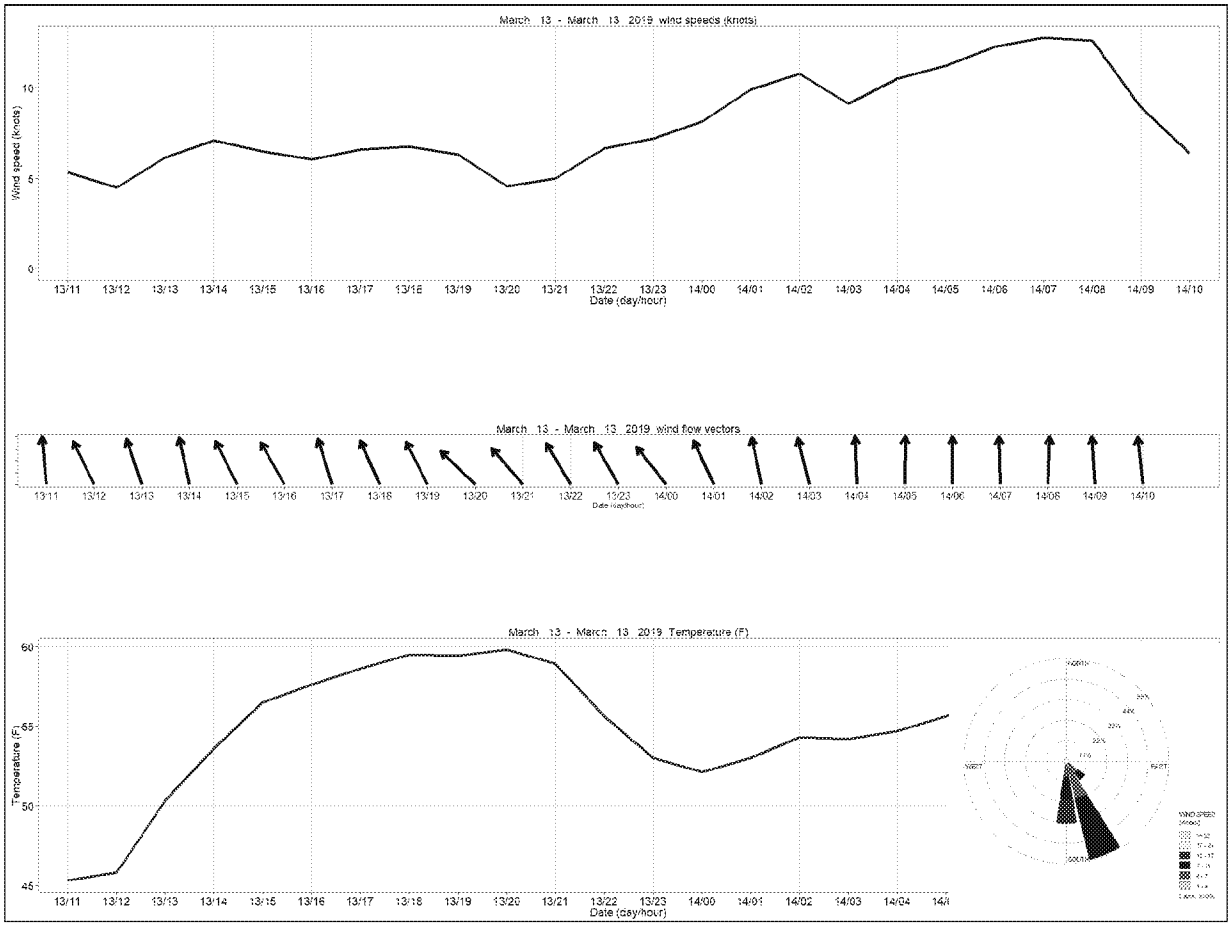

February 26 - February 26 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
February 26 - February 26 2019 wind flow vectors
February 26 - February 26 2019 Temperature (F)
Temperature (F)
Date (day/hour)

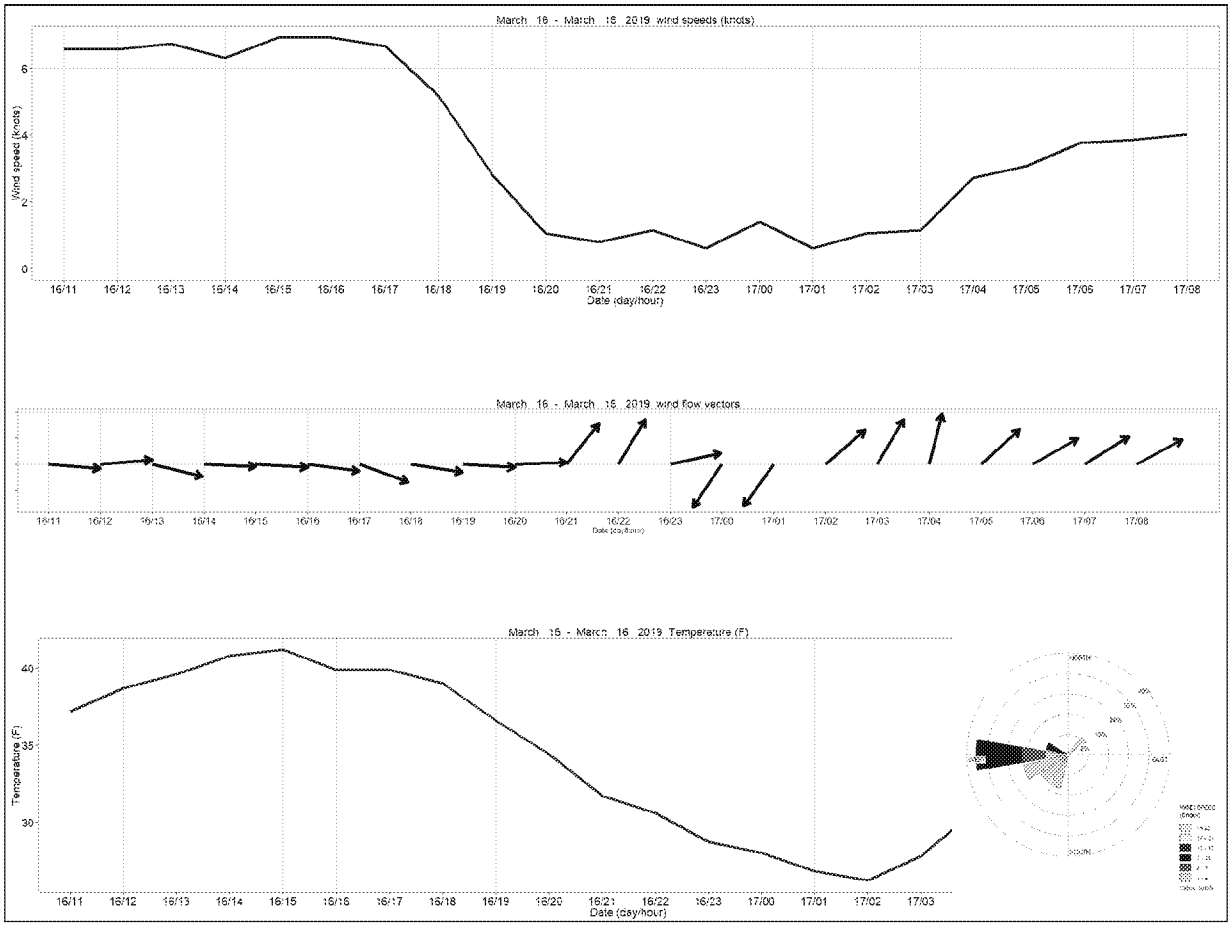

March 1 - March 01 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 1 - March 01 2019 wind flow vectors
March 1 - March 01 2019 Temperature (F)
Temperature (F)
Date (day/hour)

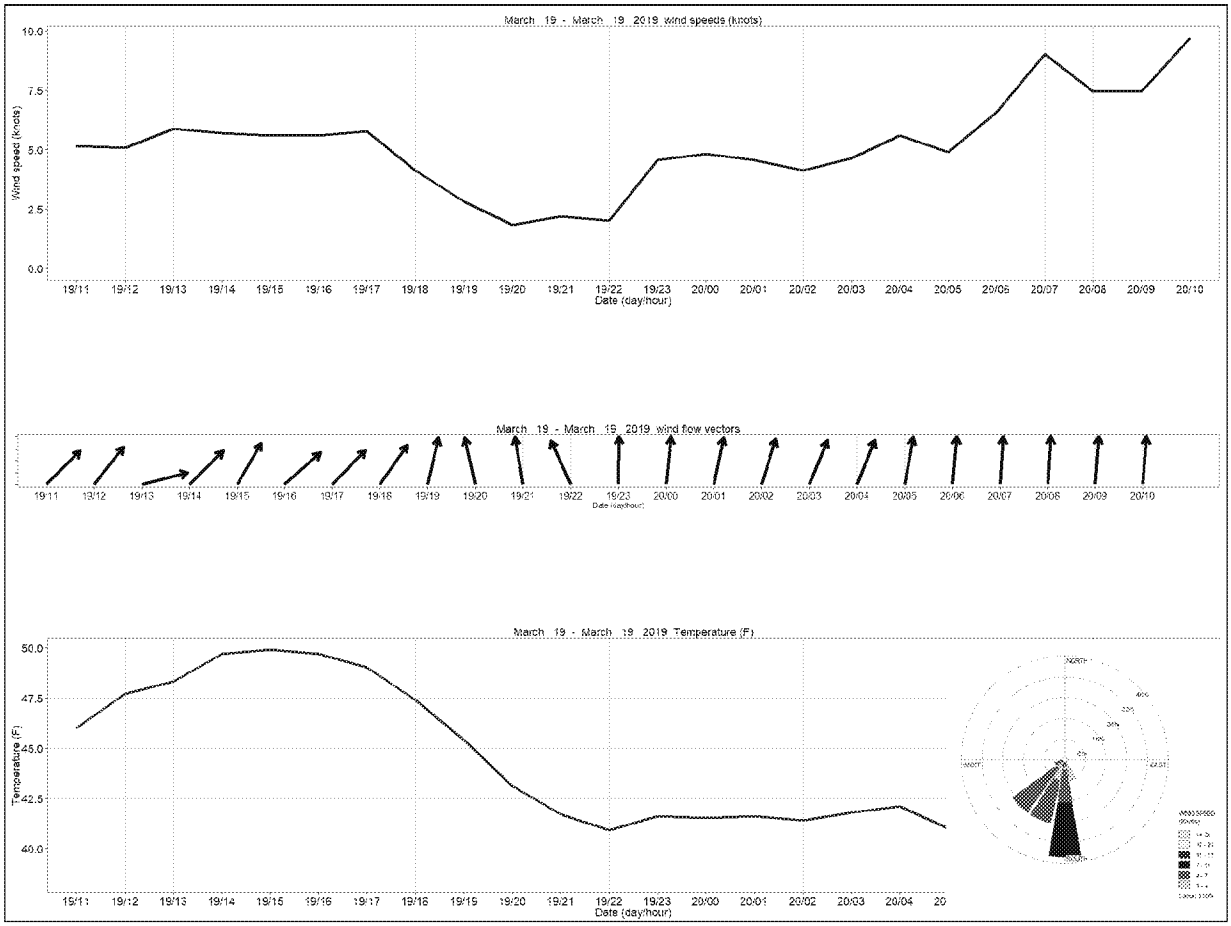

March 4 - March 04 2019 wind speeds (knots)
Wind speed (knots)
10.0
7.5
5.0
2.5
0.0
4/11 4/12 4/13 4/14 4/15 4/16 4/17 4/18 4/19 4/20 4/21 4/22 4/23 5/00 5/01 5/02 5/03 5/04 5/05 5/06 5/07 5/08 5/09 5/10
Date (day/hour)
March 4 - March 04 2019 wind flow vectors
4/11 4/12 4/13 4/14 4/15 4/16 4/17 4/18 4/19 4/20 4/21 4/22 4/23 5/00 5/01 5/02 5/03 5/04 5/05 5/06 5/07 5/08 5/09 5/10
March 4 - March 04 2019 Temperature (F)
Temperature (F)
11
9
7
5
4/11 4/12 4/13 4/14 4/15 4/16 4/17 4/18 4/19 4/20 4/21 4/22 4/23 5/00 5/01 5/02 5/03 5/04
Date (day/hour)

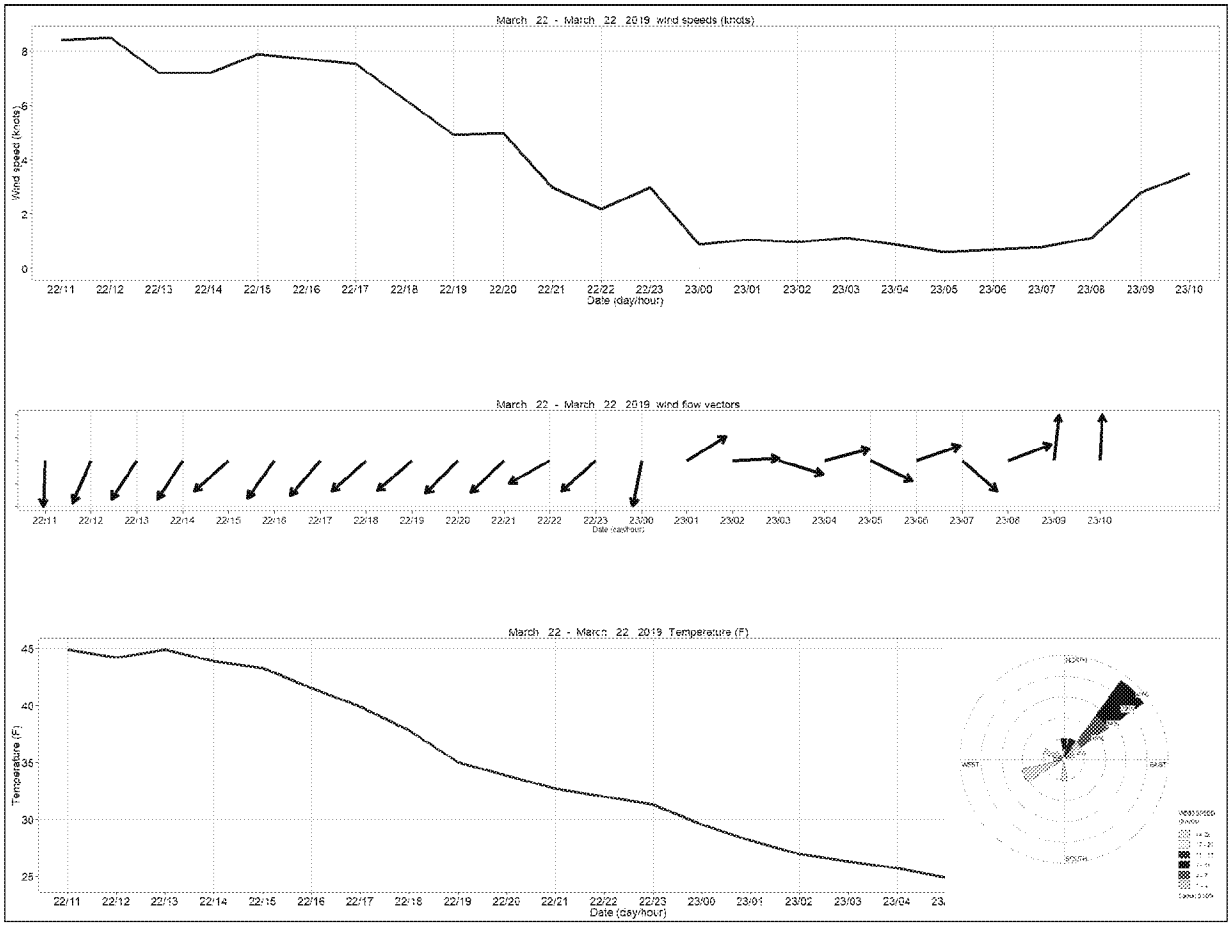

March 7 - March 07 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 7 - March 07 2019 wind flow vectors
March 7 - March 07 2019 Temperature (F)
Temperature (F)
Date (day/hour)

