2014 – 3rd Quarter Report
Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

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Prepared for:

U. S. Environmental Protection Agency

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List of Acronyms and Abbreviations

% diff	percent difference
A/D	analog to digital converter
ARS	Air Resource Specialist, Inc.
ASTM	American Society for Testing and Materials
CASTNET	Clean Air Status and Trends Network
DAS	data acquisition system
DC	direct current
deg	degree
DVM	digital voltmeter
EEMS	Environmental, Engineering & Measurement Services, Inc.
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FSAD	Field Site Audit Database
GPS	geographical positioning system
lpm	liters per minute
MLM	Multilayer Model
m/s	meters per second
mv	milivolt
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
QAPP	Quality Assurance Project Plan
SOP	standard operating procedure
TEI	Thermo Environmental Instruments
USNO	United States Naval Observatory
V	volts
WRR	World Radiation Reference

1.0 CASTNET Quarterly Report

1.1 Introduction

The Clean Air Status and Trends Network (CASTNET) is a national air monitoring program developed under mandate of the 1990 Clean Air Act Amendments. Each site in the network measures acidic gases and particles and other forms of atmospheric pollution using a continuous collection filter aggregated over a one week period. Hourly averages of surface ozone concentrations and selected meteorological variables are also measured.

Site measurements are used to estimate deposition rates of the various pollutants with the objective of determining relationships between emissions, air quality, deposition, and ecological effects. In conjunction with other national monitoring networks, CASTNET data are used to determine the effectiveness of national emissions control programs and to assess temporal trends and spatial deposition patterns in atmospheric pollutants. CASTNET data are also used for long-range transport model evaluations and effects research.

CASTNET pollutant flux estimates are calculated as the aggregate product of weekly measured chemical concentrations and model-estimated deposition velocities. Currently, the National Oceanic and Atmospheric Administration's multilayer inferential model (NOAA-MLM) described by Meyers et al. [1998] is used to derive deposition velocity estimates.

As of May 2016, the network is comprised of 94 active rural sampling sites across the Untied States and Canada, cooperatively operated by the Environmental Protection Agency (EPA), the National Park Service (NPS), Environment Canada, Bureau of Land Management (BLM) and several independent partners. AMEC is responsible for operating the EPA and Environment Canada sponsored sites, and Air Resource Specialist, Inc. (ARS) is responsible for operating the NPS and BLM sponsored sites.

1.2 Project Objectives

The objectives of this project are to establish an independent and unbiased program of performance and systems audits for all CASTNET sampling sites. Ongoing Quality Assurance (QA) programs are an essential part of any long-term monitoring network.

Performance audits verify that all evaluated variables are consistent with the accuracy goals as defined in the CASTNET Quality Assurance Project Plan (QAPP). The parameter specific accuracy goals are presented in Table 1. Only four EPA sponsored sites that are operated by AMEC continue to operate meteorological sensors. Those sites are BEL116, BVL30, CHE185,

and PAL190. Five new sites sponsored by EPA and operated by the BLM in WY also operate meteorological sensors and are BAS601, NEC602, BUF603, FOR604, and SHE604.

Some or all of the additional monitored variables, NOy, CO, and SO_2 have been added to the EPA sponsored sites BVL130, HWF187, PND165, PNF126, ROM206, and BEL116. Those variables were audited at the ROM206, PND165, HWF187, and BVL130 stations during third quarter 2014. All of the SO_2 and NOy results for those audits were found to be within acceptance criteria. The preliminary reports of those results were delivered following the audits and are not included in this report.

Table 1. Performance Audit Challenge and Acceptance Criteria

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Precipitation	Response	10 manual tips	1 DAS count per tip
Precipitation	Accuracy	2 introductions of known amounts of water	≤ ±10.0% of input amount
Relative Humidity	Accuracy	Compared to reference instrument or standard solution	≤ ±10.0% RH
Solar Radiation	Accuracy	Compared to WRR traceable standard	≤ ±10.0% of daytime average
Surface Wetness	Response	Distilled water spray mist	Positive response
Surface Wetness	Sensitivity	1% decade resistance	N/A
Temperature	Accuracy	Comparison to 3 NIST measured baths (~ 0° C, ambient, ~ full-scale)	≤ ± 0.5° C
Temperature Difference	Accuracy	Comparison to station temperature sensor	≤ ± 0.50° C
Wind Direction	Orientation Accuracy	Parallel to alignment rod/crossarm, or sighted to distant point	≤ ±5° from degrees true
Wind Direction	Linearity	Eight cardinal points on test fixture	≤ ±5° mean absolute error
Wind Direction	Response Threshold	Starting torque tested with torque gauge	< 10 g-cm Climatronics; < 20 g-cm R.M. Young
Wind Speed	Accuracy	Shaft rotational speed generated and measured with certified synchronous motor	≤ ±0.5 mps below 5.0 mps input; ≤ ±5.0% of input at or above 5.0 mps
Wind Speed	Starting Threshold	Starting torque tested with torque gauge	< 0.5 g-cm
Mass Flow Controller	Flow Rate	Comparison with Primary Standard	≤ ± 5.0% of designated rate

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Ozone	Slope	Linear regression of multi-point test gas concentration as measured with a certified transfer standard	$0.9000 \leq m \leq 1.1000$
Ozone	Intercept		-5.0 ppb $\leq b \leq 5.0$ ppb
Ozone	Correlation Coefficient		$0.9950 \leq r$
DAS	Accuracy	Comparison with certified standard	$\leq \pm 0.003$ VDC

Performance audits are conducted using standards that are traceable to the National Institute of Standards and Technology (NIST), or another authoritative organization, and certified as current.

Site systems audits are intended to provide a qualitative appraisal of the total measurement system. Site planning, organization, and operation are evaluated to ensure that good Quality Assurance/Quality Control (QA/QC) practices are being applied. At a minimum the following audit issues were addressed at each site systems audit:

- Site locations and configurations match those provided in the CASTNET QAPP.
- Meteorological instruments are in good physical and operational condition and are sited to meet EPA ambient monitoring guidelines (EPA-600/4-82-060).
- Sites are accessible, orderly, and if applicable, compliant with OSHA safety standards.
- Sampling lines are free of leaks, kinks, visible contamination, weathering, and moisture.
- Site shelters provide adequate temperature control.
- All ambient air quality instruments are functional, being operated in the appropriate range, and the zero air supply desiccant is unsaturated.
- All instruments are in current calibration.
- Site documentation (maintenance schedules, on-site SOPs, etc.) is current and log book records are complete.
- All maintenance and on-site SOPs are performed on schedule.
- Corrective actions are documented and appropriate for required maintenance/repair activity.
- Site operators demonstrate an adequate knowledge and ability to perform required site activities, including documentation and maintenance activities.

1.3 CASTNET Sites Visited Third Quarter 2014

This report consists of the systems and performance and other audit results from the CASTNET sites visited during the third quarter (July through September) of 2014. The locations and dates of the audits are presented in Table 2.

Table 2. Site Audit Visits

Side ID	Audit Type	Sponsor	Site Visit Date	Station Name
ANA115	Without met	EPA	8/19/2014	Ann Arbor
ARE128	Without met	EPA	9/25/2014	Arendtsville
CAT175	Without met	EPA	9/26/2014	Claryville
CTH110	Without met	EPA	9/5/2014	Connecticut Hill
DIN431	Without met	NPS	7/15/2014	Dinosaur NM
EGB181	Without met	EPA	8/28/2014	Egbert, Ontario
FOR605	With met	EPA / BLM	7/21/2014	Fortification Creek
HOX148	Without met	EPA	8/25/2014	Hoxeyville
HWF187	Without met	EPA	9/30/2014	Huntington Wildlife Forest
KEF112	Without met	EPA	9/23/2014	Kane Experimental Forest
MKG113	Without met	EPA	9/20/2014	M.K. Goddard State Park
PSU106	Without met	EPA	9/23/2014	Penn State University
RED004	Flow only	EPA	9/4/2014	Red Lake Nation
SAL133	Without met	EPA	7/19/2014	Salamonie Reservoir
UVL124	Without met	EPA	8/26/2014	Unionville

In addition to the sites listed in Table 2 that were visited for complete audits, the sites listed in Table 3 were visited to conduct Through-The-Probe (TTP) pollutant monitor Performance Evaluations (PE).

Table 3. Site TTP Pollutant Monitor PE Audit Visits

Side ID	Audit Type	Sponsor	Site Visit Date	Station Name
ALH157	Ozone PE	EPA	7/22/2014	Alhambra
ANA115	Ozone PE	EPA	9/24/2014	Ann Arbor
BAS601	Ozone PE	EPA / BLM	7/17/2014	Basin
BVL130	Ozone PE	EPA	9/20/2014	Bondville
BVL130	NO_y CO SO_2	EPA	9/20/2014	Bondville
CNT169	Ozone PE	EPA	8/23/2014	Centennial
GLR468	Ozone PE	NPS	8/23/2014	Glacier NP
GTH161	Ozone PE	EPA	8/21/2014	Gothic
HWF187	NO_y	EPA	9/30/2014	Huntington Wildlife Forest
LRL117	Ozone PE	EPA	9/19/2014	Laurel Hill
NEC602	Ozone PE	EPA / BLM	7/22/2014	New Castle
PND165	Ozone PE	EPA / BLM	7/16/2014	Pinedale
PND165	NO_y	EPA / BLM	7/16/2014	Pinedale
PRK134	Ozone PE	EPA	9/10/2014	Perkinstown
ROM206	Ozone PE	EPA	8/16/2014	Rocky Mountain NP
ROM206	NO_y	EPA	8/16/2014	Rocky Mountain NP
ROM406	Ozone PE	NPS	8/16/2014	Rocky Mountain NP
STK138	Ozone PE	EPA	7/21/2014	Stockton
THR422	Ozone PE	NPS	8/25/2014	Theodore Roosevelt NP
VIN140	Ozone PE	EPA	7/23/2014	Vincennes
VOY413	Ozone PE	NPS	9/8/2014	Voyageurs NP
WNC429	Ozone PE	NPS	7/23/2014	Wind Cave NP
YEL408	Ozone PE	NPS	8/24/2014	Yellowstone NP

1.4 Audit Results

The observations and results of the systems and performance audits are included in Appendix A, *Audit Report Forms* by site, arranged by audit date.

Photographs of site conditions are included within each systems report where necessary.

Copies of the spot reports that were sent immediately following the audit of each site are included as Appendix B, *Site Spot Report Forms*.

The Ozone PE results and observations are included in Appendix C, *Ozone Performance Evaluation Forms.*

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates three precipitation chemistry networks and two atmospheric concentration networks. The National Trends Network (NTN) has been measuring acidic precipitation since 1978. The network currently has more than 200 sites. The Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992 and currently measures event based precipitation events at 6 sites. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from more than 100 stations. The MDN began operation in 1996 and includes sites throughout the US and Canada. The Atmospheric Mercury Network (AMNet) and the Ammonia Monitoring Network (AMoN) measure ambient concentrations of mercury and ammonia, respectively.

The NADP and other long-term monitoring networks provide critical information to the EPA regarding evaluating the effectiveness of emission reduction control programs from the power industry.

The NADP Program Office operates and administers the three precipitation chemistry networks (NTN, MDN and AIRMoN), two atmospheric concentration networks (AMNet and AMoN), two analytical laboratories (the Central Analytical Laboratory (CAL) located at the University of Illinois/Illinois State Water Survey and the Mercury Analytical Laboratory (HAL) located at Frontier Global Sciences), and the network equipment depot (NED).

2.2 Project Objectives

The objective of this project is to perform independent and unbiased evaluations of the sites along with its operations. These evaluations provide quality assurance pertaining to siting, sample collection and handling, equipment operation and maintenance, record keeping and field laboratory procedures.

More specifically, the surveys determine and report findings based on an established methodology consisting of completing a site questionnaire, testing the equipment and documenting with photographs the location, siting criteria, existing equipment, and any issues encountered that require such documentation.

2.3 Sites Visited Third Quarter 2014

This report covers the results from the NADP sites surveyed during the third quarter (July through September) of 2014. The station names and dates of the audits are presented in Table 4.

Table 4. Sites Surveyed – Third Quarter 2014

Side ID	Network	Visit Date	Station Name
IA08	NTN	7/21/2014	Big Springs Fish Hatchery
IL37	AMoN	7/21/2014	Stockton
IL46	AMoN/NTN	7/22/2014	Alhambra
IN20	NTN	7/19/2014	Roush Lake
WY99	NTN	7/22/2014	Newcastle
CO10	NTN	8/21/2014	Gothic
CO15	NTN	8/25/2014	Sand Spring
CO19	NTN	8/27/2014	Rocky Mountain NP-Beaver Meadows
CO97	MDN/NTN	8/26/2014	Buffalo Pass - Summit Lake
MT97	NTN	8/22/2014	Lost Trail Pass
ON07	MDN	8/28/2014	Egbert
SD18	MDN	8/26/2014	Eagle Butte
SD99	NTN	8/27/2014	Huron Well Field
CAN5	NTN	9/3/2014	Frelighsburg
ND08	NTN	9/3/2014	Icelandic State Park
ND11	NTN	9/2/2014	Woodworth
NY01	NTN	9/21/2014	Alfred
NY08	NTN	9/5/2014	Aurora Research Farm
NY20	MDN/NTN/AMoN	9/30/2014	Huntington Wildlife
NY67	AIRMoN	9/5/2014	Ithaca
NY68	MDN/NTN	9/26/2014	Biscuit Brook
NY98	NTN/AMoN	9/29/2014	Whiteface Mountain
PA15	AIRMoN/NTN	9/24/2014	Penn State

Side ID	Network	Visit Date	Station Name
PA18	NTN	9/22/2014	Young Woman's Creek
PA60	NTN	9/24/2014	Valley Forge
PA90	NTN	9/22/2014	Hills Creek State Park
PQ17	MDN	9/1/2014	Chapais
WI35	NTN/AMoN	9/10/2014	Perkinstown
WI37	NTN	9/9/2014	Spooner

2.4 Survey Results

Site survey results are entered into a relational database. The database in turn generates Site Spot Reports which are distributed among the interested parties as soon as all the site data has been entered. Database tables with all the data collected and reviewed are then sent to the NADP Program Office and to the U.S. EPA Project Officers.

Other items gathered during the surveys (i.e., photographs, Belfort charts, etc.) are uploaded to EEMS' server where the NADP PO and the U.S. EPA POs can access them and download them as needed by login into the server site.

Given the volume of data generated, and the fact that data is distributed and/or is available through EEMS' server, no survey results are included in this report.

APPENDIX A

CASTNET Audit Report Forms

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
DIN431-Eric Hebert-07/15/2014						
1	7/15/2014	DAS	Environmental Sys Corp	90652	8816	2565
2	7/15/2014	elevation	Elevation	none	none	none
3	7/15/2014	flow rate	Mykrolis	none	FC280SAV-4S	AW902153
4	7/15/2014	Infrastructure	Infrastructure	none	none	none
5	7/15/2014	MFC power supply	Tylan	none	RO-32	FP9706002
6	7/15/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	1211052490
7	7/15/2014	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450194
8	7/15/2014	Shelter Temperature	ARS	none	unknown	none
9	7/15/2014	siting criteria	Siting Criteria	none	none	None
10	7/15/2014	Temperature	RM Young	none	41342	4273

DAS Data Form

DAS Time Max Error: 1.25

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	2565	DIN431	Eric Hebert	07/15/2014	DAS	Primary

Das Date: 7 /15/2014
Das Time: 13:28:15
Das Day: 196

Audit Date 7 /15/2014
Audit Time 13:27:00
Audit Day 196

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0005	0.0002	0.0003

Mfg Datel **Parameter** DAS
Serial Number 15510194 **Tfer Desc.** Source generator (D
Tfer ID 01320

Mfg Fluke **Parameter** DAS
Serial Number 86590148 **Tfer Desc.** DVM
Tfer ID 01310

Slope 1.00000 **Intercept** 0.00000
Cert Date 12/28/2013 **CorrCoff** 1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
2	0.0000	0.0000	0.0000	V	V	0.0000
2	0.1000	0.1000	0.1000	V	V	0.0000
2	0.3000	0.2999	0.2999	V	V	0.0000
2	0.5000	0.5004	0.5006	V	V	0.0002
2	0.7000	0.7002	0.7007	V	V	0.0005
2	0.9000	0.9003	0.9008	V	V	0.0005
2	1.0000	1.0004	1.0009	V	V	0.0005
9	0.0000	-0.0002	-0.0002	V	V	0.0000
9	0.1000	0.0997	0.1000	V	V	0.0003
9	0.3000	0.3001	0.3004	V	V	0.0003
9	0.5000	0.5000	0.5002	V	V	0.0002
9	0.7000	0.7003	0.7004	V	V	0.0001
9	0.9000	0.9003	0.9005	V	V	0.0002
9	1.0000	0.9993	0.9992	V	V	-0.0001

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Mykrolis	AW902153	DIN431	Eric Hebert	07/15/2014	flow rate	none

Mfg	Tylan
SN/Owner ID	FP9706002 none
Parameter	MFC power supply

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	122974	**Tfer Desc.**	BIOS 220-H
Tfer ID	01416		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:		
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	
0.24%	0.28%			

Cal Factor Zero	0.038
Cal Factor Full Scale	10.92
Rotometer Reading:	3.4

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.05	0.0101	0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.05	0.0101	0.01	l/m	l/m	
primary	test pt 1	0.000	2.993	1.35	1.3574	3.00	l/m	l/m	0.20%
primary	test pt 2	0.000	2.991	1.35	1.3574	3.00	l/m	l/m	0.28%
primary	test pt 3	0.000	2.992	1.35	1.3574	3.00	l/m	l/m	0.25%

Sensor Component	Condition	Status
Tubing Condition	Good	pass
System Memo		pass
Rotometer Condition	Clean and dry	pass
Moisture Present	No moisture present	pass
Leak Test		pass
Filter Position	Good	pass
Filter Distance	5.5 cm	pass
Filter Depth	1.0 cm	pass
Filter Azimuth	360 deg	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1211052490	DIN431	Eric Hebert	07/15/2014	Ozone	none

Slope:	0.99366	**Slope:**	0.00000
Intercept	0.33934	**Intercept**	0.00000
CorrCoff	0.99996	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.9%	2.4%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.32	0.52	0.47	ppb	
primary	2	33.21	33.18	33.99	ppb	2.44%
primary	3	52.94	52.77	52.63	ppb	-0.27%
primary	4	83.46	83.08	82.82	ppb	-0.31%
primary	5	112.74	112.15	111.70	ppb	-0.40%

Sensor Component	Condition	Status
Cell B Noise	0.7 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	0.9998	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.024	pass
Cell B Freq.	80.0 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.69 lpm	pass
Cell A Tmp.	34.1 C	pass
Cell A Pressure	620.9 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	81.9 kHz	pass
Cell A Flow	0.69 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	0.0001	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	4273	DIN431	Eric Hebert	07/15/2014	Temperature	none

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.44	0.54		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.06	0.29	0.0000	0.7	C	0.37
primary	Temp Mid Range	25.37	25.47	0.0000	25.9	C	0.42
primary	Temp High Range	45.32	45.33	0.0000	45.9	C	0.54

Sensor Component	System Memo	**Condition**	See comments	**Status**	pass
Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	DIN431	Eric Hebert	07/15/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.23	0.49		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.16	25.26	0.000	25.4	C	0.11
primary	Temp Mid Range	24.62	24.73	0.000	25.2	C	0.49
primary	Temp Mid Range	25.32	25.42	0.000	25.3	C	-0.1

Infrastructure Data For

Site ID	DIN431	Technician	Eric Hebert	Site Visit Date	07/15/2014

Sensor Component	Condition	Status
Tubing Type	3/8 teflon	pass
Signal Cable	Good	pass
Shelter Temp Control	Functioning	pass
Shelter Roof	Good	pass
Shelter Floor	Good	pass
Shelter Door	Fair	pass
Shelter Condition	Good	pass
Sample Train	Good	pass
Sample Tower Type	Type B	pass
Sample Tower	Fair	pass
Rotometer	Installed	pass
Power Cables	Good	pass
Moisture Trap	Not installed	pass
Met Tower	N/A	pass
Conduit	N/A	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Temperature	DIN431	Eric Hebert	07/15/2014	System Memo	RM Young	3992	☐	☐

The temperature sensor is mounted directly above the shelter roof.

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator was observed to lower the sample tower and replace the filter pack with the sample pump running and the channel marked as valid. Although gloves were used to handle the filter, they were kept in a pants pocket until needed and many items were touched between handling the filters. The operator was not completely familiar with the CASTNET procedures.

2 **Parameter:** DasComments

All sensors, filter pack, and ozone sample inlet are on a single, crank-down tower.

3 **Parameter:** SiteOpsProcedures

The site operator is not responsible for manual zero/span/precision checks of the ozone analyzer.

4 **Parameter:** DocumentationCo

There is very little documentation of onsite activities. No manual entries in Dataview. The COC section of the SSRF is not being used.

5 **Parameter:** SitingCriteriaCom

A small parking lot for park service employees is located approximately 40 meters north of the site.

6 **Parameter:** ShelterCleanNotes

The shelter is in good condition, clean, and well organized.

7 **Parameter:** MetSensorComme

The ambient temperature sensor is mounted approximately 8 meters from the ground and above the shelter roof.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	DIN431	**Technician**	Eric Hebert	**Site Visit Date**	07/15/2014

Site Sponsor (agency)	NPS	**USGS Map**	Dinosaur Quarry
Operating Group	NPS	**Map Scale**	
AQS #	49-047-1002	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	40.4373
Deposition Measurement	dry	**QAPP Longitude**	-109.3046
Land Use	Desert	**QAPP Elevation Meters**	1463
Terrain	complex	**QAPP Declination**	10.7
Conforms to MLM	Marginally	**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	40.4373
Site Address 1		**Audit Longitude**	-109.3046
Site Address 2		**Audit Elevation**	1463
County	Uintah	**Audit Declination**	10.7
City, State	Jensen, UT		
Zip Code	84035		**Present**
Time Zone	Mountain	**Fire Extinguisher**	☑ No inspection date
Primary Operator		**First Aid Kit**	☐
Primary Op. Phone #		**Safety Glasses**	☐
Primary Op. E-mail		**Safety Hard Hat**	☐
Backup Operator		**Climbing Belt**	☐
Backup Op. Phone #		**Security Fence**	☐
Backup Op. E-mail		**Secure Shelter**	☑
		Stable Entry Step	☑

Shelter Working Room ☑ **Make** American Portable B **Model** A0810 **Shelter Size** 640 cuft

Shelter Clean ☑ **Notes** The shelter is in good condition, clean, and well organized.

Site OK ☑ **Notes**

Driving Directions Go east on route 40 from Vernal, UT. Turn north on route 149 and follow signs for Dinosaur National Monument.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID DIN431 **Technician** Eric Hebert **Site Visit Date** 07/15/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m	40 m	☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

A small parking lot for park service employees is located approximately 40 meters north of the site.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	DIN431	Technician	Eric Hebert	Site Visit Date	07/15/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☐	Mounted on south of tower, over shelter
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☐	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ambient temperature sensor is mounted approximately 8 meters from the ground and above the shelter roof.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID DIN431 **Technician** Eric Hebert **Site Visit Date** 07/15/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	
2	Are all the meteorological sensors operational online, and reporting data?	☑	
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Parameter	Manufacturer	Model	S/N	Client ID
Temperature	RM Young	41342	4273	none

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID DIN431 **Technician** Eric Hebert **Site Visit Date** 07/15/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☐	No
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID DIN431 **Technician** Eric Hebert **Site Visit Date** 07/15/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?	One tower only	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

All sensors, filter pack, and ozone sample inlet are on a single, crank-down tower.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID DIN431 **Technician** Eric Hebert **Site Visit Date** 07/15/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☑	☐	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☐	Not present	☐
SSRF	☑		☑
Site Ops Manual	☐	Not present	☐
HASP	☐	Not present	☐
Field Ops Manual	☐	Not present	☐
Calibration Reports	☑	1/20/2014	☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☐	
2	Are the Site Status Report Forms being completed and current?	☑	Flow & observation sections
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☐	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

There is very little documentation of onsite activities. No manual entries in Dataview. The COC section of the SSRF is not being used.

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	DIN431	Technician	Eric Hebert	Site Visit Date	07/15/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☐	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	N/A	☑
Visual Inspections	☑	N/A	☑
Translator Zero/Span Tests (climatronics)	☑	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	N/A	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐	Not performed	☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐	Not performed	☐
Analyzer Diagnostics Tests	☐	Not performed	☐
In-line Filter Replacement (at inlet)	☑	Weekly	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☐	Not performed	☐
Zero Air Desiccant Check	☑	Semiannually	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☑	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	Dataview

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The site operator is not responsible for manual zero/span/precision checks of the ozone analyzer.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID DIN431 **Technician** Eric Hebert **Site Visit Date** 07/15/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☐	Not performed	☐
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☐	Not performed	☐

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The site operator was observed to lower the sample tower and replace the filter pack with the sample pump running and the channel marked as valid. Although gloves were used to handle the filter, they were kept in a pants pocket until needed and many items were touched between handling the filters. The operator was not completely familiar with the CASTNET procedures.

