2014 – 4th Quarter Report Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

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Table of Contents

1.0 CAS	TNET Quarterly Report	1-1
1.1	Introduction	1-1
1.2	Project Objectives	1-1
1.3	CASTNET Sites Visited Fourth Quarter 2014	1-4
1.4	Audit Results	1-5
2.0 NAI	OP Quarterly Report	2-1
2.0 NAI 2.1	DP Quarterly Report	2-1
2.0 NAI 2.1 2.2	DP Quarterly Report Introduction Project Objectives	2-1 2-1 2-1
2.0 NAI 2.1 2.2 2.3	DP Quarterly Report Introduction Project Objectives Sites Visited Fourth Quarter 2014	2-1 2-1 2-1 2-2

List of Appendices

Appendix A	CASNTET Audit Report Forms
Appendix B	CASTNET Site Spot Report Forms
Appendix C	CASTNET Ozone Performance Evaluation Forms

List of Tables

Table 1.	Performance Audit Challenge and Acceptance Criteria	1-2
Table 2.	Site Audit Visits	1-4
Table 3.	TTP Pollutant PE Visits	1-4
Table 4.	Sites Surveyed – Fourth Quarter 2014	2-2

List of Acronyms and Abbreviations

percent difference
analog to digital converter
Air Resource Specialist, Inc.
American Society for Testing and Materials
Clean Air Status and Trends Network
data acquisition system
direct current
degree
digital voltmeter
Environmental, Engineering & Measurement Services, Inc.
U.S. Environmental Protection Agency
Environmental Systems Corporation
Field Site Audit Database
geographical positioning system
liters per minute
Multilayer Model
meters per second
milivolt
National Institute of Standards and Technology
National Oceanic and Atmospheric Administration
National Park Service
Quality Assurance Project Plan
standard operating procedure
Thermo Environmental Instruments
United States Naval Observatory
volts
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 June 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 SO₂ have been added to the EPA sponsored sites BVL130, HWF187, PND165, PNF126, ROM206, and BEL116. Those variables were audited at the PNF126, HWF187, and BEL116 stations during fourth quarter 2014. All of the SO₂ 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.

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	$\leq \pm 10.0\%$ of input amount
Relative Humidity	Accuracy	Compared to reference instrument or standard solution	≤±10.0% RH
Solar Radiation	Accuracy	Compared to WRR traceable standard	$\leq \pm 10.0\%$ 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)	$\leq \pm 0.5^{\circ} \mathrm{C}$
Temperature Difference	Accuracy	Comparison to station temperature sensor	$\leq \pm 0.50^{\circ} \mathrm{C}$
Wind Direction	Orientation Accuracy	Parallel to alignment rod/crossarm, or sighted to distant point	$\leq \pm 5^{\circ}$ 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	$\leq \pm 0.5$ mps below 5.0 mps input; $\leq \pm 5.0\%$ 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	$\leq \pm 5.0\%$ of designated rate

 Table 1. Performance Audit Challenge and Acceptance Criteria

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

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 Fourth Quarter 2014

This report consists of the systems and performance and other audit results from the CASTNET sites visited during the fourth quarter (October through December) of 2014. The locations and dates of the site visits for complete audits are presented in Table 2.

<u>Side ID</u>	<u>Audit Type</u>	<u>Sponsor</u>	<u>Site Visit</u> <u>Date</u>	Station Name	
HWF187	Without met	EPA	10/1/2014	Huntington Wildlife Forest	
ACA416	With met	NPS	10/03/2014	Acadia National Park	
HOW191	Without met	EPA	10/6/2014	Howland Ameriflux	
ASH135	Without met	EPA	10/7/2014	Ashland	
PNF126	Without met	EPA	10/30/2014	Cranberry	
ABT147	Without met	EPA	11/09/2014	Abington	
WST109	Without met	EPA	11/10/2014	Woodstock	
BEL116	Without met	EPA	11/10/2014	Beltsville	

Table 2. Site Audit Visits

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 Performance Evaluations (PE).

Table 3.TTP Pollutant PE Visits

<u>Side ID</u>	<u>Audit Type</u>	<u>Sponsor</u>	<u>Site Visit Date</u>	Station Name
HWF187	NOy	EPA	09/30/2014	Huntington Wildlife Forest
GRS420	Ozone PE	NPS	10/27/2014	Great Smoky NP - Look Rock
PNF126	NOy	EPA	10/30/2014	Cranberry
PED108	Ozone PE	EPA	11/3/2014	Prince Edward

Side ID	<u>Audit Type</u>	<u>Sponsor</u>	<u>Site Visit Date</u>	Station Name	
BEL116	SO_2	EPA	11/10/2014	Beltsville	
BEL116	Nitrotrain	EPA	11/10/2014	Beltsville	
BWR139	Ozone PE	EPA	11/13/2014	Blackwater NWR	
WSP144	Ozone PE	EPA	11/14/2014	Washington Crossing State Park	
VPI120	Ozone PE	EPA	11/17/2014	Horton Station	
SHN418	Ozone PE	NPS	11/18/2014	Shenandoah NP - Big Meadows	
PAR107	Ozone PE	EPA	11/19/2014	Parsons	
CDR119	Ozone PE	EPA	11/21/2014	Cedar Creek	
CND125	Ozone PE	EPA	11/24/2014	Candor	
BFT142	Ozone PE	EPA	11/25/2014	Beaufort	

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 250 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 120 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 Fourth Quarter 2014

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

<u>Side ID</u>	<u>Network</u>	<u>Visit Date</u>	Station Name
ME00	MDN/NTN	10/7/2014	Caribou
ME94	NTN	10/10/2014	Indian Township
ME98	MDN/NTN	10/2/2014	Acadia National Park-McFarland Hill
MN08	NTN	10/22/2014	Hovland
MN16	MDN/NTN	10/20/2014	Marcell Experimental Forest
MN18	MDN/AMoN	10/21/2014	Fernberg
MN99	NTN	10/22/2014	Wolf Ridge
NC45	NTN	10/28/2014	Mt. Mitchell
NF19	MDN	10/15/2014	Stephenville
NS01	MDN/AMoN	10/13/2014	Kejimkujik National Park
CT15	NTN/AMoN	11/9/2014	Abington
MD99	MDN/NTN/AMoN	11/11/2014	Beltsville
NC03	NTN	11/17/2014	Lewiston
NC08	MDN	11/18/2014	Waccamaw State Park
NC34	NTN	11/24/2014	Piedmont Research Station
NC41	NTN	11/25/2014	Finley Farm
NH02	NTN/AMoN	11/10/2014	Hubbard Brook
NY29	NTN	11/13/2014	Moss Lake
NY52	NTN	11/13/2014	Bennett Bridge
NY99	NTN	11/7/2014	West Point
VA00	NTN	11/4/2014	Charlottesville
VA13	NTN	11/17/2014	Horton's Station
VA24	NTN/AMoN	11/3/2014	Prince Edward

Table 4. Sites Surveyed – Fourth Quarter 2015

Side ID	<u>Network</u>	<u>Visit Date</u>	Station Name
VA28	MDN/NTN	11/18/2014	Shenandoah NP - Big Meadows
VA99	NTN	11/25/2014	Natural Bridge Station
VT01	NTN	11/8/2014	Bennington
VT99	MDN/NTN/AMoN	11/12/2014	Underhill
WV04	NTN	11/24/2014	Babcock State Park
WV18	AMoN	11/19/2014	Parsons
WV99	AIRMoN	11/20/2014	Canaan Valley Institute

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		
HWI	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	В	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 Nu	mber Site	ſ	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2134	HWI	F187	Eric Hebert	09/30/2014	DAS	Primary
Das Date:	10/1 /2014	Audit Date	10/1 /2014	Mfg	HY	Parameter	DAS
Das Day:	9.00.15	Audit Time	274	Serial Number	12010039329	Tfer Desc.	Source generator (D
Low Channel:		High Channel	:	Tfer ID	01322		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0002	0.0004	0.0002	0.0004	Cert Date	6/15/201	4 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	1/22/201	4 CorrCoff	1.00000
Channel	Input D	VM 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	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 Nur	nber Ta	Site	Тес	chnician	Site Visit D	ate Paran	neter	Owner ID
Apex	illegible		HWF187	Eri	ic Hebert	09/30/2014	Flow R	late	000592
					Mfg Serial Number	BIOS	P T	arameter Flow	v Rate
					Tfer ID	01417			
					Slope	1.0	00000 Int	ercept	0.00000
					Cert Date	1/8	/2014 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.0	01	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	0.9	99	
1.12%	1.35%				Rotometer R	eading:	1.{	55	
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	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 Comp	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	Condition		Conditio	n Good		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Comp	onent Rotomet	er Conditic	n	Conditio	n Clean and dry		Status	pass	
Sensor Compo	onent Moisture	Present		Conditio	n See comments	3	Status	pass	
Sensor Compo	Filter Dis	tance		Conditio	n 6.5 cm		Status	pass	
Sensor Compo	Filter De	pth		Conditio	n 0.5 cm		Status	pass	
Sensor Compo	onent Filter Azi	muth		Conditio	n 180 deg		Status	pass	
Sensor Comp	onent System	Memo		Conditio	n		Status	pass	