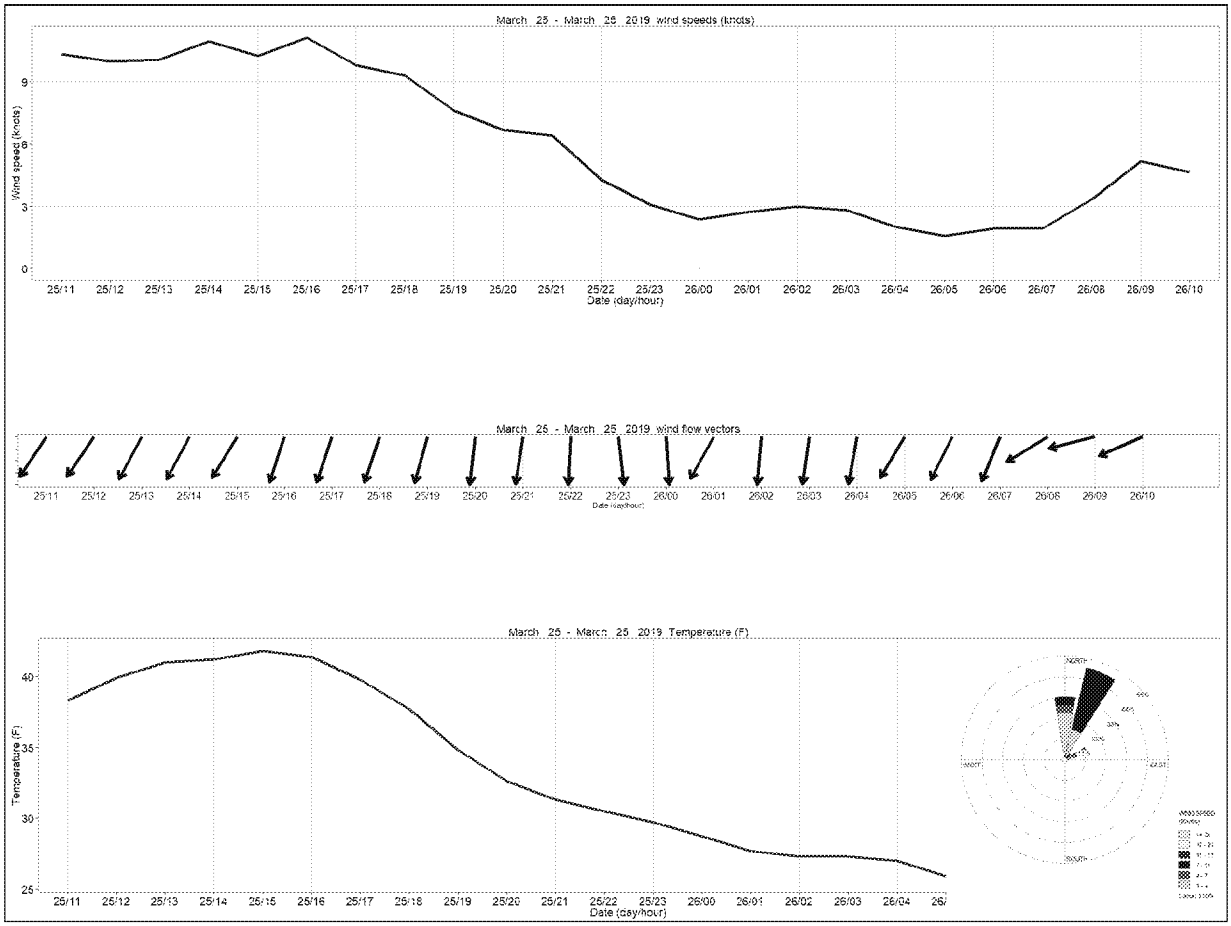

March 10 - March 10 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 10 - March 10 2019 wind flow vectors
March 10 - March 10 2019 Temperature (F)
Temperature (F)
Date (day/hour)

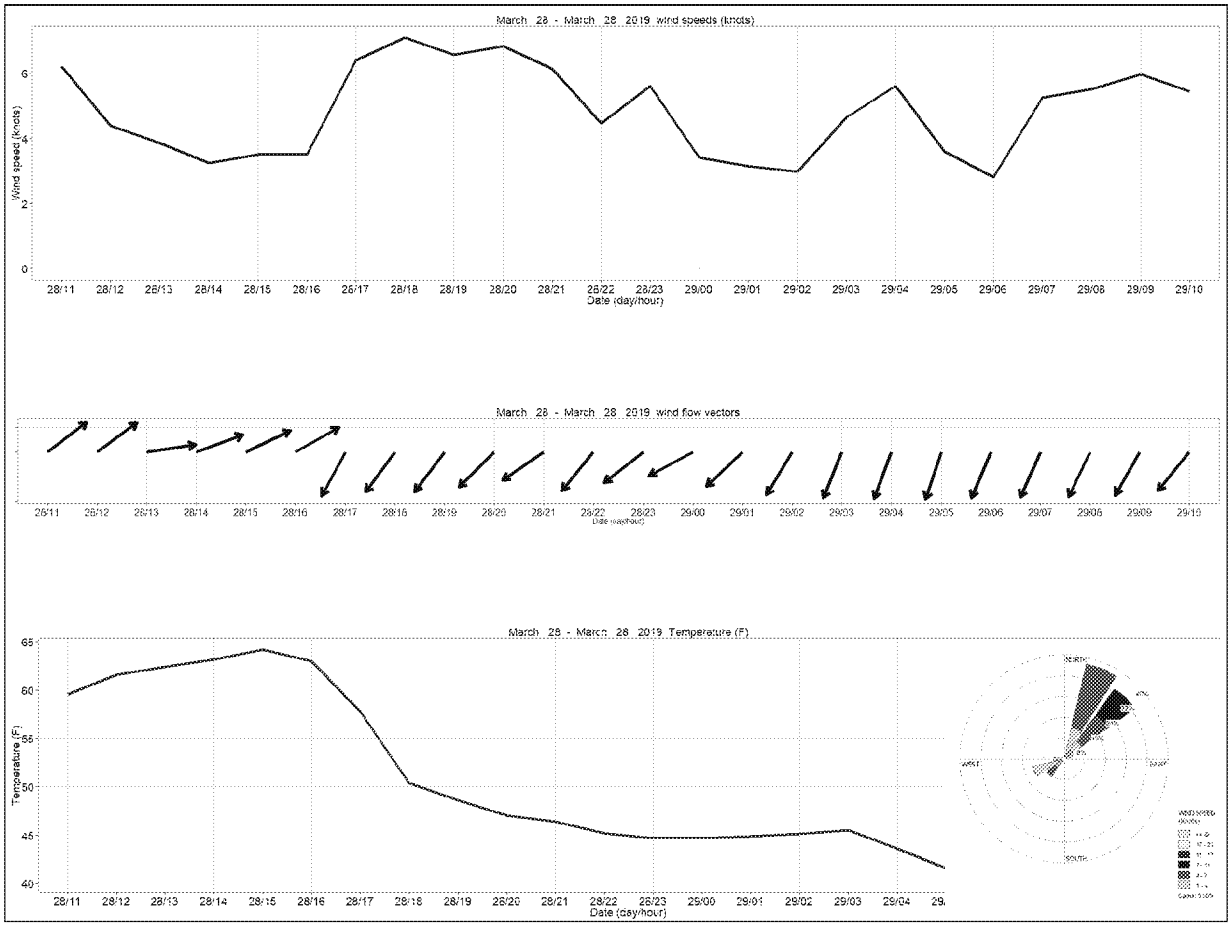

March 13 - March 13 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 13 - March 13 2019 wind flow vectors
March 13 - March 13 2019 Temperature (F)
Temperature (F)
Date (day/hour)

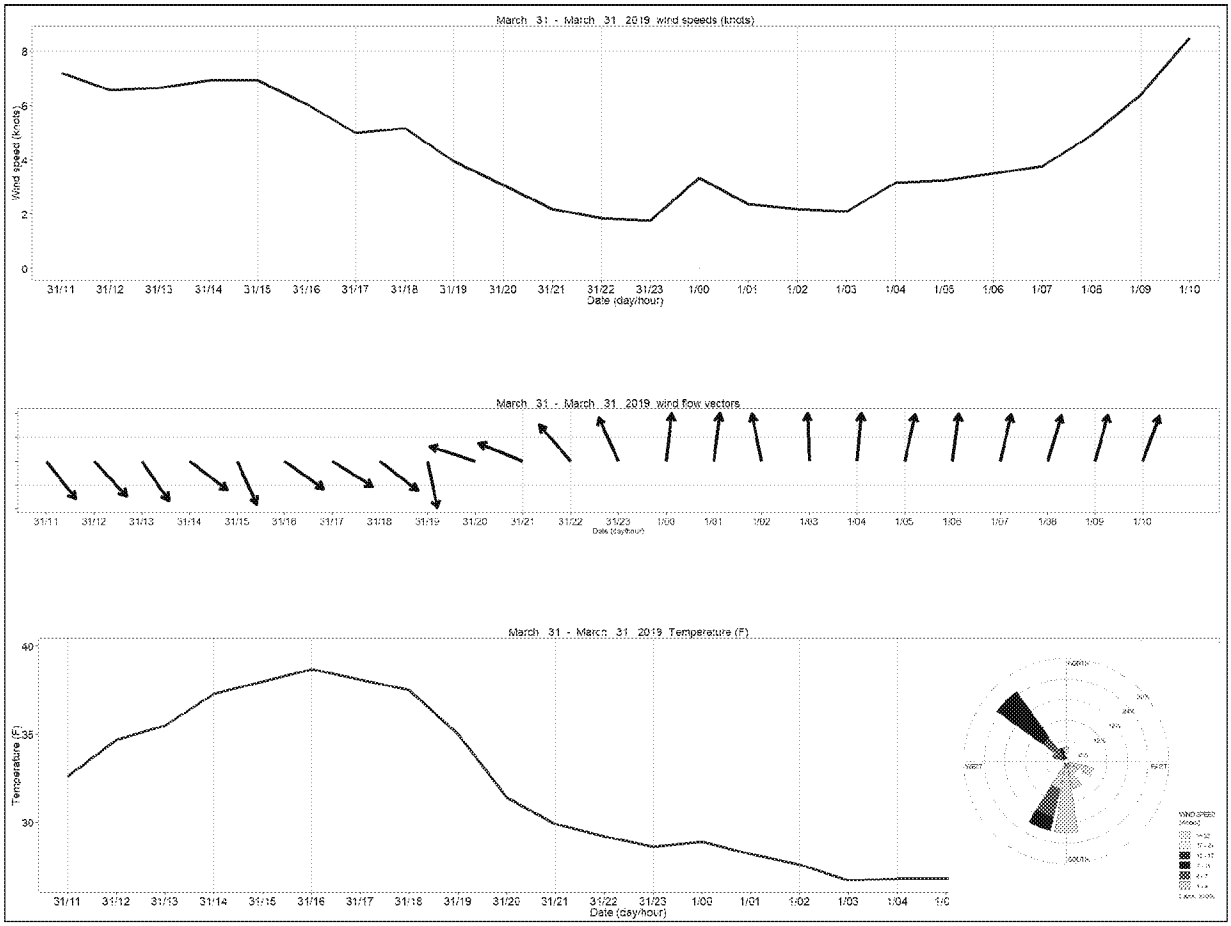

March 16 - March 18 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 16 - March 18 2019 wind flow vectors
March 16 - March 18 2019 Temperature (F)
Temperature (F)
Date (day/hour)


March 19 - March 19 2019 wind speeds (knots)
Wind speed (knots)
10.0
7.5
5.0
2.5
0.0
19/11 19/12 19/13 19/14 19/15 19/16 19/17 19/18 19/19 19/20 19/21 19/22 19/23 20/00 20/01 20/02 20/03 20/04 20/05 20/06 20/07 20/08 20/09 20/10
Date (day/hour)
March 19 - March 19 2019 wind flow vectors
19/11 19/12 19/13 19/14 19/15 19/16 19/17 19/18 19/19 19/20 19/21 19/22 19/23 20/00 20/01 20/02 20/03 20/04 20/05 20/06 20/07 20/08 20/09 20/10
March 19 - March 19 2019 Temperature (F)
Temperature (F)
50.0
47.5
45.0
42.5
40.0
19/11 19/12 19/13 19/14 19/15 19/16 19/17 19/18 19/19 19/20 19/21 19/22 19/23 20/00 20/01 20/02 20/03 20/04 20
Date (day/hour)


March 22 - March 22 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 22 - March 22 2019 wind flow vectors
March 22 - March 22 2019 Temperature (F)
Temperature (F)
Date (day/hour)


March 25 - March 25 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 25 - March 25 2019 wind flow vectors
March 25 - March 25 2019 Temperature (F)
Temperature (F)
Date (day/hour)


March 28 - March 28 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 28 - March 28 2019 wind flow vectors
March 28 - March 28 2019 Temperature (F)
Temperature (F)
Date (day/hour)


March 31 - March 31 2019 wind speeds (knots)
Wind speed (knots)
Date (day/hour)
March 31 - March 31 2019 wind flow vectors
March 31 - March 31 2019 Temperature (F)
Temperature (F)
Date (day/hour)

Message

From: Mackey, Lawrence J. [LMackey@lakecountyil.gov]
Sent: 7/22/2019 7:12:55 PM
To: Siegel, Kathryn [siegel.kathryn@epa.gov]
CC: King, Steven [Steven.King@Illinois.gov]; Mattison, Kevin [Kevin.Mattison@Illinois.gov]; Cain, Alexis [cain.alexis@epa.gov]; Compher, Michael [compher.michael@epa.gov]
Subject: RE: GHD report for Village of Willowbrook

Thanks!

From: Siegel, Kathryn <siegel.kathryn@epa.gov>
Sent: Monday, July 22, 2019 2:11 PM
To: Mackey, Lawrence J. <LMackey@lakecountyil.gov>
Cc: King, Steven <Steven.King@Illinois.gov>; Mattison, Kevin <Kevin.Mattison@Illinois.gov>; Cain, Alexis <cain.alexis@epa.gov>; Compher, Michael <compher.michael@epa.gov>
Subject: GHD report for Village of Willowbrook

Hi Larry,

As discussed, see page 13 of GHD's Willowbrook report. Note that the name of the modeler is given and they used the Lakes Environmental Software.

Let us know if you'd like our agencies to get on a call with GHD. Steve is happy to walk through his analysis. Thanks!

Katie Siegel, Chief
Air Toxics and Assessment Branch
Air and Radiation Division
U.S. EPA Region 5
siegel.kathryn@epa.gov
(312) 886-3006

Message

From: Cain, Alexis [cain.alexis@epa.gov]
Sent: 12/2/2019 3:39:13 PM
To: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
CC: Siegel, Kathryn [siegel.kathryn@epa.gov]; Compher, Michael [compher.michael@epa.gov]; Sieffert, Margaret [Sieffert.Margaret@epa.gov]
Subject: FW: Three Questions on EtO Emission Testing and AERMOD Discrepancies
Attachments: Sterigenics - Before and After Shutdown - Outdoor and Indoor Testing - A2.pptx; Covington GA - 7 Days - AERMOD Errors with Ground Data.pptx

Hello Lew—I will likely give this guy a call to talk through some of these issues with him. Do you have any advice about what to tell him about when the full NATTS data will be available (as opposed to just the site averages)?

He has made an effort to compare monitoring and modeling information at Covington in a way that is off-base. More interesting, I think, is his claim that post-closure, outdoor air EtO concentrations in Willowbrook declined rapidly, while indoor air concentrations dropped more slowly. See especially slides 8 and 9 of the Sterigenics presentation.

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From: John Aldrin <aldrin@computationaltools.com>
Sent: Friday, November 29, 2019 7:34 PM
To: Colledge, Michelle (ATSDR/DCHI/CB) <mna9@cdc.gov>; Cain, Alexis <cain.alexis@epa.gov>; Robinson, Randall <robinson.randall@epa.gov>
Cc: Nancy Loeb <n-loeb@northwestern.edu>; Syed Karim <etogohome@yahoo.com>; Cary John Shepherd <cary.shepherd@law.northwestern.edu>
Subject: Three Questions on EtO Emission Testing and AERMOD Discrepancies

Dear Michelle, Alexis, and Randy,

Michelle, it was great to talk with you at the Town Hall in Grayslake last month. Thanks for answering so many questions that day.

Alexis and Randy, thanks for taking the time to call a few months back and answer my question on the unexpected high reading near Woodland Middle School.

I've been doing some more analysis of EtO emission data from a number of sites, and also working to replicate AERMOD results at different locations in Illinois and Georgia, in support of the StopEtO in Lake County organization.

Based on this work, I have three questions in this email that I'd like to get your opinion on. (I've CCed a few people you know from our StopEtO in Lake County organization, so they are in the loop.) They don't need to be answered anytime soon. But, I would definitely appreciate your expert opinion on these topics when you have time.

1) Willowbrook After Sterigenics Ambient EtO Levels Lower than 18 Sites Around US.

I've been trying to request the raw data from the recent report: "Ethylene Oxide Data Summary from National Air Toxics Trends Stations and Urban Air Toxics Monitoring Program sites" but I haven't got a response through the US EPA web site yet.

https://www.epa.gov/hazardous-air-pollutants-ethylene-oxide/ethylene-oxide-data-summary-national-air-toxics-trends

The average results are reported at this link, but I can't seem to find the raw data online, or much details on the EtO testing details.

https://www.epa.gov/sites/production/files/2019-11/documents/data_summary_stations.pdf

Basically, these numbers, between 0.185 and 0.397 ug/m^3 appear to be a little higher than what I would have expected.

I've been doing analysis of the distribution of the data from Willowbrook. (See spreadsheet Sterigenics - Before and After Shutdown - Outdoor and Indoor Testing - A2.pptx – Slides 1-5) For comparison, after the Willowbrook shutdown, the mean value was only 0.138 ug/m^3.

Basically, it's hard to believe that every one of these 18 test sites was higher than Willowbrook, especially considering what Sterigencis was emitting just before shutdown.

One concern I have in this study is they should really be reporting median values (rather than mean levels) to avoid issues with averaging 'non-detect' levels or possibly including testing outliers on the high end in the averages. Essentially, I want to understand why these 18 sites are so high, and see if we can get some more insight from more ambient data around the US, on the ambient levels in Illinois.

Question 1: Do you have access to the raw data from this study and can provide the data to us at StopEtO in Lake County?

2) AERMOD Discrepancies at Increasing Distance.

I've been working to replicate the various EtO measurements around various facilities using AERMOD. I recently got an inversion process operational for estimating the emission levels from experimental cannister data. (To solve the inverse problem, I basically integrated AERMOD with Matlab). I decided to start with the 7 day Covington GA data, because it was continuously collected, the Georgia EPD already developed an AERMOD model for the site, and the cannister results were so much higher than expected.

While I had high hopes with implementing an inverse method to quantitatively evaluate the expected emissions, reality (of course) is so much more complicated.

There are a few examples of cannister results that are making inversion difficult using experimental data. (I have some notes in the attached 'Covington GA - 7 Days - AERMOD Errors with Ground Data.pptx'):

Observation 1 – Errors Near Source (Slide 3): The Georgia AERMOD model shows a very sharp drop between local emission at the BD plant and in the neighboring residential areas. Cannister readings to date tell a different story. Now, these results are only over a short period, and there are a number of partially calm days, which AERMOD doesn't do a great job of modeling. But, AERMOD emission models show a much sharper drop off locally than what we are seeing in the field. This is a critical point when we have residences so close to heavy EtO use facilities.