Field Systems Data Form F-02058-1500-S10-rev002

Site ID DIN431 **Technician** Eric Hebert **Site Visit Date** 07/15/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Environmental Sys Corp	8816	2565	90652
elevation	Elevation	none	none	none
flow rate	Mykrolis	FC280SAV-4S	AW902153	none
Infrastructure	Infrastructure	none	none	none
MFC power supply	Tylan	RO-32	FP9706002	none
Ozone	ThermoElectron Inc	49i A3NAA	1211052490	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	1130450194	none
Shelter Temperature	ARS	unknown	none	none
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342	4273	none

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
SAL133-Sandy Grenville-07/19/2014					
1 7/19/2014	Computer	Dell	000292	D520	unknown
2 7/19/2014	DAS	Campbell	000351	CR3000	2129
3 7/19/2014	Elevation	Elevation	None	1	None
4 7/19/2014	Filter pack flow pump	Thomas	00765	107CA110	0000141
5 7/19/2014	Flow Rate	Apex	000465	AXMC105LPMDPCV	43974
6 7/19/2014	Infrastructure	Infrastructure	none	none	none
7 7/19/2014	Met tower	Universal Tower	03558	unknown	none
8 7/19/2014	Modem	Raven	06594	V4221-V	0844344486
9 7/19/2014	Ozone	ThermoElectron Inc	000741	49i A1NAA	1105347316
10 7/19/2014	Ozone Standard	ThermoElectron Inc	000372	49i A3NAA	0726124684
11 7/19/2014	Sample Tower	Aluma Tower	none	B	AT-51065-5-G-A
12 7/19/2014	Shelter Temperature	Campbell	none	107-L	none
13 7/19/2014	Siting Criteria	Siting Criteria	None	1	None
14 7/19/2014	Temperature	RM Young	06410	41342	14043
15 7/19/2014	Zero air pump	Werther International	06935	C 70/4	000829172

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2129	SAL133	Sandy Grenville	07/19/2014	DAS	Primary

Das Date: 7 /19/2014
Das Time: 17:30:33
Das Day: 200

Audit Date 7 /19/2014
Audit Time 17:30:34
Audit Day 200

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0001	0.0002	0.0001	0.0002

Mfg Datel **Parameter** DAS
Serial Number 15510194 **Tfer Desc.** Source generator (D
Tfer ID 01320

Mfg Fluke **Parameter** DAS
Serial Number 95740135 **Tfer Desc.** DVM
Tfer ID 01311

Slope 1.00000 **Intercept** 0.00000
Cert Date 12/28/2013 **CorrCoff** 1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2998	0.2998	V	V	0.0000
7	0.5000	0.4997	0.4996	V	V	-0.0001
7	0.7000	0.6996	0.6995	V	V	-0.0001
7	0.9000	0.8995	0.8993	V	V	-0.0002
7	1.0000	0.9994	0.9992	V	V	-0.0002

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	43974	SAL133	Sandy Grenville	07/19/2014	Flow Rate	000465

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103471	**Tfer Desc.**	nexus
Tfer ID	01420		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103424	**Tfer Desc.**	BIOS cell
Tfer ID	01410		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	-0.02
1.12%	1.35%			**Cal Factor Full Scale**	0.97
				Rotometer Reading:	1.4

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.01	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	-0.01	l/m	l/m	
primary	test pt 1	1.510	1.480	1.54	0.000	1.50	l/m	l/m	1.35%
primary	test pt 2	1.506	1.480	1.54	0.000	1.50	l/m	l/m	1.35%
primary	test pt 3	1.515	1.490	1.54	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	3.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	2.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	200 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347316	SAL133	Sandy Grenville	07/19/2014	Ozone	000741

Slope:	1.01925	**Slope:**	0.00000
Intercept	-0.35120	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.4%	1.6%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.55	0.66	0.15	ppb	
primary	2	30.65	30.62	31.05	ppb	1.40%
primary	3	50.33	50.21	50.99	ppb	1.55%
primary	4	80.69	80.43	81.40	ppb	1.21%
primary	5	100.53	100.18	101.80	ppb	1.62%

Sensor Component	Condition	Status
Cell B Noise	0.9 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.10	pass
Span	1.020	pass
Cell B Freq.	96.7 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.54 lpm	pass
Cell A Tmp.	33.7 C	pass
Cell A Pressure	729 mmHg	pass
Cell A Noise	0.8 ppb	pass
Cell A Freq.	109.7 kHz	pass
Cell A Flow	0.63 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14043	SAL133	Sandy Grenville	07/19/2014	Temperature	06410

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00288	**Intercept**	-0.15155
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.10	0.18		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.04	0.19	0.000	0.2	C	0
primary	Temp Mid Range	26.02	26.10	0.000	26.0	C	-0.12
primary	Temp High Range	49.32	49.33	0.000	49.2	C	-0.18

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	SAL133	Sandy Grenville	07/19/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.14	0.31		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00288	Intercept	-0.15155
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.60	22.69	0.000	23.0	C	0.31
primary	Temp Mid Range	22.70	22.79	0.000	22.8	C	0.01
primary	Temp Mid Range	22.80	22.89	0.000	23.0	C	0.11

Infrastructure Data For

Site ID	SAL133	Technician	Sandy Grenville	Site Visit Date	07/19/2014

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	N/A	pass
Met Tower	Fair	pass
Moisture Trap	Installed	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Fair	pass
Shelter Condition	Fair	pass
Shelter Door	Fair	pass
Shelter Roof	Poor	Fail
Shelter Floor	Fair	pass
Signal Cable	Good	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone sample train is leak tested every two weeks.

2 **Parameter:** SitingCriteriaCom

The site is located next to a field usually planted with corn or soy beans.

3 **Parameter:** ShelterCleanNotes

There is evidence of a leak in the shelter roof, and the condition has deteriorated since the previous audit visit. Only one light is working. There are signs of ants in the shelter.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	SAL133	**Technician**	Sandy Grenville	**Site Visit Date**	07/19/2014

Site Sponsor (agency)	EPA	**USGS Map**	Lagro
Operating Group	private	**Map Scale**	
AQS #	18-169-9991	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	
Deposition Measurement	dry	**QAPP Longitude**	
Land Use	agriculture	**QAPP Elevation Meters**	
Terrain	flat	**QAPP Declination**	
Conforms to MLM	Yes	**QAPP Declination Date**	
Site Telephone	(260) 782-2428	**Audit Latitude**	40.816038
Site Address 1	Hamilton Road	**Audit Longitude**	-85.661407
Site Address 2		**Audit Elevation**	250
County	Wabash	**Audit Declination**	-5
City, State	Lagro, IN		
Zip Code	46941	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☐	
Primary Op. E-mail		**Climbing Belt** ☐	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	There is evidence of a leak in the shelter roof, and the condition has deteriorated since the previous audit visit. Only one light is working. There are signs of ants in the shelter.				
Site OK	☑	**Notes**					

Driving Directions From Huntington, IN take route 9 south a few miles to Division Road. Turn right (west) on Division and continue several miles to S 750 E, turn left (south). Turn right (west) at the first intersection (E 50 S). Turn left (south) at the next road, Hamilton or 725E. The site is about 1 mile on the right.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID SAL133 **Technician** Sandy Grenville **Site Visit Date** 07/19/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m	20 m	☐
Limited agricultural operations	200 m	20 m	☐
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is located next to a field usually planted with corn or soy beans.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	SAL133	Technician		Site Visit Date	07/19/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID SAL133 **Technician** Sandy Grenville **Site Visit Date** 07/19/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☐
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	SAL133	Technician	Sandy Grenville	Site Visit Date	07/19/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☑	☐
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☑	☐
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑		☐
HASP	☑	November 2009	☑
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	SAL133	Technician	Sandy Grenville	Site Visit Date	07/19/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained on-site by ESE employee (JBA)
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, logbook, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone sample train is leak tested every two weeks.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID SAL133 **Technician** Sandy Grenville **Site Visit Date** 07/19/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
FOR605-Eric Hebert-07/21/2014						
1	7/21/2014	DAS	Campbell	49922	CR1000	illegible
2	7/21/2014	elevation	Elevation	none	none	none
3	7/21/2014	Flow Rate	AALBORG	none	GFMS-012446	196706-5
4	7/21/2014	Infrastructure	Infrastructure	none	none	none
5	7/21/2014	Precipitation	Vaisala	none	444A	2998
6	7/21/2014	Relative Humidity	Vaisala	none	HMP45AC	C2240042
7	7/21/2014	siting criteria	Siting Criteria	none	none	None
8	7/21/2014	Solar Radiation	Licor	none	LI-200	PY47986
9	7/21/2014	Temperature	Vaisala	none	HMP45AC	C2240042
10	7/21/2014	Wind Direction	Met One	illegible	Illegible	k5192
11	7/21/2014	Wind Speed	Met One	none	014	D3117

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
AALBORG	196706-5	FOR605	Eric Hebert	07/21/2014	Flow Rate	none

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.33
6.56%	6.82%			**Cal Factor Full Scale**	0.0019
				Rotometer Reading:	0

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.36	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.36	l/m	l/m	
primary	test pt 1	3.080	3.080	0.00	0.000	3.29	l/m	l/m	6.82%
primary	test pt 2	3.079	3.080	0.00	0.000	3.29	l/m	l/m	6.66%
primary	test pt 3	3.081	3.080	0.00	0.000	3.27	l/m	l/m	6.20%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	N/A	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	3.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	3.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Wind Speed Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Met One	D3117	FOR605	Eric Hebert	07/21/2014	Wind Speed	none

Mfg	RM Young	**Parameter**	wind speed
Serial Number	CA04013	**Tfer Desc.**	wind speed motor (h
Tfer ID	01253		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/16/2014	**CorrCoff**	1.00000

Prop or Cups SN N/A
Prop or Cups Torque 0 **to** 0
Prop Correction Fact N/A

	DAS 1:		DAS 2:	
	Low Range	**High Range**	**Low Range**	**High Range**
Abs Avg Err	0.07	0.63%		
Abs Max Er	0.17	1.26%		

UseDescription:	Input Device	Input RPM	Input m/s	Out V	DAS m/s	Diff/ %Diff	Diff	WsM
primary	none	0	0.45	0.0	0.5		0.00	
primary	01253	40	1.67	0.0	1.5		-0.17	
primary	01253	80	2.75	0.0	2.7		-0.10	
primary	01253	140	4.26	0.0	4.3		-0.01	
primary	01253	210	6.07	0.0	6.1	-0.33%		
primary	01253	400	11.11	0.0	11.3	1.26%		
primary	01253	730	19.87	0.0	20.1	0.91%		
primary	01253	1800	48.44	0.0	48.5	0.02%		

Sensor Component	Condition	**Condition**	Good	**Status**	pass
Sensor Component	Prop or Cups Condition	**Condition**	Good	**Status**	pass
Sensor Component	Sensor Heater	**Condition**	N/A	**Status**	pass
Sensor Component	Torque	**Condition**		**Status**	pass
Sensor Component	Sensor Plumb	**Condition**	Plumb	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Wind Direction Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Met One	k5192	FOR605	Eric Hebert	07/21/2014	Wind Direction	illegible

Mfg	RM Young	**Parameter**	wind direction
Serial Number		**Tfer Desc.**	wind direction wheel
Tfer ID	01264		

Vane SN: N/A **C. A. Align. deg. true:**

VaneTorque 0 **to** 0 360

Mfg	Ushikata	**Parameter**	wind direction
Serial Number	192034	**Tfer Desc.**	transit
Tfer ID	01270		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/30/2014	**CorrCoff**	1.00000

	DAS 1: Orientation	DAS 1: Linearity:	DAS 2: Orientation	DAS 2: Linearity:
Abs Avg Err	3.5			
Abs Max Er	5			

UseDescription	TferID	Input Raw	Linearity	Output V	Output Deg.	Difference	Change	Error
primary	01270	0	☐	0.000	1	1		1
primary	01270	90	☐	0.000	86	4		4
primary	01270	180	☐	0.000	176	4		4
primary	01270	270	☐	0.000	265	5		5

Sensor Component	Sensor Heater	**Condition**	N/A	**Status**	pass
Sensor Component	Mast	**Condition**	Good	**Status**	pass
Sensor Component	Sensor Plumb	**Condition**	Plumb	**Status**	pass
Sensor Component	Condition	**Condition**	Good	**Status**	pass
Sensor Component	Torque	**Condition**		**Status**	pass
Sensor Component	Vane Condition	**Condition**	Good	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Vaisala	C2240042	FOR605	Eric Hebert	07/21/2014	Temperature	none

Mfg	Eutechnics	**Parameter**	Temperature
Serial Number	01D102193	**Tfer Desc.**	RTD translator
Tfer ID	01231		
Slope	1.00133	**Intercept**	-0.05731
Cert Date	12/27/2013	**CorrCoff**	1.00000

Mfg	Eutechnics	**Parameter**	Temperature
Serial Number	01H0060	**Tfer Desc.**	RTD probe
Tfer ID	01230		
Slope	1.00133	**Intercept**	-0.05731
Cert Date	12/27/2013	**CorrCoff**	1.00000

DAS 1: Abs Avg Err	DAS 1: Abs Max Er	DAS 2: Abs Avg Err	DAS 2: Abs Max Er
0.67	1.45		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	4.41	4.46	0.000	5.9	C	1.45
primary	Temp Mid Range	33.72	33.73	0.000	33.5	C	-0.27
primary	Temp High Range	43.63	43.63	0.000	43.9	C	0.29

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Humidity Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Vaisala	C2240042	FOR605	Eric Hebert	07/21/2014	Relative Humidity	none

Mfg	Rotronic	**Parameter**	Relative Humidity
Serial Number	75296	**Tfer Desc.**	GTL
Tfer ID	01220		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/5/2010	**CorrCoff**	1.00000

	DAS 1:		DAS 2:	
	Low Range	**High Range**	**Low Range**	**High Range**
Abs Avg Err	3.5	6.5		
Abs Max Er	4.7	6.5		

UseDesc.	Test type	Device	Input RH	GTL Raw	RH Corr.	DAS Volts	DAS %RH	Difference
primary	RH Low Range	GTL	32.8	0.0	32.8	0.000	30.5	-2.3
primary	RH Low Range	GTL	52.9	0.0	52.9	0.000	48.2	-4.7
primary	RH High Range	GTL	93.6	0.0	93.6	0.000	87.1	-6.5

Sensor Component	RH Filter	**Condition**	Clean	**Status**	pass
Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Solar Radiation Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Licor	PY47986	FOR605	Eric Hebert	07/21/2014	Solar Radiation	none

DAS 1:		DAS 2:	
% Diff of Avg	%Diff of Max	%Diff of Avg	%Diff of Max
2.3%	1.7%	0.0%	0.0%

Mfg	RM Young	Parameter	solar radiation		
Serial Number		Tfer Desc.	SR transfer translat		
Tfer ID	01240				
Slope	1.02678	Intercept	-16.91000		
Cert Date	6/14/2014	CorrCoff	0.99800		
Mfg	Licor	Parameter	solar radiation		
Serial Number		Tfer Desc.	SR transfer sensor		
Tfer ID	01241				
Slope	1.02678	Intercept	-16.91000		
Cert Date	6/14/2014	CorrCoff	0.99800		

UseDescription	Measure Date	MeasureTime	Tfer Raw	Tfer Corr	DAS w/m2	PctDifference
primary	7/21/2014	10:00	844	838	814	-2.9%
primary	7/21/2014	11:00	875	868	853	-1.7%

Sensor Component	Sensor Clean	Condition	Clean	Status	pass
Sensor Component	Sensor Level	Condition	Level	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Precipitation Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Vaisala	2998	FOR605	Eric Hebert	07/21/2014	Precipitation	none

DAS 1:		DAS 2:	
A Avg % Diff:	A Max % Di	A Avg %Dif	A Max % Di
9.7%	10.3%		

Mfg	PMP	Parameter	Precipitation
Serial Number	EW-06134-50	Tfer Desc.	250ml graduate
Tfer ID	01250		
Slope	1.00000	Intercept	0.00000
Cert Date	9/5/2005	CorrCoff	1.00000

UseDesc.	Test type	TferVolume	Iteration	TimePerTip	Eq.Ht	DAS eng	Eq.HtUnit	OSE Unit	TferUnits	PctDifference
primary	test 1	231.5	1	15 sec	7.25	6.50	mm	mm	ml	-10.3%
primary	test 2	231.5	2	15 sec	7.25	6.60	mm	mm	ml	-9.0%

Sensor Component	Gauge Drain Screen	Condition	Installed	Status	pass
Sensor Component	Funnel Clean	Condition	Clean	Status	pass
Sensor Component	Condition	Condition	Good	Status	pass
Sensor Component	Properly Sited	Condition	45 degree rule	Status	pass
Sensor Component	Gauge Screen	Condition	Installed	Status	pass
Sensor Component	Gauge Clean	Condition	Dirty	Status	Fail
Sensor Component	Level	Condition	Level	Status	pass
Sensor Component	Sensor Heater	Condition	N/A	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	FOR605	Technician	Eric Hebert	Site Visit Date	07/21/2014

Shelter Make	Shelter Model	Shelter Size

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Pole type	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Rotometer	Condition	Not installed	Status	Fail
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Door	Condition	N/A	Status	pass
Sensor Component	Shelter Roof	Condition	N/A	Status	pass
Sensor Component	Shelter Floor	Condition	N/A	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	FOR605	Eric Hebert	07/21/2014	System Memo	AALBORG	4202	☐	☐
Additional details can be found in the hardcopy of the site audit report.								
Temperature	FOR605	Eric Hebert	07/21/2014	System Memo	Vaisala	4198	☐	☐
Additional details can be found in the hardcopy of the site audit report.								

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The dry deposition sample height is approximately 6 meters and not 10 meters.

2 **Parameter:** DocumentationCo

There is no documentation available at the site since there is no place to store documents. The site does not have a computer or shelter other than the small enclosure. The site operator completes a site checklist which remains in his vehicle. Information from the checklist is later filed at his office.

3 **Parameter:** SitingCriteriaCom

The site is located in a wellfield with oil and gas operations nearby.

4 **Parameter:** ShelterCleanNotes

This is a small footprint site with instruments mounted in enclosure on tripod tower.

5 **Parameter:** MetOpMaintCom

The temperature and relative humidity sensor is a combination sensor which cannot be submersed making it difficult to audit throughout a range of temperatures.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	FOR605	**Technician**	Eric Hebert	**Site Visit Date**	07/21/2014

Site Sponsor (agency)	EPA	**USGS Map**	
Operating Group	BLM	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type	Met One		
Air Pollutant Analyzer		**QAPP Latitude**	
Deposition Measurement	dry	**QAPP Longitude**	
Land Use	Range	**QAPP Elevation Meters**	
Terrain	Rolling	**QAPP Declination**	
Conforms to MLM	Marginally	**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	44.339232
Site Address 1		**Audit Longitude**	-105.92023
Site Address 2		**Audit Elevation**	1402
County	Campbell	**Audit Declination**	9.5
City, State	Gillette, WY		
Zip Code	82716	**Fire Extinguisher** ☐	
Time Zone	Mountain	**First Aid Kit** ☐	
Primary Operator		**Safety Glasses** ☐	
Primary Op. Phone #		**Safety Hard Hat** ☐	
Primary Op. E-mail		**Climbing Belt** ☐	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☐	**Make**		**Model**		**Shelter Size**	
Shelter Clean	☐	**Notes**	This is a small footprint site with instruments mounted in enclosure on tripod tower.				
Site OK	☐	**Notes**					

Driving Directions

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID FOR605 **Technician** Eric Hebert **Site Visit Date** 07/21/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is located in a wellfield with oil and gas operations nearby.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	FOR605	Technician	Eric Hebert	Site Visit Date	07/21/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	
3	Are the tower and sensors plumb?	☑	
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	
8	Is the rain gauge plumb?	☑	
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☐	45 degree rule violation
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID FOR605 **Technician** Eric Hebert **Site Visit Date** 07/21/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	N/A
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The temperature and relative humidity sensor is a combination sensor which cannot be submersed making it difficult to audit throughout a range of temperatures.

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	FOR605	Technician	Eric Hebert	Site Visit Date	07/21/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		N/A
4	Describe dry dep sample tube.		3/8 teflon by 8 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	N/A
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	N/A
8	Are there moisture traps in the sample lines?	☐	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☐	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID FOR605 **Technician** Eric Hebert **Site Visit Date** 07/21/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	Solar power
8	Is the instrument shelter temperature controlled?	☑	N/A

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID FOR605 **Technician** Eric Hebert **Site Visit Date** 07/21/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☐	Data logger	☐	☐	☐
Wind direction sensor	☐	☐	☐	Data logger	☐	☐	☐
Temperature sensor	☐	☐	☐	Strip chart recorder	☐	☐	☐
Relative humidity sensor	☐	☐	☐	Computer	☐	☐	☐
Solar radiation sensor	☐	☐	☐	Modem	☐	☐	☐
Surface wetness sensor	☐	☐	☐	Printer	☐	☐	☐
Wind sensor translator	☐	☐	☐	Zero air pump	☐	☐	☐
Temperature translator	☐	☐	☐	Filter flow pump	☐	☐	☐
Humidity sensor translator	☐	☐	☐	Surge protector	☐	☐	☐
Solar radiation translator	☐	☐	☐	UPS	☐	☐	☐
Tipping bucket rain gauge	☐	☐	☐	Lightning protection device	☐	☐	☐
Ozone analyzer	☐	☐	☐	Shelter heater	☐	☐	☐
Filter pack flow controller	☐	☐	☐	Shelter air conditioner	☐	☐	☐
Filter pack MFC power supply	☐	☐	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☐		☐
SSRF	☑		☐
Site Ops Manual	☐		☐
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☐	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

There is no documentation available at the site since there is no place to store documents. The site does not have a computer or shelter other than the small enclosure. The site operator completes a site checklist which remains in his vehicle. Information from the checklist is later filed at his office.