Ozone Data Form

Mfg	Serial Number Tag	Site	Te	chnician		Site Visi	it Date	Paramet	ter	Owner I	D
ThermoElectron Inc	1030244790	HWF187	Er	ic Hebert		09/30/2	014	Ozone		000681	
Slope: 0 Intercept -0 CorrCoff 1	.97152 Slope: .17924 Intercept	0.0000	D D	Mfg Serial N	umber	ThermoE 0419606	Electron	Inc Par	rameter (er Desc. (ozone Ozone primary	/ stan
DAS 1: A Avg % Diff: A M 3.2%	DAS 2: ax % Di A Avg %	6Dif A Max	% Di	Tfer ID Slope Cert Da	ıte	01112	1.00928 1/8/2014	3 Inter 4 Corr	cept Coff	0.11	780 000
UseDescription:	ConcGroup:	Tfer Raw	Tfer	Corr.	Si	te	Site	Unit	PctD	ifference:	
primary	1	-0.20	-0.	31	-0.	50	ppb	omt.	TetD	interence.	
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	5.72	103	.50	ppb			-3.02%	
Sensor Componer	t Cell B Noise		Conditio	0.6 pp	b			Status	pass		
Sensor Componer	t Cell B Tmp.		Conditio	on				Status	pass		
Sensor Componer	t Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Componer	t Inlet Filter Condition	วท	Conditio	on Clean				Status	pass		
Sensor Componer	t Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Componer	t Offset		Conditio	on 0.000				Status	pass		
Sensor Componer	t Span		Condition 1.006				Status	pass			
Sensor Componer	t Cell B Freq.		Conditio	90.4	Hz			Status	pass		
Sensor Componer	t System Memo		Conditio	See c	omments	;		Status	pass		
Sensor Componer	t Sample Train		Conditio	on Good				Status	pass		
Sensor Componer	t Cell B Pressure		Conditio	on				Status	pass		
Sensor Componer	t Cell B Flow		Conditio	on 0.72 I	pm			Status	pass		
Sensor Componer	t Cell A Tmp.		Conditio	on 34.9 ()			Status	pass		
Sensor Componer	t Cell A Pressure		Conditio	on 692.5	mmHg			Status	pass		
Sensor Componer	t Cell A Noise		Conditio	0.6 pp	b			Status	pass		
Sensor Componer	t Cell A Freq.		Conditio	on 89.7 k	Hz			Status	pass		
Sensor Componer	t Cell A Flow		Conditio	on 0.32 l	pm			Status	Fail		
Sensor Componer	t Battery Backup		Conditio	on N/A				Status	pass		
Sensor Componer	t Zero Voltage		Conditio	n N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number T	'a Site	7	Fechn	chnician		isit Date/	Param	eter	Owner ID	
RM Young	14034	HWF187		Eric H	ebert	09/30	0/2014	Temper	ature	06401	
				Mf	g	Extec	h	Pa	rameter Te	emperature	
				Serial Number		H232	H232679 T		er Desc. R	٢D	
				Tfer ID 01228		3					
DAS 1:	DAS	2:		Slo	ppe		1.0049	6 Inte	rcept	-0.2300)9
Abs Avg Err Ab	vg Err Abs Max Er Abs Avg Err Abs Max		Max Er	x Er Cert Date			1/8/201	4 Cor	rCoff	1.0000	00
0.14	0.29			L							
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	-0.02	0.21		0.000		0.3	3	С	0.06	
primary Tem	p Mid Range	24.57	24.68	3	0.000		24.	24.6 C		-0.06	
primary Tem	p High Range	47.90	47.89)	0.000		48.	2	С	0.29	
Sensor Compone	nt Shield		Condi	ition N	Moderately clea	an		Status	pass		
Sensor Component Blower			Condi	Condition Functioning				Status	s pass		
Sensor Component Blower Status Switch			Condi	Condition N/A				Status	status pass		
Sensor Compone	ent System Memo		Condi	Condition				Status	IS 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 Temperatu	renone
DAS 1: Abs Avg Err A 0.28	DAS 2:Abs Max ErAbs Avg0.36	; Err Abs Max Er	Mfg Serial Number Tfer ID	Extech H232679 01228	Parameter S Tfer Desc. R	helter Temperatur
			Slope	1.0049	6 Intercept	-0.23009
			Cert Date	1/8/201	4 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	С	0.36
primary	Temp Mid Range	22.02	22.14	0.000	22.4	С	0.21

Infrastructure Data For

Site ID	HWF187	Technician Eric H	ebert Site Visit Date 09/30/2014
Shelter N	Make	Shelter Model	Shelter Size
ESF		none	1630 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	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 The filter sample tubing h	HWF187 has drops of mois	Eric Hebert ture in low sections	09/30/2014 outside the she	Moisture Present lter.	Apex	4026		
07070	11WE197	Erric Habort	00/20/2014		Thomas Electron	2269		
This analyzer diagnostic	check is outside t	he manufacturer's r	ecommended va	lue.	InermoElectron	3308		

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 09/3	0/2014				
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	onforms to MLM No		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	Present					
Zip Code	12852	Fire Extinguisher 🗹	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 M	odel none	Shelter Size 1630 cuft				
Shelter Clean	Notes The shelter is in good condition	٦.					
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

HWF187

F-02058-1500-S2-rev002

Site ID

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		\checkmark
City > 50,000 population	40 km		\checkmark
City 10,000 to 50,000 population	10 km		\checkmark
City 1,000 to 10,000 population	5 km		\checkmark
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m		\checkmark
Tree line	50 m	20 m	
Obstacles to wind	10 times obstacle height		\checkmark

Siting Distances OK

Siting Criteria Comment

Fi	eld Sy	stems Data F	orm	F-02058-1500-S3-rev00					
Site	e ID	HWF187	Technician Eric Hebert		Site Visit Date 09/30/2014				
1	Are win being in	d speed and direction fluenced by obstruction	sensors sited so as to avoid ons?	✓	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?			umb?	✓	N/A				
4	Are the avoid ra	temperature shields p adiated heat sources su	oointed north or positioned to 1ch as buildings, walls, etc?						
5	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 so	lar radiation sensor p	lumb?	✓	N/A				
7	Is it site light?	d to avoid shading, or	any artificial or reflected		N/A				
8	Is the ra	ain gauge plumb?		✓	N/A				
9	Is it site towers,	d to avoid sheltering e etc?	ffects from buildings, trees,		N/A				
10	Is the su facing n	urface wetness sensor a orth?	sited with the grid surface	✓	N/A				
11	Is it inc	lined approximately 3	80 degrees?	✓	N/A				
11 Pro	Is it inc	lined approximately 3 additional explanatio	0 degrees? n (photograph or sketch if nec	✓	N/A y) regarding conditions listed above, or any other fea				

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 th condition	e meterological senso 1, and well maintaine	rs appear to be d?	intact, in good		Temperature only
2	Are all the reporting	ne meteorological sen g data?	sors operational	l online, and		Temperature only
3	Are the s	hields for the temper	ature and RH s	ensors clean?	✓	Moderately clean
4	Are the a	spirated motors wor	king?]
5	Is the sol scratches	ar radiation sensor's s?	lens clean and f	ree of	✓] N/A
6	Is the su	rface wetness sensor g	grid clean and u	ndamaged?	\checkmark] <mark>N/A</mark>
7	Are the s condition	ensor signal and pow h, and well maintaine	ver cables intact d?	, in good		
8	Are the s from the	ensor signal and pow elements and well ma	ver cable connec aintained?	tions protected		

Field Systems Data Form						F-02058-1500-S5-rev002			
Site	e ID	HWF187	Technician Eric Hebert			Site Visit Date 09/30/2014			
	Siting C	Criteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipr</u>	oment sited in accordance with 40 CFR 58, Appendix E			
1	Do the s unrestri	sample inlets have at le icted airflow?	ast a 270 degre	e arc of	✓				
2	Are the	sample inlets 3 - 15 me	eters above the	ground?	✓				
3	3 Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?								
	<u>Pollutai</u>	nt analyzers and depos	ition equipment	t operations and	mai	aintenance			
1	Do the a condition	analyzers and equipme on and well maintained	nt appear to be ?	in good	✓				
2	Are the reportin	analyzers and monitor 1g data?	rs operational, o	on-line, and	✓				
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters			
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters			
5	Are in-l indicate	ine filters used in the o location)	zone sample lin	e? (if yes		At inlet only			
6	Are san obstruc	nple lines clean, free of tions?	kinks, moisture	e, and	✓	Moisture in tubing only			
7	Is the ze	ero air supply desiccan	t unsaturated?		✓				
8	Are the	re moisture traps in th	e sample lines?			Flow line only			
9	Is there clean?	a rotometer in the dry	deposition filte	er line, and is it		Clean and dry			

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S6-rev002				
Site	e ID	HWF187	Technician	Eric Hebert		Site Visit I	Date 09/30)/2014	
	DAS, sei	nsor translators, and j	peripheral equij	pment operation	ns ai	nd maintenance	<u>e</u>		
1	Do the I well mai	OAS instruments appe intained?	ar to be in good	condition and	✓				
2 Are all the components of the DAS operational? (printers, modem, backup, etc)									
3	3 Do the analyzer and sensor signal leads pass through lightning protection circuitry?					Met sensors on	lly		
4	Are the well mai	signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	to the correct]	DAS channel?					
6	Are the grounde	DAS, sensor translato d?	rs, and shelter j	properly					
7	Does the	e instrument shelter ha	ave a stable pow	ver source?	✓				
8	Is the in	strument shelter temp	oerature control	led?					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounde	d
10	Is the sa	mple tower stable and	l grounded?						
11	Tower c	omments?							

Field	Systems Data	For	m			F-02	058-	1500-S7-rev002
Site ID	HWF187		Tech	nician Er	ric Hebert Site Visit Date C	9/30/2014	,	
Docun	nentation							
Does t	<u>he site have the requi</u>	red ins	strume	nt and eq	uipment manuals?			
Wind spo Wind dir Tempera Relative Solar rad Surface v Wind sen Tempera Humidity Solar rad Tipping I	eed sensor rection sensor ture sensor humidity sensor liation sensor wetness sensor nsor translator ture translator y sensor translator liation translator bucket rain gauge	Yes			Data logger Data logger Strip chart recorder Computer Modem Printer Zero air pump Filter flow pump Surge protector UPS Lightning protection device	Yes	No V V V V V V V V V V V	N/A V V V V V V V V V V V V V V V V V V
Ozone an	nalyzer				Shelter heater			
Filter pa	ck flow controller	•			Shelter air conditioner		V	
rnter pa	ck wif C power supply	, LI						
Does	the site have the requ	iired a	nd mos	st recent	<u>QC</u> documents and report forms?			
		Pres	ent			Curre	nt	
Station L	.og	Ŀ						
SSRF		4						
Site Ops	Manual	-		Oct 2001				
HASP		-		lov 2009		✓		
Field Op	s Manual							
Calibrati	on Reports	Ŀ				\checkmark		
Ozone z/s	s/p Control Charts							
Preventiv	ve maintenance sched	ul [
1 Is th	e station log properly	⁷ comp	leted d	uring eve	ery site visit? 🗸			
2 Are curr	the Site Status Repor ent?	t Forn	ns bein	g comple	ted and 🔽			
3 Are sam	the chain-of-custody ple transfer to and fro	forms om lab	proper ?	ly used to	o document 🗹			

4 Are ozone z/s/p control charts properly completed and current?

Control charts not used

Field Systems Data Form

HWF187 Technician Eric Hebert Site Visit Date 09/30/2014 Site ID Site operation procedures Trained during site installation by ESE employee Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark 4 Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

QCO	Check	Perf	ormed
-----	-------	------	-------

Frequency

Multipoint Calibrations	\checkmark	Semiannually	\checkmark
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	N/A	

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

OC	Check	Performed
VU.	CIICCA	I CITOI IIICU

Multi-point Calibrations Automatic Zero/Span Tests Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet) In-line Filter Replacement (at analyze** Sample Line Check for Dirt/Water **Zero Air Desiccant Check**

	Frequency	Co
✓	Semiannually	
✓	Daily	
✓	Daily	
✓	Weekly	
✓	Every 2 weeks	
✓	N/A	
✓	Weekly	
✓	N/A	 ✓

- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?

	······································
3	Are the automatic and manual z/s/p checks monitored and
	non orte do Térrez, horro
	reported? If yes, now?