Observation 2 – Errors at Moderate Distances (Slide 4): The Williams Street Water plant had a higher emission level than Covington Mills Area for this day, as well as the three cannisters around BD. The wind direction was correct for a high reading at the Water plant, but not higher than Covington Mills. Now, there could be some reasons for this, like (1) the wind rose not being a precise representation of the reality or (2) experimental testing error. But, for the AERMOD model, this high value with lower values closer to the source doesn't make sense and causes all kinds of trouble when implementing an inverse method. Essentially, while this seems like a useful data point, it causes problem to include it as part of an inverse model based on AERMOD.

Observation 3 – Errors at Far Distances (Slide 5-6): At the cannister site in Rural SE Newton County, a high

measurement of 0.624 ug/m^3 was acquired at 8 miles from the BD sterilization site, on day 7 of testing. Based on the wind rose pattern, it appears the source of this EtO reading is coming straight from the BD site. That alignment with the wind data is nearly perfect. While this cannister location was likely chosen to evaluate 'background' levels, due to the wind direction that day, unexpectedly higher emission levels were detected at a very far distance. The problem is AERMOD, even when the wind is aligned with this distant location, the model only estimates levels of 0.003 ug/m^3 versus 0.624 ug/m^3 on the ground (and that's with applying a 10X increase in emission levels.)

There appears to be two key areas for model discrepancy based on the Covington GA results:

(A) Actual emission levels are just too low in the Covington model to match the local data. They are emitting at much higher levels than 657.4 lb per year rate during this week of testing.

(B) I also think model error for AERMOD appears to get worse as you get further away from these facilities (i.e. it under-estimates the emission levels at greater distances.) While right near the facility, the numbers have less error, further away in the closest residential neighborhoods and of course at 8 miles away, even with increasing the average emission level, the model really underpredicts.

Question 2: Is anyone working on model corrections to AERMOD to address these discrepancies at increasing distance? Are there any other good models to better address transient plumes over longer distances? I would really like to perfect an inverse model here, taking cannister data and linking it back to estimate combined stack + fugitive emissions, but these model discrepancies make it difficult to practically implement and have someone else trust the results.

(If you need more info on this, let me know.)

3) Slow Decay of EtO Indoors in Willowbrook.

While the EPA was funding testing every three days, the city of Willowbrook also paid for more frequent independent testing, both inside and outside the Village Hall and Police Station, that started in Feb. 1, 2019. This independent testing actually produced much higher EtO numbers relative to the EPA funded testing. On these high days, very high EtO concentrations were detected both inside and outside the Town Hall and Police Station, with a maximum value of 320 ug/m^3 outdoor and 250 ug/m^3 indoors.

However, the numbers that really surprised me were the indoor EtO trends after shutdown. While outside levels immediately dropped the day Sterigenics was shut down on Feb. 15, 2019, the indoor numbers only slowly decreased, with some day-to-day variability mixed in. The slow decay didn't even reach the ambient outdoor levels at the end of their testing, 19 days after the shutdown (See Slide 6-9 of Sterigenics - Before and After Shutdown - Outdoor and Indoor Testing – A2.pptx) Note, they did come back in August and did 7 days of indoor testing, and results did finally show lower levels matching outdoor conditions.

This study shows how EtO can potentially linger for weeks to possibly months in the spaces we live.

Question 3: These results were quite surprising concerning the slow decay of EtO indoors in Willowbrook at the town hall and police station. Are you or do you know of anyone else studying this problem? I originally assumed being indoors would be better than outdoors, but these data show otherwise, at least at first glance. I have a lot of concern for the businesses near Medline and Vantage for example, and other locations around the USA too. Curious if there might be certain measures that could be recommended to building / HVAC design to mitigate this problem.

Lastly, I do have concern going forward about the current state of these EtO models for permitting, verification of compliance, and managing risk. From the data I've been studying, EtO appears to extend beyond the expected range of AERMOD models, and also appears to linger, especially in indoor environments, longer than expected.

Sorry for the very long email with attachments, but I think these points our critical for understanding our risk in Lake County. I would appreciate your thoughts on my questions when you have time. I'm guessing you've seen most of these observations I've noted here and may already be working on these issues. Appreciate any insight you might have.

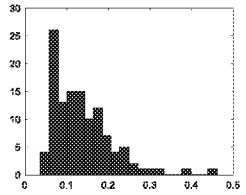
Thanks for your help in advance!

Sincerely,

John Aldrin

Redacted

Sterigenics (Willowbrook) After Shutdown – Distribution of All Outdoor Measurements



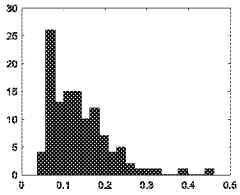
- Study trends in data after Willowbrook Shutdown
  - *8 Outdoor Locations*
  - *15 '24 hour' Periods*
  - *118 Data Points (2 NA)*
  - *26 Values below 0.072 ug/m³ (Limit of Testing)*

Sample Start Date	Day (after shutdown)	Willowbrook Village Hall	EPA Willowbrook Warehouse	Gower Middle School	West Neighborhood	Water Tower	Willow Pond Park	Hinsdale South High School	Gower Elementary School	MEDIAN (for Date)
2/19/2019	4	0.239	0.15	0.202	0.298	0.222	0.072	0.162	0.072	0.212
2/20/2019	5	0.26	0.159	0.072	0.072	0.072	0.111	0.072	0.148	0.092
2/23/2019	8	0.128	0.132	0.164	0.165	0.179	0.171	0.282	NA	0.168
2/26/2019	11	0.166	0.119	0.072	0.114	0.084	0.072	0.188	0.072	0.117
3/1/2019	14	0.072	0.103	0.072	0.072	0.142	0.148	0.125	0.145	0.114
3/4/2019	17	0.161	0.072	0.072	0.113	0.072	0.108	0.122	0.124	0.111
3/7/2019	20	0.099	0.096	0.093	0.112	0.165	0.122	0.072	0.072	0.106
3/10/2019	23	NA	0.075	0.171	0.201	0.081	0.244	0.102	0.097	0.171
3/13/2019	26	0.204	0.122	0.246	0.195	0.219	0.147	0.139	0.394	0.200
3/16/2019	29	0.461	0.171	0.267	0.109	0.072	0.322	0.102	0.056	0.219
3/19/2019	32	0.136	0.056	0.082	0.037	0.079	0.206	0.082	0.215	0.082
3/22/2019	35	0.06	0.117	0.068	0.197	0.075	0.177	0.224	0.181	0.147
3/25/2019	38	0.078	0.134	0.084	0.102	0.093	0.13	0.133	0.106	0.116
3/28/2019	41	0.114	0.181	0.233	0.12	0.092	0.151	0.175	0.174	0.163
3/31/2019	44	0.057	0.072	0.099	0.242	0.087	0.136	0.072	0.138	0.093

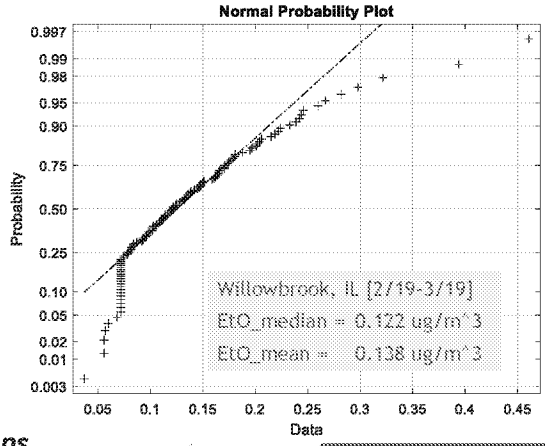
Trans -2- butene detected although concentration is too low to quantify

Below 0.072 ug/m3

Sterigenics (Willowbrook) After Shutdown – Distribution of All Outdoor Measurements



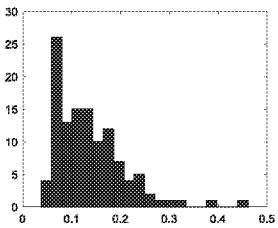
- Present 118 Data Points on Normal Probability Plot
  - *Shows fairly normal representation for probabilities from 0.2 to 0.8*
  - *Low end departs from normal trend due to lack of test sensitivity below 0.072 ug/m^3*
  - *Also see departure from normal trend for cases with highest local emissions*
  - *Distribution not normal at tails (left skewed)*
  - *Don't see any obvious 'outliers'*
  - ***Should not use 'mean' metric but 'median' to compare distributions***

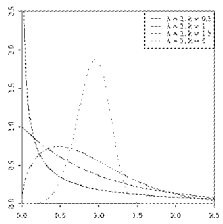


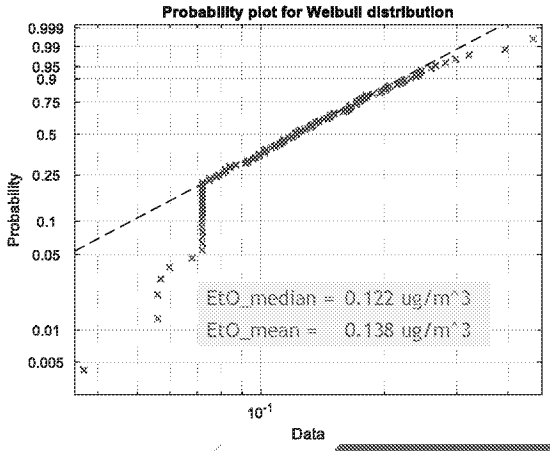
Sterigenics (Willowbrook) After Shutdown – Distribution of All Outdoor Measurements

- Present 118 Data Points on Normal Probability Plot
  - *Weibull Distribution provides somewhat better fit:*

$$f(x;\lambda,k) = \begin{cases} \frac{k}{\lambda}\left(\frac{x}{\lambda}\right)^{k-1} e^{-(x/\lambda)^k} & x \geq 0, \\ 0 & x < 0, \end{cases}$$







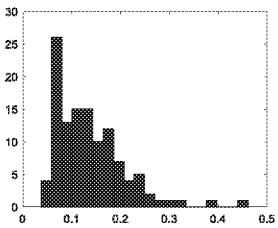
Sterigenics (Willowbrook) After Shutdown – Distribution of All Outdoor Measurements

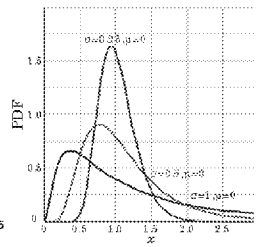
- Present 118 Data Points on Normal Probability Plot
  - *Lognormal Distribution provides somewhat better fit:*

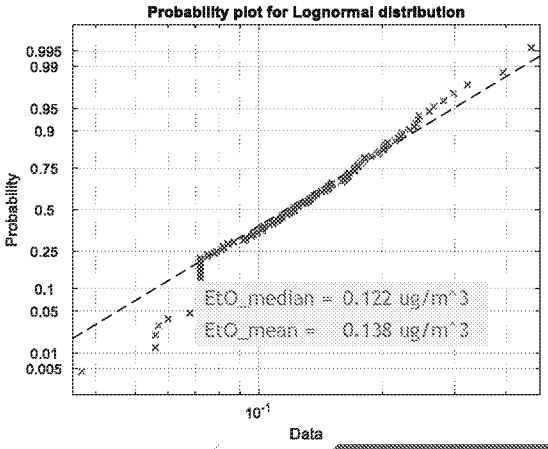
$$f_X(x) = \frac{\mathrm{d}}{\mathrm{d}x}\Pr(X \le x) = \frac{\mathrm{d}}{\mathrm{d}x}\Pr(\ln X \le \ln x) = \frac{\mathrm{d}}{\mathrm{d}x}\Phi\left(\frac{\ln x - \mu}{\sigma}\right)$$

$$= \varphi\left(\frac{\ln x - \mu}{\sigma}\right)\frac{\mathrm{d}}{\mathrm{d}x}\left(\frac{\ln x - \mu}{\sigma}\right) = \varphi\left(\frac{\ln x - \mu}{\sigma}\right)\frac{1}{\sigma x}$$

$$= \frac{1}{x}\cdot\frac{1}{\sigma\sqrt{2\pi}}\exp\left(-\frac{(\ln x - \mu)^2}{2\sigma^2}\right).$$







Sterigenics (Willowbrook) After Shutdown – Compare with National Data (10/2018 – 3/2019)

- Compare:
  - *Willowbrook after shutdown lower than all 18 sites. Why?*

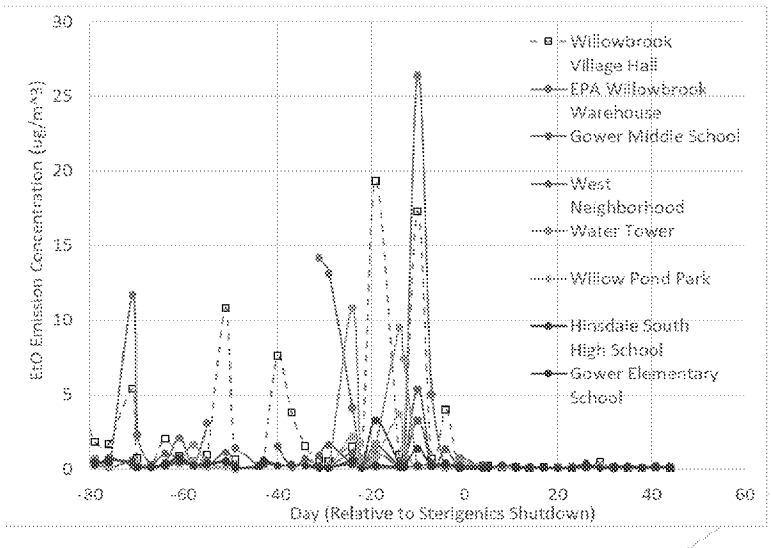
Willowbrook, IL [2/19-3/19]
EtO_median = 0.122 ug/m^3
EtO_mean = 0.138 ug/m^3

  - *Should not be using averages*
  - *Median is better metric*

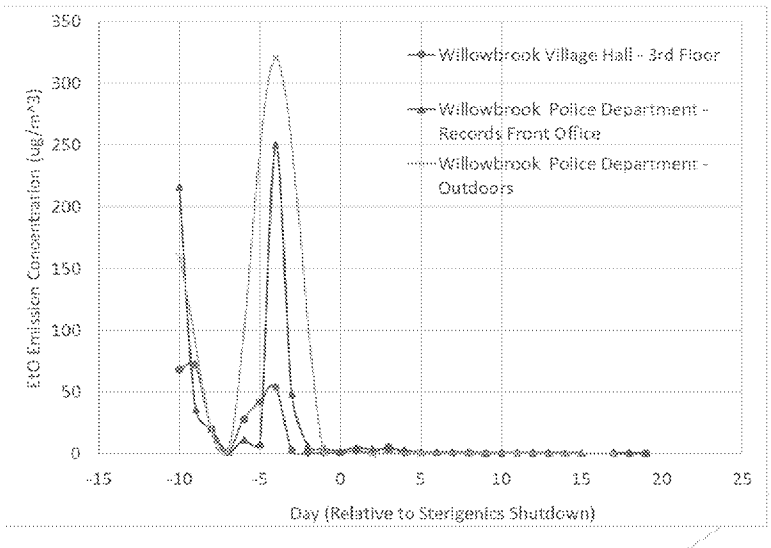
Site Name	City	State	Network	AQS Site ID	Average by Site (in micrograms per cubic meter) [National average = 0.297]
PXSS	Phoenix	AZ	National Air Toxics Trends	04-013-9997	0.397
SPAZ	Phoenix	AZ	Urban Air Toxics	04-013-4003	0.345
GPCO	Grand Junction	CO	National Air Toxics Trends	08-077-0018	0.261
NBIL	Northbrook	IL	National Air Toxics Trends	17-031-4201	0.294
SPIL	Chicago	IL	Urban Air Toxics	17-031-3103	0.365
ASKY	Ashland	KY	Urban Air Toxics	21-019-0017	0.286
BLKY	Smithland	KY	Urban Air Toxics	21-139-0004	0.312
GLKY	Grayson lake	KY	National Air Toxics Trends	21-043-0500	0.185
TVKY	Calvert City	KY	Urban Air Toxics	21-157-0014	0.363
DEMI	Dearborn	MI	National Air Toxics Trends	26-163-0033	0.242
S4MO	St. Louis	MO	National Air Toxics Trends	29-510-0085	0.270
CHNJ	Chester	NJ	Urban Air Toxics	34-027-3001	0.361
CSNJ	Camden	NJ	Urban Air Toxics	34-007-0002	0.350
ELNJ	Elizabeth	NJ	Urban Air Toxics	34-039-0004	0.305
NRNJ	East Brunswick	NJ	Urban Air Toxics	34-023-0011	0.298
BTUT	Bountiful	UT	National Air Toxics Trends	49-011-0004	0.338
LAWA	Lacey	WA	Urban Air Toxics	53-067-0013	0.192
SEWA	Seattle	WA	National Air Toxics Trends	53-033-0080	0.185