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	FOR605	Technician	Eric Hebert	Site Visit Date	07/21/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐		☑
Manual Rain Gauge Test	☑	Monthly	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☐	N/A	☑
Automatic Zero/Span Tests	☐	N/A	☑
Manual Zero/Span Tests	☐	N/A	☑
Automatic Precision Level Tests	☐	N/A	☑
Manual Precision Level Test	☐	N/A	☑
Analyzer Diagnostics Tests	☐	N/A	☑
In-line Filter Replacement (at inlet)	☐	N/A	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☐	N/A	☑
Zero Air Desiccant Check	☐	N/A	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☑	N/A
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	N/A
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	FOR605	Technician	Eric Hebert	Site Visit Date	07/21/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	Flow section only
3	Are data downloads and backups being performed as scheduled?	☑	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	One set of gloves only
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☐	N/A	☑
In-line Filter Inspection/Replacement	☑	As needed	☑
Sample Line Check for Dirt/Water	☐		☐

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The dry deposition sample height is approximately 6 meters and not 10 meters.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID FOR605 **Technician** Eric Hebert **Site Visit Date** 07/21/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR1000	illegible	49922
elevation	Elevation	none	none	none
Flow Rate	AALBORG	GFMS-012446	196706-5	none
Infrastructure	Infrastructure	none	none	none
Precipitation	Vaisala	444A	2998	none
Relative Humidity	Vaisala	HMP45AC	C2240042	none
siting criteria	Siting Criteria	none	None	none
Solar Radiation	Licor	LI-200	PY47986	none
Temperature	Vaisala	HMP45AC	C2240042	none
Wind Direction	Met One	Illegible	k5192	illegible
Wind Speed	Met One	014	D3117	none

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ANA115-Eric Hebert-08/19/2014						
1	8/19/2014	Computer	Dell	000298	D520	unknown
2	8/19/2014	DAS	Campbell	000338	CR3000	2117
3	8/19/2014	Elevation	Elevation	None	1	None
4	8/19/2014	Filter pack flow pump	Thomas	00209	107CA110	0000124
5	8/19/2014	Flow Rate	Apex	000809	AXMC105LPMDPCV	illegible
6	8/19/2014	Infrastructure	Infrastructure	none	none	none
7	8/19/2014	Met tower	Universal Tower	03555	unknown	none
8	8/19/2014	Modem	Raven	06588	V4221-V	0844352818
9	8/19/2014	Ozone	ThermoElectron Inc	000746	49i A1NAA	1105347315
10	8/19/2014	Ozone Standard	ThermoElectron Inc	000436	49i A3NAA	CM08200012
11	8/19/2014	Ozone Standard	ThermoElectron Inc	000364	49i A3NAA	0726124687
12	8/19/2014	Sample Tower	Aluma Tower	000180	B	none
13	8/19/2014	Shelter Temperature	Campbell	none	107-L	none
14	8/19/2014	Shield (10 meter)	Climatronics	00768	100325	illegible
15	8/19/2014	Siting Criteria	Siting Criteria	None	1	None
16	8/19/2014	Temperature	Climatronics	06708	100093	missing
17	8/19/2014	Zero air pump	Werther International	06933	C 70/4	000836202

DAS Data Form

DAS Time Max Error: 0.05

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2117	ANA115	Eric Hebert	08/19/2014	DAS	Primary

Das Date: 8 /20/2014 **Audit Date** 8 /20/2014
Das Time: 12:47:35 **Audit Time** 12:47:32
Das Day: 232 **Audit Day** 232

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0000	0.0000	0.0000

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	ANA115	Eric Hebert	08/19/2014	Flow Rate	000809

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0
2.04%	2.04%			**Cal Factor Full Scale**	0
				Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.01	l/m	l/m	
primary	test pt 1	1.474	1.470	1.47	0.000	1.50	l/m	l/m	2.04%
primary	test pt 2	1.474	1.470	1.47	0.000	1.50	l/m	l/m	2.04%
primary	test pt 3	1.473	1.470	1.47	0.000	1.50	l/m	l/m	2.04%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	5.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	2.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347315	ANA115	Eric Hebert	08/19/2014	Ozone	000746

Slope:	0.80101	**Slope:**	0.00000
Intercept	2.22814	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
16.0%	17.9%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.36	-0.47	1.91	ppb	
primary	2	32.59	32.17	28.06	ppb	-12.78%
primary	3	53.27	52.66	44.13	ppb	-16.20%
primary	4	85.17	84.27	69.91	ppb	-17.04%
primary	5	110.87	109.73	90.10	ppb	-17.89%

Sensor Component	Condition	Status
Cell B Noise	0.5 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.10	pass
Span	1.016	pass
Cell B Freq.	90.3 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.66 lpm	pass
Cell A Tmp.	35.2 C	pass
Cell A Pressure	712.7 mmHg	pass
Cell A Noise	0.7 ppb	pass
Cell A Freq.	87.1 kHz	pass
Cell A Flow	0.72 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	missing	ANA115	Eric Hebert	08/19/2014	Temperature	06708

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.20	0.28		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.03	0.20	0.000	0.3	C	0.08
primary	Temp Mid Range	25.10	25.21	0.000	25.0	C	-0.24
primary	Temp High Range	47.26	47.26	0.000	47.5	C	0.28

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ANA115	Eric Hebert	08/19/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.12	0.22		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.50	22.62	0.000	22.6	C	0.01
primary	Temp Mid Range	22.20	22.32	0.000	22.5	C	0.22

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	ANA115	Technician	Eric Hebert	Site Visit Date	08/19/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810	640 cuft

Shelter Make	Shelter Model	Shelter Size
Ekto	8810	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Fair	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	ANA115	Eric Hebert	08/19/2014	System Memo	Apex	3990	☐	☑
There is no plastic bag for the installed filter. The operator uses the received bag for the installed filter to ship the removed filter to the lab.								
Flow Rate	ANA115	Eric Hebert	08/19/2014	Moisture Present	Apex	3990	☐	☐
The filter sample tubing has drops of moisture in low sections outside the shelter.								

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

Gloves were not used to change the filter. It was observed that the dry deposition filter was replaced while the sample pump was running with the sample tower lowered. The filter was changed during a rain storm and water entered the filter and sample lines (flow and ozone). The filter can be exposed and sampling from ground level for up to 30 minutes if the ozone leak check is also performed.

2 **Parameter:** DasComments

The air conditioner thermostat control is by-passed and the air conditioner is running continuously.

3 **Parameter:** SitingCriteriaCom

Site is confined within a fenced area that is somewhat small. There is available space adjacent to the fenced area that could be utilized to improve the instrument siting.

4 **Parameter:** ShelterCleanNotes

The shelter is well organized and in fair condition.

5 **Parameter:** PollAnalyzerCom

Moisture is present in the flow tubing outside of the shelter.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	ANA115	**Technician**	Eric Hebert	**Site Visit Date**	08/19/2014

Site Sponsor (agency)	EPA	**USGS Map**	Pinckney
Operating Group	University of MI	**Map Scale**	
AQS #	26-161-9991	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	
Land Use	woodland - mixed	**QAPP Elevation Meters**	
Terrain	flat	**QAPP Declination**	
Conforms to MLM	Marginally	**QAPP Declination Date**	
Site Telephone	(734) 426-0060	**Audit Latitude**	42.416636
Site Address 1	8420 Strawberry Lake Rd.	**Audit Longitude**	-83.90218
Site Address 2		**Audit Elevation**	266
County	Washtenaw	**Audit Declination**	-6.6
City, State	Dexter, MI		
Zip Code	48130		
Time Zone	Eastern		
Primary Operator			
Primary Op. Phone #			
Primary Op. E-mail			
Backup Operator			
Backup Op. Phone #			
Backup Op. E-mail			

	Present		
Fire Extinguisher	☑	No inspection date	
First Aid Kit	☑		
Safety Glasses	☐		
Safety Hard Hat	☑		
Climbing Belt	☐		
Security Fence	☑		
Secure Shelter	☑		
Stable Entry Step	☑		

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is well organized and in fair condition.				
Site OK	☑	**Notes**					

Driving Directions

From Ann Arbor take I-94 west to exit 169 to Dexter, turning right (north) to Dexter. Continue a few miles to the stop sign and turn left. Continue approximately one block to the small park in the center of town and turn right (north). Continue through Dexter, across the railroad tracks and river. Turn left (west) just across the river on Huron River Drive. Continue about 8 miles on Huron River Drive which becomes a dirt road after the intersection of North Territorial Rd. The site is on the left, just past the first sharp turn in the road (to the right) where it becomes Strawberry Lake Road.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID ANA115 **Technician** Eric Hebert **Site Visit Date** 08/19/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Site is confined within a fenced area that is somewhat small. There is available space adjacent to the fenced area that could be utilized to improve the instrument siting.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	ANA115	Technician	Eric Hebert	Site Visit Date	08/19/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	ANA115	Technician	Eric Hebert	Site Visit Date	08/19/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	N/A
2	Are all the meteorological sensors operational online, and reporting data?	☑	N/A
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID ANA115 **Technician** Eric Hebert **Site Visit Date** 08/19/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☐	Moisture in tubing only
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Moisture is present in the flow tubing outside of the shelter.

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID ANA115 **Technician** Eric Hebert **Site Visit Date** 08/19/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	A/C running continuously, thermostat by-passed

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☐
11	Tower comments?	Sample tower not grounded	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The air conditioner thermostat control is by-passed and the air conditioner is running continuously.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	ANA115	Technician	Eric Hebert	Site Visit Date	08/19/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☑	☐
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☑	☐
Solar radiation translator	☐	☐	☑	UPS	☑	☐	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☐		☐
HASP	☑	Oct 2014	☑
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☑		☑

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	ANA115	Technician	Eric Hebert	Site Visit Date	08/19/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☐	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	N/A	☑
Visual Inspections	☑	N/A	☑
Translator Zero/Span Tests (climatronics)	☑	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	N/A	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, logbook, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID ANA115 **Technician** Eric Hebert **Site Visit Date** 08/19/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed various times
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☐	
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Gloves were not used to change the filter. It was observed that the dry deposition filter was replaced while the sample pump was running with the sample tower lowered. The filter was changed during a rain storm and water entered the filter and sample lines (flow and ozone). The filter can be exposed and sampling from ground level for up to 30 minutes if the ozone leak check is also performed.

Field Systems Data Form F-02058-1500-S10-rev002

Site ID ANA115 **Technician** Eric Hebert **Site Visit Date** 08/19/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000298
DAS	Campbell	CR3000	2117	000338
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	0000124	00209
Flow Rate	Apex	AXMC105LPMDPC	illegible	000809
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03555
Modem	Raven	V4221-V	0844352818	06588
Ozone	ThermoElectron Inc	49i A1NAA	1105347315	000746
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124687	000364
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200012	000436
Sample Tower	Aluma Tower	B	none	000180
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	Climatronics	100325	illegible	00768
Siting Criteria	Siting Criteria	1	None	None
Temperature	Climatronics	100093	missing	06708
Zero air pump	Werther International	C 70/4	000836202	06933

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
HOX148-Eric Hebert-08/25/2014						
1	8/25/2014	Computer	Dell	000289	D520	unknown
2	8/25/2014	DAS	Campbell	000426	CR3000	2533
3	8/25/2014	Elevation	Elevation	None	1	None
4	8/25/2014	Filter pack flow pump	Thomas	04927	107CAB18	110300021225
5	8/25/2014	Flow Rate	Apex	000526	AXMC105LPMDPCV	48099
6	8/25/2014	Infrastructure	Infrastructure	none	none	none
7	8/25/2014	Met tower	Universal Tower	03560	unknown	none
8	8/25/2014	Modem	Raven	06480	H4222-C	0808311145
9	8/25/2014	Ozone	ThermoElectron Inc	000614	49i A1NAA	1009241794
10	8/25/2014	Ozone Standard	ThermoElectron Inc	000432	49i A3NAA	CM08200008
11	8/25/2014	Sample Tower	Aluma Tower	000131	B	none
12	8/25/2014	Shelter Temperature	Campbell	none	107-L	none
13	8/25/2014	Shield (10 meter)	RM Young	00794	Aspirated 43408	none
14	8/25/2014	Siting Criteria	Siting Criteria	None	1	None
15	8/25/2014	Temperature	RM Young	06544	41342	14805
16	8/25/2014	Zero air pump	Werther International	06938	C 70/4	000829164

DAS Data Form

DAS Time Max Error: 0.75

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2533	HOX148	Eric Hebert	08/25/2014	DAS	Primary

Das Date: 8 /25/2014 **Audit Date** 8 /25/2014
Das Time: 13:14:15 **Audit Time** 13:15:00
Das Day: 237 **Audit Day** 237

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0001	0.0001	0.0001	0.0001

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0004	0.0004	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.3003	0.3004	V	V	0.0001
7	0.5000	0.5004	0.5005	V	V	0.0001
7	0.7000	0.7002	0.7003	V	V	0.0001
7	0.9000	0.9005	0.9004	V	V	-0.0001
7	1.0000	1.0000	1.0000	V	V	0.0000

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	48099	HOX148	Eric Hebert	08/25/2014	Flow Rate	000526

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.05
0.67%	0.67%			**Cal Factor Full Scale**	1.06
				Rotometer Reading:	1.4

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.08	0.000	-0.03	l/m	l/m	
primary	leak check	0.000	0.000	-0.02	0.000	0.04	l/m	l/m	
primary	test pt 1	1.499	1.500	1.43	0.000	1.49	l/m	l/m	-0.67%
primary	test pt 2	1.495	1.500	1.43	0.000	1.49	l/m	l/m	-0.67%
primary	test pt 3	1.500	1.500	1.43	0.000	1.49	l/m	l/m	-0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	5.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	3.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**	See comments	**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241794	HOX148	Eric Hebert	08/25/2014	Ozone	000614

Slope:	0.97404	**Slope:**	0.00000
Intercept	1.20525	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.4%	2.2%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.56	-0.67	0.72	ppb	
primary	2	24.81	24.46	25.00	ppb	2.21%
primary	3	52.58	51.97	51.63	ppb	-0.65%
primary	4	81.19	80.32	79.30	ppb	-1.27%
primary	5	113.06	111.90	110.40	ppb	-1.34%

Sensor Component	Condition	Status
Cell B Noise	0.9 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.50	pass
Span	1.022	pass
Cell B Freq.	95.7 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.72 lpm	pass
Cell A Tmp.	33.8 C	pass
Cell A Pressure	711.8 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	89.1 kHz	pass
Cell A Flow	0.72 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14805	HOX148	Eric Hebert	08/25/2014	Temperature	06544

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.11	0.18		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.06	0.17	0.000	0.1	C	-0.05
primary	Temp Mid Range	22.61	22.73	0.000	22.6	C	-0.1
primary	Temp High Range	43.57	43.58	0.000	43.4	C	-0.18

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	HOX148	Eric Hebert	08/25/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.29	0.60		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	20.94	21.07	0.000	20.8	C	-0.25
primary	Temp Mid Range	26.36	26.46	0.000	26.4	C	-0.03
primary	Temp Mid Range	19.35	19.48	0.000	20.1	C	0.6

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	HOX148	Technician	Eric Hebert	Site Visit Date	08/25/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	HOX148	Eric Hebert	08/25/2014	Moisture Present	Apex	3194	☐	☐
Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.								
Shelter Temperature	HOX148	Eric Hebert	08/25/2014	System Memo	Campbell	3192	☐	☐
The shelter thermostat for cooling has been bypassed and the air conditioning system is no longer being controlled by the shelter thermostat.								

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone analyzer sample train is leak-checked every two weeks.

2 **Parameter:** SitingCriteriaCom

There is a co-generating and smelting facility in Cadillac approximately 30 km to the northeast. The site is located in a hay field which is cut 2 or 3 times per year.

3 **Parameter:** ShelterCleanNotes

The shelter is clean, neat, well organized.

4 **Parameter:** MetSensorComme

Met tower and 10 meter temperature operating and audited.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	HOX148	**Technician**	Eric Hebert	**Site Visit Date**	08/25/2014

Site Sponsor (agency)	EPA	**USGS Map**	Hoxeyville
Operating Group	private	**Map Scale**	
AQS #	26-165-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	
Deposition Measurement	dry	**QAPP Longitude**	
Land Use	woodlands - mixed	**QAPP Elevation Meters**	
Terrain	gently rolling	**QAPP Declination**	
Conforms to MLM	Yes	**QAPP Declination Date**	
Site Telephone	(231) 862-3750	**Audit Latitude**	44.18089
Site Address 1	10637 South 9 Rd.	**Audit Longitude**	-85.73898
Site Address 2		**Audit Elevation**	297
County	Wexford	**Audit Declination**	-5
City, State	Cadillac, MI		
Zip Code	49601	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☐	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is clean, neat, well organized.				
Site OK	☑	**Notes**					

Driving Directions

From Cadillac proceed west on route 55 for approximately 12.5 miles. Turn left (south) on Hoxeyville Road (S13) and continue approximately 2 miles to the first stop sign. Turn right (west) on an unmarked road and continue approximately 2 miles to 9 road. Turn left (south) on 9 road which is not paved and continue approximately 1 mile, the site is on the left.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID HOX148 **Technician** Eric Hebert **Site Visit Date** 08/25/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km	~ 30 km	☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m	10 m	☐
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

There is a co-generating and smelting facility in Cadillac approximately 30 km to the northeast. The site is located in a hay field which is cut 2 or 3 times per year.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	HOX148	Technician	Eric Hebert	Site Visit Date	08/25/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Met tower and 10 meter temperature operating and audited.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	HOX148	Technician	Eric Hebert	Site Visit Date	08/25/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	Temperature only
2	Are all the meteorological sensors operational online, and reporting data?	☑	Temperature only
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	HOX148	Technician	Eric Hebert	Site Visit Date	08/25/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID HOX148 **Technician** Eric Hebert **Site Visit Date** 08/25/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	HOX148	Technician	Eric Hebert	Site Visit Date	08/25/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☑	☐	☐
Surface wetness sensor	☐	☐	☑	Printer	☑	☐	☐
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2001	☐
Field Ops Manual	☑	June 1987	☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☑

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	HOX148	Technician	Eric Hebert	Site Visit Date	08/25/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	10/20/2000 by ESE employee EOH
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☑	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	N/A	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑		☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑		☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone analyzer sample train is leak-checked every two weeks.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID HOX148 **Technician** Eric Hebert **Site Visit Date** 08/25/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID HOX148 **Technician** Eric Hebert **Site Visit Date** 08/25/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000289
DAS	Campbell	CR3000	2533	000426
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	110300021225	04927
Flow Rate	Apex	AXMC105LPMDPC	48099	000526
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03560
Modem	Raven	H4222-C	0808311145	06480
Ozone	ThermoElectron Inc	49i A1NAA	1009241794	000614
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200008	000432
Sample Tower	Aluma Tower	B	none	000131
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	00794
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14805	06544
Zero air pump	Werther International	C 70/4	000829164	06938

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
UVL124-Eric Hebert-08/26/2014						
1	8/26/2014	Computer	Dell	000294	D520	unknown
2	8/26/2014	DAS	Campbell	000423	CR3000	2517
3	8/26/2014	Elevation	Elevation	None	1	None
4	8/26/2014	Filter pack flow pump	Thomas	02973	107CAB18	0493002467
5	8/26/2014	Flow Rate	Apex	000600	AXMC105LPMDPCV	illegible
6	8/26/2014	Infrastructure	Infrastructure	none	none	none
7	8/26/2014	Met tower	Universal Tower	02745	unknown	none
8	8/26/2014	Modem	Raven	06466	V4221-V	0808339409
9	8/26/2014	Ozone	ThermoElectron Inc	000745	49i A1NAA	1105347310
10	8/26/2014	Ozone Standard	ThermoElectron Inc	000365	49i A3NAA	0726124688
11	8/26/2014	Sample Tower	Aluma Tower	03557	A	none
12	8/26/2014	Shelter Temperature	Campbell	none	107-L	none
13	8/26/2014	Shield (10 meter)	RM Young	missing	Aspirated 43408	none
14	8/26/2014	Siting Criteria	Siting Criteria	None	1	None
15	8/26/2014	Temperature	RM Young	06504	41342	14624
16	8/26/2014	Zero air pump	Werther International	06936	C 70/4	000829169

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2517	UVL124	Eric Hebert	08/26/2014	DAS	Primary

Das Date: 8 /26/2014 **Audit Date** 8 /26/2014
Das Time: 13:05:00 **Audit Time** 13:05:01
Das Day: 238 **Audit Day** 238

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0003	0.0002	0.0003

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0002	0.0000	V	V	0.0002
7	0.1000	0.0997	0.0996	V	V	-0.0001
7	0.3000	0.2996	0.2997	V	V	0.0001
7	0.5000	0.4994	0.4996	V	V	0.0002
7	0.7000	0.6998	0.6999	V	V	0.0001
7	0.9000	0.8999	0.8996	V	V	-0.0003
7	1.0000	1.0000	0.9998	V	V	-0.0002

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	UVL124	Eric Hebert	08/26/2014	Flow Rate	000600

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	-0.02
0.67%	0.67%			**Cal Factor Full Scale**	0.99
				Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.01	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.00	l/m	l/m	
primary	test pt 1	1.488	1.490	1.50	0.000	1.50	l/m	l/m	0.67%
primary	test pt 2	1.485	1.490	1.50	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.494	1.490	1.51	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	5.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	3.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	360 deg	**Status**	pass
Sensor Component	System Memo	**Condition**	See comments	**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347310	UVL124	Eric Hebert	08/26/2014	Ozone	000745

Slope:	0.99192	**Slope:**	0.00000
Intercept	0.80640	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.9%	2.2%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.41	-0.52	0.29	ppb	
primary	2	26.07	25.71	26.28	ppb	2.22%
primary	3	51.19	50.60	51.06	ppb	0.91%
primary	4	77.54	76.71	76.86	ppb	0.20%
primary	5	113.77	112.60	112.50	ppb	-0.09%

Sensor Component	Condition	Status
Cell B Noise	0.9 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.10	pass
Span	1.049	pass
Cell B Freq.	90.4 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.46 lpm	pass
Cell A Tmp.	35.4 C	pass
Cell A Pressure	726.5 mmHg	pass
Cell A Noise	1.0 ppb	pass
Cell A Freq.	87.4 kHz	pass
Cell A Flow	0.64 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14624	UVL124	Eric Hebert	08/26/2014	Temperature	06504

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.08	0.11		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.06	0.17	0.000	0.1	C	-0.06
primary	Temp Mid Range	25.21	25.31	0.000	25.2	C	-0.08
primary	Temp High Range	46.38	46.38	0.000	46.3	C	-0.11

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	UVL124	Eric Hebert	08/26/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.34	0.50		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	24.28	24.39	0.000	24.6	C	0.16
primary	Temp Mid Range	23.99	24.10	0.000	23.8	C	-0.35
primary	Temp Mid Range	26.15	26.25	0.000	25.8	C	-0.5

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	UVL124	Technician	Eric Hebert	Site Visit Date	08/26/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type A	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	UVL124	Eric Hebert	08/26/2014	Moisture Present	Apex	3991	☐	☐

Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

Ozone sample train leak-check performed every two weeks.

2 **Parameter:** DocumentationCo

The ozone diagnostic and observation sections of the SSRF were completed during the filter removal visit and not the installation visit as indicated on the form.

3 **Parameter:** SitingCriteriaCom

The site is located in an active agriculture field usually planted with beans or corn.

4 **Parameter:** ShelterCleanNotes

The shelter is clean and in good condition.

5 **Parameter:** MetOpMaintCom

Met tower and 10 meter temperature operating and audited.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	UVL124	**Technician**	Eric Hebert	**Site Visit Date**	08/26/2014

Site Sponsor (agency)	EPA	**USGS Map**	Ellington
Operating Group	private	**Map Scale**	
AQS #	26-157-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	
Deposition Measurement	dry, wet	**QAPP Longitude**	
Land Use	agriculture	**QAPP Elevation Meters**	
Terrain	flat	**QAPP Declination**	
Conforms to MLM	Yes	**QAPP Declination Date**	
Site Telephone	(989) 673-5901	**Audit Latitude**	43.613572
Site Address 1	1821 E. Dickerson Rd.	**Audit Longitude**	-83.359869
Site Address 2		**Audit Elevation**	202
County	Tuscola	**Audit Declination**	-7
City, State	Unionville, MI		
Zip Code	48767	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is clean and in good condition.				
Site OK	☑	**Notes**					

Driving Directions

From Saginaw MI, take route 81 east through Caro. About 2.9 miles past the junction of SR24 and 81, turn left (north) on Colwood. There is a large church at that intersection. Continue on Colwood for about 6 miles to the intersection of Dickerson road. Turn left (west) at the stop sign. The site is on the right (north) side on the road behind the first farmhouse, where Fred Matt, the landowner resides.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID UVL124 **Technician** Eric Hebert **Site Visit Date** 08/26/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m	30 m	☐
Limited agricultural operations	200 m		☐
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is located in an active agriculture field usually planted with beans or corn.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	UVL124	Technician	Eric Hebert	Site Visit Date	08/26/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	UVL124	Technician	Eric Hebert	Site Visit Date	08/26/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	Temperature only
2	Are all the meteorological sensors operational online, and reporting data?	☑	Temperature only
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Met tower and 10 meter temperature operating and audited.

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	UVL124	Technician	Eric Hebert	Site Visit Date	08/26/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID UVL124 **Technician** Eric Hebert **Site Visit Date** 08/26/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☐
10	Is the sample tower stable and grounded?	☑	☐
11	Tower comments?	Towers not grounded	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID UVL124 **Technician** Eric Hebert **Site Visit Date** 08/26/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☑	☐	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☑	☐	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2001	☐
Field Ops Manual	☐		☐
Calibration Reports	☑	4/2/2014	☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone diagnostic and observation sections of the SSRF were completed during the filter removal visit and not the installation visit as indicated on the form.