	Unknown	
✓		
✓	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.

mpliant

Compliant

F-02058-1500-S8-rev002

Field Systems Data Form								F-02058 -	1500-S9-rev002
Sit	Site ID HWF187 Tec		Technic	hnician Eric Hebert			Site Visit Date	09/30/2014	
	<u>Site ope</u>	ration procedures							
1	Is the fi	lter pack being changed	every Tu	iesda	ay as scheduled	<mark>?</mark> ✓	Filter changed mori	nings	
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 gen	eral observations being	made and	d re	corded? How?	✓	SSRF		
5	Are site supplies on-hand and replenished in a timely fashion?				✓				
6	Are san	ple 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 an	d off		
9	Are the operation	site conditions reported ons manager or staff?	l regularl	y to	the field				
QC	Check P	erformed		Fre	quency			Compliant	
I	Multi-poi	nt MFC Calibrations		Sem	niannually			\checkmark	
J	Flow Syst	em Leak Checks		Wee	ekly				
]	Filter Pac	k Inspection							
Flow Rate Setting Checks			ekly			\checkmark			
٦	Visual Ch	eck of Flow Rate Rotom	neter 🗹	Wee	ekly			\checkmark	
]	In-line Fil	ter Inspection/Replacen	nent 🗹	Semiannually				\checkmark	
5	Sample Li	ine Check for Dirt/Wate	er 🗹	Weekly				\checkmark	
Dana	do onvo	ditional employation (nhotogra	ah a	n alrotok if nooco		y) nooganding aanditi	and listed above a	n any other features

Field Systems Data Form

HWF187

F-02058-1500-S10-rev002

Site ID	
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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	В	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

Site Inventory by Site Visit

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
ACA	416-Eric H	lebert-10/03/2014				
1	10/3/2014	Computer	Hewlett Packard	none	8460p	CNU20941M6
2	10/3/2014	DAS	Environmental Sys Corp	ACADIA1	8832	unknown2
3	10/3/2014	Delta Temperature	Climatronics	none	100093	illegible
4	10/3/2014	Elevation	Elevation	None	1	None
5	10/3/2014	F460 translator	Climatronics	none	100163	683
6	10/3/2014	Filter pack flow pump	Thomas	none	107CAB11	10950000040
7	10/3/2014	Flow Rate	Tylan	none	FC260	AW02213003
8	10/3/2014	Infrastructure	Infrastructure	none	none	none
9	10/3/2014	Mainframe	Climatronics	01342	100081	1288
10	10/3/2014	Met tower	Climatronics	none	unknown	illegible
11	10/3/2014	MFC power supply	Tylan	none	RO-32	none
12	10/3/2014	Modem	US Robotics	none	33.6 fax modem	unknown
13	10/3/2014	Ozone	ThermoElectron Inc	90744	49C	49C-74536-376
14	10/3/2014	Ozone Standard	ThermoElectron Inc	none	49CPS	49CPS-70752-366
15	10/3/2014	Precipitation	Climatronics	01322	100508-2	illegible
16	10/3/2014	Precipitation	Texas Electronics	02179	TR-525i-HT	illegible
17	10/3/2014	Printer	Hewlett Packard	none	842C	unknown
18	10/3/2014	Relative Humidity	Vaisala	none	HMP45AC	Y0730050
19	10/3/2014	Sample Tower	Aluma Tower	none	В	AT-71103-7I-3
20	10/3/2014	Shelter Temperature	unknown	none	none	none
21	10/3/2014	Shield (10 meter)	Climatronics	none	100325	illegible
22	10/3/2014	Shield (2 meter)	Climatronics	none	100325	illegible
23	10/3/2014	Siting Criteria	Siting Criteria	None	1	None
24	10/3/2014	Solar Radiation	Licor	none	LI-200	PY16746
25	10/3/2014	Solar Radiation Translator	Climatronics	none	100144	309
26	10/3/2014	Surface Wetness	RM Young	90725	58101	none
27	10/3/2014	Temperature	Climatronics	none	100093	illegible
28	10/3/2014	Temperature Translator	Climatronics	03630	100088-2	401

Site \	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
29	10/3/2014	Wind Direction	Climatronics	none	100076	illegible
30	10/3/2014	Wind Speed	Climatronics	none	100075	1947
31	10/3/2014	Zero air pump	ThermoElectron Inc	none	111	111-30215-237

DAS Data Form

15

1.0000

0.9998

0.9992

DAS Time Max Error:

V

V

-0.0006

0

Mfg	Seria	l Number	Site	ſ	Fechnician	Site Visit Date	Parameter	Use Desc.	
Environmental Sys unknown2		own2	n2 ACA416		Eric Hebert	10/03/2014	DAS	Primary	
Das Date: Das Time: Das Day:	10/3 /2014 9:55:00 276	Audit Audit Audit	Date Time Day	10/3 /2014 9:55:00 276	Mfg Serial Number	HY 12010039329	Parameter Tfer Desc.	DAS Source generator (D	
Low Channe	l:	High C	hannel:		Tfer ID	01322			
Avg Diff:	Max Diff:	: Avg Di	ff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000	
0.0000	0.0	0001	0.0003	0.0006	Cert Date	6/15/201	4 CorrCoff	1.00000	
					Mfg	Fluke	Parameter	DAS	
					Serial Number	86590148	Tfer Desc.	DVM	
					Tfer ID	01310			
					Slope	1.0000	0 Intercept	0.00000	
					Cert Date	1/22/201	4 CorrCoff	1.00000	
Channel	Input	DVM Outp	out	DAS Output	InputUnit	OutputUnit	Difference		
2	0.0000	-0.	0002	-0.0002	e v	V	0.0000		
2	0.1000	0.	1001	0.1002	2 V	V	0.0001		
2	0.3000	0.	3010	0.3011	V	V	0.0001		
2	0.5000	0.	5004	0.5004	V V	V	0.0000		
2	0.7000	0.	6991	0.6991	V	V	0.0000		
2	0.9000	0.	8995	0.8995	i V	V	0.0000		
2	1.0000	0.	9997	0.9996	5 V	V	-0.0001		
15	0.0000	-0.	0005	-0.0006	5 V	V	-0.0001		
15	0.1000	0.	0997	0.0997	V V	V	0.0000		
15	0.3000	0.	2999	0.2994	V	V	-0.0005		
15	0.5000	0.	4998	0.4995	i V	V	-0.0003		
15	0.7000	0.	6990	0.6984	V	V	-0.0006		
15	0.9000	0.	8998	0.8996	j V	V	-0.0002		

Flow Data Form

Mfg	5	Serial Nun	iber Ta	Site	Technician		Site Visit I	Date Paran	neter	Owner ID	
Tylan		AW02213003 ACA416		Eri	c Hebert	10/03/2014	4 Flow R	late	none		
Mfg	Tyla	n				Mfg	Mfg BIOS		arameter Flo	ow Rate	
SN/Owner ID	none	Э	none			Serial Number	131818	Г	Tfer Desc. BIOS 220-H		
Parameter	MFC	C power sup	ply			Tfer ID	01417				
						Slope	1.	00000 Int	ercept	0.00000	
						Cert Date	1/8	1/8/2014 CorrCof		1.00000	
DAS 1:			DAS 2:		L	Cal Factor Z	ero	0.0)3		
A Avg % Diff:	A M	ax % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	15.0)5		
6.30%		6.44%		[Rotometer R	eading:	1	.6		
UseDescription:	Т	est type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference:	
primary	pum	p off	0.000	0.000	-0.08	-0.025	-0.04	l/m	l/m		
primary	leak	check	0.000	0.000	-0.08	-0.025	-0.04	l/m	l/m		
primary	test	pt 1	0.000	1.593	0.96	0.481	1.49	l/m	l/m	-6.44%	
primary	test	pt 2	0.000	1.592	0.96	0.481	1.49	l/m	1/m	-6.38%	
primary	lest	рі 5 1 на ві т а в	0.000	1.387	0.90	0.481	1.49		1/111	-0.08%	
Sensor Compo	onen	t Leak Tes	t		Conditio	n		Status	pass		
Sensor Compo	onen	t Filter Azir	muth		Conditio	n 90 deg		Status	Status pass		
Sensor Compo	onen	t Filter Dep	oth		Conditio	n - 2.0 cm		Status	Fail		
Sensor Compo	onen	t Filter Pos	ition		Conditio	n Poor		Status	atus Fail		
Sensor Compo	or Component Moisture Present		Conditio	n See comments	6	Status	pass				
Sensor Compo	or Component Rotometer Condition		Conditio	n Clean and dry		Status	pass				
Sensor Compo	Component System Memo			Conditio	n See comments	Status	pass				
Sensor Compo	onen	t Tubing C	ondition		Conditio	n Good		Status	pass		
Sensor Compo	Sensor Component Filter Distance			Conditio	n 6.0 cm S			pass			

Ozone Data Form

Mfg	Serial Number Tag	Site	Те	Technician		Site Visit Date		Parameter		Owner I	D
ThermoElectron Inc	49C-74536-376	ACA416	E	ric Hebert		10/03/2014		Ozone		90744	
Slope:1Intercept0CorrCoff0	.02704 Slope: .18362 Intercept .999955 CorrCoff	Slope: 0.0000 Intercept 0.0000 CorrCoff 0.0000		D Mfg Serial Number		ThermoElectron Inc 0419606966 01112		nc Par	ameter C	ozone Dzone primar	y stan
DAS 1:	DAS 2:			Slong			1 00028	Inton	t	0.11	1780
A Avg % Diff: A M	ax % Di A Avg %	6Dif A Max	% Di	Slope			1.00920	Intero	ept	0.11	780
2.9%	3.4%		Cert Date		ite	1/8/201		014 CorrCoff		1.00)000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDi	ifference:	
primary	1	0.16	0.	04	0.4	47 j	ppb				
primary	2	29.03	28	.64	29.	.54	ppb			3.14%	
primary	3	52.38	51	.78	53.	.26	ppb			2.86%	
primary	4	76.89	76	.06	77.	.73	ppb			2.20%	
primary	5	104.61	103	3.53	107	.00	ppb			3.35%	
Sensor Componer	t Cell B Noise		Conditi	on 0.7 p	b			Status [bass		
Sensor Componer	t Cell B Tmp.		Conditi	on				Status F	bass		
Sensor Componer	t Fullscale Voltage		Conditi	on 9.997	6			Status F	Dass		
Sensor Componer	t Inlet Filter Condition	Inlet Filter Condition			Condition Clean			Status pass			
Sansar Componer	t Line Loss				Condition Not tested			Statue r	1255		
Sensor Componer			Condition 0.1				Status [Dass			
Sensor Componer	t Span		Condition 1.059				Status [Dass			
Sensor Componer	t Cell B Freq.		Condition 83.9 kHz				Status [Dass			
Sensor Componer	t System Memo		Condition See comments				Status [bass			
Sensor Componer	t Sample Train		Condition Fair				Status [bass			
Sensor Componer	t Cell B Pressure		Conditi	on				Status [bass		
Sensor Componer	t Cell B Flow		Condition 0.73 lpm				Status [bass			
Sensor Componer	t Cell A Tmp.		Conditi	Condition 34.2 C				Status [Dass		
Sensor Componer	t Cell A Pressure	t Cell A Pressure			Condition 752 mmHg			Status F	bass		
Sensor Componer	t Cell A Noise	t Cell A Noise			ondition 0.8 ppb			Status F	Dass		
Sensor Componer	t Cell A Freq.	Cell A Freq.		ition 91.3 kHz			Status F	Dass			
Sensor Componer	t Cell A Flow		Conditi	on 0.72	pm			Status I	Dass		
Sensor Componer	t Battery Backup		Conditi	on N/A				Status 4	Dass		
Sensor Componer	t Zero Voltage		Conditi	on 0.000				Status I	Dass		
	<u> </u>							Ŀ			
Wind Speed Data Form