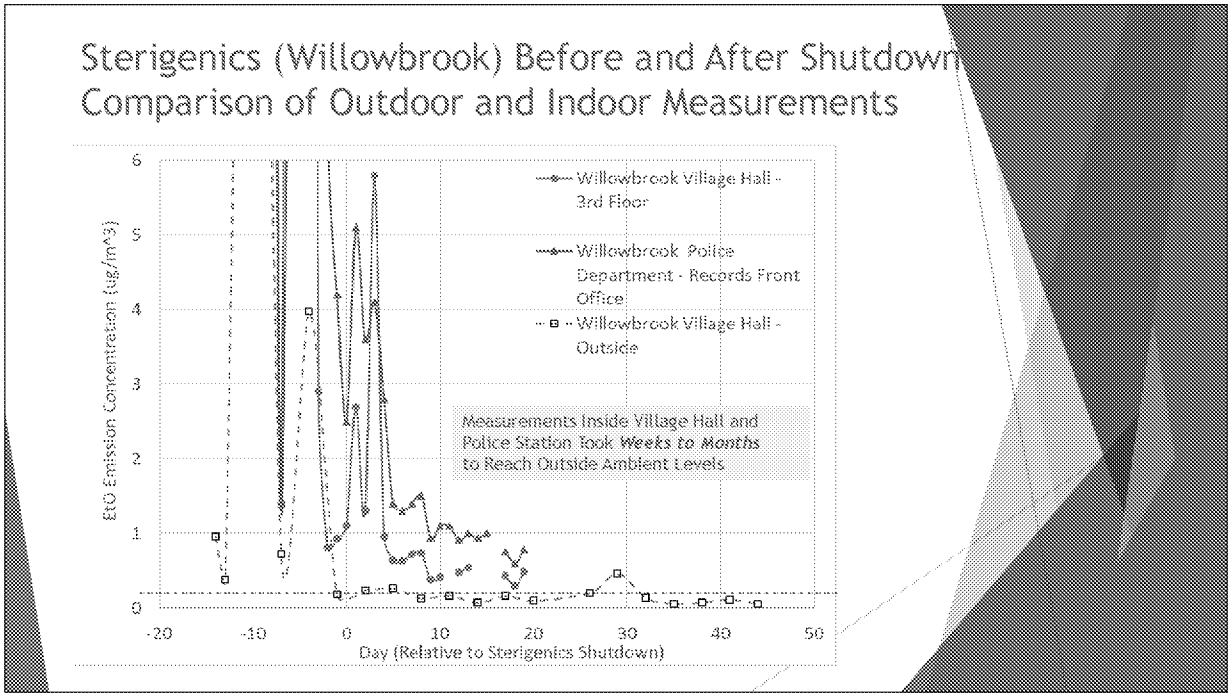
https://www.epa.gov/sites/production/files/2019-11/documents/data_summary_stations.pdf

Sterigenics (Willowbrook) Before and After Shutdown Outdoor Measurements



Sterigenics (Willowbrook) Before and After Shutdown
Comparison of Outdoor and Indoor Measurements





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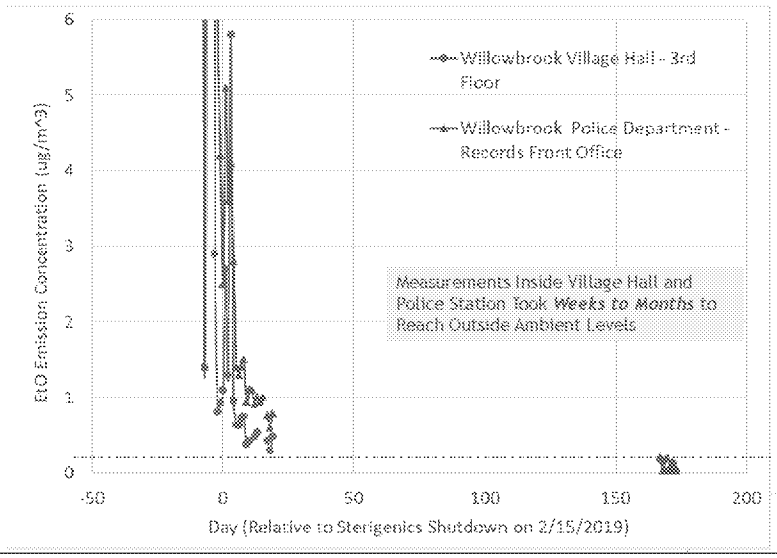
However, the numbers that REALLY surprised me were the indoor EtO trends after shutdown. While outside levels immediately dropped the day Sterigenics was shut down on Feb. 15, 2019, the indoor numbers only slowly decreased, with some day-to-day variability mixed in. The slow decay didn't even reach the ambient outdoor levels at the end of their testing, 19 days after the shutdown. [They did come back in August and did 7 days of indoor testing, and results did finally show lower levels matching outdoor conditions (approx. 6 months later).] This study shows how EtO lingers for weeks to possibly months in the spaces we live.

Sterigenics (Willowbrook) Before and After Shutdown
Comparison of Outdoor and Indoor Measurements



Sample Start Date		Willowbrook Village Hall	EPA Willowbrook Warehouse	Gower Middle School	West Neighborhood	Water Tower
11/13/2018	-94	Invalid	2.37	-	-	-
11/16/2018	-91	0.824	1.81	-	-	-
11/19/2018	-88	6.11	6.62	0.155	0.125	0.246
11/23/2018	-84	0.284	0.18	0.197	0.205	0.893
11/25/2018	-82	4.1	Invalid	0.36	0.261	Invalid
11/28/2018	-79	1.83	0.248	0.656	ND	0.699
12/1/2018	-76	1.68	0.456	0.14	0.804	ND
12/6/2018	-71	5.39	11.7	0.605	0.254	0.389
12/7/2018	-70	0.737	2.26	0.112	ND	0.273
12/10/2018	-67	0.3	0.269	ND	0.213	0.248
12/13/2018	-64	2.04	0.436	0.255	1.06	0.211
12/16/2018	-61	0.871	2.11	0.593	0.604	0.535
12/19/2018	-58	0.521	0.345	0.36	0.197	1.67
12/22/2018	-55	0.981	3.09	0.522	0.235	0.441
12/26/2018	-51	10.8	Invalid	ND	1.17	0.151
12/28/2018	-49	0.672	1.42	0.175	ND	Invalid
1/2/2019	-44	0.251	0.237	ND	ND	ND
1/3/2019	-43	0.372	ND	ND	ND	ND
1/6/2019	-40	7.59	ND	ND	1.56	ND
1/9/2019	-37	3.81	Invalid	0.354	0.115	ND
1/12/2019	-34	1.57	ND	ND	0.727	0.307
1/15/2019	-31	0.672	14.2	0.918	0.119	0.072
1/17/2019	-29	0.517	13.1	1.66	0.151	0.316
1/22/2019	-24	1.51	4.1	0.349	1.07	10.8
1/24/2019	-22	0.262	0.28	0.077	0.06	0.082
1/27/2019	-19	19.3	1.11	0.155	1.65	1.75
2/1/2019	-14	0.954	0.133	0.101	0.129	9.49
2/2/2019	-13	0.383	0.228	0.371	0.16	7.48
2/5/2019	-10	17.3	26.4	3.29	5.35	0.208
2/8/2019	-7	0.725	5.04	0.439	0.275	0.233
2/11/2019	-4	3.98	0.072	0.114	1.32	0.072
2/14/2019	-1	0.178	0.745	0.286	0.072	0.495
2/19/2019	4	0.239	0.15	0.202	0.298	0.222
2/20/2019	5	0.26	0.159	0.072	0.072	0.072
2/23/2019	8	0.128	0.132	0.164	0.165	0.179
2/26/2019	11	0.166	0.119	0.072	0.114	0.084
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3/4/2019	17	0.161	0.072	0.072	0.113	0.072
3/7/2019	20	0.099	0.096	0.093	0.112	0.165
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3/19/2019	32	0.136	0.056	0.082	0.037	0.079
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3/28/2019	41	0.114	0.181	0.233	0.12	0.092
3/31/2019	44	0.057	0.072	0.099	0.242	0.087
		Willowbrook Village Hall	**EPA Willowbrook Warehouse**	**Gower Middle School**	**West Neighborhood**	**Water Tower**
		0.132	**0.119**	**0.093**	**0.114**	**0.087**

Note: For quality assurance, EPA's monitoring plan calls for collocated samples to be collected for each sampling day at the
the expected locations of maximum concentrations. Those data are reported in the table as Willowbrook Village Hall 2 an
ND – non detect. Ethylene Oxide was either not present in the sample or was at a level below the level the method could d

Trans -2- butene detected although concentration is too low to quantify .

Unscheduled samples at maximum concentration sites only.

2/21/2019		0.144	ND	-	-	-
2/22/2019		0.123	0.121	-	-	-

Willow Pond Park	Hinsdale South High School	Gower Elementary School	MAX	MEDIAN	EPA Willowbrook Warehouse 2
-	-	-	2.37	2.37	-
-	-	-	1.81	1.317	1.81
0.105	0.253	0.164	6.62	0.205	-
0.286	Invalid	0.202	0.893	0.205	Invalid
0.345	0.665	0.411	4.1	0.3855	Invalid
0.455	0.376	0.474	1.83	0.474	1.14
0.211	0.629	0.464	1.68	0.464	-
ND	0.486	ND	11.7	0.5455	10.5
0.403	ND	0.164	2.26	0.338	-
ND	0.213	0.138	0.3	0.2305	0.403
0.365	0.244	0.401	2.04	0.383	-
0.334	0.511	0.732	2.11	0.5985	2.19
0.546	0.267	0.311	1.67	0.3525	-
0.116	0.376	0.36	3.09	0.4085	2.57
0.166	0.566	0.497	10.8	0.5315	-
ND	0.264	0.133	1.42	0.264	1.19
0.217	ND	0.21	0.251	0.227	0.396
ND	0.428	0.633	0.633	0.428	-
ND	0.249	0.249	7.59	0.9045	-
0.219	0.295	Invalid	3.81	0.295	0.685
ND	0.264	0.237	1.57	0.307	-
0.107	0.239	0.072	14.2	0.179	14.3
0.144	0.134	0.072	13.1	0.2335	-
2.21	0.349	0.598	10.8	1.29	4.05
0.114	0.072	0.095	0.28	0.0885	-
0.813	3.29	0.293	19.3	1.38	1.26
3.71	0.322	0.157	9.49	0.2395	-
1.4	0.131	0.215	7.48	0.2995	0.251
0.174	0.237	1.38	26.4	2.335	-
0.213	0.347	0.202	5.04	0.311	4.3
0.089	0.309	0.398	3.98	0.2115	-
0.244	0.258	0.072	0.745	0.251	0.609
0.072	0.162	0.072	0.298	0.182	-
0.111	0.072	0.148	0.26	0.0915	0.197
0.171	0.282	NA	0.282	0.165	ND
0.072	0.188	0.072	0.188	0.099	-
0.148	0.125	0.145	0.148	0.114	0.144
0.108	0.122	0.124	0.161	0.1105	-
0.122	0.072	0.072	0.165	0.0975	0.085
0.244	0.102	0.097	0.244	0.102	-
0.147	0.139	0.394	0.394	0.1995	0.24
0.322	0.102	0.056	0.461	0.14	-
0.206	0.082	0.215	0.215	0.082	-
0.177	0.224	0.181	0.224	0.147	0.206
0.13	0.133	0.106	0.134	0.104	-

0.151	0.175	0.174	0.233	0.1625	0.224
0.136	0.072	0.138	0.242	0.093	-
Willow Pond Park	**Hinsdale South High School**	**Gower Elementary School**			
0.147	**0.125**	**0.131**			
: Willowbrook Village Hall or the EPA Willowbrook Warehouse – d EPA Willowbrook Warehouse 2. letect. Invalid -- the sample did not meet EPA's field, shipping,					
-	-	-			ND
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Willowbrook Village Hall 2
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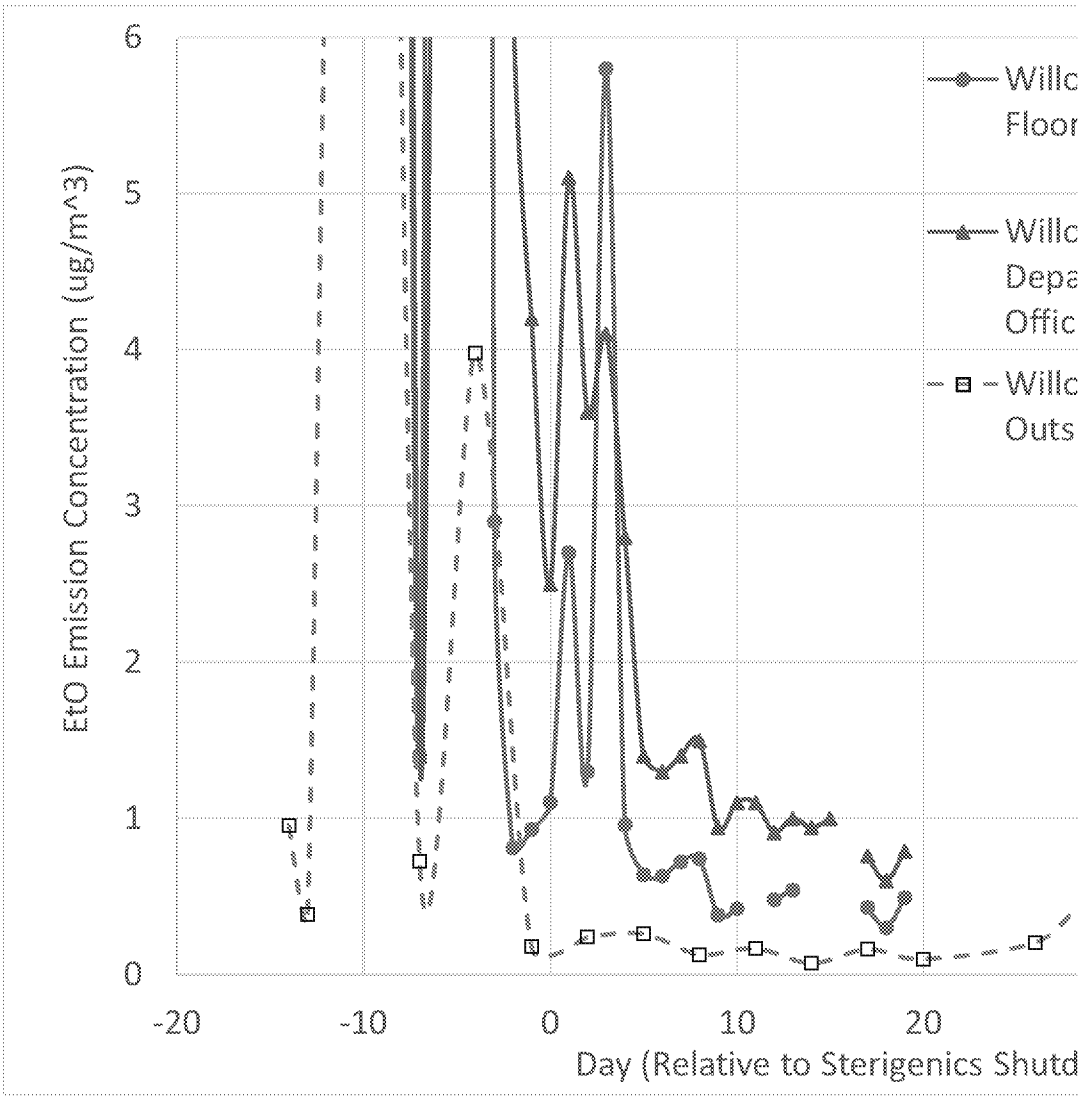

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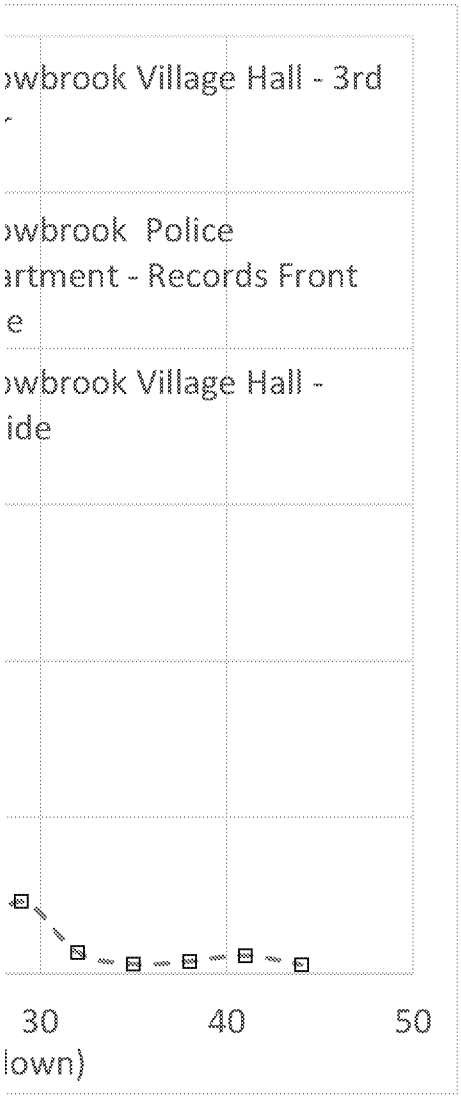
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Sample Start Date		Willowbrook Village Hall	EPA Willowbrook Warehouse	Gower Middle School	West Neighborhood	Water Tower
11/13/2018	-94		2.37	-	-	-
11/16/2018	-91	0.824	1.81	-	-	-
11/19/2018	-88	6.11	6.62	0.155	0.125	0.246
11/23/2018	-84	0.284	0.18	0.197	0.205	0.893
11/25/2018	-82	4.1		0.36	0.261	
11/28/2018	-79	1.83	0.248	0.656		0.699
12/1/2018	-76	1.68	0.456	0.14	0.804	
12/6/2018	-71	5.39	11.7	0.605	0.254	0.389
12/7/2018	-70	0.737	2.26	0.112		0.273
12/10/2018	-67	0.3	0.269		0.213	0.248
12/13/2018	-64	2.04	0.436	0.255	1.06	0.211
12/16/2018	-61	0.871	2.11	0.593	0.604	0.535
12/19/2018	-58	0.521	0.345	0.36	0.197	1.67
12/22/2018	-55	0.981	3.09	0.522	0.235	0.441
12/26/2018	-51	10.8			1.17	0.151
12/28/2018	-49	0.672	1.42	0.175	ND	
1/2/2019	-44	0.251	0.237			
1/3/2019	-43	0.372				
1/6/2019	-40	7.59			1.56	
1/9/2019	-37	3.81		0.354	0.115	
1/12/2019	-34	1.57			0.727	0.307
1/15/2019	-31	0.672	14.2	0.918	0.119	0.072
1/17/2019	-29	0.517	13.1	1.66	0.151	0.316
1/22/2019	-24	1.51	4.1	0.349	1.07	10.8
1/24/2019	-22	0.262	0.28	0.077	0.06	0.082
1/27/2019	-19	19.3	1.11	0.155	1.65	1.75
2/1/2019	-14	0.954	0.133	0.101	0.129	9.49
2/2/2019	-13	0.383	0.228	0.371	0.16	7.48
2/5/2019	-10	17.3	26.4	3.29	5.35	0.208
2/8/2019	-7	0.725	5.04	0.439	0.275	0.233
2/11/2019	-4	3.98	0.072	0.114	1.32	0.072
2/14/2019	-1	0.178	0.745	0.286	0.072	0.495
2/19/2019	4	0.239	0.15	0.202	0.298	0.222
2/20/2019	5	0.26	0.159	0.072	0.072	0.072
2/23/2019	8	0.128	0.132	0.164	0.165	0.179
2/26/2019	11	0.166	0.119	0.072	0.114	0.084
3/1/2019	14	0.072	0.103	0.072	0.072	0.142
3/4/2019	17	0.161	0.072	0.072	0.113	0.072
3/7/2019	20	0.099	0.096	0.093	0.112	0.165
3/10/2019	23	0.072	0.075	0.171	0.201	0.081
3/13/2019	26	0.204	0.122	0.246	0.195	0.219
3/16/2019	29	0.461	0.171	0.267	0.109	0.072
3/19/2019	32	0.136	0.056	0.082	0.037	0.079
3/22/2019	35	0.06	0.117	0.068	0.197	0.075
3/25/2019	38	0.078	0.134	0.084	0.102	0.093