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	UVL124	Technician	Eric Hebert	Site Visit Date	08/26/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☑	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, logbook, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Ozone sample train leak-check performed every two weeks.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID UVL124 **Technician** Eric Hebert **Site Visit Date** 08/26/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons
2	Are the Site Status Report Forms being completed and filed correctly?	☑	With noted exceptions
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID UVL124 **Technician** Eric Hebert **Site Visit Date** 08/26/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000294
DAS	Campbell	CR3000	2517	000423
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	0493002467	02973
Flow Rate	Apex	AXMC105LPMDPC	illegible	000600
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	02745
Modem	Raven	V4221-V	0808339409	06466
Ozone	ThermoElectron Inc	49i A1NAA	1105347310	000745
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124688	000365
Sample Tower	Aluma Tower	A	none	03557
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	missing
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14624	06504
Zero air pump	Werther International	C 70/4	000829169	06936

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
EGB181-Eric Hebert-08/28/2014						
1	8/28/2014	Computer	Dell	000263	D520	unknown
2	8/28/2014	DAS	Campbell	000408	CR3000	2538
3	8/28/2014	Elevation	Elevation	None	1	None
4	8/28/2014	Filter pack flow pump	Thomas	04285	107CAB18B	129800010108
5	8/28/2014	Flow Rate	Apex	000663	AXMC105LPMDPCV	illegible
6	8/28/2014	Infrastructure	Infrastructure	none	none	none
7	8/28/2014	Met tower	Universal Tower	04649	unknown	none
8	8/28/2014	Modem	Raven	06584	H4223-C	0844381230
9	8/28/2014	Sample Tower	Aluma Tower	01791	A	none
10	8/28/2014	Shelter Temperature	Campbell	none	107-L	none
11	8/28/2014	Shield (10 meter)	RM Young	02942	Aspirated 43408	none
12	8/28/2014	Siting Criteria	Siting Criteria	None	1	None
13	8/28/2014	Temperature	RM Young	06502	41342	14622

DAS Data Form

DAS Time Max Error: 1.33

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2538	EGB181	Eric Hebert	08/28/2014	DAS	Primary

Das Date: 8 /28/2014
Das Time: 13:15:20
Das Day: 240

Audit Date 8 /28/2014
Audit Time 13:14:00
Audit Day 240

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0004	0.0002	0.0004

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0005	-0.0001	V	V	0.0004
7	0.1000	0.0997	0.0996	V	V	-0.0001
7	0.3000	0.2996	0.2993	V	V	-0.0003
7	0.5000	0.4994	0.4994	V	V	0.0000
7	0.7000	0.7000	0.6999	V	V	-0.0001
7	0.9000	0.9000	0.8997	V	V	-0.0003
7	1.0000	1.0000	0.9999	V	V	-0.0001

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	EGB181	Eric Hebert	08/28/2014	Flow Rate	000663

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	-0.015
2.40%	2.63%			**Cal Factor Full Scale**	0.994
				Rotometer Reading:	1.6

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.46	0.000	-0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.26	0.000	-0.01	l/m	l/m	
primary	test pt 1	1.524	1.520	1.49	0.000	1.49	l/m	l/m	-1.97%
primary	test pt 2	1.523	1.520	1.49	0.000	1.48	l/m	l/m	-2.63%
primary	test pt 3	1.530	1.530	1.50	0.000	1.49	l/m	l/m	-2.61%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	270 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14622	EGB181	Eric Hebert	08/28/2014	Temperature	06502

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.06	0.08		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.30	0.53	0.000	0.5	C	-0.07
primary	Temp Mid Range	25.20	25.30	0.000	25.2	C	-0.08
primary	Temp High Range	48.64	48.63	0.000	48.6	C	-0.02

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	EGB181	Eric Hebert	08/28/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.27	0.36		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.81	22.93	0.000	23.3	C	0.36
primary	Temp Mid Range	23.28	23.39	0.000	23.6	C	0.17
primary	Temp Mid Range	23.65	23.76	0.000	23.5	C	-0.27

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	Technician	Site Visit Date
EGB181	Eric Hebert	08/28/2014

Shelter Make	Shelter Model	Shelter Size
custom	N/A	7200 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type A	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Poor	Status	Fail
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

Filters are sent 4 at a time and stored in a refrigerator before and after sampling prior to shipment to the lab.

2 **Parameter:** DasComments

The sample tower is badly damaged at the hinge point and should be replaced.

3 **Parameter:** DocumentationCo

The site operator no longer uses the station logbook during routine site visits.

4 **Parameter:** ShelterCleanNotes

The shelter is provided by the Center for Atmospheric Research and is clean, organized, and spacious.

5 **Parameter:** PollAnalyzerCom

Ozone concentration is not measured at EGB181 as part of CASTNET.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	EGB181	**Technician**	Eric Hebert	**Site Visit Date**	08/28/2014

Site Sponsor (agency)	EPA/Envir Canada	**USGS Map**	
Operating Group	Envir Canada	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	SO2, NOx, NOy, More	**QAPP Latitude**	44.2317
Deposition Measurement	dry, wet, CAPMon	**QAPP Longitude**	-79.7840
Land Use	Agriculture	**QAPP Elevation Meters**	251
Terrain	gentley rolling	**QAPP Declination**	10.75
Conforms to MLM	Yes	**QAPP Declination Date**	9/16/2005
Site Telephone	(705) 458-3309	**Audit Latitude**	44.231071
Site Address 1	Center for Atmospheric Research	**Audit Longitude**	-79.783115
Site Address 2	6248 Eighth Line	**Audit Elevation**	227
County		**Audit Declination**	-10.4
City, State	Egbert, Ontario		
Zip Code	CAN L0L 1N0	**Fire Extinguisher** ☑	inspected July 2014
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☐	
Primary Op. Phone #		**Safety Hard Hat** ☐	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☑	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	custom	**Model**	N/A	**Shelter Size**	7200 cuft
Shelter Clean	☑	**Notes**	The shelter is provided by the Center for Atmospheric Research and is clean, organized, and spacious.				
Site OK	☑	**Notes**					

Driving Directions

From Toronto take the 403 to the 401 and then go north on the 400 toward Barrie. Go west on Hwy 89 at the Cookstown exit. Turn right (north) on Hwy 27. Continue approximately 3 miles and turn left (west) on Side Road 10 at the sign for Egbert. Continue approximately 3.2 miles and turn right (north) on the dirt road at the Environment Canada, Center for Atmospheric Research. The site is through the locked gate on the left into the complex.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID EGB181 **Technician** Eric Hebert **Site Visit Date** 08/28/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	EGB181	Technician	Eric Hebert	Site Visit Date	08/28/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID EGB181 **Technician** Eric Hebert **Site Visit Date** 08/28/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	Temperature only
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	Temperature only
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	EGB181	Technician	Eric Hebert	Site Visit Date	08/28/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		N/A
4	Describe dry dep sample tube.		3/8 teflon by 20 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☐	N/A
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☐	N/A
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Ozone concentration is not measured at EGB181 as part of CASTNET.

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID EGB181 **Technician** Eric Hebert **Site Visit Date** 08/28/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The sample tower is badly damaged at the hinge point and should be replaced.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	EGB181	Technician	Eric Hebert	Site Visit Date	08/28/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☑	☐	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☐	☑	Shelter heater	☐	☐	☑
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☐	☑
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☐
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2009	☑
Field Ops Manual	☑	March 2006 version QAPP on Disc	☑
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐	N/A	☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☐	Logbook not used
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The site operator no longer uses the station logbook during routine site visits.

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	EGB181	Technician	Eric Hebert	Site Visit Date	08/28/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	N/A	☑
Visual Inspections	☑	N/A	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	N/A	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☐	N/A	☑
Automatic Zero/Span Tests	☐	N/A	☑
Manual Zero/Span Tests	☐	N/A	☑
Automatic Precision Level Tests	☐	N/A	☑
Manual Precision Level Test	☐	N/A	☑
Analyzer Diagnostics Tests	☐	N/A	☑
In-line Filter Replacement (at inlet)	☐	N/A	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☐	N/A	☑
Zero Air Desiccant Check	☐	N/A	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	N/A
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☐	N/A
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☐	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID EGB181 **Technician** Eric Hebert **Site Visit Date** 08/28/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Daily	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☐		☐

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Filters are sent 4 at a time and stored in a refrigerator before and after sampling prior to shipment to the lab.

Field Systems Data Form F-02058-1500-S10-rev002

Site ID EGB181 **Technician** Eric Hebert **Site Visit Date** 08/28/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000263
DAS	Campbell	CR3000	2538	000408
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18B	129800010108	04285
Flow Rate	Apex	AXMC105LPMDPC	illegible	000663
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	04649
Modem	Raven	H4223-C	0844381230	06584
Sample Tower	Aluma Tower	A	none	01791
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	02942
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14622	06502

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
RED004-Alison Ray-09/04/2014						
1	9/4/2014	DAS	Campbell	Unknown	CR850	unknown
2	9/4/2014	Filter pack flow pump	gast	none	16D-6150-101-1039	1039
3	9/4/2014	Flow Rate	Apex	000599	AXMC105LPMDPCV	illegible
4	9/4/2014	Sample Tower	Aluma Tower	000813	B	unknown
5	9/4/2014	Temperature	RM Young	06986	41342	024087

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	RED004	Alison Ray	09/04/2014	Flow Rate	000599

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	122974	**Tfer Desc.**	BIOS 220-H
Tfer ID	01416		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.01
0.99%	0.99%			**Cal Factor Full Scale**	1.014
				Rotometer Reading:	3

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.01	l/m	l/m	
primary	test pt 1	3.026	3.030	2.97	0.000	3.00	l/m	l/m	-0.99%
primary	test pt 2	3.028	3.030	2.97	0.000	3.00	l/m	l/m	-0.99%
primary	test pt 3	3.033	3.030	2.97	0.000	3.00	l/m	l/m	-0.99%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Field Systems Comments

1 **Parameter:** DocumentationCo

There is no site logbook and all manuals are kept electronically since the site is a small footprint site with no place to store hardcopies.

2 **Parameter:** ShelterCleanNotes

Small footprint site with enclosure for instruments only.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	RED004	**Technician**	Alison Ray	**Site Visit Date**	09/04/2014

Site Sponsor (agency)	EPA	**USGS Map**	
Operating Group	Red Lake Nation / AMEC	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer		**QAPP Latitude**	
Deposition Measurement	dry	**QAPP Longitude**	
Land Use		**QAPP Elevation Meters**	
Terrain		**QAPP Declination**	
Conforms to MLM		**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	47.86382
Site Address 1		**Audit Longitude**	-94.83535
Site Address 2		**Audit Elevation**	374
County	Beltrami	**Audit Declination**	
City, State	Redby, MN		
Zip Code	56670	**Fire Extinguisher** ☐ Present	
Time Zone	Central	**First Aid Kit** ☐	
Primary Operator		**Safety Glasses** ☐	
Primary Op. Phone #		**Safety Hard Hat** ☐	
Primary Op. E-mail		**Climbing Belt** ☐	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☐	
Backup Op. E-mail		**Stable Entry Step** ☐	

Shelter Working Room ☐ **Make** **Model** **Shelter Size**

Shelter Clean ☐ **Notes** Small footprint site with enclosure for instruments only.

Site OK ☑ **Notes**

Driving Directions

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID RED004 **Technician** Alison Ray **Site Visit Date** 09/04/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	RED004	Technician	Alison Ray	Site Visit Date	09/04/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID RED004 **Technician** Alison Ray **Site Visit Date** 09/04/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	Temperature only
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	Temperature only
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	N/A
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	RED004	Technician	Alison Ray	Site Visit Date	09/04/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		N/A
4	Describe dry dep sample tube.		3/8 teflon by 8 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	N/A
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	N/A
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID RED004 **Technician** Alison Ray **Site Visit Date** 09/04/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	N/A

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	RED004	Technician	Alison Ray	Site Visit Date	09/04/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☐	☑
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☐	☑
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☐	☑	Shelter heater	☐	☐	☑
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☐	☑
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☐		☐
SSRF	☑		☑
Site Ops Manual	☑	Feb 2014	☐
HASP	☑	Feb 2014	☐
Field Ops Manual	☑	Feb 2014	☐
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☐	No Logbook
2	Are the Site Status Report Forms being completed and current?	☐	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☐	
4	Are ozone z/s/p control charts properly completed and current?	☐	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

There is no site logbook and all manuals are kept electronically since the site is a small footprint site with no place to store hardcopies.

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	RED004	Technician	Alison Ray	Site Visit Date	09/04/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained by AMEC technician during site installation
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☐	N/A	☑
Confirm Reasonableness of Current Values	☐	Weekly	☑
Test Surface Wetness Response	☐	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☐	N/A	☑
Automatic Zero/Span Tests	☐	N/A	☑
Manual Zero/Span Tests	☐	N/A	☑
Automatic Precision Level Tests	☐	N/A	☑
Manual Precision Level Test	☐	N/A	☐
Analyzer Diagnostics Tests	☐	N/A	☑
In-line Filter Replacement (at inlet)	☐	N/A	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☐	N/A	☑
Zero Air Desiccant Check	☐	N/A	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☑	N/A
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	N/A
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID RED004 **Technician** Alison Ray **Site Visit Date** 09/04/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☐	
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☐		☐

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID RED004 **Technician** Alison Ray **Site Visit Date** 09/04/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	unknown	Unknown
Filter pack flow pump	gast	16D-6150-101-1039	1039	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	000599
Sample Tower	Aluma Tower	B	unknown	000813
Temperature	RM Young	41342	024087	06986

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CTH110-Eric Hebert-09/05/2014						
1	9/5/2014	Computer	Dell	000479	D630	unknown
2	9/5/2014	DAS	Campbell	000420	CR3000	2520
3	9/5/2014	Elevation	Elevation	None	1	None
4	9/5/2014	Filter pack flow pump	Thomas	04987	107CA18	050400022550
5	9/5/2014	Flow Rate	Apex	000559	AXMC105LPMDPCV	illegible
6	9/5/2014	Infrastructure	Infrastructure	none	none	none
7	9/5/2014	Met tower	Universal Tower	03442	unknown	none
8	9/5/2014	Modem	Raven	06599	V4221-V	0844349892
9	9/5/2014	Ozone	ThermoElectron Inc	000742	49i A1NAA	1105347313
10	9/5/2014	Ozone Standard	ThermoElectron Inc	000447	49i A3NAA	CM08200023
11	9/5/2014	Sample Tower	Aluma Tower	666363	B	AT-5107-E-4-10
12	9/5/2014	Shelter Temperature	Campbell	none	107-L	none
13	9/5/2014	Shield (10 meter)	Climatronics	00917	100325	illegible
14	9/5/2014	Siting Criteria	Siting Criteria	None	1	None
15	9/5/2014	Temperature	Climatronics	06647	100093	none
16	9/5/2014	UPS	APC	06796	RS900	unknown
17	9/5/2014	Zero air pump	Werther International	06864	PC70/4	000815261

DAS Data Form

DAS Time Max Error: 0.05

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2520	CTH110	Eric Hebert	09/05/2014	DAS	Primary

Das Date: 9 /5 /2014
Das Time: 13:00:03
Das Day: 248

Audit Date 9 /5 /2014
Audit Time 13:00:00
Audit Day 248

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0003	0.0007	0.0003	0.0007

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0008	-0.0001	V	V	0.0007
7	0.1000	0.0992	0.0993	V	V	0.0001
7	0.3000	0.2997	0.2996	V	V	-0.0001
7	0.5000	0.4997	0.4995	V	V	-0.0002
7	0.7000	0.6995	0.6993	V	V	-0.0002
7	0.9000	0.8998	0.8994	V	V	-0.0004
7	1.0000	1.0000	0.9995	V	V	-0.0005

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	CTH110	Eric Hebert	09/05/2014	Flow Rate	000559

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.007
				Cal Factor Full Scale	0.979
0.22%	0.67%			**Rotometer Reading:**	1.55

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.10	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.03	0.000	0.03	l/m	l/m	
primary	test pt 1	1.500	1.500	1.53	0.000	1.50	l/m	l/m	0.00%
primary	test pt 2	1.499	1.500	1.53	0.000	1.50	l/m	l/m	0.00%
primary	test pt 3	1.490	1.490	1.53	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	2.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	270 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347313	CTH110	Eric Hebert	09/05/2014	Ozone	000742

Slope:	0.97108	**Slope:**	0.00000
Intercept	0.71838	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.5%	2.3%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.10	-0.01	0.56	ppb	
primary	2	28.84	28.45	28.52	ppb	0.25%
primary	3	52.06	51.46	50.76	ppb	-1.36%
primary	4	80.25	79.39	77.75	ppb	-2.07%
primary	5	109.89	108.76	106.30	ppb	-2.26%

Sensor Component	Condition	Status
Cell B Noise	0.9 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.50	pass
Span	1.001	pass
Cell B Freq.	100.3 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.70 lpm	pass
Cell A Tmp.	29.2 C	pass
Cell A Pressure	694.9 mmHg	pass
Cell A Noise	1.0 ppb	pass
Cell A Freq.	100.6 kHz	pass
Cell A Flow	0.67 lpm	pass
Battery Backup	Functioning	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	none	CTH110	Eric Hebert	09/05/2014	Temperature	06647

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.11	0.22		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.08	0.31	0.000	0.3	C	-0.04
primary	Temp Mid Range	25.21	25.31	0.000	25.1	C	-0.22
primary	Temp High Range	49.30	49.29	0.000	49.2	C	-0.08

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	CTH110	Eric Hebert	09/05/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
1.00	1.07		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.99	23.11	0.000	24.0	C	0.93
primary	Temp Mid Range	22.74	22.86	0.000	23.9	C	1
primary	Temp Mid Range	22.28	22.40	0.000	23.5	C	1.07

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	Technician	Site Visit Date
CTH110	Eric Hebert	09/05/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2116-6)	640 cuft

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	N/A	pass
Met Tower	Fair	pass
Moisture Trap	Installed	pass
Power Cables	Fair	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Fair	pass
Shelter Condition	Fair	pass
Shelter Door	Good	pass
Shelter Roof	Good	pass
Shelter Floor	Fair	pass
Signal Cable	Fair	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	CTH110	Eric Hebert	09/05/2014	Moisture Present	Apex	3262	☐	☐

Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is changed and the sample train is leak tested every two weeks.

2 **Parameter:** SitingCriteriaCom

There is a point source north of Ithaca within 40 km of the site. The tree line is less than 50 m from the site. The siting is acceptable even with the noted exceptions.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	CTH110	**Technician**	Eric Hebert	**Site Visit Date**	09/05/2014

Site Sponsor (agency)	EPA	**USGS Map**	Mecklenburg
Operating Group	IES	**Map Scale**	
AQS #	36-109-9991	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, ammonia	**QAPP Latitude**	42.4010
Deposition Measurement	dry, wet	**QAPP Longitude**	-76.6535
Land Use	woodland - mixed	**QAPP Elevation Meters**	515
Terrain	rolling	**QAPP Declination**	12.3
Conforms to MLM	No	**QAPP Declination Date**	12/28/2004
Site Telephone	(607) 564-7622	**Audit Latitude**	42.400875
Site Address 1	CR 136 (Connecticut Hill Road)	**Audit Longitude**	-76.653516
Site Address 2		**Audit Elevation**	511
County	Tompkins	**Audit Declination**	-12.0
City, State	Newfield, NY		
Zip Code	14867	**Fire Extinguisher** ☑ Present	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room ☑ **Make** Ekto **Model** 8810 (s/n 2116-6) **Shelter Size** 640 cuft

Shelter Clean ☐ **Notes**

Site OK ☑ **Notes**

Driving Directions

From Ithaca take route 13 south to hwy 327. Bear right onto hwy 327 and go past both the lower and upper entrances for Robert Treman St Park. Turn left at the second left past the upper entrance to the park onto Trumbell Corners Road. Continue on Trumbell Corners Rd for approximately one mile to the stop sign. Turn right at the stop onto Connecticut Hill Road and continue for approximately 1/4 mile where it veers to the right. The site is up the hill on the left just after the turn in the road.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID CTH110 **Technician** Eric Hebert **Site Visit Date** 09/05/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☐
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m	30 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

There is a point source north of Ithaca within 40 km of the site. The tree line is less than 50 m from the site. The siting is acceptable even with the noted exceptions.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	CTH110	Technician	Eric Hebert	Site Visit Date	09/05/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID CTH110 **Technician** Eric Hebert **Site Visit Date** 09/05/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	Temperature only
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	Temperature only
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID CTH110 **Technician** Eric Hebert **Site Visit Date** 09/05/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID CTH110 **Technician** Eric Hebert **Site Visit Date** 09/05/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	CTH110	Technician	Eric Hebert	Site Visit Date	09/05/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☑	☐	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2001	☐
Field Ops Manual	☑	July 1990	☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	Minimal information
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	CTH110	Technician	Eric Hebert	Site Visit Date	09/05/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained at ESE in 1987
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☑	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone inlet filter is changed and the sample train is leak tested every two weeks.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID CTH110 **Technician** Eric Hebert **Site Visit Date** 09/05/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID CTH110 **Technician** Eric Hebert **Site Visit Date** 09/05/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D630	unknown	000479
DAS	Campbell	CR3000	2520	000420
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	050400022550	04987
Flow Rate	Apex	AXMC105LPMDPC	illegible	000559
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03442
Modem	Raven	V4221-V	0844349892	06599
Ozone	ThermoElectron Inc	49i A1NAA	1105347313	000742
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200023	000447
Sample Tower	Aluma Tower	B	AT-5107-E-4-10	666363
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	Climatronics	100325	illegible	00917
Siting Criteria	Siting Criteria	1	None	None
Temperature	Climatronics	100093	none	06647
UPS	APC	RS900	unknown	06796
Zero air pump	Werther International	PC70/4	000815261	06864

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
MKG113-Sandy Grenville-09/20/2014						
1	9/20/2014	Computer	Dell	000276	D520	unknown
2	9/20/2014	DAS	Campbell	000404	CR3000	2521
3	9/20/2014	Elevation	Elevation	None	1	None
4	9/20/2014	Filter pack flow pump	Thomas	03639	107CAB18	049400004427
5	9/20/2014	Flow Rate	Apex	000637	AXMC105LPMDPCV	illegible
6	9/20/2014	Infrastructure	Infrastructure	none	none	none
7	9/20/2014	Met tower	Universal Tower	03445	unknown	none
8	9/20/2014	Modem	Raven	06593	V4221-V	0844350394
9	9/20/2014	Ozone	ThermoElectron Inc	000612	49i A1NAA	1009241779
10	9/20/2014	Ozone Standard	ThermoElectron Inc	000374	49i A3NAA	0726124694
11	9/20/2014	Sample Tower	Aluma Tower	666362	B	AT-5107-E-4-11
12	9/20/2014	Shelter Temperature	Campbell	none	107-L	none
13	9/20/2014	Shield (10 meter)	Climatronics	01383	100325	illegible
14	9/20/2014	Siting Criteria	Siting Criteria	None	1	None
15	9/20/2014	Temperature	Climatronics	06706	100093	missing
16	9/20/2014	Zero air pump	Werther International	06937	C 70/4	000821896

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2521	MKG113	Sandy Grenville	09/20/2014	DAS	Primary

Das Date: 9 /20/2014 **Audit Date** 9 /20/2014
Das Time: 12:49:03 **Audit Time** 12:49:02
Das Day: 263 **Audit Day** 263

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0001	0.0001	0.0001	0.0001

Mfg Datel **Parameter** DAS
Serial Number 15510194 **Tfer Desc.** Source generator (D
Tfer ID 01320

Mfg Fluke **Parameter** DAS
Serial Number 95740135 **Tfer Desc.** DVM
Tfer ID 01311

Slope 1.00000 **Intercept** 0.00000
Cert Date 12/28/2013 **CorrCoff** 1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.1000	0.0999	V	V	-0.0001
7	0.3000	0.2998	0.2997	V	V	-0.0001
7	0.5000	0.4996	0.4996	V	V	0.0000
7	0.7000	0.6995	0.6995	V	V	0.0000
7	0.9000	0.8994	0.8993	V	V	-0.0001
7	1.0000	0.9993	0.9992	V	V	-0.0001

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	MKG113	Sandy Grenville	09/20/2014	Flow Rate	000637

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103471	**Tfer Desc.**	nexus
Tfer ID	01420		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997
Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103424	**Tfer Desc.**	BIOS cell
Tfer ID	01410		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0
0.66%	0.66%			**Cal Factor Full Scale**	1
				Rotometer Reading:	1.6

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	PctDifference
primary	pump off	0.000	0.000	-0.02	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	1.538	1.510	1.50	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 2	1.538	1.510	1.50	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 3	1.539	1.510	1.50	0.000	1.50	l/m	l/m	-0.66%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	3.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	3.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	15 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241779	MKG113	Sandy Grenville	09/20/2014	Ozone	000612

Slope:	1.00307	**Slope:**	0.00000
Intercept	-0.04993	**Intercept**	0.00000
CorrCoff	0.99998	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.3%	0.6%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.38	0.49	0.47	ppb	
primary	2	30.96	30.93	31.02	ppb	0.29%
primary	3	50.19	50.07	50.19	ppb	0.24%
primary	4	82.55	82.28	82.10	ppb	-0.22%
primary	5	100.20	99.85	100.40	ppb	0.55%

Sensor Component	Condition	Status
Cell B Noise	1.2 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.20	pass
Span	1.005	pass
Cell B Freq.	99.9 kHz	pass
System Memo	See comments	pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.70 lpm	pass
Cell A Tmp.	34.8 C	pass
Cell A Pressure	705.3 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	87.5 kHz	pass
Cell A Flow	0.0 lpm	Fail
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	missing	MKG113	Sandy Grenville	09/20/2014	Temperature	06706

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00288	**Intercept**	-0.15155
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.09	0.19		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.69	0.84	0.000	0.7	C	-0.19
primary	Temp Mid Range	24.82	24.90	0.000	24.9	C	-0.01
primary	Temp High Range	49.38	49.39	0.000	49.3	C	-0.06

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	MKG113	Sandy Grenville	09/20/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.21	0.47		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00288	Intercept	-0.15155
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.90	26.97	0.000	26.5	C	-0.47
primary	Temp Mid Range	24.60	24.68	0.000	24.6	C	-0.06
primary	Temp Mid Range	21.80	21.89	0.000	21.8	C	-0.11

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	MKG113	Technician	Sandy Grenville	Site Visit Date	09/20/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2116-4)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Poor	Status	Fail
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	MKG113	Sandy Grenville	09/20/2014	Cell A Flow	ThermoElectron	3362	☐	☑

This analyzer diagnostic check is outside the manufacturer's recommended value.