Mfg	Serial Numbe	er Ta Site	Te	echnician	Site Visit Dat	e Parameter	Owner ID
Climatronics	1947	ACA416	6 E	ric Hebert	10/03/2014	Wind Speed	none
Mfg	Climatronics			Mfg	RM Young	Paramet	er wind speed
SN/Owner ID	683	none		Serial Number		Tfer Des	c. wind speed motor (h
Parameter	F460 translator			Tfer ID	01262		
Prop or Cups S	N 2033			Slope	1.000	000 Intercept	0.00000
Prop or Cups T	orque	0.3 to	0.3	Cert Date	1/16/20	014 CorrCoff	1.00000
Prop Correction	n Fact			Mfg	RM Young	Paramet	er wind speed
				Serial Number		Tfer Des	c. wind speed motor (I
				Tfer ID	01261		
				Slope	1.000	000 Intercept	0.00000
				Cert Date	1/16/20	014 CorrCoff	1.00000
Т	DAS 1:	D	AS 2:				
I	Low Range Hi	gh Range L	ow Range I	High Range			
Abs Avg Err	0.17	10.23%					
Abs Max Er	0.20	38.59%					
UseDescription:	InputDevice:	Input RPM:	Input m/s:	Output V:	DAS m/s:	Diff/ %Diff:	Difference:
primary	00000	0	0.20	0.000	0.0		-0.20
primary	00000	50	1.40	0.000	1.2		-0.20
primary	00000	100	2.57	0.000	2.4		-0.17
primary	00000	170	4.22	0.000	4.1		-0.12
primary	00000	250	6.10	0.000	6.0	-1.64%	
primary	00000	500	11.97	0.000	11.9	-0.58%	
primary	00000	800	19.02	0.000	19.0	-0.11%	
primary	00000	2000	47.22	0.000	29.0	-38.59%	
Sensor Compo	onent System Mer	no	Conditi	on See comment	S	Status pass	
Sensor Compo	onent Sensor Plur	nb	Conditi	on Plumb		Status pass	
Sensor Compo	onent Sensor Hea	ter	Conditi	on Functioning		Status pass	
Sensor Compo	onent Prop or Cup	os Condition	Conditi	on Good		Status pass	
Sensor Compo	onent Condition		Conditi	on Good		Status pass	
Sensor Compo	onent Torque		Conditi	on Good		Status pass	

Wind Direction Data Form

Mfg	Sei	rial Nui	nber Ta	Site		,	Technician		Site Visit	Date I	Param	neter	C)wner II)
Climatronics	ille	egible		ACA4	16		Eric Hebert		10/03/20	14 \	Nind E	Direction	n	one	
Mfa	Climat	ronics					Mfg		RM Youn	g	P	arameter	wind d	irection	
wing	Chintat						Contal Nam	. h. an		-		You Dogo	wind di	iroction v	whool
SN/Owner ID	683		none				Serial Nur	nber				ler Desc.	wind u		vileei
Parameter	F460 t	ranslato	r				Tfer ID		01264						
Vane SN: 14	491		C. <i>A</i>	A. Align	. deg. tru	e:									
VaneTorque	10	to	10		18	80									
							Mfg		Ushikata		P	arameter	wind d	rection	
							Serial Nur	nber	190037		Т	fer Desc.	transit		
							Tfer ID		01265						
										4 0 0 0 0 0	_				
							Slope			1.00000	Inte	ercept		0.000)00
							Cert Date		1/	30/2012	Cor	rCoff		1.000)00
	DAG 1.				DAG 2.										
	DAS I: Oriente	tion	Linearit	· * 7 •	DA5 2: Orienta	tion	L incority.								
Abs Avg Frr	Orienta	2.6	Linearn	y • 15			Linearity.								
		£.0		2											
ADS MAX Er		5		3											
UseDescription	n: '	TferID:	In	put Rav	v: Line	earity	Output V:	Out	put Deg.:	Differen	nce:	Change:	Er	ror:	
primary		01264		15			0.000		357		3	42		-3	
primary		01204		90		- /	0.000		85		5	43			
primary		01264		135		 Image: A start of the start of	0.000		132		3	47		2	
primary		01264		180		✓	0.000		178		2	46		1	
primary		01264		225		/	0.000		222		3	44		-1	
primary		01264		270		/	0.000		268		2	46		1	
primary		01264		315		/	0.000		315		0	47		2	
primary		01265		90			0.000		85		5			5	
primary		01265		90			0.000		89		1			1	
primary		01265		180			0.000		178		2			2	
primary		01265		270			0.000		268		2			2	
primary		01265		360			0.000		357		3			3	
Sensor Comp	onent	Mast				Condi	ition Good			1	Status	pass]
Sensor Comp	onent	Conditio	n			Condi	ition Good				Status	pass]
Sensor Comp	onent S	Sensor H	Heater			Condi	ition Function	ing			Status	pass]
Sensor Comp	onent	Sensor F	Plumb			Condi	ition Plumb				Status	pass]
Sensor Comp	onent	Foraue]	Condi	ition Good				Status]
Songon Comm			ndition]	Cond	ition Good			````````````````````````````````	Status	nass]
Sensor Comp						Cond					status	pass]
Sensor Comp	onent	System I	viemo			Condi	ition				Status	pass			

Temperature Data Form

Mfg	;	Serial Numb	er Ta	Site		Т	ech	nnic	rian	Site V	isit Date	Param	eter	Owner II)
Climatronics		illegible		ACA416		E	Eric	He	bert	10/03	/2014	Temper	rature	none	
Mfg	Clim	natronics]	N	Mfg		Extech	٦	Pa	arameter Te	mperature	
SN/Owner ID	401		03630				S	Seria	al Number	H2326	679	Tf	fer Desc. R	۲D	
Parameter	Tem	nperature Tra	nslator				T	ſfer	· ID	01228	;				
DAS 1:		Γ	AS 2:			_	S	Slop	e		1.0049	6 Inte	rcept	-0.230	009
Abs Avg Err	Abs	Max Er A	bs Avg	Err Abs	Max	Er	C	Cert	t Date		1/8/201	4 Cor	rCoff	1.000	000
0.17		0.27													
UseDesc.:	,	Test type:	Inp	utTmpRaw	Inpu	tTmpC	Corr	r.: (OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range		-0.10		0.13			0.377		0.2	2	С	0.03	
primary	Temp	Mid Range		25.65		25.75			0.694		25.	5	С	-0.22	
primary	Temp	High Range		49.95		49.93			0.995		49.	7	C	-0.27	
Sensor Comj	ponen	t Shield			0	Condit	tion	Mo	oderately clea	an		Status	pass]
Sensor Comj	ponen	t Blower Sta	tus Swite	ch		Condit	tion	N/.	A			Status	pass]
Sensor Comj	ponen	t Blower			0	Condit	tion	Fu	Inctioning			Status	pass]
Sensor Comj	ponen	t System Me	mo			Condit	tion					Status	pass]

Humidity Data Form

Mfg	Serial Nu	nber Ta Site	•	Technician		Site V	isit Date	Para	meter	Owner ID
Vaisala	Y0730050	AC	A416	Eric Hebert		10/03/	/2014	Relat	ive Humidity	none
				Mfg		Rotron	ic		Parameter R	elative Humidity
				Serial Nu	mber	124432	2		Tfer Desc. H	/groclip
				Tfer ID		01225				
				Slope			1.0000	0 In	tercept	0.00000
	DAS 1:		DAS 2:	Cert Dat	e		1/29/201	3 C	orrCoff	1.00000
	Low Range	High Range	Low Range	High Range	e					
Abs Avg Err	1.3									
Abs Max Er	2.0									
UseDesc.:	Test type:	Device:	Input RH:	GTL Raw:	RH C	Corr.:	DAS Vo	olts:	DAS %RH:	Difference:
primary	RH Low Range	Hygroclip	32.8	0.0	32	.8	0.328	3	32.8	0.0
primary	RH Low Range	Hygroclip	52.9	0.0	52	.9	0.510)	51.0	-1.9
primary	RH High Range	Hygroclip	75.3	0.0	75	.3	0.734	1	73.4	-2.0
Sensor Com	ponent System I	Memo	Con	dition				Statu	us pass	
Sensor Com	ponent Blower		Con	dition N/A				Statı	us pass	
Sensor Com	ponent Blower S	tatus Switch	Con	dition N/A				Statu	ns pass	
Sensor Com	ponent RH Filter		Con	dition Clean				Statu	as pass	
Sensor Com	ponent Shield		Con	dition Modera	tely clea	an		Statu	as pass	

Solar Radiation Data Form

Mfg	Serial Numbe	er Ta Site	Те	chnician	Site Vi	sit Date	Parame	eter	Owner ID
Licor	PY16746	ACA416	Er	ric Hebert	10/03/2	2014	Solar Ra	adiation	none
Mfg	Climatronics			Mfg	Eppley		Pa	rameters	olar radiation
SN/Owner ID	309	none		Serial Number	10765		Tf	er Desc. S	SR transfer translat
Parameter	Solar Radiation T	ranslator		Tfer ID	01246]		
DAS 1.	D	AS 2.		Slope		1.00000	Inter	rcept	0.00000
% Diff of Avg	%Diff of Max %	Diff of Avg %D	iff of Max	Cert Date	1	2/16/2010	Corr	Coff	1.00000
				Mfg	Eppley		Pa	rameter	olar radiation
				Serial Number	34341F	3	Tf	er Desc.	SR transfer sensor
				Tfer ID	01245]		
				Slope		1.00000	Inter	rcept	0.00000
				Cert Date	1	2/16/2010	Corr	Coff	1.00000
2.6%	1.8%	0.0%	0.0%						
UseDescription:	Measure Date	MeasureTime	Tfer Corr	: DAS w/r	m2:	PctDiffer	ence:		
primary	10/3/2014	8:00	647	636			-1.8%		
primary	10/3/2014	9:00	522	505			-3.2%		
primary	10/3/2014	10:00	425	410			-3.5%		
primary	10/3/2014	11:00	495	462			-6.7%		
primary	10/3/2014	12:00	420	402			-4.3%		
mainsom	10/2/2014	14.00	270	200			2 70/		

primary	10/3/2014	14:00	278	288	3.7%		
primary	10/3/2014	15:00	371	371	0.2%		
primary	10/3/2014	16:00	418	409	-2.0%		
Sensor Compo	nent Sensor Leve	I	Condition	evel	Status	pass]
Sensor Compo	nent Sensor Clear	n	Condition C	Clean	Status	pass]
Sensor Compo	nent Properly Site	d	Condition P	Properly sited	Status	pass]
Sensor Compo	nent System Merr	10	Condition		Status	pass]