3/28/2019	41	0.114	0.181	0.233	0.12	0.092
3/31/2019	44	0.057	0.072	0.099	0.242	0.087
		Willowbrook Village Hall	**EPA Willowbrook Warehouse**	**Gower Middle School**	**West Neighborhood**	**Water Tower**
		0.128	**0.119**	**0.093**	**0.114**	**0.087**

Note: For quality assurance, EPA's monitoring plan calls for collocated samples to be collected for each sampling day at the
the expected locations of maximum concentrations. Those data are reported in the table as Willowbrook Village Hall 2 an
ND – non detect. Ethylene Oxide was either not present in the sample or was at a level below the level the method could d

Trans -2- butene detected although concentration is too low to quantify .

Unscheduled samples at maximum concentration sites only.

2/21/2019		0.144	ND	-	-	-
2/22/2019		0.123	0.121	-	-	-

Willow Pond Park	Hinsdale South High School	Gower Elementary School	MAX	MEDIAN	EPA Willowbrook Warehouse 2
-	-	-	2.37	2.37	-
-	-	-	1.81	1.317	1.81
0.105	0.253	0.164	6.62	0.205	-
0.286		0.202	0.893	0.205	Invalid
0.345	0.665	0.411	4.1	0.3855	Invalid
0.455	0.376	0.474	1.83	0.474	1.14
0.211	0.629	0.464	1.68	0.464	-
	0.486		11.7	0.5455	10.5
0.403		0.164	2.26	0.338	-
	0.213	0.138	0.3	0.2305	0.403
0.365	0.244	0.401	2.04	0.383	-
0.334	0.511	0.732	2.11	0.5985	2.19
0.546	0.267	0.311	1.67	0.3525	-
0.116	0.376	0.36	3.09	0.4085	2.57
0.166	0.566	0.497	10.8	0.5315	-
ND	0.264	0.133	1.42	0.264	1.19
0.217		0.21	0.251	0.227	0.396
	0.428	0.633	0.633	0.428	-
	0.249	0.249	7.59	0.9045	-
0.219	0.295		3.81	0.295	0.685
	0.264	0.237	1.57	0.307	-
0.107	0.239	0.072	14.2	0.179	14.3
0.144	0.134	0.072	13.1	0.2335	-
2.21	0.349	0.598	10.8	1.29	4.05
0.114	0.072	0.095	0.28	0.0885	-
0.813	3.29	0.293	19.3	1.38	1.26
3.71	0.322	0.157	9.49	0.2395	-
1.4	0.131	0.215	7.48	0.2995	0.251
0.174	0.237	1.38	26.4	2.335	-
0.213	0.347	0.202	5.04	0.311	4.3
0.089	0.309	0.398	3.98	0.2115	-
0.244	0.258	0.072	0.745	0.251	0.609
0.072	0.162	0.072	0.298	0.182	-
0.111	0.072	0.148	0.26	0.0915	0.197
0.171	0.282		0.282	0.165	ND
0.072	0.188	0.072	0.188	0.099	-
0.148	0.125	0.145	0.148	0.114	0.144
0.108	0.122	0.124	0.161	0.1105	-
0.122	0.072	0.072	0.165	0.0975	0.085
0.244	0.102	0.097	0.244	0.0995	-
0.147	0.139	0.394	0.394	0.1995	0.24
0.322	0.102	0.056	0.461	0.14	-
0.206	0.082	0.215	0.215	0.082	-
0.177	0.224	0.181	0.224	0.147	0.206
0.13	0.133	0.106	0.134	0.104	-

0.151	0.175	0.174	0.233	0.1625	0.224
0.136	0.072	0.138	0.242	0.093	-
Willow Pond Park	**Hinsdale South High School**	**Gower Elementary School**			
0.147	**0.125**	**0.131**			
Willowbrook Village Hall or the EPA Willowbrook Warehouse – d EPA Willowbrook Warehouse 2. letect. Invalid -- the sample did not meet EPA's field, shipping,					
-	-	-			ND
-	-	-			-

Willowbrook Village Hall 2
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1.9
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0.822
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0.338
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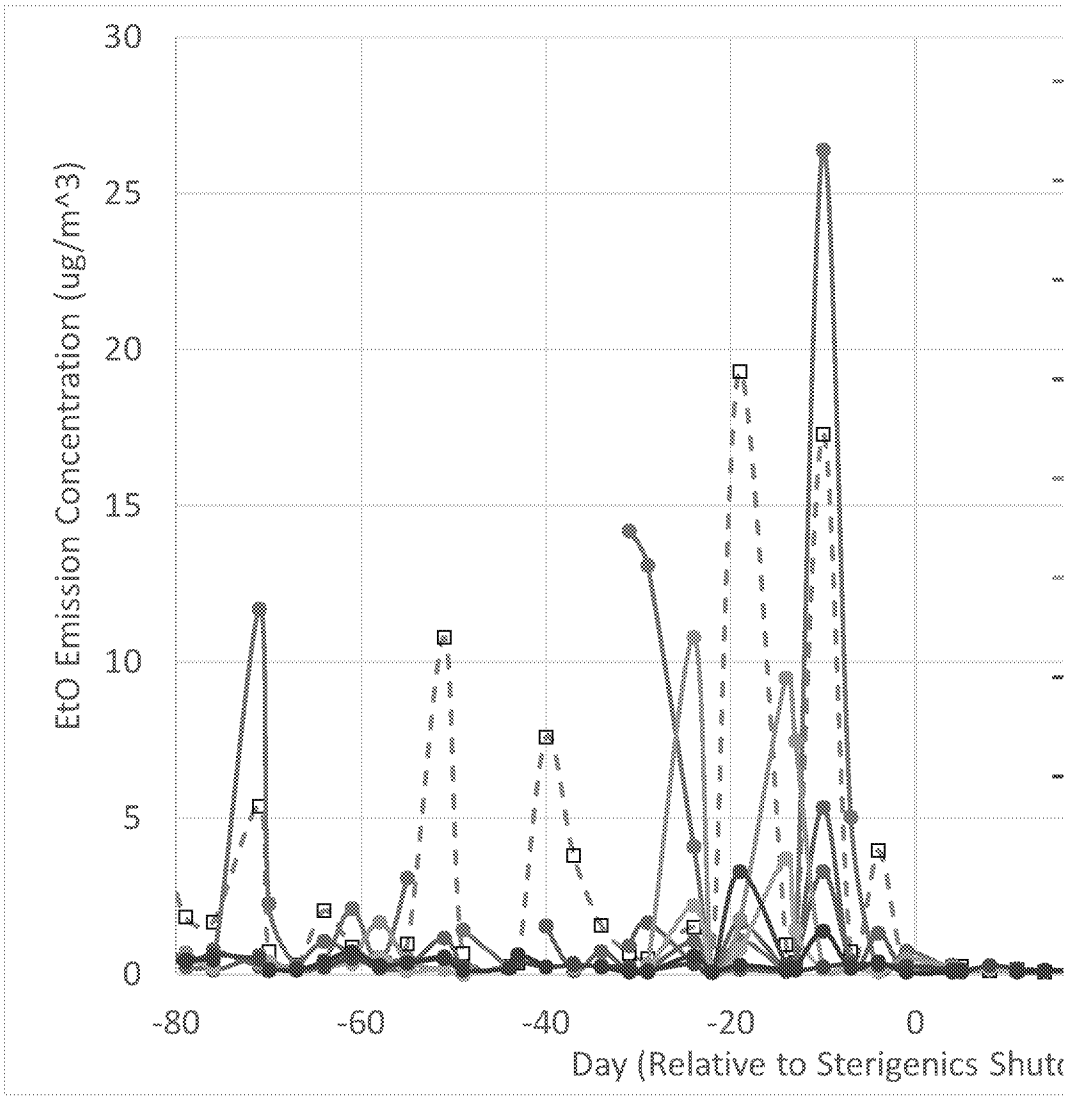

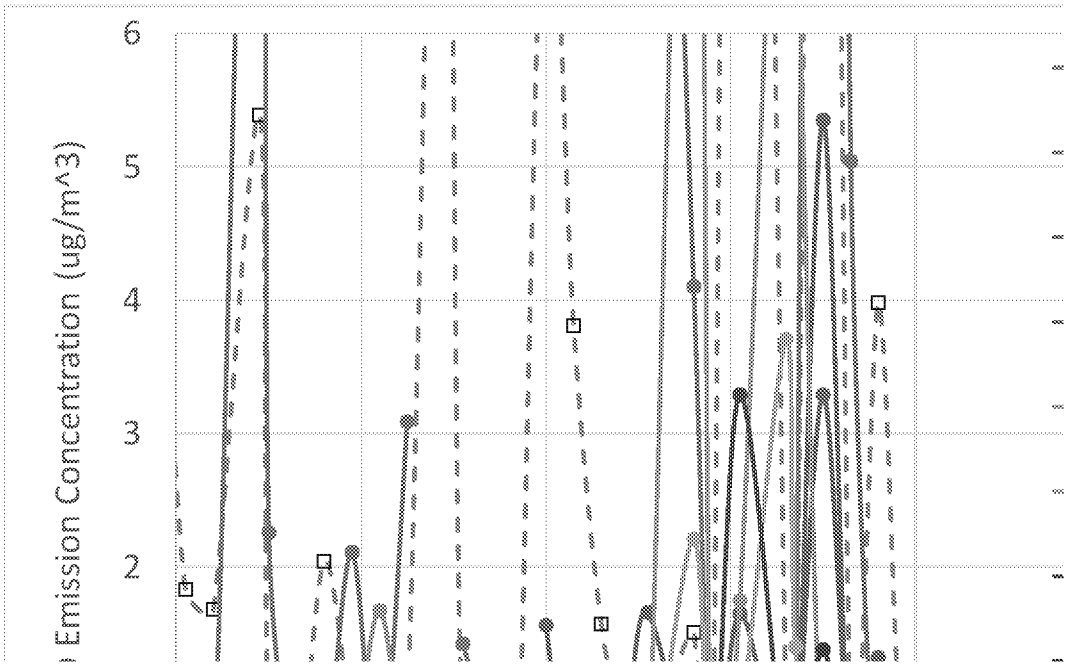

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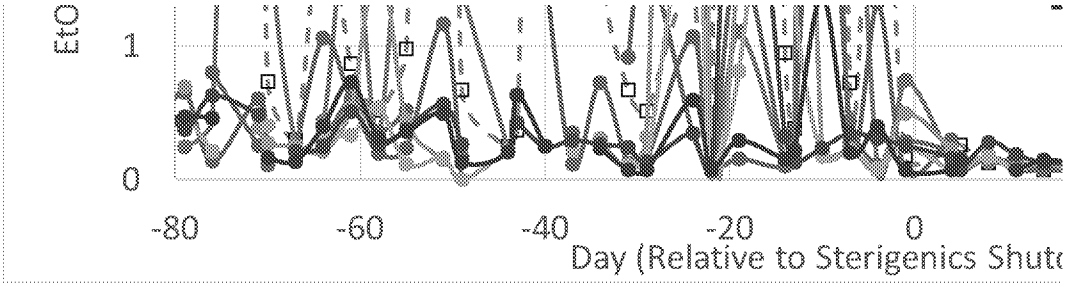

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0.217

Willowbrook Village Hall
EPA Willowbrook Warehouse
Gower Middle School
West Neighborhood
Water Tower
Willow Pond Park
Hinsdale South High School
Gower Elementary School
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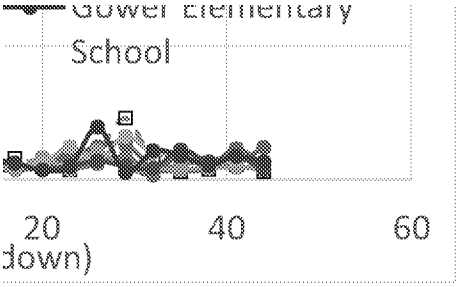
Willowbrook Village Hall
EPA Willowbrook Warehouse
Gower Middle School
West Neighborhood
Water Tower
Willow Pond Park
Hinsdale South High School


Gower Elementary
School
20
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60
down)

Sample Start Date		Willowbrook Village Hall	EPA Willowbrook Warehouse	Gower Middle School	West Neighborhood
11/13/2018	-94		2.37	-	-
11/16/2018	-91	0.824	1.81	-	-
11/19/2018	-88	6.11	6.62	0.155	0.125
11/23/2018	-84	0.284	0.18	0.197	0.205
11/25/2018	-82	4.1		0.36	0.261
11/28/2018	-79	1.83	0.248	0.656	
12/1/2018	-76	1.68	0.456	0.14	0.804
12/6/2018	-71	5.39	11.7	0.605	0.254
12/7/2018	-70	0.737	2.26	0.112	
12/10/2018	-67	0.3	0.269		0.213
12/13/2018	-64	2.04	0.436	0.255	1.06
12/16/2018	-61	0.871	2.11	0.593	0.604
12/19/2018	-58	0.521	0.345	0.36	0.197
12/22/2018	-55	0.981	3.09	0.522	0.235
12/26/2018	-51	10.8			1.17
12/28/2018	-49	0.672	1.42	0.175	ND
1/2/2019	-44	0.251	0.237		
1/3/2019	-43	0.372			
1/6/2019	-40	7.59			1.56
1/9/2019	-37	3.81		0.354	0.115
1/12/2019	-34	1.57			0.727
1/15/2019	-31	0.672	14.2	0.918	0.119
1/17/2019	-29	0.517	13.1	1.66	0.151
1/22/2019	-24	1.51	4.1	0.349	1.07
1/24/2019	-22	0.262	0.28	0.077	0.06
1/27/2019	-19	19.3	1.11	0.155	1.65
2/1/2019	-14	0.954	0.133	0.101	0.129
2/2/2019	-13	0.383	0.228	0.371	0.16
2/5/2019	-10	17.3	26.4	3.29	5.35
2/8/2019	-7	0.725	5.04	0.439	0.275
2/11/2019	-4	3.98	0.072	0.114	1.32
2/14/2019	-1	0.178	0.745	0.286	0.072
Sample Start Date	**Day (after shutdown)**	**Willowbrook Village Hall**	**EPA Willowbrook Warehouse**	**Gower Middle School**	**West Neighborhood**
2/19/2019	4	0.239	0.15	0.202	0.298
2/20/2019	5	0.26	0.159	0.072	0.072
2/23/2019	8	0.128	0.132	0.164	0.165
2/26/2019	11	0.166	0.119	0.072	0.114
3/1/2019	14	0.072	0.103	0.072	0.072
3/4/2019	17	0.161	0.072	0.072	0.113

3/7/2019	20	0.099	0.096	0.093	0.112
3/10/2019	23	NA	0.075	0.171	0.201
3/13/2019	26	0.204	0.122	0.246	0.195
3/16/2019	29	0.461	0.171	0.267	0.109
3/19/2019	32	0.136	0.056	0.082	0.037
3/22/2019	35	0.06	0.117	0.068	0.197
3/25/2019	38	0.078	0.134	0.084	0.102
3/28/2019	41	0.114	0.181	0.233	0.12
3/31/2019	44	0.057	0.072	0.099	0.242
		Willowbrook Village Hall	**EPA Willowbrook Warehouse**	**Gower Middle School**	**West Neighborhood**
		0.132	**0.119**	**0.093**	**0.114**

Note: For quality assurance, EPA's monitoring plan calls for collocated samples to be collected for each sampling day a
expected locations of maximum concentrations. Those data are reported in the table as Willowbrook Village Hall 2 an
ND – non detect. Ethylene Oxide was either not present in the sample or was at a level below the level the method co