Field Systems Comments

1 **Parameter:** ShelterCleanNotes

The shelter is clean and organized. Leak and rot below the air conditioner and on the floor under the counter. Mold beginning on walls and floor.

2 **Parameter:** MetOpMaintCom

The temperature shield forced-air blower has a loose connection and the operation is intermittent.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	MKG113	**Technician**	Sandy Grenville	**Site Visit Date**	09/20/2014

Site Sponsor (agency)	EPA	**USGS Map**	Hadley
Operating Group	PA/private	**Map Scale**	
AQS #	42-085-9991	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, IMPROVE	**QAPP Latitude**	41.4250
Deposition Measurement	dry	**QAPP Longitude**	-80.1447
Land Use	woodland - mixed, agriculture	**QAPP Elevation Meters**	384
Terrain	gently rolling	**QAPP Declination**	9.25
Conforms to MLM	Marginally	**QAPP Declination Date**	2/22/2006
Site Telephone	(724) 253-3685	**Audit Latitude**	41.426847
Site Address 1	M. K. Goddard St. Park	**Audit Longitude**	-80.145247
Site Address 2	684 Lake Wilhelm Rd.	**Audit Elevation**	377
County	Mercer	**Audit Declination**	-9.3
City, State	Sandy Lake, PA		
Zip Code	16145	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☐	
Backup Op. E-mail		**Stable Entry Step** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2116-4)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is clean and organized. Leak and rot below the air conditioner and on the floor under the counter. Mold beginning on walls and floor.				
Site OK	☑	**Notes**					

Driving Directions From I-79 take exit 130 (route 358). Go west and bear right onto Sheakleyville Road. Continue less than a mile to the stop sign, and turn right onto Lake Wilhelm Road. Continue approximately 1.5 miles, just after crossing the lake the site will be visible on the right at the state park headquarters facility.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID MKG113 **Technician** Sandy Grenville **Site Visit Date** 09/20/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km	1.5 km	☐
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m	60 m	☐
Tree line	50 m	10 - 30 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☐

Siting Criteria Comment

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	MKG113	Technician	Sandy Grenville	Site Visit Date	09/20/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID MKG113 **Technician** Sandy Grenville **Site Visit Date** 09/20/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	Temperature only
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	Temperature only
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The temperature shield forced-air blower has a loose connection and the operation is intermittent.

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	MKG113	Technician	Sandy Grenville	Site Visit Date	09/20/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID MKG113 **Technician** Sandy Grenville **Site Visit Date** 09/20/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID MKG113 **Technician** Sandy Grenville **Site Visit Date** 09/20/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Feb 2014	☐
HASP	☑	Feb 2014	☑
Field Ops Manual	☑	Feb 2014	☑
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☑
Preventive maintenance schedul	☑		☑

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID MKG113 **Technician** Sandy Grenville **Site Visit Date** 09/20/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	July 2006, refresher training by Howell and Lavery
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID MKG113 **Technician** Sandy Grenville **Site Visit Date** 09/20/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed various times of day
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☑	Weekly	☑
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID MKG113 **Technician** Sandy Grenville **Site Visit Date** 09/20/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000276
DAS	Campbell	CR3000	2521	000404
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	049400004427	03639
Flow Rate	Apex	AXMC105LPMDPC	illegible	000637
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03445
Modem	Raven	V4221-V	0844350394	06593
Ozone	ThermoElectron Inc	49i A1NAA	1009241779	000612
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124694	000374
Sample Tower	Aluma Tower	B	AT-5107-E-4-11	666362
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	Climatronics	100325	illegible	01383
Siting Criteria	Siting Criteria	1	None	None
Temperature	Climatronics	100093	missing	06706
Zero air pump	Werther International	C 70/4	000821896	06937

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PSU106-Sandy Grenville-09/23/2014						
1	9/23/2014	Computer	Dell	000268	D520	unknown
2	9/23/2014	DAS	Campbell	000407	CR3000	2512
3	9/23/2014	Elevation	Elevation	None	1	None
4	9/23/2014	Filter pack flow pump	Thomas	06023	107CAB18	060400022676
5	9/23/2014	Flow Rate	Apex	000560	AXMC105LPMDPCV	50732
6	9/23/2014	Infrastructure	Infrastructure	none	none	none
7	9/23/2014	Modem	Raven	06483	V4221-V	0808310813
8	9/23/2014	Ozone	ThermoElectron Inc	000678	49i A1NAA	1030244791
9	9/23/2014	Ozone Standard	ThermoElectron Inc	000219	49i A3NAA	0622717857
10	9/23/2014	Sample Tower	Aluma Tower	02747	A	none
11	9/23/2014	Shelter Temperature	Campbell	none	107-L	none
12	9/23/2014	Siting Criteria	Siting Criteria	None	1	None
13	9/23/2014	Temperature	RM Young	04316	41342VO	4013
14	9/23/2014	Zero air pump	Werther International	06914	C 70/4	000829156

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2512	PSU106	Sandy Grenville	09/23/2014	DAS	Primary

Das Date: 9 /23/2014
Das Time: 17:36:17
Das Day: 266

Audit Date 9 /23/2014
Audit Time 17:36:16
Audit Day 266

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0001	0.0002	0.0001	0.0002

Mfg Datel **Parameter** DAS
Serial Number 15510194 **Tfer Desc.** Source generator (D
Tfer ID 01320

Mfg Fluke **Parameter** DAS
Serial Number 95740135 **Tfer Desc.** DVM
Tfer ID 01311

Slope 1.00000 **Intercept** 0.00000
Cert Date 12/28/2013 **CorrCoff** 1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.1000	V	V	0.0001
7	0.3000	0.2998	0.2997	V	V	-0.0001
7	0.5000	0.4997	0.4996	V	V	-0.0001
7	0.7000	0.6996	0.6995	V	V	-0.0001
7	0.9000	0.8995	0.8993	V	V	-0.0002
7	1.0000	0.9994	0.9993	V	V	-0.0001

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	50732	PSU106	Sandy Grenville	09/23/2014	Flow Rate	000560

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103471	**Tfer Desc.**	nexus
Tfer ID	01420		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103424	**Tfer Desc.**	BIOS cell
Tfer ID	01410		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	-0.02
0.66%	0.66%			**Cal Factor Full Scale**	0.96
				Rotometer Reading:	1.45

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	-0.02	l/m	l/m	
primary	test pt 1	1.539	1.510	1.55	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 2	1.540	1.510	1.55	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 3	1.541	1.510	1.55	0.000	1.50	l/m	l/m	-0.66%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	0.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	Not tested	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244791	PSU106	Sandy Grenville	09/23/2014	Ozone	000678

Slope:	0.99612	**Slope:**	0.00000
Intercept	-0.56230	**Intercept**	0.00000
CorrCoff	0.99986	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.6%	2.5%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.05	0.16	-0.46	ppb	
primary	2	30.65	30.62	29.85	ppb	-2.51%
primary	3	52.82	52.69	51.72	ppb	-1.84%
primary	4	81.14	80.88	81.10	ppb	0.27%
primary	5	101.05	100.70	99.00	ppb	-1.69%

Sensor Component	Condition	Status
Cell B Noise	1.1 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.60	pass
Span	0.994	pass
Cell B Freq.	104.5 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.70 lpm	pass
Cell A Tmp.	33.9 C	pass
Cell A Pressure	709.5 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	106 kHz	pass
Cell A Flow	0.71 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	4013	PSU106	Sandy Grenville	09/23/2014	Temperature	04316

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00288	**Intercept**	-0.15155
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.17	0.35		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.05	0.20	0.000	-0.2	C	-0.35
primary	Temp Mid Range	25.50	25.58	0.000	25.5	C	-0.08
primary	Temp High Range	48.20	48.21	0.000	48.3	C	0.09

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	PSU106	Sandy Grenville	09/23/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.14	0.25		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00288	Intercept	-0.15155
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.90	22.99	0.000	23.2	C	0.25
primary	Temp Mid Range	23.86	23.94	0.000	23.9	C	-0.03
primary	Temp Mid Range	23.80	23.88	0.000	24.0	C	0.14

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	PSU106	Technician	Sandy Grenville	Site Visit Date	09/23/2014

Shelter Make	Shelter Model	Shelter Size
PSU	N/A	3840 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type A	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** DasComments

The meteorological tower has been removed.

2 **Parameter:** SitingCriteriaCom

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field.

3 **Parameter:** ShelterCleanNotes

The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad network.

4 **Parameter:** MetOpMaintCom

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
KEF112-Sandy Grenville-09/23/2014					
1 9/23/2014	Computer	Dell	000256	D520	unknown
2 9/23/2014	DAS	Campbell	000414	CR3000	2537
3 9/23/2014	Elevation	Elevation	None	1	None
4 9/23/2014	Filter pack flow pump	Thomas	000965	107CA18	00000878
5 9/23/2014	Flow Rate	Apex	000671	AXMC105LPMDPCV	illegible
6 9/23/2014	Infrastructure	Infrastructure	none	none	none
7 9/23/2014	Met tower	Universal Tower	06487	unknown	none
8 9/23/2014	Modem	Raven	06455	V4221-V	0808337420
9 9/23/2014	Ozone	ThermoElectron Inc	000700	49i A1NAA	1030244793
10 9/23/2014	Ozone Standard	ThermoElectron Inc	000438	49i A3NAA	CM08200014
11 9/23/2014	Sample Tower	Aluma Tower	03443	A	none
12 9/23/2014	Shelter Temperature	Campbell	none	107-L	none
13 9/23/2014	Shield (10 meter)	RM Young	01399	Aspirated 43408	none
14 9/23/2014	Siting Criteria	Siting Criteria	None	1	None
15 9/23/2014	Temperature	RM Young	06388	41342	13992
16 9/23/2014	Zero air pump	Werther International	06922	C 70/4	000836217

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2537	KEF112	Sandy Grenville	09/23/2014	DAS	Primary

Das Date: 9 /23/2014 **Audit Date** 9 /23/2014
Das Time: 11:11:32 **Audit Time** 11:11:32
Das Day: 266 **Audit Day** 266

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0001	0.0004	0.0001	0.0004

Mfg Datel **Parameter** DAS
Serial Number 15510194 **Tfer Desc.** Source generator (D
Tfer ID 01320

Mfg Fluke **Parameter** DAS
Serial Number 95740135 **Tfer Desc.** DVM
Tfer ID 01311

Slope 1.00000 **Intercept** 0.00000
Cert Date 12/28/2013 **CorrCoff** 1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.1000	V	V	0.0001
7	0.3000	0.2997	0.2998	V	V	0.0001
7	0.5000	0.4996	0.4997	V	V	0.0001
7	0.7000	0.6996	0.6997	V	V	0.0001
7	0.9000	0.8999	0.8995	V	V	-0.0004
7	1.0000	0.9993	0.9994	V	V	0.0001

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	KEF112	Sandy Grenville	09/23/2014	Flow Rate	000671

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103471	**Tfer Desc.**	nexus
Tfer ID	01420		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103424	**Tfer Desc.**	BIOS cell
Tfer ID	01410		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

DAS 1:		DAS 2:		
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	
1.54%	1.97%			

Cal Factor Zero	0
Cal Factor Full Scale	0.98
Rotometer Reading:	1.55

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	PctDifference
primary	pump off	0.000	0.000	0.01	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.10	0.000	0.10	l/m	l/m	
primary	test pt 1	1.546	1.520	1.53	0.000	1.50	l/m	l/m	-1.32%
primary	test pt 2	1.542	1.520	1.53	0.000	1.49	l/m	l/m	-1.97%
primary	test pt 3	1.542	1.520	1.53	0.000	1.50	l/m	l/m	-1.32%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	3.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	330 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244793	KEF112	Sandy Grenville	09/23/2014	Ozone	000700

Slope:	1.00924	**Slope:**	0.00000
Intercept	0.71974	**Intercept**	0.00000
CorrCoff	0.99968	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
3.5%	8.0%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.04	0.15	-0.29	ppb	
primary	2	31.06	31.03	33.52	ppb	8.02%
primary	3	50.00	49.88	51.51	ppb	3.27%
primary	4	80.54	80.28	81.30	ppb	1.27%
primary	5	99.84	99.49	100.80	ppb	1.32%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.30	pass
Span	1.023	pass
Cell B Freq.	89.7 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.67 lpm	pass
Cell A Tmp.	30.0 C	pass
Cell A Pressure	696.3 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	94.5 kHz	pass
Cell A Flow	0.63 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	13992	KEF112	Sandy Grenville	09/23/2014	Temperature	06388

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00288	**Intercept**	-0.15155
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.18	0.37		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.38	0.53	0.000	0.2	C	-0.37
primary	Temp Mid Range	25.43	25.51	0.000	25.4	C	-0.13
primary	Temp High Range	47.74	47.75	0.000	47.7	C	-0.03

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	KEF112	Sandy Grenville	09/23/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.41	1.06		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00288	Intercept	-0.15155
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	19.50	19.60	0.000	20.7	C	1.06
primary	Temp Mid Range	19.52	19.61	0.000	19.7	C	0.11
primary	Temp Mid Range	20.66	20.75	0.000	20.8	C	0.06

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	KEF112	Technician	Sandy Grenville	Site Visit Date	09/23/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2149-14)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type A	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone sample train is leak tested every two weeks.

2 **Parameter:** SitingCriteriaCom

The site is in a clearing within the Kane Experimental Forest, the tree line is within 10 meters of the site.

3 **Parameter:** ShelterCleanNotes

The shelter is clean and very well organized. The floor and bottom of walls are beginning to deteriorate.

4 **Parameter:** PollAnalyzerCom

The MFC was observed to fluctuate from 1.4 to 1.6 lpm. Trees to the east are within 20 meters of the ozone inlet.

5 **Parameter:** MetSensorComme

The meteorological tower is attached to the shelter and the temperature sensor is positioned directly over the metal roof of the shelter.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	PSU106	**Technician**	Sandy Grenville	**Site Visit Date**	09/23/2014

Site Sponsor (agency)	EPA	**USGS Map**	Pine Grove Mills
Operating Group	PSU	**Map Scale**	
AQS #	42-027-9991	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	40.7209
Deposition Measurement	dry	**QAPP Longitude**	-77.9316
Land Use	agriculture	**QAPP Elevation Meters**	376
Terrain	rolling - complex	**QAPP Declination**	10.9
Conforms to MLM	Marginally	**QAPP Declination Date**	9/16/2005
Site Telephone	(814) 237-5778	**Audit Latitude**	40.720902
Site Address 1	PSU Agriculture Research Farm	**Audit Longitude**	-77.931759
Site Address 2	Tadpole Road	**Audit Elevation**	364
County	Centre	**Audit Declination**	-10.7
City, State	Rockspring, PA		
Zip Code	16865	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	PSU	**Model**	N/A	**Shelter Size**	3840 cuft
Shelter Clean	☑	**Notes**	The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad network.				
Site OK	☑	**Notes**					

Driving Directions

From 322 on the east side of State College, take SR 3024 south. After the traffic light at the intersection of route 26, SR 3024 will change to Whitehall Road. Continue on Whitehall road for approximately 3 miles to Fairbrook. Turn left on Tadpole Road in Fairbrook at the church. Continue approximately 0.5 miles, the site will be in the field on the right.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID PSU106 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km	State College	☐
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m	10 m	☐
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	PSU106	Technician	Sandy Grenville	Site Visit Date	09/23/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID PSU106 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	Temperature only
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	Temperature only
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	N/A
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	PSU106	Technician	Sandy Grenville	Site Visit Date	09/23/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 20 meters
4	Describe dry dep sample tube.		3/8 teflon by 20 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID PSU106 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?	Met tower removed	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The meteorological tower has been removed.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	PSU106	Technician	Sandy Grenville	Site Visit Date	09/23/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☐	☑
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☐	☐	☑
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Feb 2014	☑
HASP	☑	Feb 2014	☑
Field Ops Manual	☑		☑
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	PSU106	Technician	Sandy Grenville	Site Visit Date	09/23/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	No backup operator
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, logbook, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID PSU106 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☐	gloves are not used
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID PSU106 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000268
DAS	Campbell	CR3000	2512	000407
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022676	06023
Flow Rate	Apex	AXMC105LPMDPC	50732	000560
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0808310813	06483
Ozone	ThermoElectron Inc	49i A1NAA	1030244791	000678
Ozone Standard	ThermoElectron Inc	49i A3NAA	0622717857	000219
Sample Tower	Aluma Tower	A	none	02747
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	4013	04316
Zero air pump	Werther International	C 70/4	000829156	06914

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	KEF112	**Technician**	Sandy Grenville	**Site Visit Date**	09/23/2014

Site Sponsor (agency)	EPA	**USGS Map**	James City
Operating Group	PAFS/private	**Map Scale**	
AQS #	42-047-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	41.5981
Deposition Measurement	dry, wet	**QAPP Longitude**	-78.7683
Land Use	woodland - mixed	**QAPP Elevation Meters**	622
Terrain	rolling	**QAPP Declination**	10.5
Conforms to MLM	Yes	**QAPP Declination Date**	2/24/2006
Site Telephone	(814) 837-8069	**Audit Latitude**	41.598119
Site Address 1	Kane Experimental Forest Hdqts	**Audit Longitude**	-78.767866
Site Address 2	Seven Mile Road	**Audit Elevation**	618
County	Elk	**Audit Declination**	-10.3
City, State	Kane, PA		
Zip Code	16735	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☐	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2149-14)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is clean and very well organized. The floor and bottom of walls are beginning to deteriorate.				
Site OK	☑	**Notes**					

Driving Directions

From Kane go south on route 66 for approximately 1 mile. Just past the 2nd cemetery turn left. Continue to the stop sign just over the railroad tracks. Turn right and continue approximately 3.2 miles through the town of Lamont. About 0.5 mile past Lamont, turn left on a gravel road which is marked with a brown Forest Service sign for the NE Forest Experimental Station. Continue approximately 2 miles and bear left at the fork. The site is behind the green Forest Service buildings on the left.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m	10 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is in a clearing within the Kane Experimental Forest, the tree line is within 10 meters of the site.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	KEF112	Technician	Sandy Grenville	Site Visit Date	09/23/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☐	Temperature sensor mounted over shelter roof
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The meteorological tower is attached to the shelter and the temperature sensor is positioned directly over the metal roof of the shelter.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	N/A
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	N/A
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☐	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The MFC was observed to fluctuate from 1.4 to 1.6 lpm. Trees to the east are within 20 meters of the ozone inlet.

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☐
11	Tower comments?	Towers are not grounded	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☑	☐	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Oct 2011	☑
Field Ops Manual	☑	Oct 2011	☑
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☑
Preventive maintenance schedul	☑		☑

1	Is the station log properly completed during every site visit?	☑	Minimal information
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Current operator trained by previous operator, who was trained by previous operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone sample train is leak tested every two weeks.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings 90% of the time
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	As needed	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID KEF112 **Technician** Sandy Grenville **Site Visit Date** 09/23/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000256
DAS	Campbell	CR3000	2537	000414
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	00000878	000965
Flow Rate	Apex	AXMC105LPMDPC	illegible	000671
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	06487
Modem	Raven	V4221-V	0808337420	06455
Ozone	ThermoElectron Inc	49i A1NAA	1030244793	000700
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200014	000438
Sample Tower	Aluma Tower	A	none	03443
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	01399
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	13992	06388
Zero air pump	Werther International	C 70/4	000836217	06922

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ARE128-Sandy Grenville-09/25/2014						
1	9/25/2014	Computer	Dell	000244	D520	67FNHB1
2	9/25/2014	DAS	Campbell	000400	CR3000	2524
3	9/25/2014	Elevation	Elevation	None	1	None
4	9/25/2014	Filter pack flow pump	Thomas	02661	107CA110	000012187C
5	9/25/2014	Flow Rate	Apex	000462	AXMC105LPMDPCV	42228
6	9/25/2014	Infrastructure	Infrastructure	none	none	none
7	9/25/2014	Met tower	Universal Tower	03505	unknown	none
8	9/25/2014	Modem	Raven	06809	V4221-V	093644408
9	9/25/2014	Ozone	ThermoElectron Inc	000609	49i A1NAA	1009241782
10	9/25/2014	Ozone Standard	ThermoElectron Inc	000199	49i A3NAA	0607315737
11	9/25/2014	Sample Tower	Aluma Tower	666361	B	none
12	9/25/2014	Shelter Temperature	Campbell	none	107-L	none
13	9/25/2014	Shield (10 meter)	Climatronics	01167	100325	1272
14	9/25/2014	Siting Criteria	Siting Criteria	None	1	None
15	9/25/2014	Temperature	Climatronics	06678	100093	missing
16	9/25/2014	Zero air pump	Werther International	06866	PC70/4	000815262

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2524	ARE128	Sandy Grenville	09/25/2014	DAS	Primary

Das Date: 9 /25/2014 **Audit Date** 9 /25/2014
Das Time: 15:28:25 **Audit Time** 15:28:26
Das Day: 268 **Audit Day** 268

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0001	0.0000	0.0001

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	12/28/2013	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2997	0.2997	V	V	0.0000
7	0.5000	0.4996	0.4996	V	V	0.0000
7	0.7000	0.6995	0.6995	V	V	0.0000
7	0.9000	0.8994	0.8993	V	V	-0.0001
7	1.0000	0.9993	0.9992	V	V	-0.0001

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	42228	ARE128	Sandy Grenville	09/25/2014	Flow Rate	000462

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103471	**Tfer Desc.**	nexus
Tfer ID	01420		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103424	**Tfer Desc.**	BIOS cell
Tfer ID	01410		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

DAS 1:		DAS 2:		
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	
0.22%	0.67%			

Cal Factor Zero	0.04
Cal Factor Full Scale	1.02
Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.10	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.05	0.000	-0.02	l/m	l/m	
primary	test pt 1	1.525	1.500	1.49	0.000	1.51	l/m	l/m	0.67%
primary	test pt 2	1.522	1.500	1.49	0.000	1.50	l/m	l/m	0.00%
primary	test pt 3	1.528	1.500	1.49	0.000	1.50	l/m	l/m	0.00%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	2.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	2.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	250 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241782	ARE128	Sandy Grenville	09/25/2014	Ozone	000609

Slope:	0.99159	**Slope:**	0.00000
Intercept	0.17333	**Intercept**	0.00000
CorrCoff	0.99995	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.0%	1.8%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.05	0.16	-0.03	ppb	
primary	2	31.26	31.23	31.78	ppb	1.76%
primary	3	51.05	50.93	50.50	ppb	-0.84%
primary	4	80.17	79.91	79.44	ppb	-0.59%
primary	5	101.56	101.21	100.40	ppb	-0.80%

Sensor Component	Condition	Status
Cell B Noise	0.7 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.10	pass
Span	0.999	pass
Cell B Freq.	106.1 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.75 lpm	pass
Cell A Tmp.	31.9 C	pass
Cell A Pressure	716 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	97.0 kHz	pass
Cell A Flow	0.70 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	missing	ARE128	Sandy Grenville	09/25/2014	Temperature	06678

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00288	**Intercept**	-0.15155
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.19	0.24		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.50	0.65	0.000	0.5	C	-0.14
primary	Temp Mid Range	25.66	25.74	0.000	25.6	C	-0.18
primary	Temp High Range	49.67	49.68	0.000	49.4	C	-0.24

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ARE128	Sandy Grenville	09/25/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.51	0.65		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00288	Intercept	-0.15155
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.78	22.87	0.000	22.3	C	-0.54
primary	Temp Mid Range	22.94	23.03	0.000	22.7	C	-0.35
primary	Temp Mid Range	25.92	26.00	0.000	25.4	C	-0.65

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	ARE128	Technician	Sandy Grenville	Site Visit Date	09/25/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2116-7)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** DasComments

The meteorological tower is grounded but the lightning rod has been removed. The sample tower is not grounded.