Precipitation Data Form

Mfg	Serial	Number Ta	Site	r ·	Гес	hnician		Site	Visit Date	Paramet	er	Owner ID
Climatronics	illegib	le	ACA416		Erio	c Hebert		10/0	03/2014	Precipitat	tion	01322
					-	Mfg		PMF)	Par	ameter	Precipitation
DAS 1:		DAS 2:				Serial Nun	nber	EW-	06134-50	Tfe	r Desc. 2	250ml graduate
A Avg % Diff:	A Max %	Di A Avg %	6Dif A N	/Iax % Di		Tfer ID		0125	50			
2.0%	4.	0%										
						Slope			1.0000	0 Intere	cept	0.00000
						Cert Date			9/5/200)5 Corr(Coff	1.00000
II. D.	Track	TTC	Terret	T'						OSE IL.	TCUL	·
DiseDesc.	Test type:	231 5	Iteration:	8 - 10 sec	p:	Eq.Ht:		eng: R0	Eq.HtUnit:	USE Unit	ml	-4.0%
primary	test 2	231.5	2	8 - 10 sec	:	5.00	5.0	00	mm	mm	ml	0.0%
Sensor Com	ponent Syst	em Memo		Condi	i tio	n				Status P	ass	
Sensor Comp	ponent Sens	sor Heater		Condi	itio	n Function	ing			Status F	ass	
Sensor Com	ponent Prop	erly Sited		Condi	i tio	n See com	ments			Status [ass	
Sensor Comp	onent Gau	ge Drain Scree	en	Condi	i tio	n Not insta	lled			Status [ass	
Sensor Com	ponent Leve	el		Condi	i tio i	n Level				Status F	ass	
Sensor Com	oonent Gau	ge Clean		Condi	i tio	n Clean				Status [ass	
Sensor Com	ponent Fun	nel Clean		Condi	i tio i	n Clean				Status F	ass	
Sensor Comp	ponent Con	dition		Condi	itio	n Good				Status [ass	
Sensor Com	ponent Gau	ge Screen		Condi	itio	n Installed				Status F	ass	

Surface Wetness Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	ACA416	Eric Hebert	10/03/2014	Surface Wetness	90725
			Mfg	Ohmite	Parameter S	urface wetness
			Serial Number	296-1200	Tfer Desc. d	ecade box
			Tfer ID	01210		
			Slope	1.0000	0 Intercept	0.00000
			Cert Date	1/4/201	1 CorrCoff	1.00000

Manual Test Pass

UseDescription:	Test Type:	Tfer kOhms:	OutputSignal:	DAS eng:	OutputSignalEngUni	TferUnits:	OutputSignalUnit
primary	wet	N/A	0.994	99.40	V	N/A	% Wet
primary	dry	N/A	0.298	0.30	V	N/A	% Wet
							1

Sensor Component	Grid Orientation	Condition North	Status pass
Sensor Component	Grid Clean	Condition Clean	Status pass
Sensor Component	Grid Angle	Condition about 45 deg	Status pass
Sensor Component	Grid Condition	Condition Good	Status pass
Sensor Component	Properly Sited	Condition Properly sited	Status pass
Sensor Component	System Memo	Condition	Status pass
Sensor Component	Grid Type	Condition Grid without holes	Status pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
unknown	none	ACA416	Eric Hebert	10/03/2014	Shelter Temperature	e none
DAS 1: Abs Avg Err Abs 1.24	DAS 2: Max Er Abs Avg 2.27	Err Abs Max Er	Mfg Serial Number Tfer ID Slope Cert Date	Extech H232679 01228 1.0049 1/8/201	Parameter Sh Tfer Desc. RT Intercept CorrCoff	elter Temperatur D -0.23009 1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	19.30	19.43	0.000	21.7	С	2.27
primary	Temp Mid Range	21.85	21.97	0.000	22.4	С	0.4
primary	Temp Mid Range	21.02	21.15	0.000	22.2	С	1.04

Infrastructure Data For

Site ID	ACA416	Technician Eric Heb	ert Site Visit Date 10/03/2014
Shelter	Make	Shelter Model	Shelter Size
Ekto		8818 (s/n 2920-1)	1152 cuft
in a second second	en mar a construction de la construction de la construcción de la construcción de la construcción de la constru La construcción de la construcción d		

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	Fail
Sensor Component	Power Cables	Condition	Fair	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Shelter Door	Condition	Good	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	ACA416	Eric Hebert	10/03/2014	Moisture Present	Tylan	4022		
Although there currently	is no moisture in	the flow sample tra	ain, there is evid	ence of previous m	oisture events.			
Flow Rate The filter sample tubing	ACA416 has drops of moi	Eric Hebert sture in low sections	10/03/2014 s outside the she	Moisture Present slter.	Tylan	4022		
Ozone The ozone sample train i	ACA416 s composed of m	Eric Hebert aterials other than tl	10/03/2014 he recommended	System Memo d materials which a	ThermoElectron re Teflon and glass	814 s only.		
Precipitation Objects violate the 45 de	ACA416 gree rule for the	Eric Hebert tipping bucket rain	10/03/2014 gage.	Properly Sited	Climatronics	4018		

Field Systems Comments

1 Parameter: SiteOpsProcComm

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

2 Parameter: DocumentationCo

The site operator reported that low flow rate conditions had been observed and reported to ARS recently. The Flow controller has been replaced since then to correct the issue.

3 Parameter: SiteOpsProcedures

The meteorological and ozone instrument checks and maintenance are performed by the State of Maine DEP.

4 **Parameter:** ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: PollAnalyzerCom

The ozone sample inlet still has a stainless steel fittings. The recommended material for ozone sample train is Teflon or glass. The site operator indicated that the fittings would be changed.

6 Parameter: MetSensorComme

The wind speed translator span is set to 25 m/s and not 50 m/s. This may have affected the low output observed at the highest wind speed challenge.

7 Parameter: MetOpMaintCom

The sensor signal cables are beginning to show signs of wear.

Field Systems D	ata Form	F-02058-1500-S1-rev001					
Site ID ACA416	Technician Eric Hebert	Site Visit Date 10/	03/2014				
Site Sponsor (agency)	NPS/EPA	USGS Map	Salsbury Cove				
Operating Group	NPS/MEDEP	Map Scale					
AOS #	23-009-0103	Map Date					
Meteorological Type	Climatronics						
Air Pollutant Analyzer	Ozone, SO2, NOx, NOy, PM, VOC	OAPP I atitude	44.3770				
Deposition Measurement	drv. wet. Ha	OAPP Longitude	-68,2610				
Land Use	Costal, woodland - mixed	OAPP Elevation Meters	158				
Terrain	rolling	OAPP Declination					
Conforms to MLM	No	OAPP Declination Date					
	(420) 200 0222		44.277000				
Site Telephone	(432) 288-9322	Audit Latitude	44.377086				
Site Address 1	Route 233	Audit Longitude	-08.2608				
Site Address 2		Audit Elevation	153				
County	Hancock	Audit Declination	-16.4				
City, State	Bar Harbor, ME	Present					
Zip Code	04609	Fire Extinguisher ⊻	Inspected Dec 2011				
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 N	Iodel 8818 (s/n 2920-1)	Shelter Size 1152 cuft				
Shelter Clean	Notes The shelter is clean and well	organized.					
Site OK	Papager do east on 14 to Ellowerth	n Elloworth take route 2 part to	Par Harbor At the west sides of town				
Driving Directions From Bangor go east on 1A to Ellsworth. From Ellsworth take route 3 east to Bar Harbor. At the west edge of town, take Eagle Lake Rd (route 233) west toward Acadia National Park. The site is through a gate, at the end of a gravel road, across from the Park Headquarters.							

Field S	VS	tems	Dat	a F	orm
I ICIU N	90		Jui		

ACA416

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 10/03/2014

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	8]
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	25 m]
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

Fie	eld Sy	stems Data Fo	orm	F-02058-1	.500-S3-rev001		
Site	D	ACA416	Technician	Eric Hebert		Site Visit Date 10/03/2014	
1	Are win being in	d speed and direction fluenced by obstructio	sensors sited so ns?	as to avoid			
2	Are win (i.e. win horizon tower in	d sensors mounted so d sensors should be mo tally extended boom > nto the prevailing wind	as to minimize ounted atop the 2x the max dian)	tower effects? tower or on a neter of the			
3	Are the	tower and sensors plu	mb?				
4	Are the avoid ra	temperature shields p adiated heat sources su	ointed north or ch as buildings	positioned to , walls, etc?			
5	Are ten conditio surface standin	perature and RH sens ons? (i.e. ground below and not steeply sloped g water should be avoi	ors sited to avo sensors should . Ridges, hollov ded)	id unnatural be natural vs, and areas of			
6	Is the so	olar radiation sensor p	umb?				
7	Is it site light?	d to avoid shading, or	any artificial o	r reflected			
8	Is the ra	ain gauge plumb?					
9	Is it site towers,	d to avoid sheltering e etc?	ffects from buil	dings, trees,		15 degree rule violation	
10	Is the su facing r	urface wetness sensor s orth?	ited with the g	id surface			
11	Is it inc	lined approximately 3	0 degrees?				

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 wind speed translator span is set to 25 m/s and not 50 m/s. This may have affected the low output observed at the highest wind speed challenge.

Field	Systems Data	a Form				F-0205 8	8-1500-S4-rev001
Site ID	ACA416	Technician	Eric Hebert		Site Visit Date	10/03/2014	
							1
1 Do a cond	all the meterological a lition, and well main	sensors appear to be i tained?	intact, in good				
2 Are all the meteorological sensors operational online, and reporting data?							
3 Are	the shields for the te	mperature and RH so	ensors clean?				
4 Are	the aspirated motors	s working?					
5 Is th scra	e solar radiation sen tches?	sor's lens clean and f	ree of				
6 Is th	ie surface wetness se	nsor grid clean and u	ndamaged?				
7 Are cond	the sensor signal and lition, and well main	l power cables intact, tained?	, in good				
8 Are fron	the sensor signal and n the elements and w	l power cable connect ell maintained?	tions protected				
Paramet	ter	Manufacturer	Model		S/N		Client ID
Wind Spe	eed	Climatronics	100075	1992-100	1947		none
Wind Direction Climatronics 100076			100076		illegible		none
Met tower Climatronics unknown				illegible		none	
Shield (10 meter) Climatronics 100325				illegible		none	
Shield (2	meter)	Climatronics	100325		illegible		none
Surface V	Wetness	RM Young	58101	un server	none		90725
Relative	Humidity	Vaicala			V0720050		Papa

Temperature Delta Temperature 100093 Climatronics illegible none Precipitation Climatronics 100508-2 illegible 01322 Solar Radiation LI-200 PY16746 Licor none

illegible

none

100093

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 sensor signal cables are beginning to show signs of wear.

Climatronics

Fi	eld Sy	stems Dat	a Form			F-02058	3-1500-S5-rev001	
Site	e ID	ACA416	Technician E	ric Hebert		Site Visit Date	10/03/2014	
	Siting (Criteria: Are the	pollutant analyzers and	l deposition eq	<u>uipr</u>	nent sited in accord	lance with 40 C	FR 58, Appendix E
1	Do the unrestr	sample inlets hav icted airflow?	ve at least a 270 degree	arc of				
2	Are the sample inlets 3 - 15 meters above the ground?							
3	Are the and 20	sample inlets > meters from tree	1 meter from any major es?	r obstruction,				
	Polluta	nt analyzers and	deposition equipment of	operations and	mai	intenance		
1	Do the condition	analyzers and eq on and well main	uipment appear to be in Itained?	n good				
2	Are the reporting	analyzers and n ng data?	nonitors operational, on	-line, and				
3	Describ	e ozone sample (tube.			3/8 teflon by 12 met	ers and Stainles	s Steel
4	Describ	e dry dep sampl	e tube.			3/8 teflon by 12 met	ers	
5	Are in-	line filters used i e location)	n the ozone sample line	? (if yes		At inlet only		
6	Are san obstruc	nple lines clean, tions?	free of kinks, moisture,	and				
7	Is the z	ero air supply de	esiccant unsaturated?					
8	Are the	re moisture trap	os in the sample lines?			No moisture traps p	resent	
9	Is there clean?	a rotometer in t	the dry deposition filter	line, and is it		Clean and dry		
Pa	rameter	- 18 B	Manufacturer	Model		S/N	1. A. 1. A. 1.	Client ID

Parameter	Manufacturer	Model	S/N	Client ID
Sample Tower	Aluma Tower	В	AT-71103-7I-3	none
Ozone	ThermoElectron Inc	49C	49C-74536-376	90744
Zero air pump	ThermoElectron Inc	111	111-30215-237	none
Filter pack flow pump	Thomas	107CAB11	10950000040	none
MFC power supply	Tylan	RO-32	none	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:

The ozone sample inlet still has a stainless steel fittings. The recommended material for ozone sample train is Teflon or glass. The site operator indicated that the fittings would be changed.