Trans -2- butene detected although concentration is too low to quantify .		
Below 0.072 ug/m3		

2/21/2019		0.144	ND	-	-
2/22/2019		0.123	0.121	-	-

Water Tower	Willow Pond Park	Hinsdale South High School	Gower Elementary School	MAX	MEDIAN
-	-	-	-	2.37	2.37
-	-	-	-	1.81	1.317
0.246	0.105	0.253	0.164	6.62	0.205
0.893	0.286		0.202	0.893	0.205
	0.345	0.665	0.411	4.1	0.3855
0.699	0.455	0.376	0.474	1.83	0.474
	0.211	0.629	0.464	1.68	0.464
0.389		0.486		11.7	0.5455
0.273	0.403		0.164	2.26	0.338
0.248		0.213	0.138	0.3	0.2305
0.211	0.365	0.244	0.401	2.04	0.383
0.535	0.334	0.511	0.732	2.11	0.5985
1.67	0.546	0.267	0.311	1.67	0.3525
0.441	0.116	0.376	0.36	3.09	0.4085
0.151	0.166	0.566	0.497	10.8	0.5315
	ND	0.264	0.133	1.42	0.264
	0.217		0.21	0.251	0.227
		0.428	0.633	0.633	0.428
		0.249	0.249	7.59	0.9045
	0.219	0.295		3.81	0.295
0.307		0.264	0.237	1.57	0.307
0.072	0.107	0.239	0.072	14.2	0.179
0.316	0.144	0.134	0.072	13.1	0.2335
10.8	2.21	0.349	0.598	10.8	1.29
0.082	0.114	0.072	0.095	0.28	0.0885
1.75	0.813	3.29	0.293	19.3	1.38
9.49	3.71	0.322	0.157	9.49	0.2395
7.48	1.4	0.131	0.215	7.48	0.2995
0.208	0.174	0.237	1.38	26.4	2.335
0.233	0.213	0.347	0.202	5.04	0.311
0.072	0.089	0.309	0.398	3.98	0.2115
0.495	0.244	0.258	0.072	0.745	0.251
Water Tower	**Willow Pond Park**	**Hinsdale South High School**	**Gower Elementary School**	**MEDIAN (for Date)**	**MEDIAN**
0.222	0.072	0.162	0.072	0.212	0.182
0.072	0.111	0.072	0.148	0.092	0.092
0.179	0.171	0.282	NA	0.168	0.165
0.084	0.072	0.188	0.072	0.117	0.099
0.142	0.148	0.125	0.145	0.114	0.114
0.072	0.108	0.122	0.124	0.111	0.111

0.165	0.122	0.072	0.072	0.106	0.098
0.081	0.244	0.102	0.097	0.171	0.102
0.219	0.147	0.139	0.394	0.200	0.200
0.072	0.322	0.102	0.056	0.219	0.140
0.079	0.206	0.082	0.215	0.082	0.082
0.075	0.177	0.224	0.181	0.147	0.147
0.093	0.13	0.133	0.106	0.116	0.104
0.092	0.151	0.175	0.174	0.163	0.163
0.087	0.136	0.072	0.138	0.093	0.093
Water Tower	**Willow Pond Park**	**Hinsdale South High School**	**Gower Elementary School**		
0.087	**0.147**	**0.125**	**0.131**		

t the Willowbrook Village Hall or the EPA Willowbrook Warehouse – the
d EPA Willowbrook Warehouse 2.
uld detect. Invalid -- the sample did not meet EPA's field, shipping, laboratory

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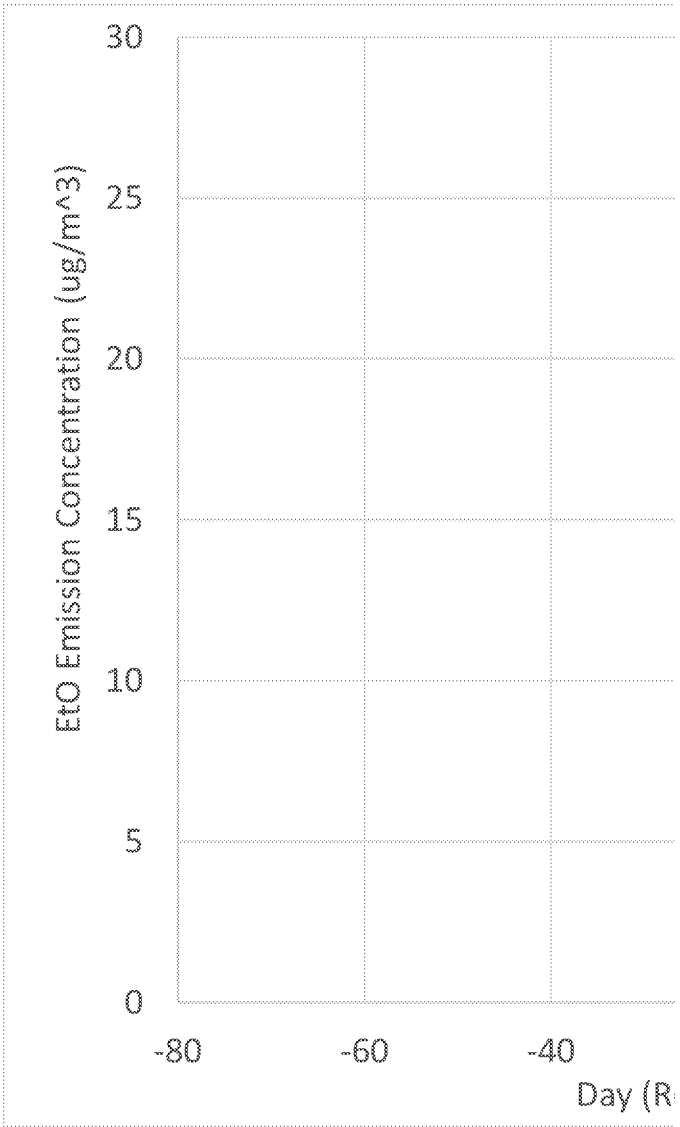
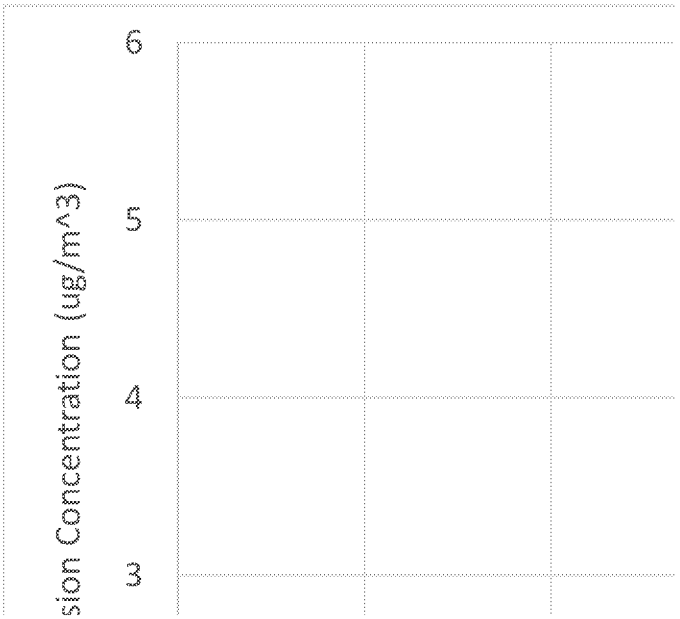
-	-	-	-

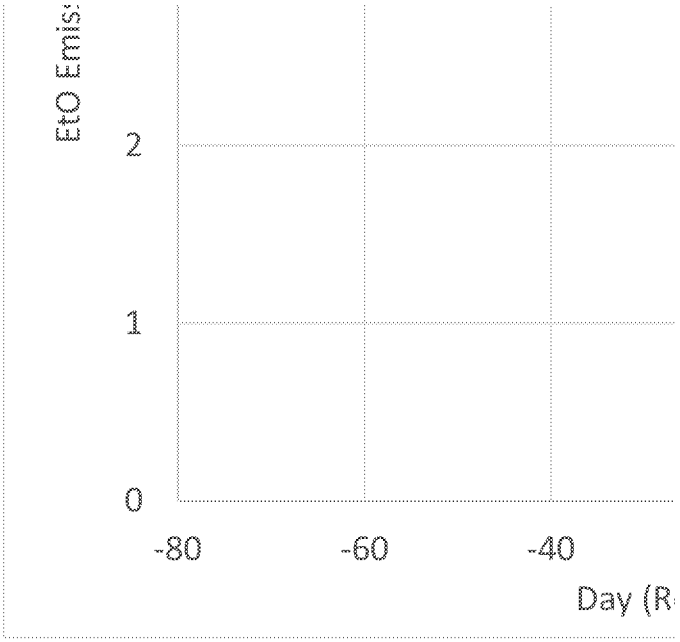
EPA Willowbrook Warehouse 2	Willowbrook Village Hall 2
-	-
1.81	-
-	6.31
Invalid	-
Invalid	-
1.14	-
-	1.9
10.5	-
-	0.822
0.403	-
-	2.13
2.19	-
-	0.338
2.57	-
-	10.5
1.19	-
0.396	-
-	0.257
-	6.62
0.685	-
-	1.65
14.3	-
-	0.591
4.05	-
-	0.158
1.26	-
-	0.882
0.251	-
-	15.6
4.3	-
-	4.72
0.609	-

EPA Willowbrook Warehouse 2	Willowbrook Village Hall 2
-	0.197
0.197	-
ND	-
-	ND
0.144	-
-	0.068

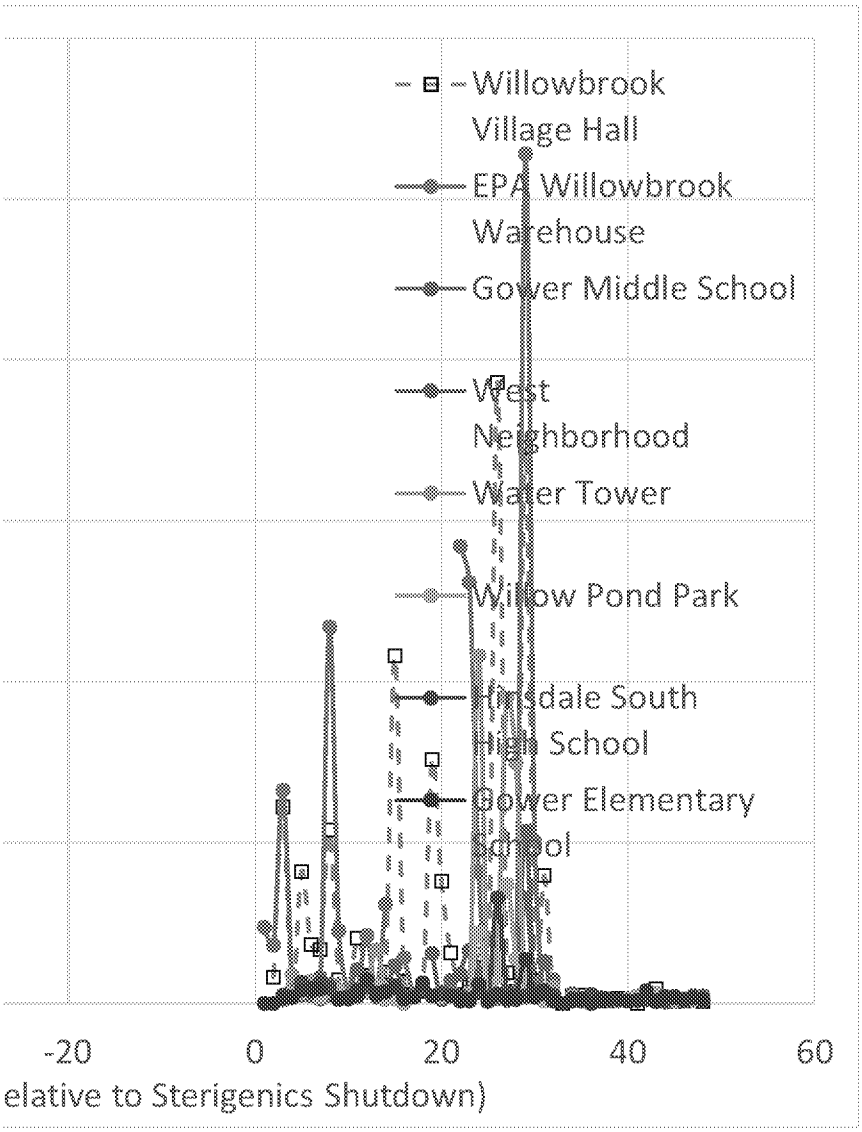


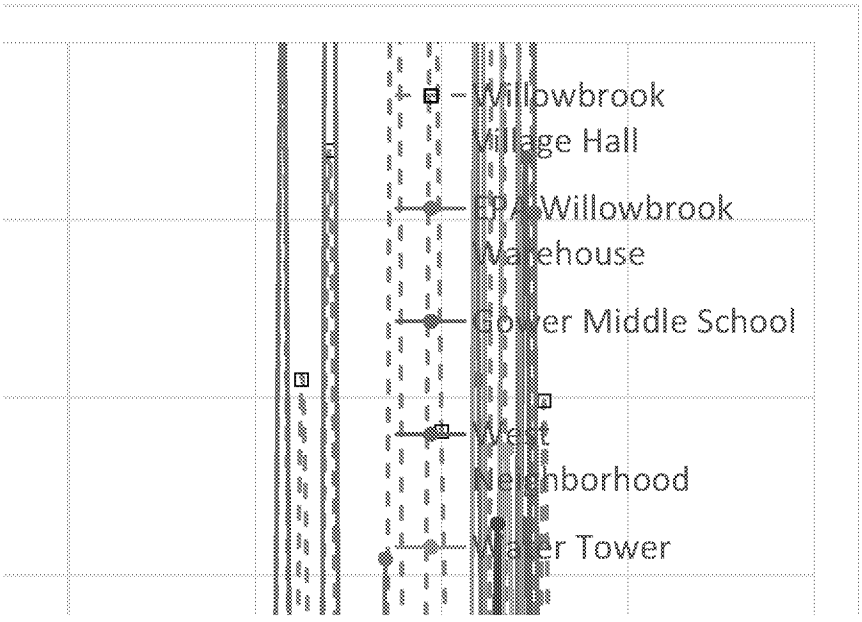


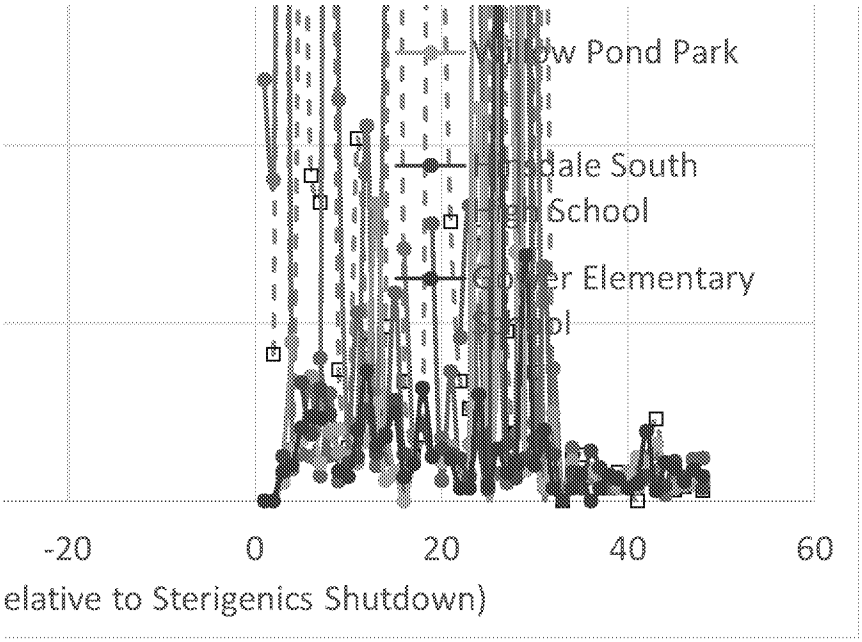
0.085	-
-	0.204
0.24	-
-	0.058
-	0.091
0.206	-
-	0.183
0.224	-
-	0.112



ND	-
-	0.217


Willowbrook Village Hall
EPA Willowbrook Warehouse
Gower Middle School
West Neighborhood
Water Tower
Willow Pond Park
Hinsdale South High School
Gower Elementary School
-20
0
20
40
60
elative to Sterigenics Shutdown)


Willowbrook Village Hall
EPA Willowbrook Warehouse
Gower Middle School
West Neighborhood
Water Tower


w Pond Park
dale South
School
er Elementary
ol
-20
0
20
40
60
elative to Sterigenics Shutdown)

Message

From: Cipriano, Renee [RCipriano@schiffhardin.com]
Sent: 9/23/2019 7:23:26 PM
To: Weinstock, Lewis [Weinstock.Lewis@epa.gov]
Subject: Level IV data package
Attachments: L488088_package_1.pdf; ATT00001.txt

Attached. Thank you again Renee

This message and any attachments may contain confidential
information protected by the attorney-client or other privilege.
If you believe that it has been sent to you in error,
please reply to the sender that you received the message in
error. Then delete it. Thank you.