2 **Parameter:** SitingCriteriaCom

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

3 **Parameter:** MetOpMaintCom

The 10-meter temperature sensor is being operated and maintained on the meteorological tower.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	ARE128	**Technician**	Sandy Grenville	**Site Visit Date**	09/25/2014

Site Sponsor (agency)	EPA	**USGS Map**	Arendtsville
Operating Group	PSU/private	**Map Scale**	
AQS #	42-001-9991	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, IMROVE	**QAPP Latitude**	39.9231
Deposition Measurement	dry, wet, Hg, PM	**QAPP Longitude**	-77.3078
Land Use	agriculture	**QAPP Elevation Meters**	269
Terrain	complex - rolling	**QAPP Declination**	10.9
Conforms to MLM	Marginally	**QAPP Declination Date**	2/22/2006
Site Telephone	(717) 677-9866	**Audit Latitude**	39.923241
Site Address 1	PSU Fruit Research Orchard	**Audit Longitude**	-77.307863
Site Address 2	Winding Road	**Audit Elevation**	266
County	Adams	**Audit Declination**	-11
City, State	Arendtsville, PA		
Zip Code	17307	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2116-7)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**					
Site OK	☑	**Notes**					

Driving Directions

From Gettysburg take route 34 north to Biglerville. At the intersection of 34 and 234 turn left (west) to Arendtsville. Continue into the town of Arendtsville. At the stop sign next to the gas station, turn left and immediately turn right, onto Chambersburg Street. Continue approximately 0.4 miles and turn right onto Winding Road. There is a sign for Boyer Nursery & Orchard. The site will be visible at the top of the hill in the orchard on the right.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m	20 m	☐
Limited agricultural operations	200 m	20 m	☐
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	ARE128	Technician	Sandy Grenville	Site Visit Date	09/25/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	Temperature only
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	Temperature only
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The 10-meter temperature sensor is being operated and maintained on the meteorological tower.

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	Moisture in tubing only
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☐
11	Tower comments?	Met tower grounded but lightning rod removed, sample tower not grounded	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The meteorological tower is grounded but the lightning rod has been removed. The sample tower is not grounded.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☐
SSRF	☑		☑
Site Ops Manual	☑	Oct 2010	☑
HASP	☑	Oct 2010	☑
Field Ops Manual	☑	Oct 2001	☑
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Refresher training by Lavery and Howell, July 2006
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Refresher training by Lavery and Howell, July 2006
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☐	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☐	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☐
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, logbook, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☐	Gloves not consistently used
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☐		☐

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID ARE128 **Technician** Sandy Grenville **Site Visit Date** 09/25/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	67FNHB1	000244
DAS	Campbell	CR3000	2524	000400
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	000012187C	02661
Flow Rate	Apex	AXMC105LPMDPC	42228	000462
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03505
Modem	Raven	V4221-V	093644408	06809
Ozone	ThermoElectron Inc	49i A1NAA	1009241782	000609
Ozone Standard	ThermoElectron Inc	49i A3NAA	0607315737	000199
Sample Tower	Aluma Tower	B	none	666361
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	Climatronics	100325	1272	01167
Siting Criteria	Siting Criteria	1	None	None
Temperature	Climatronics	100093	missing	06678
Zero air pump	Werther International	PC70/4	000815262	06866

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CAT175-Eric Hebert-09/26/2014						
1	9/26/2014	Computer	Dell	000275	D520	unknown
2	9/26/2014	DAS	Campbell	000412	CR3000	2532
3	9/26/2014	Elevation	Elevation	None	1	None
4	9/26/2014	Filter pack flow pump	Brailsford	none	TD-4X2N	none
5	9/26/2014	Flow Rate	Apex	000644	AXMC105LPMDPCV	illegible
6	9/26/2014	Infrastructure	Infrastructure	none	none	none
7	9/26/2014	Met tower	Universal Tower	02742	unknown	none
8	9/26/2014	Modem	Raven	06660	V4221-V	0918425101
9	9/26/2014	Sample Tower	Aluma Tower	666359	B	none
10	9/26/2014	Shield (10 meter)	RM Young	none	41003	none
11	9/26/2014	Siting Criteria	Siting Criteria	None	1	None
12	9/26/2014	Temperature	RM Young	06409	41342VO	14042
13	9/26/2014	UPS	ProSine	04576	1000w	unknown

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	CAT175	Eric Hebert	09/26/2014	Flow Rate	000644

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0
3.21%	3.21%			**Cal Factor Full Scale**	0
				Rotometer Reading:	1.55

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.03	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	-0.01	0.000	0.02	l/m	l/m	
primary	test pt 1	1.556	1.560	1.50	0.000	1.51	l/m	l/m	-3.21%
primary	test pt 2	1.560	1.560	1.50	0.000	1.51	l/m	l/m	-3.21%
primary	test pt 3	1.564	1.560	1.50	0.000	1.51	l/m	l/m	-3.21%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Poor	**Status**	Fail
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	-0.5 cm	**Status**	Fail
Sensor Component	Filter Azimuth	**Condition**	90 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14042	CAT175	Eric Hebert	09/26/2014	Temperature	06409

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.06	0.11		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.07	0.16	0.000	0.2	C	0.01
primary	Temp Mid Range	24.98	25.09	0.000	25.0	C	-0.11
primary	Temp High Range	47.52	47.51	0.000	47.5	C	-0.06

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Infrastructure Data For

Site ID	CAT175	Technician	Eric Hebert	Site Visit Date	09/26/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 1977-1)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	CAT175	Eric Hebert	09/26/2014	Filter Position	Apex	4212	☐	☑

The filter attachment plate is mounted too low in the enclosure resulting in the filter being exposed to wind-driven rain and in the standard geometric orientation.

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator was not available to meet with the auditor during the audit visit due to a personal family matter. Audit information was obtained from review of the site documentation.

2 **Parameter:** DasComments

The shelter is not temperature controlled. The site is solar and DC battery powered.

3 **Parameter:** ShelterCleanNotes

The shelter is neat and clean. The vegetation has been allowed to grow. The shelter roof has been repaired.

4 **Parameter:** PollAnalyzerCom

Ozone monitoring is no longer being conducted at the site.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	CAT175	**Technician**	Eric Hebert	**Site Visit Date**	09/26/2014

Site Sponsor (agency)	EPA	**USGS Map**	Claryville
Operating Group	private	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	41.9423
Deposition Measurement	dry	**QAPP Longitude**	-74.5519
Land Use	woodland - mixed	**QAPP Elevation Meters**	765
Terrain	complex	**QAPP Declination**	13.5
Conforms to MLM	No	**QAPP Declination Date**	2/22/2006
Site Telephone	(845) 798-0947	**Audit Latitude**	41.942325
Site Address 1	Wildcat Mt. Road	**Audit Longitude**	-74.551999
Site Address 2		**Audit Elevation**	754
County	Ulster	**Audit Declination**	-13.2
City, State	Claryville, NY		
Zip Code	12725	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☐	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 1977-1)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is neat and clean. The vegetation has been allowed to grow. The shelter roof has been repaired.				
Site OK	☑	**Notes**					

Driving Directions

From Liberty, NY go west on route 52 toward Grahamsville. Just before reaching Grahamsville, turn left onto County Road 19 to Claryville. Stay on 19 through Claryville and turn left on Wildcat Mt Road immediately after crossing the bridge at the far end of town. Bear right and follow the semi-paved road for about 0.7 miles to the fork. Go right at the fork and turn left at the first house on the left. The site is about .75 miles up the dirt road behind the house.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID CAT175 **Technician** Eric Hebert **Site Visit Date** 09/26/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	CAT175	Technician	Eric Hebert	Site Visit Date	09/26/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	CAT175	Technician	Eric Hebert	Site Visit Date	09/26/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	Temperature only
2	Are all the meteorological sensors operational online, and reporting data?	☑	Temperature only
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	Natural aspiration
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	N/A
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	CAT175	Technician	Eric Hebert	Site Visit Date	09/26/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	Ozone not measured
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		N/A
4	Describe dry dep sample tube.		3/8 teflon by 18 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☐	N/A
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☐	N/A
8	Are there moisture traps in the sample lines?	☐	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Ozone monitoring is no longer being conducted at the site.

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID CAT175 **Technician** Eric Hebert **Site Visit Date** 09/26/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☐	Solar power
8	Is the instrument shelter temperature controlled?	☐	Shelter not temperature controlled

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The shelter is not temperature controlled. The site is solar and DC battery powered.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID CAT175 **Technician** Eric Hebert **Site Visit Date** 09/26/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☐	☑
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☑	☐	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☑	☐
Ozone analyzer	☐	☐	☑	Shelter heater	☐	☐	☑
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☐	☑
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2001	☐
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐	N/A	☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID CAT175 **Technician** Eric Hebert **Site Visit Date** 09/26/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	No backup operator
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☐	N/A	☑
Automatic Zero/Span Tests	☐	N/A	☑
Manual Zero/Span Tests	☐	N/A	☑
Automatic Precision Level Tests	☐	N/A	☑
Manual Precision Level Test	☐	N/A	☑
Analyzer Diagnostics Tests	☐	N/A	☑
In-line Filter Replacement (at inlet)	☐	N/A	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☐	N/A	☑
Zero Air Desiccant Check	☐	N/A	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	N/A
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☐	N/A
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☐	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID CAT175 **Technician** Eric Hebert **Site Visit Date** 09/26/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☐	
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, e-mail
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐	Not performed	☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The site operator was not available to meet with the auditor during the audit visit due to a personal family matter. Audit information was obtained from review of the site documentation.

Field Systems Data Form F-02058-1500-S10-rev002

Site ID CAT175 **Technician** Eric Hebert **Site Visit Date** 09/26/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000275
DAS	Campbell	CR3000	2532	000412
Elevation	Elevation	1	None	None
Filter pack flow pump	Brailsford	TD-4X2N	none	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	000644
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	02742
Modem	Raven	V4221-V	0918425101	06660
Sample Tower	Aluma Tower	B	none	666359
Shield (10 meter)	RM Young	41003	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	14042	06409
UPS	ProSine	1000w	unknown	04576

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
HWF187-Eric Hebert-09/30/2014						
1	9/30/2014	Computer	Dell	000290	D520	unknown
2	9/30/2014	DAS	Campbell	000356	CR3000	2134
3	9/30/2014	Elevation	Elevation	None	1	None
4	9/30/2014	Filter pack flow pump	Thomas	02358	illegible	illegible
5	9/30/2014	Flow Rate	Apex	000592	AXMC105LPMDPCV	illegible
6	9/30/2014	Infrastructure	Infrastructure	none	none	none
7	9/30/2014	Met tower	Universal Tower	03579	unknown	none
8	9/30/2014	Modem	Raven	06807	H4223-C	0934393748
9	9/30/2014	Ozone	ThermoElectron Inc	000681	49i A1NAA	1030244790
10	9/30/2014	Ozone Standard	ThermoElectron Inc	000445	49i A3NAA	CM08200021
11	9/30/2014	Sample Tower	Aluma Tower	illegible	B	AT-5107-E-4-12
12	9/30/2014	Shelter Temperature	Campbell	none	107-L	unknown
13	9/30/2014	Shield (10 meter)	RM Young	04676	Aspirated 43408	none
14	9/30/2014	Siting Criteria	Siting Criteria	None	1	None
15	9/30/2014	Temperature	RM Young	06401	41342VO	14034
16	9/30/2014	Zero air pump	Teledyne	000775	701H	611

DAS Data Form

DAS Time Max Error: 0.25

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2134	HWF187	Eric Hebert	09/30/2014	DAS	Primary

Das Date: 10/1 /2014
Das Time: 9:00:15
Das Day: 274

Audit Date 10/1 /2014
Audit Time 9:00:00
Audit Day 274

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0004	0.0002	0.0004

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0004	0.0000	V	V	0.0004
7	0.1000	0.0997	0.0997	V	V	0.0000
7	0.2000	0.1996	0.1995	V	V	-0.0001
7	0.5000	0.4994	0.4995	V	V	0.0001
7	0.7000	0.6999	0.6997	V	V	-0.0002
7	0.9000	0.8995	0.8994	V	V	-0.0001
7	1.0000	1.0003	1.0005	V	V	0.0002

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	HWF187	Eric Hebert	09/30/2014	Flow Rate	000592

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.01
1.12%	1.35%			**Cal Factor Full Scale**	0.99
				Rotometer Reading:	1.55

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.01	0.000	0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.01	l/m	l/m	
primary	test pt 1	1.483	1.480	1.52	0.000	1.50	l/m	l/m	1.35%
primary	test pt 2	1.485	1.480	1.51	0.000	1.50	l/m	l/m	1.35%
primary	test pt 3	1.492	1.490	1.52	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	6.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	0.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244790	HWF187	Eric Hebert	09/30/2014	Ozone	000681

Slope:	0.97152	**Slope:**	0.00000
Intercept	-0.17924	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
3.2%	3.4%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.20	-0.31	-0.50	ppb	
primary	2	26.78	26.41	25.55	ppb	-3.26%
primary	3	47.59	47.03	45.44	ppb	-3.38%
primary	4	77.75	76.91	74.56	ppb	-3.06%
primary	5	107.83	106.72	103.50	ppb	-3.02%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.006	pass
Cell B Freq.	90.4 kHz	pass
System Memo	See comments	pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.72 lpm	pass
Cell A Tmp.	34.9 C	pass
Cell A Pressure	692.5 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	89.7 kHz	pass
Cell A Flow	0.32 lpm	Fail
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14034	HWF187	Eric Hebert	09/30/2014	Temperature	06401

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.14	0.29		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.02	0.21	0.000	0.3	C	0.06
primary	Temp Mid Range	24.57	24.68	0.000	24.6	C	-0.06
primary	Temp High Range	47.90	47.89	0.000	48.2	C	0.29

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	unknown	HWF187	Eric Hebert	09/30/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.28	0.36		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.40	22.52	0.000	22.9	C	0.36
primary	Temp Mid Range	22.02	22.14	0.000	22.4	C	0.21

Infrastructure Data For

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

Shelter Make	Shelter Model	Shelter Size
ESF	none	1630 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	HWF187	Eric Hebert	09/30/2014	Moisture Present	Apex	4026	☐	☐
The filter sample tubing has drops of moisture in low sections outside the shelter.								
Ozone	HWF187	Eric Hebert	09/30/2014	Cell A Flow	ThermoElectron	3368	☐	☑
This analyzer diagnostic check is outside the manufacturer's recommended value.								

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested every other week.

2 **Parameter:** ShelterCleanNotes

The shelter is in good condition.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	HWF187	**Technician**	Eric Hebert	**Site Visit Date**	09/30/2014

Site Sponsor (agency)	EPA	**USGS Map**	Newcomb
Operating Group	SUNY/ESF	**Map Scale**	
AQS #	36-031-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, Hg	**QAPP Latitude**	43.9732
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	-74.2232
Land Use	woodland - mixed	**QAPP Elevation Meters**	502
Terrain	complex	**QAPP Declination**	14.5
Conforms to MLM	No	**QAPP Declination Date**	6/17/2004
Site Telephone	(518) 582-4800	**Audit Latitude**	43.973044
Site Address 1	Adirondack Ecological Center	**Audit Longitude**	-74.223317
Site Address 2		**Audit Elevation**	497
County	Essex	**Audit Declination**	-14
City, State	Newcomb, NY		
Zip Code	12852	**Fire Extinguisher** ☑ Present	Inspected Oct 2014
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☐	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	ESF	**Model**	none	**Shelter Size**	1630 cuft
Shelter Clean	☑	**Notes**	The shelter is in good condition.				
Site OK	☑	**Notes**					

Driving Directions From I-87 take exit 29 west to Newcomb. Continue through Newcomb (about 6 miles). Just west of town, turn right (north) at the Adirondack Ecological Center. Continue past the building on the dirt road to the site.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m	20 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	Temperature only
2	Are all the meteorological sensors operational online, and reporting data?	☑	Temperature only
3	Are the shields for the temperature and RH sensors clean?	☑	Moderately clean
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	Moisture in tubing only
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☐	☑
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☑	☐
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☐	☑
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2009	☑
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	Minimal information
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained during site installation by ESE employee
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	N/A	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone inlet filter is replaced and the sample train is leak tested every other week.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000290
DAS	Campbell	CR3000	2134	000356
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	illegible	illegible	02358
Flow Rate	Apex	AXMC105LPMDPC	illegible	000592
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03579
Modem	Raven	H4223-C	0934393748	06807
Ozone	ThermoElectron Inc	49i A1NAA	1030244790	000681
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200021	000445
Sample Tower	Aluma Tower	B	AT-5107-E-4-12	illegible
Shelter Temperature	Campbell	107-L	unknown	none
Shield (10 meter)	RM Young	Aspirated 43408	none	04676
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	14034	06401
Zero air pump	Teledyne	701H	611	000775

APPENDIX B

CASTNET Site Spot Report Forms

EEMS Spot Report

Data Compiled: 1/23/2015 12:39:32 PM

SiteVisitDate	Site	Technician
07/22/2014	ALH157	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99162	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.55984	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99994	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.0	%	**P**
5	Ozone % difference max	P	7	10	4	3.0	%	**P**

EEMS Spot Report

Data Compiled: 5/10/2016 9:43:24 AM

SiteVisitDate	Site	Technician
08/19/2014	ANA115	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.20	c	**P**
2	Temperature max error	P	4	0.5	9	0.28	c	**P**
3	Ozone Slope	P	0	1.1	4	0.80101	unitless	**Fail**
4	Ozone Intercept	P	0	5	4	2.22814	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
6	Ozone % difference avg	P	7	10	4	16.0	%	**Fail**
7	Ozone % difference max	P	7	10	4	17.9	%	**Fail**
8	Flow Rate average % difference	P	10	5	2	2.04	%	**P**
9	Flow Rate max % difference	P	10	5	2	2.04	%	**P**
10	DAS Time maximum error	P	0	5	1	0.05	min	**P**
11	DAS Voltage average error	P	7	0.003	7	0.0000	V	**P**

SiteVisitDate	Site	Technician
08/19/2014	ANA115	Eric Hebert

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** System Memo **CommentCode** 81

There is no plastic bag for the installed filter. The operator uses the received bag for the installed filter to ship the removed filter to the lab.

2 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

Gloves were not used to change the filter. It was observed that the dry deposition filter was replaced while the sample pump was running with the sample tower lowered. The filter was changed during a rain storm and water entered the filter and sample lines (flow and ozone). The filter can be exposed and sampling from ground level for up to 30 minutes if the ozone leak check is also performed.

2 **Parameter:** DasComments

The air conditioner thermostat control is by-passed and the air conditioner is running continuously.

3 **Parameter:** SitingCriteriaCom

Site is confined within a fenced area that is somewhat small. There is available space adjacent to the fenced area that could be utilized to improve the instrument siting.

4 **Parameter:** ShelterCleanNotes

The shelter is well organized and in fair condition.

5 **Parameter:** PollAnalyzerCom

Moisture is present in the flow tubing outside of the shelter.

EEMS Spot Report

Data Compiled: 1/23/2015 1:10:27 PM

SiteVisitDate	Site	Technician
09/24/2014	ANA115	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97366	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.48989	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.6	%	**P**
5	Ozone % difference max	P	7	10	4	2.4	%	**P**

EEMS Spot Report

Data Compiled: 5/10/2016 5:35:03 PM

SiteVisitDate	Site	Technician
09/25/2014	ARE128	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.19	c	**P**
2	Temperature max error	P	4	0.5	9	0.24	c	**P**
3	Ozone Slope	P	0	1.1	4	0.99159	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.17333	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99995	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.0	%	**P**
7	Ozone % difference max	P	7	10	4	1.8	%	**P**
8	Flow Rate average % difference	P	10	5	4	0.22	%	**P**
9	Flow Rate max % difference	P	10	5	4	0.67	%	**P**
10	DAS Time maximum error	P	0	5	1	0.02	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0000	V	**P**

Field Systems Comments

1 **Parameter:** DasComments

The meteorological tower is grounded but the lightning rod has been removed. The sample tower is not grounded.

2 **Parameter:** SitingCriteriaCom

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

3 **Parameter:** MetOpMaintCom

The 10-meter temperature sensor is being operated and maintained on the meteorological tower.

EEMS Spot Report

Data Compiled: 1/23/2015 12:34:36 PM

SiteVisitDate	Site	Technician
07/17/2014	BAS601	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.96978	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.45325	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.0	%	**P**
5	Ozone % difference max	P	7	10	4	2.9	%	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell B Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

2 **Parameter:** Ozone **SensorComponent:** Cell A Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

3 **Parameter:** Ozone **SensorComponent:** Cell A Tmp. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

EEMS Spot Report

Data Compiled: 1/23/2015 1:08:34 PM

SiteVisitDate	Site	Technician
09/20/2014	BVL130	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.96651	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.76544	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.0	%	**P**
5	Ozone % difference max	P	7	10	4	2.7	%	**P**

EEMS Spot Report

Data Compiled: 5/11/2016 6:12:47 PM

SiteVisitDate	Site	Technician
09/26/2014	CAT175	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.06	c	**P**
2	Temperature max error	P	4	0.5	12	0.11	c	**P**
3	Flow Rate average % difference	P	10	5	2	3.21	%	**P**
4	Flow Rate max % difference	P	10	5	2	3.21	%	**P**

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Filter Position **CommentCode** 71

The filter attachment plate is mounted too low in the enclosure resulting in the filter being exposed to wind-driven rain and in the standard geometric orientation.

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator was not available to meet with the auditor during the audit visit due to a personal family matter. Audit information was obtained from review of the site documentation.

2 **Parameter:** DasComments

The shelter is not temperature controlled. The site is solar and DC battery powered.

3 **Parameter:** ShelterCleanNotes

The shelter is neat and clean. The vegetation has been allowed to grow. The shelter roof has been repaired.

4 **Parameter:** PollAnalyzerCom

Ozone monitoring is no longer being conducted at the site.

EEMS Spot Report

Data Compiled: 2/9/2015 12:25:52 PM

SiteVisitDate	Site	Technician
08/23/2014	CNT169	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99705	unitless	**P**
2	Ozone Intercept	P	0	5	4	-1.82502	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	3.8	%	**P**
5	Ozone % difference max	P	7	10	4	6.3	%	**P**

EEMS Spot Report

Data Compiled: 5/10/2016 5:06:26 PM

SiteVisitDate	Site	Technician
09/05/2014	CTH110	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.11	c	**P**
2	Temperature max error	P	4	0.5	9	0.22	c	**P**
3	Ozone Slope	P	0	1.1	4	0.97108	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.71838	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.5	%	**P**
7	Ozone % difference max	P	7	10	4	2.3	%	**P**
8	Flow Rate average % difference	P	10	5	4	0.22	%	**P**
9	Flow Rate max % difference	P	10	5	4	0.67	%	**P**
10	DAS Time maximum error	P	0	5	1	0.05	min	**P**
11	DAS Voltage average error	P	7	0.003	35	0.0003	V	**P**

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 70

Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is changed and the sample train is leak tested every two weeks.

2 **Parameter:** SitingCriteriaCom

There is a point source north of Ithaca within 40 km of the site. The tree line is less than 50 m from the site. The siting is acceptable even with the noted exceptions.

EEMS Spot Report

Data Compiled: 7/31/2015 8:15:06 PM

SiteVisitDate	Site	Technician
07/15/2014	DIN431	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	3	0.44	c	**P**
2	Temperature max error	P	4	0.5	3	0.54	c	**Fail**
3	Ozone Slope	P	0	1.1	4	0.99366	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.33934	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99996	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.9	%	**P**
7	Ozone % difference max	P	7	10	4	2.4	%	**P**
8	Flow Rate average % difference	P	9	5	8	0.24	%	**P**
9	Flow Rate max % difference	P	9	5	8	0.28	%	**P**
10	DAS Time maximum error	P	0	5	1	1.25	min	**P**
11	DAS Voltage average error	P	9	0.003	42	0.0002	V	**P**
12	DAS Voltage average error	P	2	0.003	42	0.0002	V	**P**
13	Shelter Temperature average error	P	5	1	3	0.23	c	**P**
14	Shelter Temperature max error	P	5	1	3	0.49	c	**P**

SiteVisitDate	Site	Technician
07/15/2014	DIN431	Eric Hebert

Field Performance Comments

1 **Parameter:** Temperature **SensorComponent:** System Memo **CommentCode** 141

The temperature sensor is mounted directly above the shelter roof.

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator was observed to lower the sample tower and replace the filter pack with the sample pump running and the channel marked as valid. Although gloves were used to handle the filter, they were kept in a pants pocket until needed and many items were touched between handling the filters. The operator was not completely familiar with the CASTNET procedures.

2 **Parameter:** DasComments

All sensors, filter pack, and ozone sample inlet are on a single, crank-down tower.

3 **Parameter:** SiteOpsProcedures

The site operator is not responsible for manual zero/span/precision checks of the ozone analyzer.

4 **Parameter:** DocumentationCo

There is very little documentation of onsite activities. No manual entries in Dataview. The COC section of the SSRF is not being used.

5 **Parameter:** SitingCriteriaCom

A small parking lot for park service employees is located approximately 40 meters north of the site.

6 **Parameter:** ShelterCleanNotes

The shelter is in good condition, clean, and well organized.

7 **Parameter:** MetSensorComme

The ambient temperature sensor is mounted approximately 8 meters from the ground and above the shelter roof.