Fie	eld Sy	ystems Data F	`orm				F-02058-	1500-	S6-rev001
Site	ID	ACA416	Technician Eric Hebert		Site Visi	t Date 10/0	3/2014		
	DAS, s	ensor translators, and	l peripheral equipment opera	tions an	<u>d maintena</u>	nce			
1	Do the well ma	DAS instruments app aintained?	ear to be in good condition a	nd 🗹					
2	Are all modem	the components of th n, backup, etc)	e DAS operational? (printers						
3	Do the lightnii	analyzer and sensor s ng protection circuitr	ignal leads pass through y?						
4	Are the well ma	e signal connections p aintained?	rotected from the weather an	d 🔽					
5	Are the	e signal leads connecto	ed to the correct DAS channe	!? ☑					
6	Are the ground	e DAS, sensor translat led?	tors, and shelter properly						
7	Does th	ie instrument shelter [have a stable power source?						
8	Is the i	nstrument shelter ten	perature controlled?						
9	Is the r	net tower stable and g	grounded?		Stable		Groun	ded	
10	Is the s	ample tower stable a	nd grounded?						
11	Tower	comments?							

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	8460p	CNU20941M6	none
DAS	Environmental Sys Corp	8832	unknown2	ACADIA1
F460 translator	Climatronics	100163	683	none
Mainframe	Climatronics	100081	1288	01342
Modem	US Robotics	33.6 fax modem	unknown	none
Printer	Hewlett Packard	842C	unknown	none
Solar Radiation Translator	Climatronics	100144	309	none
Temperature Translator	Climatronics	100088-2	401	03630

Field Systems Data l	Form				F-02	058-	-1500-S7-rev001
Site ID ACA416	Tecl	nnician Eric	Hebert	Site Visit Date 1	0/03/2014	-	and the second
						ins.	
Documentation							
Does the site have the require	<u>d instrum</u>	ent and equi	<u>ipment manuals?</u>				
Wind speed concer	ies No	N/A	Data logge		Yes	No	N/A
Wind speed sensor			Data logge				
Temperature sensor			Strin char	t recorder			
Relative humidity sensor			Computer	riccorder			
Solar radiation sensor			Modem				
Surface wetness sensor			Printer				
Wind sensor translator			Zero air p	ump			
Temperature translator			Filter flow	pump			
Humidity sensor translator			Surge prot	ector			
Solar radiation translator			UPS				
Tipping bucket rain gauge			Lightning	protection device			
Ozone analyzer			Shelter he	ater			
Filter pack flow controller			Shelter air	conditioner			
Filter pack MFC power supply							
Does the site have the requir	ed and m	ost recent Q	C documents and	report forms?			
	Present				Curre	nt	
Station Log		Dataview					
SSRF							
Site Ops Manual		June 2000					
HASP							
Field Ops Manual							
Calibration Reports							
Ozone z/s/p Control Charts							
Preventive maintenance schedul							
1 Is the station log properly c	ompleted	during every	y site visit? 🔽 🛛	ataview			
2 Are the Site Status Report I current?	Forms bei	ng complete	d and 🔽				
3 Are the chain-of-custody for sample transfer to and from	rms prop 1 lab?	erly used to a	document 🔽				
4 Are ozone z/s/p control char current?	rts proper	ly completed	i and 🗌 C	ontrol charts not use	ed		
Provide any additional explanation natural or man-made, that may	ion (photo affect the	graph or sko monitoring	etch if necessary) parameters:	regarding conditio	ns listed	above,	or any other features,
The site operator reported that low	flow rate c	onditions had	d been observed ar	nd reported to ARS r	ecently.	The Flo	w controller has been
replaced since then to correct the is	ssue.					855.S	

Fie	eld Sy	stems Data F	orm				F-02058	-1500-S8-rev001
Site	ID	ACA416	Technician	Eric Hebert		Site Visit Date	10/03/2014	
1	Site op Has the course	eration procedures e site operator attend ? If yes, when and wh	ed a formal CAS o instructed?	STNET training				
2	Has the trainin	e backup operator att g course? If yes, when	tended a formal n and who instru	CASTNET icted?		Trained on-site by A	RS during site ins	stallation
3	Is the si schedul	te visited regularly or e?	n the required T	uesday				
4	Are the flollowe	standard CASTNET d by the site operator	operational pro ?	cedures being		Operator procedures	s are very good fo	r filter replacement
5	Is the si the requ	te operator(s) knowle ured site activities? (i	edgeable of, and including docum	able to perform entation)				
	Are reg	ular operational QA/	QC checks perfo	ormed on meteo	rolog	gical instruments?		

QC Check Performed	Frequency	Compliant
Multipoint Calibrations	Semiannually by MEDEP	
Visual Inspections	Weekly	
Translator Zero/Span Tests (climatronics)	Semiannually	
Manual Rain Gauge Test	Monthly	
Confirm Reasonableness of Current Values	Weekly	
Test Surface Wetness Response	Not performed	

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

QC Check Performed Compliant Frequency **Multi-point Calibrations** ~ ~ Monthly ~ ~ Weekly **Automatic Zero/Span Tests** < ~ Weekly Manual Zero/Span Tests \checkmark \checkmark Weekly **Automatic Precision Level Tests** ~ Weekly **Manual Precision Level Test** \checkmark ~ Weekly **Analyzer Diagnostics Tests** \checkmark ~ Monthly **In-line Filter Replacement (at inlet)** V N/A **In-line Filter Replacement (at analyze** ~ \checkmark Weekly Sample Line Check for Dirt/Water ~ \checkmark Weekly **Zero Air Desiccant Check**

- **1** Do multi-point calibration gases go through the complete sample train including all filters?
- 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?

Results are recorded weekly on a checklist

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 and ozone instrument checks and maintenance are performed by the State of Maine DEP.

Fie	eld Sy	stems Data Fo	orm					F-02058-1	500-S9-rev001
Site	e ID	ACA416	Tech	nician	Eric Hebert		Site Visit Date	10/03/2014	
	Site oper	ration procedures							
1	Is the fil	ter pack being change	d every	Tuesda	y as scheduled	·	Filter changed mori	nings, 90%	
2	Are the correctly	Site Status Report For y?	rms bein	g comp	pleted and filed		Flow and general of	oservation sections on	ıly
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 sam	ple flow rates recorde	d? How	?			SSRF		
7	Are sam fashion?	ples sent to the lab on	a regula	r sche	dule in a timely				
8	Are filte and ship	rs protected from con pping? How?	taminati	on dur	ing handling		Clean gloves on and	d off	
9	Are the soperatio	site conditions reporte ns manager or staff?	ed regula	rly to 1	the field				
QC	Check Pe	erformed		Free	Juency			Compliant	
N	/ulti-poin	nt MFC Calibrations		Sem	iannually	(1) S. (1)			
F	Tow System Leak Checks								
F	ilter Pacl	Pack Inspection							
F	low Rate	Setting Checks	Weekly						
V	isual Cho	eck of Flow Rate Roto	meter	Vee Wee	kly				
I	n-line Filt	ter Inspection/Replace	ement	As n	eeded	CONSTRAINT,			
S	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:

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
HOV	W191-Eric I	Hebert-10/06/2014				
1	10/6/2014	DAS	Campbell	000419	CR3000	2527
2	10/6/2014	elevation	Elevation	none	none	none
3	10/6/2014	Filter pack flow pump	Thomas	04921	107CAB18	060300019983
4	10/6/2014	Flow Rate	Арех	000645	AXMC105LPMDPCV	illegible
5	10/6/2014	Infrastructure	Infrastructure	none	none	none
6	10/6/2014	Modem	Raven	06470	H4222-C	0808311250
7	10/6/2014	Ozone	ThermoElectron Inc	000616	49i A1NAA	1009241781
8	10/6/2014	Ozone Standard	ThermoElectron Inc	000435	49i A3NAA	CM08200011
9	10/6/2014	Shelter Temperature	Campbell	none	107-L	none
10	10/6/2014	siting criteria	Siting Criteria	none	none	None
11	10/6/2014	Temperature	RM Young	04449	41342VC	4547
12	10/6/2014	Zero air pump	Werther International	06908	C 70/4	000821900

DAS Data Form

7

7

0.9000

1.0000

0.8998

0.9997

DAS Time Max Error:

V

V

-0.0002

-0.0002

V

V

0

Mfg	Serial	Number Sit	e 7	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2527	Н	DW191	Eric Hebert	10/06/2014	DAS	Primary
Das Date:	10/6 /2014	Audit Date	10/6 /2014	Mfg	HY	Parameter	DAS
Das Time:	11:34:00 279	Audit Time Audit Dav	279	Serial Number	12010039329	Tfer Desc.	Source generator (D
Low Channel	:	High Chann	el:	Tfer ID	01322		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.0	0.000	0.0002	Cert Date	6/15/201	4 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	1/22/201	4 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	0.0995	0.0997	V V	V	0.0002	
7	0.3000	0.3011	0.3010) V	V	-0.0001	
7	0.5000	0.5010	0.5009	v v	V	-0.0001	
7	0.7000	0.6996	0.6995	5 V	V	-0.0001	

0.8996

0.9995

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	chnician	Site Visit Da	ate Param	neter	Owner ID
Apex	illegible		HOW191	Eri	c Hebert	10/06/2014	Flow R	ate	000645
				[Mfg	BIOS	P	arameter Flow	Rate
					Serial Number	131818	Т	fer Desc. BIO	S 220-H
					Tfer ID	01417			
					Slope	1.0	0000 Inte	ercept	0.00000
					Cert Date	1/8/	2014 Co	rCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	0.0)2	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	1.0)3	
0.88%	1.32%				Rotometer R	eading:		0	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall I	PctDifference
primary	pump off	0.000	0.000	-0.02	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.03	l/m	l/m	
primary	test pt 1	1.516	1.520	1.47	0.000	1.50	l/m	l/m	-1.32%
primary	test pt 2	1.508	1.510	1.47	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 3	1.509	1.510	1.47	0.000	1.50	l/m	l/m	-0.66%
Sensor Comp	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Comp	onent Rotomete	er Conditior	า	Conditio	n N/A		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture pr	resent	Status	pass	
Sensor Comp	onent Filter Dis	tance		Conditio	n 3.0 cm		Status	pass	
Sensor Comp	onent Filter Dep	oth		Conditio	n 3,0 cm		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	n 360 deg		Status	pass	
Sensor Comp	onent System M	Memo		Conditio	n		Status	pass	