	Day #	Day wrt Shutdown	Willowbrook Village Hall - 3rd Floor
February 5 - 6, 2019	36	-10	68
February 6 - 7, 2019	37	-9	72
February 7 - 8, 2019	38	-8	20
February 8 - 9, 2019	39	-7	1.4
February 9- 10, 2019	40	-6	28
February 10 -11, 2019	41	-5	42
February 11 -12, 2019	42	-4	54
February 12-13, 2019	43	-3	2.9
February 13 -14, 2019	44	-2	0.81
February 14 -15, 2019	45	-1	0.93
February 15 -16, 2019	46	0	1.1
February 16 -17, 2019	47	1	2.7
February 17 -18, 2019	48	2	1.3
February 18-19, 2019	49	3	5.8
February 19 - 20, 2019	50	4	0.96
February 20 - 21, 2019	51	5	0.64
February 21 - 22, 2019	52	6	0.63
February 22 - 23, 2019	53	7	0.72
February 23 - 24, 2019	54	8	0.74
February 24 - 25, 2019	55	9	0.38
February 25 - 26, 2019	56	10	0.42
February 26 - 27, 2019	57	11	Not Reported
February 27 - 28, 2019	58	12	0.48
February 28 - March 1,	59	13	0.54
March 1 - 2, 2019	60	14	Not Reported
March 2 - 3, 2019	61	15	Not Reported
March 3 - 4, 2019	62	16	Not Reported
March 4 - 5, 2019	63	17	0.43
March 5 - 6, 2019	64	18	0.3
March 6 - 7, 2019	65	19	0.49

Day #	Day wrt Shutdown	Willowbrook Village Hall - 3rd Floor
36	-10	68
37	-9	72
38	-8	20
39	-7	1.4
40	-6	28
41	-5	42
42	-4	54
43	-3	2.9
44	-2	0.81
45	-1	0.93
46	0	1.1
47	1	2.7

48	2	1.3
49	3	5.8
50	4	0.96
51	5	0.64
52	6	0.63
53	7	0.72
54	8	0.74
55	9	0.38
56	10	0.42
57	11	
58	12	0.48
59	13	0.54
60	14	
61	15	
62	16	
63	17	0.43
64	18	0.3
65	19	0.49
213	167	0.18
214	168	0.16
215	169	0.036
216	170	0.036
217	171	0.036
218	172	0.14
219	173	0.036

Village Hall - Outdoors

213	167	0.39
214	168	0.13
215	169	< 0.072
216	170	< 0.072
217	171	0.32
218	172	< 0.072
219	173	< 0.11
181	135	0.18
182	136	0.16
183	137	< 0.072
184	138	< 0.072
185	139	< 0.072
186	140	0.14
187	141	< 0.072

	Day #	Day wrt Shutdown	Willowbrook Village Hall - Outside
2/1/2019	32	-14	0.954
2/2/2019	33	-13	0.383
2/5/2019	36	-10	17.3
2/8/2019	39	-7	0.725
2/11/2019	42	-4	3.98
2/14/2019	45	-1	0.178
2/19/2019	48	2	0.239
2/20/2019	51	5	0.26
2/23/2019	54	8	0.128
2/26/2019	57	11	0.166
3/1/2019	60	14	0.072
3/4/2019	63	17	0.161
3/7/2019	66	20	0.099
3/13/2019	72	26	0.204
3/16/2019	75	29	0.461
3/19/2019	78	32	0.136
3/22/2019	81	35	0.06
3/25/2019	84	38	0.078
3/28/2019	87	41	0.114
3/31/2019	90	44	0.057

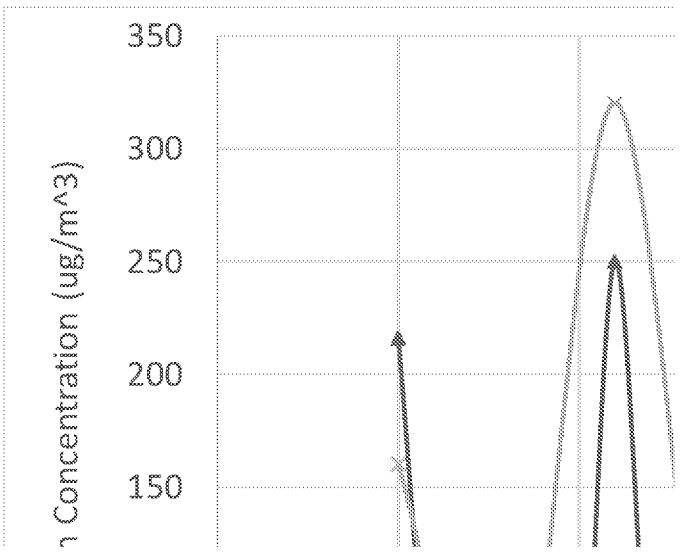
Willowbrook Police Department - Records

Front Office		Day wrt Shutdown
216	February 5-6, 2019	-10
36	February 8 - 9, 2019	-7
20	February 11 - 12, 2019	-4
1.4	February 14 - 15, 2019	-1
11	February 17 - 18, 2019	2
8.1	February 20 - 21, 2019	5
250	February 23 - 24, 2019	8
49	February 26 - 27, 2019	11
6.5	March 1 - 2, 2019	14
4.2	March 4 - 5, 2019	17
2.5		
5.1		Day wrt Shutdown
3.6	February 5-6, 2019	-10
4.1	February 8 - 9, 2019	-7
2.8	February 11 - 12, 2019	-4
1.4	February 14 - 15, 2019	-1
1.3	February 17 - 18, 2019	2
1.4	February 20 - 21, 2019	5
1.5	February 23 - 24, 2019	8
0.94	February 26 - 27, 2019	11
1.1	March 1 - 2, 2019	14
1.1	March 4 - 5, 2019	17
0.91		
1		
0.94		
1		
Not Reported		
0.76		
0.6		
0.79		

Willowbrook Police Department - Records

Front Office

216
36
20
1.4
11
8.1
250
49
6.5
4.2
2.5
5.1



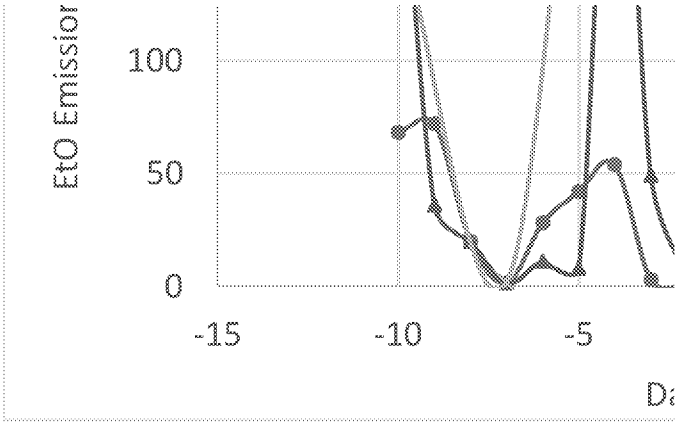
3.6
4.1
2.8
1.4
1.3
1.4
1.5
0.94
1.1
1.1
0.91
1
0.94
1

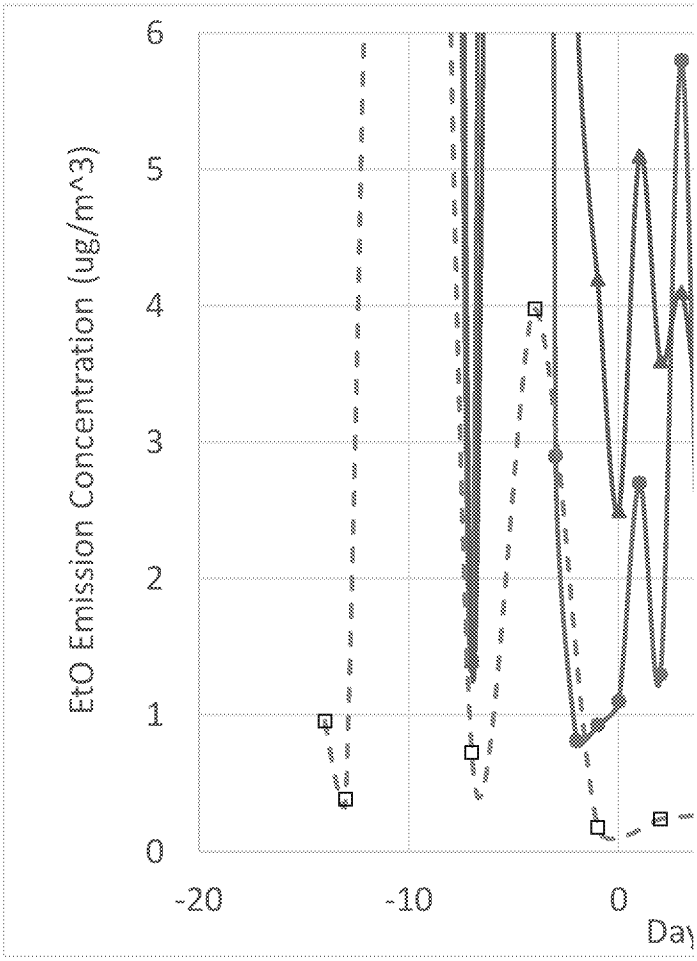
0.76
0.6
0.79

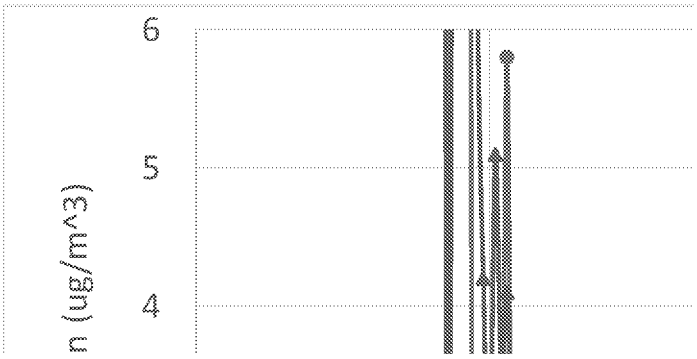
0.22
0.036
0.19
0.19
0.036
0.13
0.036

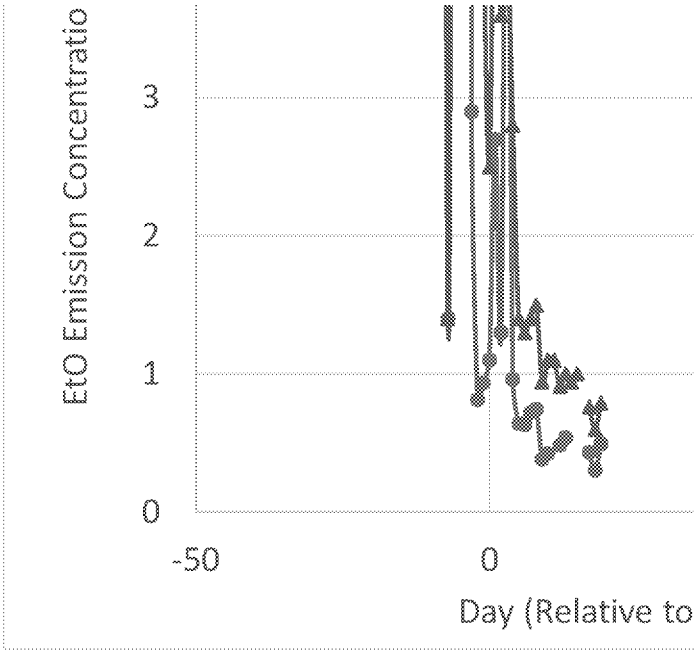
Police Station - Outdoors
0.27
8.9
< 0.094
< 0.072
< 0.086
0.12
< 0.072

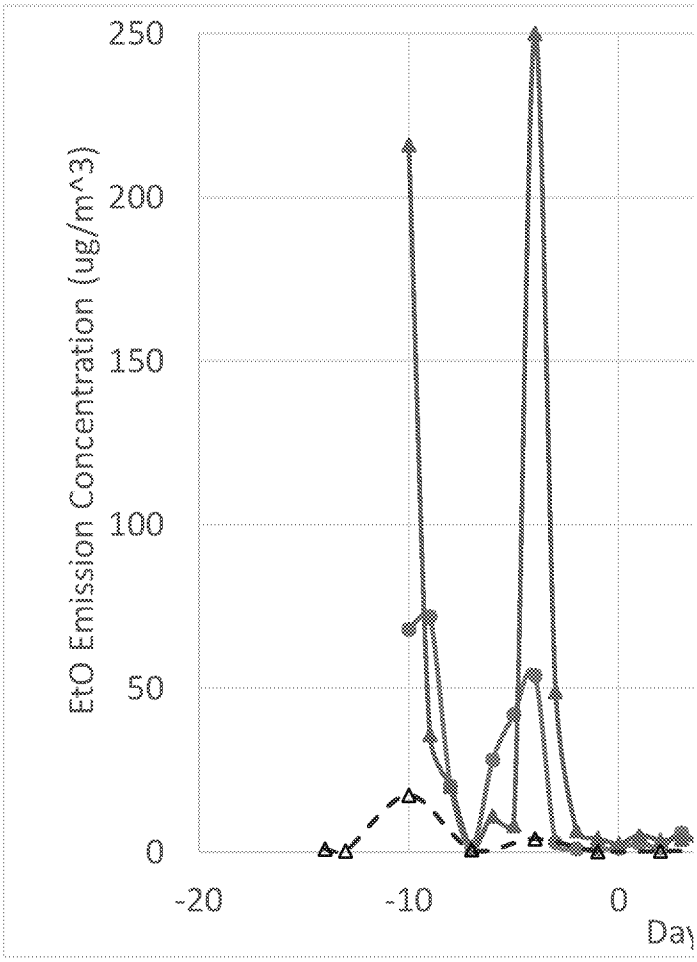
0.22
< 0.072
0.19
0.19
< 0.072
0.13
< 0.072