EEMS Spot Report

Data Compiled: 5/10/2016 4:26:35 PM

SiteVisitDate	Site	Technician
08/28/2014	EGB181	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.06	c	**P**
2	Temperature max error	P	4	0.5	9	0.08	c	**P**
3	Flow Rate average % difference	P	10	5	3	2.41	%	**P**
4	Flow Rate max % difference	P	10	5	3	2.63	%	**P**
5	DAS Time maximum error	P	0	5	1	1.33	min	**P**
6	DAS Voltage average error	P	7	0.003	21	0.0002	V	**P**

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

Filters are sent 4 at a time and stored in a refrigerator before and after sampling prior to shipment to the lab.

2 **Parameter:** DasComments

The sample tower is badly damaged at the hinge point and should be replaced.

3 **Parameter:** DocumentationCo

The site operator no longer uses the station logbook during routine site visits.

4 **Parameter:** ShelterCleanNotes

The shelter is provided by the Center for Atmospheric Research and is clean, organized, and spacious.

5 **Parameter:** PollAnalyzerCom

Ozone concentration is not measured at EGB181 as part of CASTNET.

EEMS Spot Report

Data Compiled: 5/10/2016 3:29:09 PM

SiteVisitDate	Site	Technician
07/21/2014	FOR605	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	P	3	0.5	4	0.07	m/s	**P**
2	Wind Speed max error below 5m/s in m/s	P	3	0.5	4	0.17	m/s	**P**
3	Wind Speed average % difference above 5 m/s	P	3	5	4	0.6	%	**P**
4	Wind Speed max % difference above 5 m/s	P	3	5	4	1.3	%	**P**
5	Wind Speed Torque average error	P	3	0.5	1	0.00	g-cm	**P**
6	Wind Speed Torque max error	P	3	0.5	1	0.0	g-cm	**P**
7	Wind Direction Input Deg True average error (de	P	2	5	8	3.5	degrees	**P**
8	Wind Direction Input Deg True max error (deg)	P	2	5	8	5	degrees	**P**
9	Temperature average error	P	4	0.5	3	0.67	c	**Fail**
10	Temperature max error	P	4	0.5	3	1.45	c	**Fail**
11	Relative Humidity average above 85%	P	6	10	1	6.5	%	**P**
12	Relative Humidity max above 85%	P	6	10	1	6.5	%	**P**
13	Relative Humidity average below 85%	P	6	10	2	3.5	%	**P**
14	Relative Humidity max below 85%	P	6	10	2	4.7	%	**P**
15	Solar Radiation % diff of avg	P	9	10	2	2.29	%	**P**
16	Solar Radiation % diff of max STD value	P	9	10	2	1.7	%	**P**
17	Precipitation average % difference	P	1	10	2	9.7	%	**P**
18	Precipitation max % difference	P	1	10	2	10.3	%	**Fail**
19	Flow Rate average % difference	P	10	5	2	6.56	%	**Fail**
20	Flow Rate max % difference	P	10	5	2	6.82	%	**Fail**

SiteVisitDate	Site	Technician
07/21/2014	FOR605	Eric Hebert

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** System Memo **CommentCode** 174

Additional details can be found in the hardcopy of the site audit report.

2 **Parameter:** Temperature **SensorComponent:** System Memo **CommentCode** 174

Additional details can be found in the hardcopy of the site audit report.

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The dry deposition sample height is approximately 6 meters and not 10 meters.

2 **Parameter:** DocumentationCo

There is no documentation available at the site since there is no place to store documents. The site does not have a computer or shelter other than the small enclosure. The site operator completes a site checklist which remains in his vehicle. Information from the checklist is later filed at his office.

3 **Parameter:** SitingCriteriaCom

The site is located in a wellfield with oil and gas operations nearby.

4 **Parameter:** ShelterCleanNotes

This is a small footprint site with instruments mounted in enclosure on tripod tower.

5 **Parameter:** MetOpMaintCom

The temperature and relative humidity sensor is a combination sensor which cannot be submersed making it difficult to audit throughout a range of temperatures.

EEMS Spot Report

Data Compiled: 2/9/2015 11:17:01 AM

SiteVisitDate	Site	Technician
08/23/2014	GLR468	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98527	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.12602	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.4	%	**P**
5	Ozone % difference max	P	7	10	4	1.7	%	**P**

EEMS Spot Report

Data Compiled: 2/9/2015 12:10:28 PM

SiteVisitDate	Site	Technician
08/21/2014	GTH161	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.95395	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.665	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99984	unitless	**P**
4	Ozone % difference avg	P	7	10	4	5.3	%	**P**
5	Ozone % difference max	P	7	10	4	6.3	%	**P**

EEMS Spot Report

Data Compiled: 5/10/2016 9:46:36 AM

SiteVisitDate	Site	Technician
08/25/2014	HOX148	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.11	c	**P**
2	Temperature max error	P	4	0.5	6	0.18	c	**P**
3	Ozone Slope	P	0	1.1	4	0.97404	unitless	**P**
4	Ozone Intercept	P	0	5	4	1.20525	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.4	%	**P**
7	Ozone % difference max	P	7	10	4	2.2	%	**P**
8	Flow Rate average % difference	P	10	5	4	0.67	%	**P**
9	Flow Rate max % difference	P	10	5	4	0.67	%	**P**
10	DAS Time maximum error	P	0	5	1	0.75	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0001	V	**P**

SiteVisitDate	Site	Technician
08/25/2014	HOX148	Eric Hebert

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 70

Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.

2 **Parameter:** Shelter Temperatur **SensorComponent:** System Memo **CommentCode** 215

The shelter thermostat for cooling has been bypassed and the air conditioning system is no longer being controlled by the shelter thermostat.

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone analyzer sample train is leak-checked every two weeks.

2 **Parameter:** SitingCriteriaCom

There is a co-generating and smelting facility in Cadillac approximately 30 km to the northeast. The site is located in a hay field which is cut 2 or 3 times per year.

3 **Parameter:** ShelterCleanNotes

The shelter is clean, neat, well organized.

4 **Parameter:** MetSensorComme

Met tower and 10 meter temperature operating and audited.

EEMS Spot Report

Data Compiled: 5/11/2016 5:25:56 PM

SiteVisitDate	Site	Technician
09/30/2014	HWF187	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.14	c	**P**
2	Temperature max error	P	4	0.5	12	0.29	c	**P**
3	Ozone Slope	P	0	1.1	4	0.97152	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.17924	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	3.2	%	**P**
7	Ozone % difference max	P	7	10	4	3.4	%	**P**
8	Flow Rate average % difference	P	10	5	2	1.12	%	**P**
9	Flow Rate max % difference	P	10	5	2	1.35	%	**P**
10	DAS Time maximum error	P	0	5	1	0.25	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0002	V	**P**

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

2 **Parameter:** Ozone **SensorComponent:** Cell A Flow **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested every other week.

2 **Parameter:** ShelterCleanNotes

The shelter is in good condition.

EEMS Spot Report

Data Compiled: 5/10/2016 6:09:55 PM

SiteVisitDate	Site	Technician
09/23/2014	KEF112	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.18	c	**P**
2	Temperature max error	P	4	0.5	9	0.37	c	**P**
3	Ozone Slope	P	0	1.1	4	1.00924	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.71974	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99968	unitless	**P**
6	Ozone % difference avg	P	7	10	4	3.5	%	**P**
7	Ozone % difference max	P	7	10	4	8.0	%	**P**
8	Flow Rate average % difference	P	10	5	3	1.54	%	**P**
9	Flow Rate max % difference	P	10	5	3	1.97	%	**P**
10	DAS Time maximum error	P	0	5	1	0.00	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0001	V	**P**

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone sample train is leak tested every two weeks.

2 **Parameter:** SitingCriteriaCom

The site is in a clearing within the Kane Experimental Forest, the tree line is within 10 meters of the site.

3 **Parameter:** ShelterCleanNotes

The shelter is clean and very well organized. The floor and bottom of walls are beginning to deteriorate.

4 **Parameter:** PollAnalyzerCom

The MFC was observed to fluctuate from 1.4 to 1.6 lpm. Trees to the east are within 20 meters of the ozone inlet.

5 **Parameter:** MetSensorComme

The meteorological tower is attached to the shelter and the temperature sensor is positioned directly over the metal roof of the shelter.

EEMS Spot Report

Data Compiled: 1/27/2015 6:24:16 PM

SiteVisitDate	Site	Technician
09/19/2014	LRL117	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99928	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.45197	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.9	%	**P**
5	Ozone % difference max	P	7	10	4	2.0	%	**P**

EEMS Spot Report

Data Compiled: 5/11/2016 1:01:23 PM

SiteVisitDate	Site	Technician
09/20/2014	MKG113	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.09	c	**P**
2	Temperature max error	P	4	0.5	9	0.19	c	**P**
3	Ozone Slope	P	0	1.1	4	1.00307	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.04993	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.3	%	**P**
7	Ozone % difference max	P	7	10	4	0.6	%	**P**
8	Flow Rate average % difference	P	10	5	2	0.66	%	**P**
9	Flow Rate max % difference	P	10	5	2	0.66	%	**P**
10	DAS Time maximum error	P	0	5	1	0.02	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0001	V	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell A Flow **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

Field Systems Comments

1 **Parameter:** ShelterCleanNotes

The shelter is clean and organized. Leak and rot below the air conditioner and on the floor under the counter. Mold beginning on walls and floor.

2 **Parameter:** MetOpMaintCom

The temperature shield forced-air blower has a loose connection and the operation is intermittent.

EEMS Spot Report

Data Compiled: 1/23/2015 12:53:57 PM

SiteVisitDate	Site	Technician
07/22/2014	NEC602	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.96496	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.39273	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.5	%	**P**
5	Ozone % difference max	P	7	10	4	3.5	%	**P**

EEMS Spot Report

Data Compiled: 1/23/2015 12:32:41 PM

SiteVisitDate	Site	Technician
07/16/2014	PND165	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97661	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.15722	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.1	%	**P**
5	Ozone % difference max	P	7	10	4	2.6	%	**P**

EEMS Spot Report

Data Compiled: 1/23/2015 1:07:01 PM

SiteVisitDate	Site	Technician
09/10/2014	PRK134	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97063	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.08659	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	3.1	%	**P**
5	Ozone % difference max	P	7	10	4	3.3	%	**P**

EEMS Spot Report

Data Compiled: 5/11/2016 1:26:54 PM

SiteVisitDate	Site	Technician
09/23/2014	PSU106	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.17	c	**P**
2	Temperature max error	P	4	0.5	12	0.35	c	**P**
3	Ozone Slope	P	0	1.1	4	0.99612	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.5623	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99986	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.6	%	**P**
7	Ozone % difference max	P	7	10	4	2.5	%	**P**
8	Flow Rate average % difference	P	10	5	3	0.66	%	**P**
9	Flow Rate max % difference	P	10	5	3	0.66	%	**P**
10	DAS Time maximum error	P	0	5	1	0.02	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0001	V	**P**

Field Systems Comments

1 **Parameter:** DasComments

The meteorological tower has been removed.

2 **Parameter:** SitingCriteriaCom

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field.

3 **Parameter:** ShelterCleanNotes

The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad network.

4 **Parameter:** MetOpMaintCom

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

EEMS Spot Report

Data Compiled: 5/11/2016 2:19:04 PM

SiteVisitDate	Site	Technician
09/04/2014	RED004	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Flow Rate average % difference	P	10	5	2	0.99	%	**P**
2	Flow Rate max % difference	P	10	5	2	0.99	%	**P**

Field Systems Comments

1 **Parameter:** DocumentationCo

There is no site logbook and all manuals are kept electronically since the site is a small footprint site with no place to store hardcopies.

2 **Parameter:** ShelterCleanNotes

Small footprint site with enclosure for instruments only.

EEMS Spot Report

Data Compiled: 1/23/2015 12:59:15 PM

SiteVisitDate	Site	Technician
08/16/2014	ROM206	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99749	unitless	**P**
2	Ozone Intercept	P	0	5	4	1.26437	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.4	%	**P**
5	Ozone % difference max	P	7	10	4	4.9	%	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell B Flow **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

EEMS Spot Report

Data Compiled: 1/23/2015 1:01:10 PM

SiteVisitDate	Site	Technician
08/16/2014	ROM406	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97262	unitless	**P**
2	Ozone Intercept	P	0	5	4	1.35157	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.5	%	**P**
5	Ozone % difference max	P	7	10	4	3.0	%	**P**

EEMS Spot Report

Data Compiled: 5/10/2016 10:14:19 AM

SiteVisitDate	Site	Technician
07/19/2014	SAL133	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	3	0.10	c	**P**
2	Temperature max error	P	4	0.5	3	0.18	c	**P**
3	Ozone Slope	P	0	1.1	4	1.01925	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.3512	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.4	%	**P**
7	Ozone % difference max	P	7	10	4	1.6	%	**P**
8	Flow Rate average % difference	P	10	5	4	1.12	%	**P**
9	Flow Rate max % difference	P	10	5	4	1.35	%	**P**
10	DAS Time maximum error	P	0	5	1	0.02	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0001	V	**P**

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone sample train is leak tested every two weeks.

2 **Parameter:** SitingCriteriaCom

The site is located next to a field usually planted with corn or soy beans.

3 **Parameter:** ShelterCleanNotes

There is evidence of a leak in the shelter roof, and the condition has deteriorated since the previous audit visit. Only one light is working. There are signs of ants in the shelter.

EEMS Spot Report

Data Compiled: 1/23/2015 12:37:02 PM

SiteVisitDate	Site	Technician
07/21/2014	STK138	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00334	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.41983	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.2	%	**P**
5	Ozone % difference max	P	7	10	4	2.1	%	**P**

EEMS Spot Report

Data Compiled: 2/9/2015 12:11:08 PM

SiteVisitDate	Site	Technician
08/25/2014	THR422	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.01485	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.46186	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.2	%	**P**
5	Ozone % difference max	P	7	10	4	2.9	%	**P**

EEMS Spot Report

Data Compiled: 5/5/2016 3:41:21 PM

SiteVisitDate	Site	Technician
08/26/2014	UVL124	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.08	c	**P**
2	Temperature max error	P	4	0.5	9	0.11	c	**P**
3	Ozone Slope	P	0	1.1	4	0.99192	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.80640	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.9	%	**P**
7	Ozone % difference max	P	7	10	4	2.2	%	**P**
8	Flow Rate average % difference	P	10	5	2	0.67	%	**P**
9	Flow Rate max % difference	P	10	5	2	0.67	%	**P**
10	DAS Time maximum error	P	0	5	1	0.02	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0002	V	**P**

SiteVisitDate	Site	Technician
08/26/2014	UVL124	Eric Hebert

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 70

Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

Ozone sample train leak-check performed every two weeks.

2 **Parameter:** DocumentationCo

The ozone diagnostic and observation sections of the SSRF were completed during the filter removal visit and not the installation visit as indicated on the form.

3 **Parameter:** SitingCriteriaCom

The site is located in an active agriculture field usually planted with beans or corn.

4 **Parameter:** ShelterCleanNotes

The shelter is clean and in good condition.

5 **Parameter:** MetOpMaintCom

Met tower and 10 meter temperature operating and audited.

EEMS Spot Report

Data Compiled: 1/23/2015 12:55:38 PM

SiteVisitDate	Site	Technician
07/23/2014	VIN140	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99454	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.34110	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.7	%	**P**
5	Ozone % difference max	P	7	10	4	1.6	%	**P**

EEMS Spot Report

Data Compiled: 1/23/2015 1:04:39 PM

SiteVisitDate	Site	Technician
09/08/2014	VOY413	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98467	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.48500	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.8	%	**P**
5	Ozone % difference max	P	7	10	4	1.1	%	**P**

EEMS Spot Report

Data Compiled: 1/23/2015 12:57:09 PM

SiteVisitDate	Site	Technician
07/23/2014	WNC429	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.95292	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.08442	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99995	unitless	**P**
4	Ozone % difference avg	P	7	10	4	4.3	%	**P**
5	Ozone % difference max	P	7	10	4	4.8	%	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell B Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

2 **Parameter:** Ozone **SensorComponent:** Cell A Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

EEMS Spot Report

Data Compiled: 2/9/2015 11:03:04 AM

SiteVisitDate	Site	Technician
08/24/2014	YEL408	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99470	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.81971	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.9	%	**P**
5	Ozone % difference max	P	7	10	4	1.6	%	**P**

APPENDIX C

CASTNET Ozone Performance Evaluation Forms

EEMS Spot Report

Data Compiled: 1/23/2015 12:32:41 PM

SiteVisitDate	Site	Technician
07/16/2014	PND165	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97661	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.15722	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.1	%	**P**
5	Ozone % difference max	P	7	10	4	2.6	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241791	PND165	Eric Hebert	07/16/2014	Ozone	000619

Slope:	0.97661	**Slope:**	0.00000
Intercept	0.15722	**Intercept**	0.00000
CorrCoff	0.99998	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.1%	2.6%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.28	0.48	0.68	ppb	
primary	2	31.20	31.18	30.38	ppb	-2.57%
primary	3	49.31	49.17	48.51	ppb	-1.34%
primary	4	77.28	76.94	75.03	ppb	-2.48%
primary	5	104.29	103.76	101.60	ppb	-2.08%

Sensor Component	Condition	Status
Cell B Noise	0.5 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.60	pass
Span	1.033	pass
Cell B Freq.	94.5 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.62 lpm	pass
Cell A Tmp.	34.9 C	pass
Cell A Pressure	562 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	100.4 kHz	pass
Cell A Flow	0.62 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PND165-Eric Hebert-07/16/2014					
1 7/16/2014	DAS	Campbell	000403	CR3000	2516
2 7/16/2014	Modem	Raven	06474	H4222-C	0808311240
3 7/16/2014	Ozone	ThermoElectron Inc	000619	49i A1NAA	1009241791
4 7/16/2014	Ozone Standard	ThermoElectron Inc	000329	49i A3NAA	0622717853
5 7/16/2014	Sample Tower	Aluma Tower	000055	B	AT-81213-J12
6 7/16/2014	Zero air pump	Werther International	06926	PC70/4	000836218

EEMS Spot Report

Data Compiled: 1/23/2015 12:34:36 PM

SiteVisitDate	Site	Technician
07/17/2014	BAS601	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.96978	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.45325	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.0	%	**P**
5	Ozone % difference max	P	7	10	4	2.9	%	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell B Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

2 **Parameter:** Ozone **SensorComponent:** Cell A Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

3 **Parameter:** Ozone **SensorComponent:** Cell A Tmp. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1214552973	BAS601	Eric Hebert	07/17/2014	Ozone	L0534684

Slope:	0.96978	**Slope:**	0.00000
Intercept	0.45325	**Intercept**	0.00000
CorrCoff	0.99997	**CorrCoff**	0.00000

DAS 1:		**DAS 2:**	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.0%	2.9%		

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.04	0.24	0.46	ppb	
primary	2	25.63	25.65	25.19	ppb	-1.79%
primary	3	48.59	48.45	47.83	ppb	-1.28%
primary	4	79.40	79.05	77.45	ppb	-2.02%
primary	5	116.11	115.50	112.10	ppb	-2.94%

Sensor Component	Condition	Status
Cell B Noise	0.5 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.2	pass
Span	1.030	pass
Cell B Freq.	56.7 kHz	pass
System Memo	See comments	pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.68 lpm	pass
Cell A Tmp.	46.4 C	fail
Cell A Pressure	643 mmHg	pass
Cell A Noise	0.8 ppb	pass
Cell A Freq.	52.7 kHz	fail
Cell A Flow	0.65 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	BAS601	Eric Hebert	07/17/2014	Cell B Freq.	ThermoElectron	3802	☐	☑
This analyzer diagnostic check is outside the manufacturer's recommended value.								
Ozone	BAS601	Eric Hebert	07/17/2014	Cell A Freq.	ThermoElectron	3802	☐	☑
This analyzer diagnostic check is outside the manufacturer's recommended value.								
Ozone	BAS601	Eric Hebert	07/17/2014	Cell A Tmp.	ThermoElectron	3802	☐	☑
This analyzer diagnostic check is outside the manufacturer's recommended value.								

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
BAS601-Eric Hebert-07/17/2014					
1 7/17/2014	DAS	Campbell	none	CR1000	unknown1
2 7/17/2014	Ozone	ThermoElectron Inc	L0534684	49i A1NAA	1214552973
3 7/17/2014	Ozone Standard	ThermoElectron Inc	none	49i E3CAA	1214552971
4 7/17/2014	Zero air pump	Thomas	none	107CAB18	100800031636

EEMS Spot Report

Data Compiled: 1/23/2015 12:37:02 PM

SiteVisitDate	Site	Technician
07/21/2014	STK138	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00334	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.41983	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.2	%	**P**
5	Ozone % difference max	P	7	10	4	2.1	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347321	STK138	Sandy Grenville	07/21/2014	Ozone	000743

Slope:	1.00334	**Slope:**	0.00000
Intercept	0.41983	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.2%	2.1%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.55	0.66	1.05	ppb	
primary	2	30.41	30.38	31.02	ppb	2.11%
primary	3	50.13	50.01	50.54	ppb	1.06%
primary	4	80.79	80.53	81.10	ppb	0.71%
primary	5	99.60	99.26	100.10	ppb	0.85%

Sensor Component	Condition	Status
Cell B Noise	0.8 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.50	pass
Span	0.997	pass
Cell B Freq.	92.1 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.67 lpm	pass
Cell A Tmp.	35.0 C	pass
Cell A Pressure	709 mmHg	pass
Cell A Noise	0.7 ppb	pass
Cell A Freq.	91.5 kHz	pass
Cell A Flow	0.70 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
STK138-Sandy Grenville-07/21/2014					
1 7/21/2014	DAS	Campbell	000349	CR3000	2128
2 7/21/2014	Modem	Raven	06603	H4223-C	0844356279
3 7/21/2014	Ozone	ThermoElectron Inc	000743	49i A1NAA	1105347321
4 7/21/2014	Ozone Standard	ThermoElectron Inc	000450	49i A3NAA	CM08200026
5 7/21/2014	Sample Tower	Aluma Tower	03554	A	none
6 7/21/2014	Zero air pump	Werther International	06915	C 70/4	000829162

EEMS Spot Report

Data Compiled: 1/23/2015 12:39:32 PM

SiteVisitDate	Site	Technician
07/22/2014	ALH157	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99162	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.55984	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99994	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.0	%	**P**
5	Ozone % difference max	P	7	10	4	3.0	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244798	ALH157	Sandy Grenville	07/22/2014	Ozone	000683

Slope:	0.99162	**Slope:**	0.00000
Intercept	0.55984	**Intercept**	0.00000
CorrCoff	0.99994	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.0%	3.0%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.24	0.35	0.67	ppb	
primary	2	30.05	30.02	30.91	ppb	2.96%
primary	3	50.03	49.91	49.93	ppb	0.04%
primary	4	81.22	80.96	80.30	ppb	-0.82%
primary	5	102.64	102.28	102.30	ppb	0.02%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.10	pass
Span	0.989	pass
Cell B Freq.	94.7 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.73 lpm	pass
Cell A Tmp.	34.7 C	pass
Cell A Pressure	722 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	95.4 kHz	pass
Cell A Flow	0.74 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ALH157-Sandy Grenville-07/22/2014					
1 7/22/2014	DAS	Campbell	000405	CR3000	2522
2 7/22/2014	Modem	Raven	06605	H4222-C	0844355805
3 7/22/2014	Ozone	ThermoElectron Inc	000683	49i A1NAA	1030244798
4 7/22/2014	Ozone Standard	ThermoElectron Inc	000440	49i A3NAA	CM08200016
5 7/22/2014	Sample Tower	Aluma Tower	illegible	B	none
6 7/22/2014	Zero air pump	Werther International	06910	C 70/4	000829160

EEMS Spot Report

Data Compiled: 1/23/2015 12:53:57 PM

SiteVisitDate	Site	Technician
07/22/2014	NEC602	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.96496	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.39273	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.5	%	**P**
5	Ozone % difference max	P	7	10	4	3.5	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1214552974	NEC602	Eric Hebert	07/22/2014	Ozone	none

Slope:	0.96496	**Slope:**	0.00000
Intercept	0.39273	**Intercept**	0.00000
CorrCoff	0.99997	**CorrCoff**	0.00000

DAS 1:		**DAS 2:**	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.5%	3.5%		

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.12	0.32	0.44	ppb	
primary	2	24.68	24.71	24.30	ppb	-1.66%
primary	3	47.87	47.74	46.57	ppb	-2.45%
primary	4	77.61	77.27	75.43	ppb	-2.38%
primary	5	112.92	112.33	108.40	ppb	-3.50%