Ozone Data Form

Mfg	Se	erial Number Tag	Site	Те	chnician		Site Visit	Date	Parame	ter	Owner I	D
ThermoElectron Ir	ic 1	009241781	HOW191	E	ric Hebert		10/06/20	14	Ozone		000616	
Slope:	0.9	8661 Slope: 1884 Intercept	0.00000)	Mfg Serial N	umber	ThermoEl	lectron I	nc Pai	rameter oz	one	v stan
CorrCoff	1.0	0000 CorrCoff	0.00000	כ		umber	01112]			, otain
					Tfer ID		01112]			
DAS 1:		DAS 2:			Slope			1.00928	Inter	cept	0.11	780
A Avg % Diff: A	Max	2 5%	•Dif A Max '	% D1	Cert Da	te	1	1/8/2014	Corr	Coff	1.00	000
				TTC				0.1	T T •/		c	
UseDescriptio	n:	ConcGroup:	0.12	Tfer	Corr:	S1	te:	Site	Unit:	PctDif	terence:	
primary		1	29.84	29	44	-0.	$\frac{51}{70}$ r	pp pp			-2 51%	
primary		3	52.07	51	.++ 17	50	/0 F	opb			-2.02%	
primary		4	78.85	78	.47	76	73 r	opb			-1.63%	
primary		5	113.02	111	.86	110	.00 r	opb			-1.66%	
Company Common			110102	Canditi					Ctatura [110070	
Sensor Compo	ient			Conditi	011 0.5 pr				Status	pass		
Sensor Compo	nent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compo	nent	Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Compo	ient	Inlet Filter Conditio	n	Conditi	on Clean				Status	pass		
Sensor Compo	ient	Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compo	ıent	Offset		Conditi	on 0.20				Status [pass		
Sensor Compo	ient	Span		Conditi	on 1.007				Status [pass		
Sensor Compo	ient	Cell B Freq.		Conditi	on 96.4 k	Hz			Status	pass		
Sensor Compo	ient	System Memo		Conditi	on				Status	pass		
Sensor Compo	ient	Sample Train		Conditi	on Good				Status	pass		
Sensor Compo	nent	Cell B Pressure		Conditi	on				Status	pass		
Sensor Compo	ient	Cell B Flow		Conditi	on 0.69 l	om			Status	pass		
Sensor Compo	ient	Cell A Tmp.		Conditi	on 33.8 ()			Status [pass		
Sensor Compo	ient	Cell A Pressure		Conditi	on 702 m	mHg			Status [pass		
Sensor Compo	ient	Cell A Noise		Conditi	<mark>on</mark> 0.6 pp	b			Status [pass		
Sensor Compo	ient	Cell A Freq.		Conditi	on 88.5 k	Hz			Status	pass		
Sensor Compo	ient	Cell A Flow		Conditi	on 0.68 l	om			Status	pass		
Sensor Compo	nent	Battery Backup		Conditi	on N/A				Status	pass		
Sensor Compo	ient	Zero Voltage		Conditi	on N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number Ta	a Site	1	Techni	ician	Site V	isit Date/	Param	eter	Owner ID	
RM Young	4547	HOW191		Eric H	ebert	10/06	6/2014	Temper	ature	04449	
				Mf	g	Extec	h	Pa	rameter Te	emperature	
				Ser	rial Number	H232	679	Tf	er Desc. R	٢D	
				Tfe	er ID	01228	3				
DAS 1:	DAS 2	:		Slo	pe		1.0049	6 Inte	rcept	-0.23009	'
Abs Avg Err Abs	s Max Er Abs A	vg Err Abs	Max Er	Ce	rt Date		1/8/201	4 Cor	rCoff	1.00000	
0.05	0.09										
UseDesc.	Test type I	nputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Temp	b Low Range	-0.16	0.07	7	0.000		0.1	l	C	0.04	
primary Temp	o Mid Range	21.84	21.9	6	0.000		21.	9	С	-0.02	
primary Temp	High Range	45.69	45.6	9	0.000		45.	8	С	0.09	
Sensor Compone	nt Shield		Cond	ition N	Moderately clea	an		Status	pass		
Sensor Compone	nt Blower		Cond	ition 🛚	N/A			Status	pass		
Sensor Compone	nt Blower Status S	witch	Cond	ition 🛚	N/A			Status	pass		
Sensor Compone	nt System Memo		Cond	ition				Status	pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	HOW191	Eric Hebert	10/06/2014	Shelter Temperatu	ire none
DAS 1:	DAS 2:		Mfg	Extech	Parameter S	Shelter Temperatur
Abs Avg Err Abs 0.31	s Max Er Abs Avg 0.76	Err Abs Max Er	Serial Number	H232679	Tfer Desc.	RTD
			Tfer ID	01228		
			Slope	1.0049	6 Intercept	-0.23009
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference	
primary	Temp Mid Range	20.98	21.11	0.000	21.1	С	0.01	
primary	Temp Mid Range	21.73	21.85	0.000	21.7	С	-0.17	
primary	Temp Mid Range	21.47	21.59	0.000	20.8	С	-0.76	

Infrastructure Data For

Site ID	HOW191	Technician Eric He	bert Site Visit Date 10/06/2014
Shelter	Make	Shelter Model	Shelter Size
custom		custom	800 cuft

Sensor Component	Sample Tower Type	Condition		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	Not installed	Status	Fail
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	Fair	Status	pass
Sensor Component	Tubing Type	Condition	1/4 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator reported that gloves are not consistently used to handle the filter pack.

2 Parameter: SitingCriteriaCom

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

3 Parameter: ShelterCleanNotes

The custom built shelter is clean and organized.

4 Parameter: MetSensorComme

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID HOW191	Technician Eric Hebert	Site Visit Date 10/0	6/2014				
Site Sponsor (agency)	EPA	USGS Map	Howland				
Operating Group	University of ME	Map Scale					
AQS #		Map Date					
Meteorological Type	R.M. Young						
Air Pollutant Analyzer	Ozone	QAPP Latitude					
Deposition Measurement	dry	QAPP Longitude					
Land Use	Woodland - mixed	QAPP Elevation Meters					
Terrain	flat, gently rolling	QAPP Declination					
Conforms to MLM	Yes	QAPP Declination Date					
Site Telephone		Audit Latitude	45.203963				
Site Address 1		Audit Longitude	-68.740041				
Site Address 2		Audit Elevation	68				
County	Penobscot	Audit Declination	-17				
City, State	Howland, ME	Present					
Zip Code		Fire Extinguisher 🔽					
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 Me	odel custom	Shelter Size 800 cuft				
Shelter Clean	Notes The custom built shelter is clea	an and organized.					
Site OK	Notes						
Driving Directions Arrange for site visit and access with the site operator.							

Field Systems Data Form

HOW191

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 10/06/2014

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		\checkmark
City > 50,000 population	40 km		\checkmark
City 10,000 to 50,000 population	10 km		\checkmark
City 1,000 to 10,000 population	5 km		\checkmark
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m		\checkmark
Tree line	50 m		\checkmark
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

Fi	eld Systems Data Form	F-02058-1500-S3-rev002				
Site	HOW191 Technician Eric Hebert	Site Visit Date 10/06/2014				
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 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				
Pro nat	wide any additional explanation (photograph or sketch if nec ural or man-made, that may affect the monitoring parameter	ssary) regarding conditions listed above, or any other features	3,			

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

Field Systems Data Form

F-02058-1500-S4-rev002

Site	e ID	HOW191	Technician	Eric Hebert		Site Visit Date 10/06/2014	
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 s	shields for the temper	ature and RH s	ensors clean?	✓		
4	4 Are the aspirated motors working?				✓	N/A	
5	5 Is the solar radiation sensor's lens clean and free of scratches?				✓	N/A	
6	Is the su	rface wetness sensor g	grid clean and u	indamaged?	✓	N/A	
7	Are the s condition	sensor signal and pow n, and well maintained	er cables intact 1?	, in good			
8	Are the s from the	sensor signal and pow elements and well ma	er cable connec aintained?	tions protected	✓		

Field Systems Data Form							F-02058	8-1500-S5-rev002			
Site	e ID	HOW191	Technician	Eric Hebert		Site Visit Date	10/06/2014				
	Siting C	riteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipr</u>	nent sited in accord	dance with 40 C	FR 58, Appendix E			
1	Do the s unrestri	ample inlets have at le cted airflow?	east a 270 degre	e arc of	✓						
2	Are the	sample inlets 3 - 15 m	eters above the	ground?	✓						
3	Are the and 20 r	sample inlets > 1 meten neters from trees?	er from any maj	jor obstruction,		Above canopy					
	Pollutant analyzers and deposition equipment operations and maintenance										
1	Do the a conditio	nalyzers and equipme n and well maintained	ent appear to be l?	e in good	✓						
2	Are the reportin	analyzers and moniton ng data?	rs operational, o	on-line, and	✓						
3	Describe	e ozone sample tube.				1/4 teflon by 40 met	ters				
4	Describe	e dry dep sample tube				1/4 teflon by 40 met	ters				
5	Are in-li indicate	ine filters used in the o location)	ozone sample lir	ne? (if yes	✓	At inlet only					
6	Are sam obstruct	ple lines clean, free of tions?	[°] kinks, moistur	e, and	✓						
7	Is the ze	ero air supply desiccan	nt unsaturated?		✓						
8	Are the	re moisture traps in th	e sample lines?								
9	Is there clean?	a rotometer in the dry	y deposition filto	er line, and is it							

Field Systems Data Form						F-02058-1500-S6-rev002				
Site	e ID	HOW191	Technician	Eric Hebert		Site Visit	t Date 1	0/06/2014		
	<u>DAS, se</u>	nsor translators, and p	peripheral equi	pment operation	ns and	l maintenar	<u>1ce</u>			
1	Do the I well ma	DAS instruments appea intained?	ar to be in good	condition and						
2	Are all t modem,	the components of the backup, etc)	DAS operation	al? (printers,						
3	Do the a lightnin	nalyzer and sensor sig g protection circuitry?	gnal leads pass (hrough						
4	Are the well ma	signal connections pro intained?	otected from the	e weather and						
5	Are the	signal leads connected	to the correct	DAS channel?						
6	Are the grounde	DAS, sensor translatored?	rs, and shelter j	properly						
7	Does the	e instrument shelter ha	ave a stable pow	ver source?						
8	Is the in	strument shelter temp	erature control	led?						
9	Is the m	et tower stable and gro	ounded?			Stable			Grounded	
10	Is the sa	mple tower stable and	grounded?							
11	Tower o	comments?			2	4 meter wal	k-up towe	er		