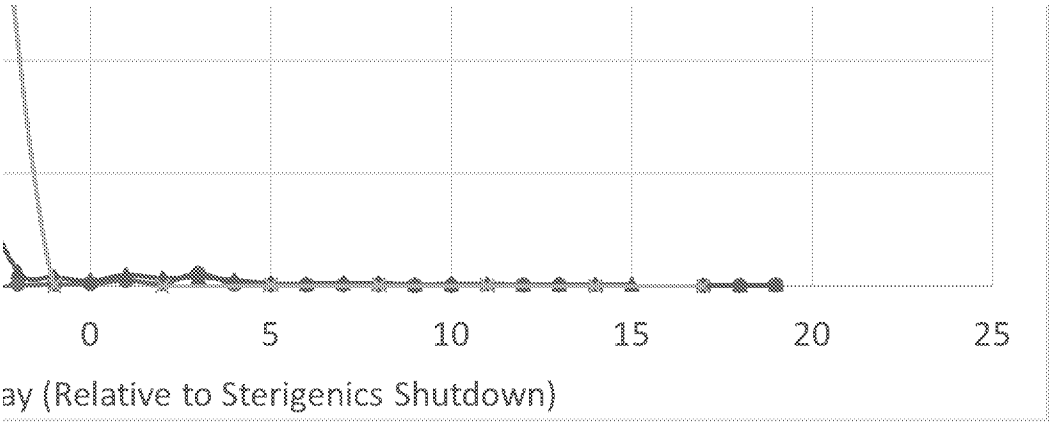


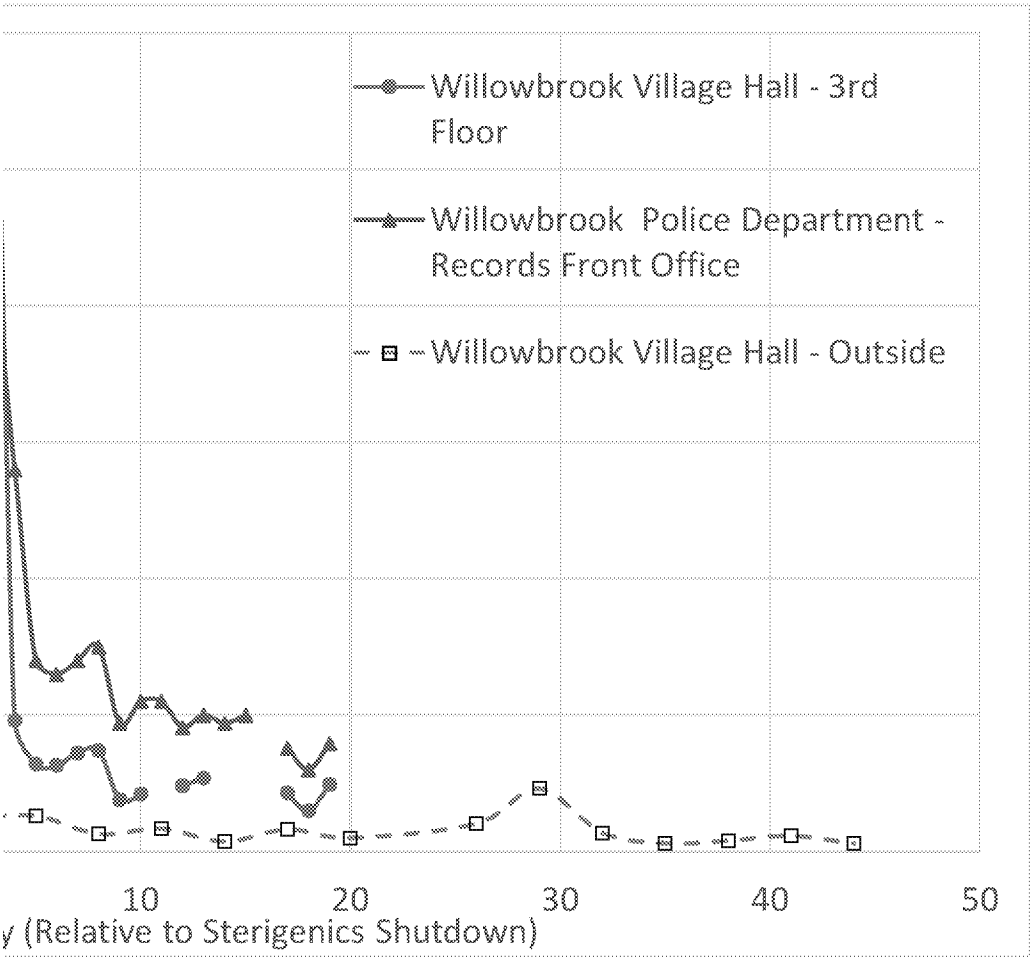

EtO Emission Concentratio
3
2
1
0
-50
0
Day (Relative to


EtO Emission Concentration (ug/m^3)
250
200
150
100
50
0
-20
-10
0
Day

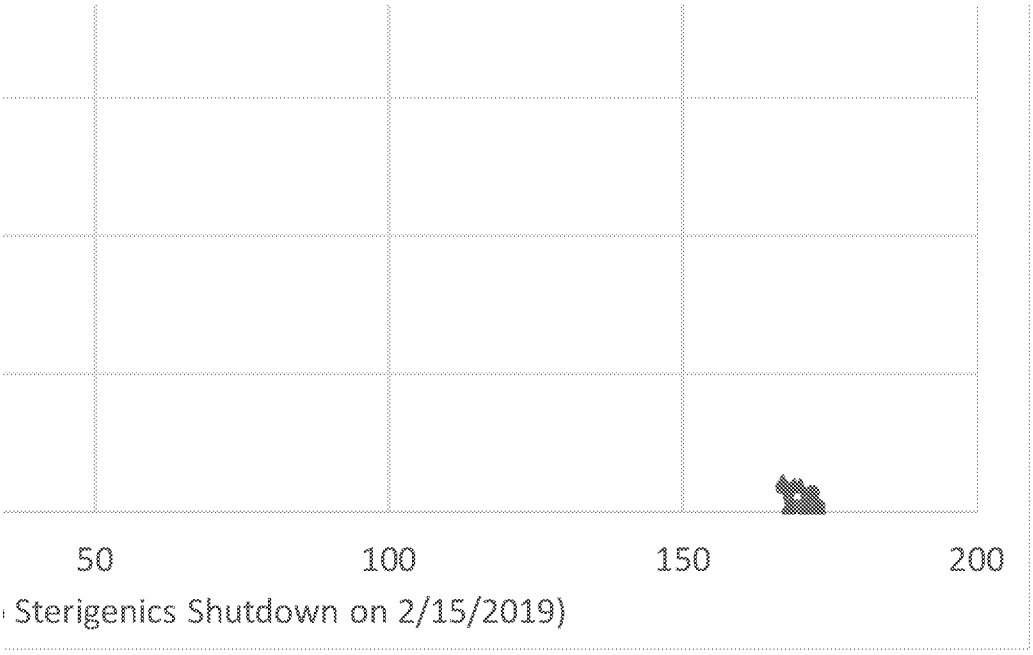
Village Hall - Outdoors	Willowbrook Police Department - Outdoors	Public Works - Outdoors	Gower	Gower
38	160	0.48	3.1	6.12
1.4	2	0.27	0.7	1.1
9.2	320	0.61	0.62	0.39
0.36	0.39	0.38	0.23	0.33
0.92	Not Analyzed	1	Not Analyzed	0.22
Not Analyzed	0.27	0.28	0.3	Not Analyzed
0.28	0.34	0.25	0.29	0.26
0.32	0.3	0.33	Not Analyzed	Not Analyzed
Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Not Analyzed	Not Analyzed	Not Analyzed	0.17	Not Analyzed

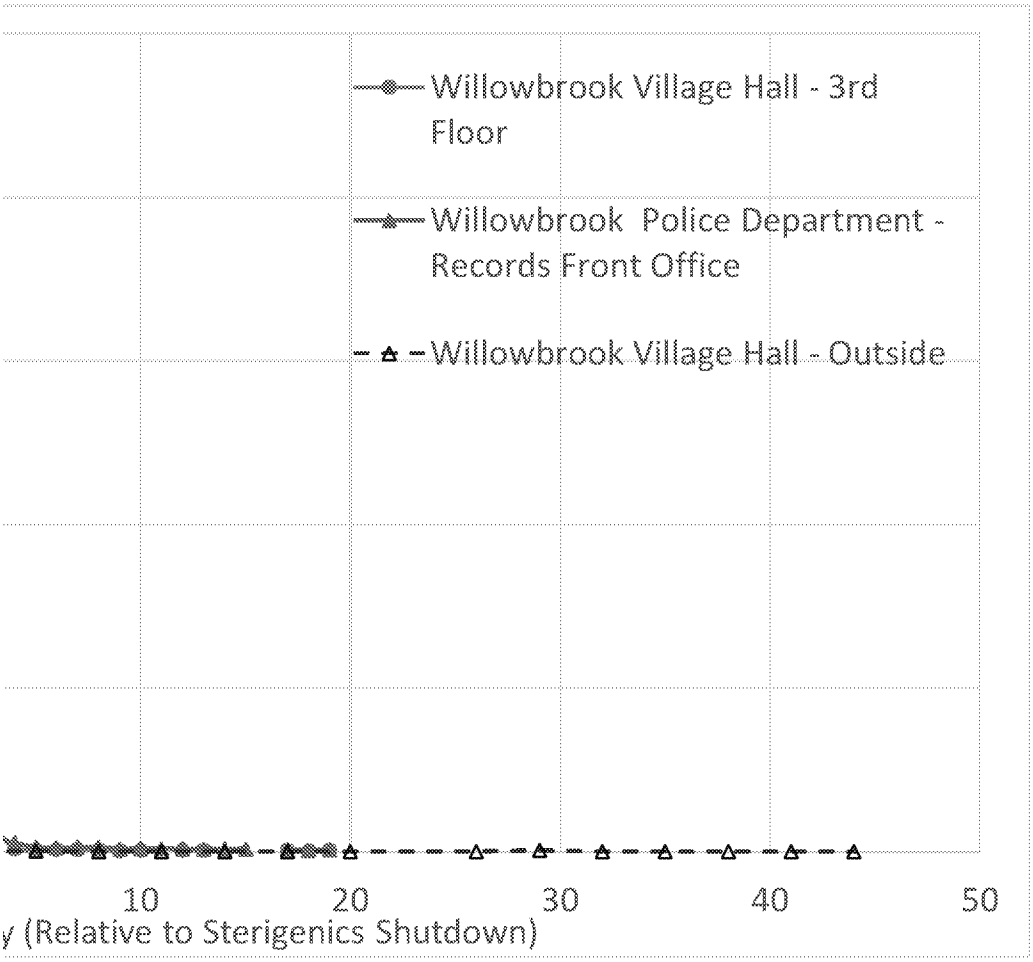
Village Hall - Outdoors	Police Station - Outdoors	Public Works - Outdoors	Gower	Gower
38	160	0.48	3.1	6.12
1.4	2	0.27	0.7	1.1
9.2	320	0.61	0.62	0.39
0.36	0.39	0.38	0.23	0.33
0.92	Not Analyzed	1	Not Analyzed	0.22
Not Analyzed	0.27	0.28	0.3	Not Analyzed
0.28	0.34	0.25	0.29	0.26
0.32	0.3	0.33	Not Analyzed	Not Analyzed
Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Not Analyzed	Not Analyzed	Not Analyzed	0.17	Not Analyzed


0
5
10
15
20
25
ay (Relative to Sterigenics Shutdown)


Willowbrook Village Hall - 3rd Floor
Willowbrook Police Department - Records Front Office
Willowbrook Village Hall - Outside
10
20
30
40
50
y (Relative to Sterigenics Shutdown)

Willowbrook Village Hall - 3rd Floor
Willowbrook Police Department - Records Front Office


50
100
150
200
Sterigenics Shutdown on 2/15/2019)


Willowbrook Village Hall - 3rd Floor
Willowbrook Police Department - Records Front Office
Willowbrook Village Hall - Outside
10
20
30
40
50
y (Relative to Sterigenics Shutdown)

Mayor

Frank A. Trilla

Village Clerk

Leroy R. Hansen

Village Trustees Sue
Berglund Umberto Davi
Terrence Kelly Michael
Mistele Gayle Neal
Paul Oggerino

Village
Administrator

Brian Pabst

Chief of Police

Robert Schaller

Director of

Finance

Carrie Dittman

Z . 1....owsR-0O *"

EST. 1960

October 31, 2019

Now that the Village has concluded its testing program and in the interest of public transparency, the Village of Willowbrook is posting all additional air sampling results for ethylene oxide collected at various locations in the Village not previously posted and as collected during the time periods:

(1) February 18, 2019 through March 7, 2019 and (2) August 1, 2019 through August 8, 2019. Be advised that the air sampling results posted today are *preliminary* and, accordingly, are being released in draft form and will remain preliminary. In consideration of the announcement of Sterigenics International to cease operations of its facilities within the Village of Willowbrook, the Village does not intend to expend resources necessary to complete a full review of the results. All of these sampling results will also be shared with our government regulators.

####

Summary of Area Air Sampling R

1 Willowbrook Village Hall - Third Floor

February 27 - 28, 2019	0.48	0.27

esults for Ethylene Oxide

Air-11183332-038
Air-11183332-043
Air-11183332-045
Air-11183332-050
Air-11183332-055
Air-11183332-061
Air-11183332-066
Air-11183332-068
Air-11183332-057
Air-11183332-072
Air-11183332-077
Air-11183332-079
Air-11183332-085
Air-11183332-088
Air-11183332-090
Air-11183332-094
Air-11183332-099
Air-11183332-101
Air-11183332-103
Air-11183332-110
Air-11183332-112
Air-11183332-115
Air-11183332-121

Summary of Area Air Sampling Results for
Village of Willowbrook, Illinois (Collected on February
LabLogin:L470478,L470798,L470996,L471307,L471513,L47

Location ID	Sample Location	GHD Sample ID Concentration pg/m3
		Air-11183332-123
		Air-11183332-125
		Air-11183332-132
		Air-11183332-134
		Air-11183332-137
		Air-11183332-143
		Air-11183332-145
	Willowbrook Village Hall - Outdoors	Air-11183332-039
		Air-11183332-047
		Air-11183332-060
		Air-11183332-071
		Air-11183332-082
		Air-11183332-091
		Air-11183332-105
		Air-11183332-116
		Air-11183332-127
		Air-11183332-138
2	Willowbrook Police Department - Records Front Office	Air-11183332-037
		Air-11183332-044
		Air-11183332-046
		Air-11183332-049
		Air-11183332-054
		Air-11183332-056
		Air-11183332-058

· Ethylene Oxide
/ 5, 2019 - March 7, 2019)
'1903,L472306,L472626,L472990

Sample Dates	Measured Airborne	
February 28 - March 1, 2019	0.54	0.3
March 1 - 2, 2019	Not Reported	
March 2 - 3, 2019	Not Reported	
March 3 - 4, 2019	Not Reported	
March 4 - 5, 2019	0.43	0.24
March 5 - 6, 2019	0.3	0.17
March 6 - 7, 2019	0.49	0.27
February 5-6, 2019	38	21
February 8 - 9, 2019	1.4	0.8
February 11 - 12, 2019	9.2	5.1
February 14 - 15, 2019	0.36	0.2
February 17 - 18, 2019	0.92	0.51
February 20 - 21, 2019	Not Analyzed	
February 23 - 24, 2019	0.28	0.16
February 26 - 27, 2019	0.32	0.18
March 1 - 2, 2019	Not Analyzed	
March 4 - 5, 2019	0.27	0.15
February 5 - 6, 2019	216	120
February 6- 7, 2019	36	20
February 7 - 8, 2019	20	11
February 8 - 9, 2019	1.4	0.79
February 9 - 10, 2019	11	6.1
February 10 - 11, 2019	8.1	4.5
February 11 - 12, 2019	250	140

	Air-11183332-065	February 12 -
	Air-11183332-067	February 13 -
	Air-11183332-069	February 14 -
	Air-11183332-076	February 15 -
	Air-11183332-078	February 16 -
	Air-11183332-080	February 17 -
	Air-11183332-087	February 18 -
	Air-11183332-089	February 19 -
	Air-11183332-093	February 20 -
	Air-11183332-098	February 21 -
	Air-11183332-100	February 22 -
	Air-11183332-102	February 23 -
	Air-11183332-109	February 24 -
	Air-11183332-111	February 25 -
	Air-11183332-113	February 26 -
	Air-11183332-120	February 27 -
	Air-11183332-122	February 28 - 2019
	Air-11183332-124	March 1 - 2,
	Air-11183332-131	March 2 - 3, 2
	Air-11183332-133	March 3 - 4, 2
	Air-11183332-136	March 4 - 5, 2
	Air-11183332-142	March 5 - 6, 2
	Air-11183332-144	March 6 - 7, 2
Willowbrook Police Department - Outdoors	Air-11183332-036	February 5 -

xide

49	27
6.5	3.6
4.2	2.3
2.5	1.4
5.1	2.8

·13, 2019
· 14, 2019
·15, 2019
·16, 2019
·17, 2019
· 18, 2019
· 19, 2019
· 20, 2019
· 21, 2019
· 22, 2019
· 23, 2019
· 24, 2019
· 25, 2019
· 26, 2019
· 27, 2019
· 28, 2019
· March 1,

2019
2019
2019
2019
2019
2019
3, 2019

1.0	0.58
160	89

6	Public Works Building - Outdoors	Air-11183332-048 9, 2019 Air-11183332-059 12, 2019 Air-11183332-070 15, 2019 Air-11183332-081 - 18, 2019 Air-11183332-092 21, 2019 Air-11183332-104 24, 2019 Air-11183332-114 Air-11183332-126
9	Gower Elementary - Outdoors	Air-11183332-135 Air-11183332-040 Air-11183332-051 Air-11183332-062 Air-11183332-073 Air-11183332-084 Air-11183332-096 Air-11183332-106 Air-11183332-118 Air-11183332-128 Air-11183332-139 Air-11183332-042 Air-11183332-053 Air-11183332-064 Air-11183332-075 Air-11183332-086 Air-11183332-097

3

February 8 -	2.0	1.1
	320	180
February 11 -	0.39	0.22
	Not Analyzed	
February 14 -	0.27	0.15
	0.34	0.19
February 17		
February 20 -		
February 23 -		

Summary of Area Air Sampling Results for Ethylene Oxide

		Air-11183332-107	February 23 - 24, 2019	0.29	0.16
		Air-11183332-119	February 26- 27, 2019	Not Analyzed	
		Air-11183332-130	March 1 - 2, 2019	Not Reported	
		Air-11183332-141	March 4 - 5, 2019	0.17	0.093
10	Gower Middle School - Outdoors	Air-11183332-041	February 5 - 6, 2019	6.12	3.4
		Air-11183332-052	February 8 - 9, 2019	1.1	0.6
		Air-11183332-063	February 11 - 12, 2019	0.39	0.22
		Air-11183332-074	February 14 - 15, 2019	0.33	0.18
		Air-11183332-083	February 17 -18, 2019	0.22	0.12
		Air-11183332-095	February 20 - 21, 2019	Not Analyzed	
		Air-11183332-108	February 23 - 24, 2019	0.26	0.14
		Air-11183332-117	February 26 - 27, 2019	Not Reported	
		Air-11183332-129	March 1 - 2, 2019	Not Reported	
		Air-11183332-140	March 4 - 5, 2019	No Reported	

Summary of Ai

Village of Willowb

Lab Login:

1 Willowbrook Village Hall - Third Floor (Indoor)

Willowbrook Village Hall - Outdoor

2 Willowbrook PD - Records Front Office (Indoor)

Willowbrook PD - Outdoor

Air-11183332-150	August 2- 3, 2019	0.16	0.091
Air-11183332-154	August 3 - 4, 2019	< 0.072	< 0.040
Air-11183332-158	August 4 - 5, 2019	< 0.072	< 0.040
Air-11183332-162	August 5 - 6, 2019	< 0.072	< 0.040
Air-11183332-166	August 6- 7, 2019	0.14	0.076
Air-11183332-170	August 7 - 8, 2019	< 0.072	< 0.040
Air-11183332-148	August 1 - 2, 2019	0.39	0.21
Air-11183332-152	August 2 - 3, 2019	0.13	0.073
Air-11183332-156	August 3 - 4, 2019	< 0.072	< 0.040
Air-11183332-160	August 4 - 5, 2019	< 0.072	< 0.040
Air-11183332-164	August 5- 6, 2019	0.32	0.18
Air-11183332-168	August 6- 7, 2019	< 0.072	< 0.040

Air-11183332-172	August 7 - 8, 2019	< 0.11	< 0.060
Air-11183332-147	August 1 - 2, 2019	0.22	0.12
Air-11183332-151	August 2 - 3, 2019	< 0.072	< 0.040
Air-11183332-155	August 3 - 4, 2019	0.19	0.11
Air-11183332-159	August 4 - 5, 2019	0.19	0.1
Air-11183332-163	August 5 - 6, 2019	< 0.072	< 0.040
Air-11183332-167	August 6- 7, 2019	0.13	0.071
Air-11183332-171	August 7 - 8, 2019	< 0.072	< 0.040
Air-11183332-149	August 1 - 2, 2019	0.27	0.15
Air-11183332-153	August 2 - 3, 2019	8.9	5
Air-11183332-157	August 3 - 4, 2019	< 0.094	< 0.052
Air-11183332-161	August 4 - 5, 2019	< 0.072	< 0.040

rea Air Sampling Results for Ethylene Oxide

rook, Illinois (Collected on August 1 - 8, 2019)

: L487933, L488220, L488088, L488502

Summary of Area Air Sampling Results for Ethylene Oxide

Location ID	Sample Location Concentration µg/m³	GHD Sample ID	Sample Date
		Air-11183332-165	
		Air-11183332-169	
		Air-11183332-173	

		Measured Airborne
August 5 - 6, 2019	< 0.086	<0.048
August 6 - 7, 2019	0.12	0.065
August 7 - 8, 2019	< 0.072	< 0.040