Sensor Component	Condition	Status
Cell B Noise	1.0 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.6	pass
Span	1.013	pass
Cell B Freq.	66.1 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.63 lpm	pass
Cell A Tmp.	37.6 C	pass
Cell A Pressure	633 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	83.1 kHz	pass
Cell A Flow	0.61 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
NEC602-Eric Hebert-07/22/2014						
1	7/22/2014	DAS	Campbell	none	CR1000	41007
2	7/22/2014	Ozone	ThermoElectron Inc	none	49i A1NAA	1214552974
3	7/22/2014	Ozone Standard	ThermoElectron Inc	L0534683	49i E3CAA	1214552972
4	7/22/2014	Zero air pump	ThermoElectron Inc	none	107CAB18	106580-00

EEMS Spot Report

Data Compiled: 1/23/2015 12:55:38 PM

SiteVisitDate	Site	Technician
07/23/2014	VIN140	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99454	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.34110	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.7	%	**P**
5	Ozone % difference max	P	7	10	4	1.6	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241798	VIN140	Sandy Grenville	07/23/2014	Ozone	000630

Slope:	0.99454	**Slope:**	0.00000
Intercept	0.34110	**Intercept**	0.00000
CorrCoff	0.99998	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.7%	1.6%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.04	0.15	0.18	ppb	
primary	2	31.02	30.99	31.49	ppb	1.61%
primary	3	50.05	49.93	50.20	ppb	0.54%
primary	4	81.56	81.30	81.10	ppb	-0.25%
primary	5	100.78	100.43	100.10	ppb	-0.33%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.30	pass
Span	1.015	pass
Cell B Freq.	100 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.69 lpm	pass
Cell A Tmp.	36.7 C	pass
Cell A Pressure	725 mmHg	pass
Cell A Noise	0.5 ppb	pass
Cell A Freq.	93.4 kHz	pass
Cell A Flow	0.65 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
VIN140-Sandy Grenville-07/23/2014						
1	7/23/2014	DAS	Campbell	000358	CR3000	2136
2	7/23/2014	Modem	Raven	06461	V4221-V	0808338875
3	7/23/2014	Ozone	ThermoElectron Inc	000630	49i A1NAA	1009241798
4	7/23/2014	Ozone Standard	ThermoElectron Inc	000513	49i A3NAA	0922236889
5	7/23/2014	Sample Tower	Aluma Tower	000137	B	none
6	7/23/2014	Zero air pump	Werther International	06906	C 70/4	000821908

EEMS Spot Report

Data Compiled: 1/23/2015 12:57:09 PM

SiteVisitDate	Site	Technician
07/23/2014	WNC429	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.95292	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.08442	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99995	unitless	**P**
4	Ozone % difference avg	P	7	10	4	4.3	%	**P**
5	Ozone % difference max	P	7	10	4	4.8	%	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell B Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

2 **Parameter:** Ozone **SensorComponent:** Cell A Freq. **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	0615817056	WNC429	Eric Hebert	07/23/2014	Ozone	none

Slope:	0.95292	**Slope:**	0.00000
Intercept	0.08442	**Intercept**	0.00000
CorrCoff	0.99995	**CorrCoff**	0.00000

DAS 1:		**DAS 2:**	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
4.3%	4.8%		

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.13	0.33	0.05	ppb	
primary	2	25.66	25.68	24.52	ppb	-4.52%
primary	3	49.19	49.05	47.54	ppb	-3.08%
primary	4	80.84	80.48	76.65	ppb	-4.76%
primary	5	117.44	116.82	111.20	ppb	-4.81%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	9.9982	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.353	pass
Cell B Freq.	56.4 kHz	fail
System Memo	See comments	pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	1.33 lpm	pass
Cell A Tmp.	32.6 C	pass
Cell A Pressure	647 mmHg	pass
Cell A Noise	0.7 ppb	pass
Cell A Freq.	49.4 kHz	fail
Cell A Flow	0.64 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	0.0075	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	WNC429	Eric Hebert	07/23/2014	Cell B Freq.	ThermoElectron	3398	☐	☑
This analyzer diagnostic check is outside the manufacturer's recommended value.								
Ozone	WNC429	Eric Hebert	07/23/2014	Cell A Freq.	ThermoElectron	3398	☐	☑
This analyzer diagnostic check is outside the manufacturer's recommended value.								

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
WNC429-Eric Hebert-07/23/2014						
1	7/23/2014	DAS	Environmental Sys Corp	missing	8816	4159
2	7/23/2014	Modem	US Robotics	none	56k fax modem	unknown
3	7/23/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	0615817056
4	7/23/2014	Ozone Standard	ThermoElectron Inc	none	49i PSA2AB	0807328333
5	7/23/2014	Zero air pump	ThermoElectron Inc	none	111	111-78387-388

EEMS Spot Report

Data Compiled: 1/23/2015 12:59:15 PM

SiteVisitDate	Site	Technician
08/16/2014	ROM206	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99749	unitless	**P**
2	Ozone Intercept	P	0	5	4	1.26437	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.4	%	**P**
5	Ozone % difference max	P	7	10	4	4.9	%	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell B Flow **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241798	ROM206	Eric Hebert	08/16/2014	Ozone	000621

Slope:	0.99749	**Slope:**	0.00000
Intercept	1.26437	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.4%	4.9%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.40	0.60	1.75	ppb	
primary	2	26.54	26.56	27.87	ppb	4.93%
primary	3	49.36	49.22	50.39	ppb	2.38%
primary	4	76.55	76.22	77.32	ppb	1.44%
primary	5	115.18	114.58	115.50	ppb	0.80%

Sensor Component	Condition	Status
Cell B Noise	0.5 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-1.8	pass
Span	1.023	pass
Cell B Freq.	98.8 kHz	pass
System Memo	See comments	pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	1.4 lpm	fail
Cell A Tmp.	33.3 C	pass
Cell A Pressure	525 mmHg	pass
Cell A Noise	o.8 ppb	pass
Cell A Freq.	104.5 kHz	pass
Cell A Flow	0.59 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	ROM206	Eric Hebert	08/16/2014	Cell B Flow	ThermoElectron	3460	☐	☑

This analyzer diagnostic check is outside the manufacturer's recommended value.

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ROM206-Eric Hebert-08/16/2014						
1	8/16/2014	DAS	Campbell	000428	CR3000	2534
2	8/16/2014	Modem	Raven	06473	V4221-V	0808311135
3	8/16/2014	Ozone	ThermoElectron Inc	000621	49i A1NAA	1009241798
4	8/16/2014	Ozone Standard	ThermoElectron Inc	000514	49i A3NAA	0922236892
5	8/16/2014	Sample Tower	Aluma Tower	666369	B	illegible
6	8/16/2014	Zero air pump	Teledyne	000777	701H	607

EEMS Spot Report

Data Compiled: 1/23/2015 1:01:10 PM

SiteVisitDate	Site	Technician
08/16/2014	ROM406	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97262	unitless	**P**
2	Ozone Intercept	P	0	5	4	1.35157	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.5	%	**P**
5	Ozone % difference max	P	7	10	4	3.0	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Teledyne	2551	ROM406	Eric Hebert	08/16/2014	Ozone	WYDEQ

Slope:	0.97262	**Slope:**	0.00000
Intercept	1.35157	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

DAS 1:		**DAS 2:**	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.5%	3.0%		

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.14	0.34	1.63	ppb	
primary	2	26.77	26.79	27.59	ppb	2.99%
primary	3	49.72	49.57	49.34	ppb	-0.46%
primary	4	77.52	77.18	76.54	ppb	-0.83%
primary	5	116.56	115.95	114.10	ppb	-1.60%

Sensor Component	Condition	Status
Cell B Noise	N/A	pass
Cell B Tmp.	N/A	pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.4	pass
Span	0.987	pass
Cell B Freq.	N/A	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure	N/A	pass
Cell B Flow	N/A	pass
Cell A Tmp.	38.7 C	pass
Cell A Pressure	N/A	pass
Cell A Noise	N/A	pass
Cell A Freq.	N/A	pass
Cell A Flow	0.57 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ROM406-Eric Hebert-08/16/2014						
1	8/16/2014	DAS	Environmental Sys Corp	90535	8816	2025
2	8/16/2014	Modem	US Robotics	none	33.6 fax modem	unknown
3	8/16/2014	Ozone	Teledyne	WYDEQ	400E	2551
4	8/16/2014	Ozone Standard	ThermoElectron Inc	none	49i A3NAA	1030745086
5	8/16/2014	Sample Tower	Aluma Tower	illegible	B	none
6	8/16/2014	Zero air pump	Werther International	none	PC70/4	531392

EEMS Spot Report

Data Compiled: 2/9/2015 12:10:28 PM

SiteVisitDate	Site	Technician
08/21/2014	GTH161	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.95395	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.665	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99984	unitless	**P**
4	Ozone % difference avg	P	7	10	4	5.3	%	**P**
5	Ozone % difference max	P	7	10	4	6.3	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1008241788	GTH161	Alison Ray	08/21/2014	Ozone	unknown

Slope:	0.95395	**Slope:**	0.00000
Intercept	-0.66500	**Intercept**	0.00000
CorrCoff	0.99984	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
5.3%	6.3%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.10	0.10	-1.20	ppb	
primary	2	29.90	29.89	28.00	ppb	-6.32%
primary	3	50.50	50.35	48.56	ppb	-3.56%
primary	4	81.00	80.64	75.79	ppb	-6.01%
primary	5	109.60	109.03	103.10	ppb	-5.44%

Sensor Component	Condition	Status
Cell B Noise	Not tested	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	Not tested	pass
Span	Not tested	pass
Cell B Freq.	Not tested	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.57 lpm	pass
Cell A Tmp.	Not tested	pass
Cell A Pressure	Not tested	pass
Cell A Noise	Not tested	pass
Cell A Freq.	Not tested	pass
Cell A Flow	0.56 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
GTH161-Alison Ray-08/21/2014						
1	8/21/2014	DAS	Campbell	000416	CR3000	2513
2	8/21/2014	Modem	Raven	06589	H4223-C	0844321356
3	8/21/2014	Ozone	ThermoElectron Inc	unknown	49i A1NAA	1008241788
4	8/21/2014	Ozone Standard	ThermoElectron Inc	000439	49i A3NAA	CM08200015
5	8/21/2014	Zero air pump	Werther International	06927	P 70/4	000836211

EEMS Spot Report

Data Compiled: 2/9/2015 12:25:52 PM

SiteVisitDate	Site	Technician
08/23/2014	CNT169	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99705	unitless	**P**
2	Ozone Intercept	P	0	5	4	-1.82502	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	3.8	%	**P**
5	Ozone % difference max	P	7	10	4	6.3	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244804	CNT169	Alison Ray	08/23/2014	Ozone	000699

Slope:	0.99274	**Slope:**	0.00000
Intercept	-1.70626	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
3.9%	6.3%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.10	0.30	-1.46	ppb	
primary	2	29.43	29.43	27.57	ppb	-6.32%
primary	3	49.43	49.29	47.32	ppb	-4.00%
primary	4	79.37	79.02	76.58	ppb	-3.09%
primary	5	109.50	108.94	106.50	ppb	-2.24%

Sensor Component	Condition	Status
Cell B Noise	Not tested	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	Not tested	pass
Span	Not tested	pass
Cell B Freq.	Not tested	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.54 lpm	pass
Cell A Tmp.	Not tested	pass
Cell A Pressure	Not tested	pass
Cell A Noise	Not tested	pass
Cell A Freq.	Not tested	pass
Cell A Flow	0.54 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CNT169-Alison Ray-08/23/2014					
1 8/23/2014	DAS	Campbell	000417	CR3000	2515
2 8/23/2014	Modem	Raven	06600	V4221-V	0844349098
3 8/23/2014	Ozone	ThermoElectron Inc	000699	49i A1NAA	1030244804
4 8/23/2014	Ozone Standard	ThermoElectron Inc	000434	49i A3NAA	CM08200010
5 8/23/2014	Zero air pump	Werther International	06925	P 70/4	000836220

EEMS Spot Report

Data Compiled: 2/9/2015 11:17:01 AM

SiteVisitDate	Site	Technician
08/23/2014	GLR468	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98527	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.12602	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.4	%	**P**
5	Ozone % difference max	P	7	10	4	1.7	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1023943901	GLR468	Sandy Grenville	08/23/2014	Ozone	none

Slope:	0.98527	**Slope:**	0.00000
Intercept	0.12602	**Intercept**	0.00000
CorrCoff	0.99997	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.4%	1.7%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.39	0.50	0.82	ppb	
primary	2	30.79	30.76	30.39	ppb	-1.20%
primary	3	50.42	50.30	49.45	ppb	-1.69%
primary	4	82.21	81.94	80.57	ppb	-1.67%
primary	5	100.86	100.51	99.52	ppb	-0.98%

Sensor Component	Condition	Status
Cell B Noise	0.4 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	Not tested	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.2	pass
Span	1.023	pass
Cell B Freq.	84.4 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.69 lpm	pass
Cell A Tmp.	36.1 C	pass
Cell A Pressure	672 mmHg	pass
Cell A Noise	0.7 ppb	pass
Cell A Freq.	82.6 kHz	pass
Cell A Flow	0.69 lpm	pass
Battery Backup	Functioning	pass
Zero Voltage	Not tested	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
GLR468-Sandy Grenville-08/23/2014						
1	8/23/2014	DAS	Environmental Sys Corp	90653	8816	2566
2	8/23/2014	Modem	US Robotics	none	56k	unknown
3	8/23/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943901
4	8/23/2014	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460050
5	8/23/2014	Printer	Hewlett Packard	none	842C	unknown
6	8/23/2014	Sample Tower	Aluma Tower	none	B	none
7	8/23/2014	Zero air pump	Werther International	none	PC70/4	000756725

EEMS Spot Report

Data Compiled: 2/9/2015 11:03:04 AM

SiteVisitDate	Site	Technician
08/24/2014	YEL408	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99470	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.81971	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.9	%	**P**
5	Ozone % difference max	P	7	10	4	1.6	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	49C-66828-354	YEL408	Sandy Grenville	08/24/2014	Ozone	90714

Slope:	0.99470	**Slope:**	0.00000
Intercept	0.81971	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.9%	1.6%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.10	0.21	1.16	ppb	
primary	2	30.69	30.66	31.15	ppb	1.60%
primary	3	50.17	50.05	50.60	ppb	1.10%
primary	4	80.80	80.54	80.87	ppb	0.41%
primary	5	100.96	100.61	101.00	ppb	0.39%

Sensor Component	Condition	Status
Cell B Noise	1.7 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.4	pass
Span	1.004	pass
Cell B Freq.	76.6 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.66 lpm	pass
Cell A Tmp.	36.8 C	pass
Cell A Pressure	561 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	95.2 kHz	pass
Cell A Flow	0.64 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
YEL408-Sandy Grenville-08/24/2014						
1	8/24/2014	Computer	Gateway	none	Solo	2500251339
2	8/24/2014	DAS	Environmental Sys Corp	90647	8816	2560
3	8/24/2014	Modem	US Robotics	none	56k fax modem	unknown
4	8/24/2014	Ozone	ThermoElectron Inc	90714	49C	49C-66828-354
5	8/24/2014	Ozone Standard	ThermoElectron Inc	90605	49C	49C-62025-333
6	8/24/2014	Sample Tower	Aluma Tower	illegible	B	none
7	8/24/2014	Zero air pump	Werther International	none	PC70/4	531393

EEMS Spot Report

Data Compiled: 2/9/2015 12:11:08 PM

SiteVisitDate	Site	Technician
08/25/2014	THR422	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.01485	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.46186	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.2	%	**P**
5	Ozone % difference max	P	7	10	4	2.9	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	0632119500	THR422	Sandy Grenville	08/25/2014	Ozone	none

Slope:	1.01485	**Slope:**	0.00000
Intercept	0.46186	**Intercept**	0.00000
CorrCoff	0.99998	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.2%	2.9%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.15	0.26	0.87	ppb	
primary	2	30.37	30.34	31.22	ppb	2.90%
primary	3	51.54	51.41	52.27	ppb	1.67%
primary	4	81.23	80.97	82.93	ppb	2.42%
primary	5	100.05	99.70	101.60	ppb	1.91%

Sensor Component	Condition	Status
Cell B Noise	1.0 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	Not tested	pass
Inlet Filter Condition	Dirty	Fail
Line Loss	Not tested	pass
Offset	0.5	pass
Span	1.016	pass
Cell B Freq.	67.9 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.68 lpm	pass
Cell A Tmp.	30.6 C	pass
Cell A Pressure	680 mmHg	pass
Cell A Noise	1.4 ppb	pass
Cell A Freq.	103.6 kHz	pass
Cell A Flow	0.65 lpm	pass
Battery Backup	Functioning	pass
Zero Voltage	Not tested	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
THR422-Sandy Grenville-08/25/2014						
1	8/25/2014	Computer	Hewlett Packard	none	65606	5CB1520H68
2	8/25/2014	DAS	Environmental Sys Corp	90656	8816	2600
3	8/25/2014	Modem	US Robotics	none	14.4 fax modem	9244894
4	8/25/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	0632119500
5	8/25/2014	Sample Tower	Aluma Tower	none	B	AT-81077-J5
6	8/25/2014	UPS	APC	none	RS500	unknown
7	8/25/2014	Zero air pump	Thomas	none	607CA22C	039500000348

EEMS Spot Report

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SiteVisitDate	Site	Technician
09/08/2014	VOY413	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98467	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.48500	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.8	%	**P**
5	Ozone % difference max	P	7	10	4	1.1	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	49C-70522-366	VOY413	Alison Ray	09/08/2014	Ozone	90730

Slope:	0.98467	**Slope:**	0.00000
Intercept	0.48500	**Intercept**	0.00000
CorrCoff	0.99998	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.8%	1.1%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.00	0.20	0.91	ppb	
primary	2	29.63	29.63	29.63	ppb	0.00%
primary	3	49.45	49.31	48.75	ppb	-1.14%
primary	4	79.48	79.13	78.23	ppb	-1.14%
primary	5	109.44	108.88	107.96	ppb	-0.84%

Sensor Component	Condition	Status
Cell B Noise	0.8 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.8	pass
Span	0.988	pass
Cell B Freq.	88.1 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.76 lpm	pass
Cell A Tmp.	35.3 C	pass
Cell A Pressure	705 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	95.6 kHz	pass
Cell A Flow	0.71 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
VOY413-Alison Ray-09/08/2014						
1	9/8/2014	DAS	Environmental Sys Corp	none	8816	4059
2	9/8/2014	Ozone	ThermoElectron Inc	90730	49C	49C-70522-366
3	9/8/2014	Ozone Standard	ThermoElectron Inc	90717	49C	49C-66823-354
4	9/8/2014	Sample Tower	Aluma Tower	none	B	AT-51159-11-G
5	9/8/2014	Zero air pump	Twin Tower Engineering	90719	TT70/E4	526294

EEMS Spot Report

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SiteVisitDate	Site	Technician
09/10/2014	PRK134	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97063	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.08659	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	3.1	%	**P**
5	Ozone % difference max	P	7	10	4	3.3	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244800	PRK134	Alison Ray	09/10/2014	Ozone	000690

Slope:	0.97063	**Slope:**	0.00000
Intercept	-0.08659	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
3.1%	3.3%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.24	0.44	0.30	ppb	
primary	2	27.45	27.46	26.56	ppb	-3.28%
primary	3	47.19	47.06	45.67	ppb	-2.95%
primary	4	80.01	79.65	77.22	ppb	-3.05%
primary	5	116.22	115.61	112.10	ppb	-3.04%

Sensor Component	Condition	Status
Cell B Noise	0.5 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.4	pass
Span	1.020	pass
Cell B Freq.	86.9 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	.70 lpm	pass
Cell A Tmp.	32.8 C	pass
Cell A Pressure	698 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	96.3 kHz	pass
Cell A Flow	0.71 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PRK134-Alison Ray-09/10/2014					
1 9/10/2014	DAS	Campbell	000411	CR3000	2509
2 9/10/2014	Ozone	ThermoElectron Inc	000690	49i A1NAA	1030244800
3 9/10/2014	Ozone Standard	ThermoElectron Inc	000362	49i A3NAA	0726124686
4 9/10/2014	Sample Tower	Aluma Tower	03518	A	none
5 9/10/2014	Zero air pump	Werther International	06905	C 70/4	000821907

EEMS Spot Report

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SiteVisitDate	Site	Technician
09/19/2014	LRL117	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99928	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.45197	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.9	%	**P**
5	Ozone % difference max	P	7	10	4	2.0	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244808	LRL117	Sandy Grenville	09/19/2014	Ozone	000701

Slope:	0.99928	**Slope:**	0.00000
Intercept	0.45197	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.9%	2.0%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.05	0.16	0.53	ppb	
primary	2	30.63	30.60	31.20	ppb	1.96%
primary	3	50.88	50.76	51.02	ppb	0.51%
primary	4	80.37	80.11	80.70	ppb	0.74%
primary	5	101.20	100.85	101.10	ppb	0.25%

Sensor Component	Condition	Status
Cell B Noise	1.0 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.1	pass
Span	1.011	pass
Cell B Freq.	92.9 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.70 lpm	pass
Cell A Tmp.	33.3 C	pass
Cell A Pressure	699.1 mmHg	pass
Cell A Noise	0.8 ppb	pass
Cell A Freq.	105.6 kHz	pass
Cell A Flow	0.68 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
LRL117-Sandy Grenville-09/19/2014						
1	9/19/2014	DAS	Campbell	000344	CR300	2123
2	9/19/2014	Modem	Raven	06612	H4223-C	0844355815
3	9/19/2014	Ozone	ThermoElectron Inc	000701	49i A1NAA	1030244808
4	9/19/2014	Ozone Standard	ThermoElectron Inc	000444	49i A3NAA	CM08200020
5	9/19/2014	Sample Tower	Aluma Tower	03446	A	none
6	9/19/2014	Zero air pump	Werther International	06904	C 70/4	000821901

EEMS Spot Report

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SiteVisitDate	Site	Technician
09/20/2014	BVL130	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.96651	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.76544	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.0	%	**P**
5	Ozone % difference max	P	7	10	4	2.7	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241797	BVL130	Eric Hebert	09/20/2014	Ozone	000625

Slope:	0.96651	**Slope:**	0.00000
Intercept	0.76544	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.0%	2.7%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.55	-0.66	0.24	ppb	
primary	2	29.76	29.36	28.94	ppb	-1.43%
primary	3	49.56	48.98	48.09	ppb	-1.82%
primary	4	80.76	79.90	78.14	ppb	-2.20%
primary	5	116.43	115.24	112.10	ppb	-2.72%

Sensor Component	Condition	Status
Cell B Noise	Not tested	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.40	pass
Span	1.012	pass
Cell B Freq.	100.8 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.76 lpm	pass
Cell A Tmp.	35.3 C	pass
Cell A Pressure	714 mmHg	pass
Cell A Noise	Not tested	pass
Cell A Freq.	100.1 kHz	pass
Cell A Flow	0.80 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
BVL130-Eric Hebert-09/20/2014					
1 9/20/2014	DAS	Campbell	000424	CR3000	2539
2 9/20/2014	Modem	Raven	06610	H4223-C	0844355827
3 9/20/2014	Ozone	ThermoElectron Inc	000625	49i A1NAA	1009241797
4 9/20/2014	Ozone Standard	ThermoElectron Inc	000512	49i A3NAA	0922236890
5 9/20/2014	Sample Tower	Aluma Tower	000182	B	unknown
6 9/20/2014	Zero air pump	Teledyne	000759	701H	576

EEMS Spot Report

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SiteVisitDate	Site	Technician
09/24/2014	ANA115	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97366	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.48989	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.6	%	**P**
5	Ozone % difference max	P	7	10	4	2.4	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241778	ANA115	Eric Hebert	09/24/2014	Ozone	000610

Slope:	0.97366	**Slope:**	0.00000
Intercept	0.48989	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.6%	2.4%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.43	-0.54	-0.25	ppb	
primary	2	28.80	28.41	28.22	ppb	-0.67%
primary	3	53.24	52.63	51.94	ppb	-1.31%
primary	4	82.56	81.68	80.20	ppb	-1.81%
primary	5	115.76	114.57	111.80	ppb	-2.42%

Sensor Component	Condition	Status
Cell B Noise	1.4 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.004	pass
Cell B Freq.	97.3 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.66 lpm	pass
Cell A Tmp.	35.0 C	pass
Cell A Pressure	720 mmHg	pass
Cell A Noise	1.9 ppb	pass
Cell A Freq.	97.7 kHz	pass
Cell A Flow	0.65 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ANA115-Eric Hebert-09/24/2014						
1	9/24/2014	DAS	Campbell	000338	CR3000	2117
2	9/24/2014	Ozone	ThermoElectron Inc	000610	49i A1NAA	1009241778
3	9/24/2014	Ozone Standard	ThermoElectron Inc	000364	49i A3NAA	0726124687
4	9/24/2014	Zero air pump	Werther International	06933	C 70/4	000836202