Field Systems Data Form							F-0	2058-	1500-S7-rev002
Site ID	HOW191		Technic	ian	Eric Hebert	Site Visit Date	<mark>e</mark> 10/06/20	14	
Documer	<u>itation</u>								
Does the	site have the requir	ed ins	strument	and	equipment manuals?				
	_	Yes	No	N/A			Yes	No	N/A
Wind speed	sensor			✓	Data logge	r		\checkmark	
Wind direct	tion sensor			✓	Data logge	er			
Temperatur	re sensor				Strip chart	t recorder			
Relative hu	midity sensor			✓	Computer			\checkmark	
Solar radiat	tion sensor			✓	Modem			\checkmark	
Surface wet	ness sensor			✓	Printer				\checkmark
Wind senso	r translator			✓	Zero air pi	ump			
Temperatur	e translator			✓	Filter flow	pump			
Humidity se	ensor translator			✓	Surge prot	tector			
Solar radiat	ion translator			✓	UPS				\checkmark
Tipping buo	eket rain gauge			✓	Lightning	protection devic	e 🗌		\checkmark
Ozone analy	zer		\checkmark		Shelter hea	ater		\checkmark	
Filter pack	flow controller		\checkmark		Shelter air	conditioner		\checkmark	
Filter pack	MFC power supply			✓					
Does th	e site have the requi	ired a	nd most	recer	nt QC documents and	report forms?			
		Pres	ent				Cur	rent	
Station Log		•					[
SSRF							[
Site Ops Ma	nual	[[
HASP							[
Field Ops M	Ianual	[[
Calibration	Reports	[[
Ozone z/s/p	Control Charts	[[
Preventive	naintenance schedu	l [[
1 Is the s	tation log properly	comp	leted dur	ing e	every site visit? 🗹				
2 Are the curren	e Site Status Report t?	Forn	ns being o	comp	leted and				
3 Are the sample	e chain-of-custody fo transfer to and from	orms m lab	properly ?	used	to document				
4 Are oz curren	one z/s/p control cha t?	arts p	roperly c	omp	leted and C	ontrol charts not	used		
Provide any natural or n	additional explana nan-made, that may	tion (/ affec	photogra et the mo	ph o nitor	r sketch if necessary) ing parameters:	regarding condi	itions liste	d above, o	or any other features,

Field Systems Data Form

Site ID HOW191 Technician Eric Hebert Site Visit Date 10/06/2014 Site operation procedures Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

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

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

QC Check Performed		Frequency	Compliant				
Multi-point Calibrations	\checkmark	Semiannually					
Automatic Zero/Span Tests	\checkmark	Daily					
Manual Zero/Span Tests							
Automatic Precision Level Tests	\checkmark	Daily					
Manual Precision Level Test							
Analyzer Diagnostics Tests	\checkmark	Weekly					
In-line Filter Replacement (at inlet)	\checkmark	Monthly					
In-line Filter Replacement (at analyze		N/A					
Sample Line Check for Dirt/Water	\checkmark	Weekly					
Zero Air Desiccant Check	\checkmark	Weekly					
1 Do multi-point calibration gases go through the complete							

- sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?
- Are the automatic and manual z/s/p checks monitored and 3 reported? If yes, how?

	Unknown	
✓		
✓	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:

F-02058-1500-S8-rev002
Field Systems	Data Form	
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F-02058-1500-S9-rev002

Site	e ID	HOW191	Technic	cian	Eric Hebert		Site Visit Date	10/06/2014	
	<u>Site ope</u>	ration procedures							
1	Is the fi	ter pack being change	d every Tu	iesda	y as scheduled?				
2	2 Are the Site Status Report Forms being completed and filed correctly?								
3	3 Are data downloads and backups being performed as scheduled?						No longer required		
4	Are gen	eral observations being	g made an	d rec	orded? How?	✓	SSRF		
5	Are site fashion	supplies on-hand and	replenishe	d in	a timely	✓			
6	6 Are sample flow rates recorded? How?						SSRF		
7	7 Are samples sent to the lab on a regular schedule in a timely fashion?				lule in a timely	✓			
8	Are filte and shij	ers protected from com oping? How?	taminatior	ı dur	ing handling		Clean gloves on and	d off	
9	Are the operation	site conditions reporte ons manager or staff?	d regularl	y to t	he field				
QC	Check P	erformed		Freq	luency			Compliant	
N	Multi-poi	nt MFC Calibrations		Sem	iannually				
I	Flow Syst	em Leak Checks		Wee	kly				
I	Filter Pac	k Inspection							
I	Flow Rate Setting Checks Image: Weekly				kly				
V	Visual Check of Flow Rate Rotometer Weekly			kly					
Ι	In-line Filter Inspection/Replacement			iannually					
8	Sample Line Check for Dirt/Water Weekly								
Prov	vide any a	dditional explanation	(photogra	ph or	sketch if neces	sary) regarding conditi	ons listed above, or a	ny other features,

natural or man-made, that may affect the monitoring parameters:

The site operator reported that gloves are not consistently used to handle the filter pack.

Field Sys	stems Data Fo	rm		F-02058-150	0-S10-rev002	
Site ID	HOW191	Technician	Eric Hebert	Site Visit Date	10/06/2014	

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR3000	2527	000419
elevation	Elevation	none	none	none
Filter pack flow pump	Thomas	107CAB18	060300019983	04921
Flow Rate	Арех	AXMC105LPMDPC	illegible	000645
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4222-C	0808311250	06470
Ozone	ThermoElectron Inc	49i A1NAA	1009241781	000616
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200011	000435
Shelter Temperature	Campbell	107-L	none	none
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342VC	4547	04449
Zero air pump	Werther International	C 70/4	000821900	06908

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ASH	135-Eric H	ebert-10/07/2014				
1	10/7/2014	Computer	Dell	000430	D630	unknown
2	10/7/2014	DAS	Campbell	000343	CR3000	2122
3	10/7/2014	Elevation	Elevation	None	1	None
4	10/7/2014	Filter pack flow pump	Thomas	01458	107CA110	028871488
5	10/7/2014	Flow Rate	Apex	000648	AXMC105LPMDPCV	54777
6	10/7/2014	Infrastructure	Infrastructure	none	none	none
7	10/7/2014	Modem	Raven	06471	H4222-C	0808311148
8	10/7/2014	Ozone	ThermoElectron Inc	000620	49i A1NAA	1009241793
9	10/7/2014	Ozone Standard	ThermoElectron Inc	000375	49i A3NAA	0726124696
10	10/7/2014	Sample Tower	Aluma Tower	03536	A	none
11	10/7/2014	Shelter Temperature	Campbell	none	107-L	none
12	10/7/2014	Siting Criteria	Siting Criteria	None	1	None
13	10/7/2014	Temperature	RM Young	06389	41342	13994
14	10/7/2014	UPS	APC	06797	RS900	unknown
15	10/7/2014	Zero air pump	Werther International	06923	C 70/4	000836208

DAS Data Form

DAS Time Max Error:

0

Mfg	Serial	Number Site	e T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2122	AS	H135 E	Eric Hebert	10/07/2014	DAS	Primary
Das Date:	10/7 /2014 12:44:00	Audit Date Audit Time	10/7 /2014 12:44:00	Mfg	HY	Parameter	DAS
Das Day:	280	Audit Day	280	Serial Number	12010039329	Tfer Desc.	Source generator (D
Low Channel	:	High Channe	el:	Tfer ID	01322		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.0	0.000	1 0.0002	Cert Date	6/15/201	4 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	1/22/201	4 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.0001	0.0000	V	V	0.0001	
7	0.1000	0.0995	0.0995	V	V	0.0000	
7	0.3000	0.2992	0.2992	V	V	0.0000	
7	0.5000	0.4998	0.4999	V	V	0.0001	
7	0.7000	0.6998	0.6996	V	V	-0.0002	
7	0.9000	0.8998	0.8998	V	V	0.0000	
7	1.0000	0.9997	0.9997	V	V	0.0000	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	chnician	Site Visit Da	te Paran	neter	Owner ID
Apex	54777		ASH135	Eri	ic Hebert	10/07/2014	Flow R	Rate	000648
					Mfg	BIOS	Р	arameter Flo	w Rate
					Serial Number	131818	Т	fer Desc. BIC	S 220-H
					Tfer ID	01417			
					Slope	1.00	000 Int	ercept	0.00000
					Cert Date	1/8/2	2014 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.0	01	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	1.(01	
1.96%	1.96%				Rotometer R	eading:	1.4	45	
Desc.	Test type	Input l/m	n Input Corr_	MfcDisp.	OutputSignal	Output S E I	nputUnit	OutputSignall	PctDifference
primary	pump off	0.000	0.000	-0.01	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.05	l/m	l/m	
primary	test pt 1	1.529	1.530	1.49	0.000	1.50	l/m	l/m	-1.96%
primary	test pt 2	1.527	1.530	1.49	0.000	1.50	l/m	l/m	-1.96%
primary	test pt 3	1.528	1.530	1.49	0.000	1.50	l/m	l/m	-1.96%
Sensor Comp	onent Leak Tes	st		Conditio	n		Status	s pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	Good		Status	pass	
Sensor Comp	onent Rotomete	er Conditio	n	Conditio	Clean and dry		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	No moisture pr	resent	Status	pass	
Sensor Comp	onent Filter Dis	tance		Conditio	n 6.0 cm		Status	pass	
Sensor Comp	onent Filter Dep	oth		Conditio	n 2.5 cm		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	n 270 deg		Status	pass	
Sensor Comp	onent System M	/lemo		Conditio	n See comments	;	Status	pass	

Ozone Data Form

Mfg	5	Serial N	Number Tag	Site		Те	chnician		Site Visi	it Date	Paramet	ter	Owner]	D
ThermoElec	ctron Inc	100924	1793	ASH	135	E	ric Hebert	i	10/07/2	014	Ozone		000620	
Slope: Intercept CorrCoff	0. -1. 0.	99168 27949 99992	Slope: Intercept CorrCoff		0.0000	0 0 0	Mfg Serial N	lumber	ThermoE 0419606	Electron	Inc Par	rameter er Desc.	ozone Ozone primar	y stan
DAS 1: A Avg % E 2.7	Diff: A M a 7%	ax % D 3.5'	DAS 2: Di A Avg %	6Dif	A Max	% Di	Slope Cert Da	ıte		1.00928 1/8/2014	3 Inter 4 Corr	cept Coff	0.1	1780 0000
UseDes	cription:	Co	oncGroup:	Tfe	er Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctI	Difference:	
prin	nary		1		0.14	0.	02	-1.	.96	ppb				
prin	nary		2	2	24.32	23	.97	23	.14	ppb			-3.46%	
prin	nary		3	4	7.76	47	.20	45	.93	ppb			-2.69%	
prin	nary		4	8	80.72	79	.86	77	.81	ppb			-2.57%	
prin	nary		5	10	07.62	106	5.51	104	.10	ppb	-		-2.26%	
Sensor C	omponen	t Cell B	3 Noise			Conditi	on 1.1 pp	b			Status	pass		
Sensor C	omponen	t Cell B	3 Tmp.			Conditi	on				Status	pass		
Sensor C	omponen	t Fullso	ale Voltage			Conditi	on N/A				Status	pass		
Sensor C	omponen	t Inlet F	Filter Conditio	n		Conditi	on Clean	1			Status	pass		
Sensor C	omponen	t Line L	LOSS			Conditi	on Not te	ested			Status	pass		
Sensor C	omponen	t Offset	t			Conditi	Condition -0.10				Status	pass		
Sensor C	omponen	t Span				Conditi	on 1.009				Status	pass		
Sensor C	omponen	t Cell B	3 Freq.			Conditi	on 91.6 k	κHz			Status	pass		
Sensor C	omponen	t Syste	m Memo			Conditi	on				Status	pass		
Sensor C	omponen	t Samp	ole Train			Conditi	on Good				Status	pass		
Sensor C	omponen	t Cell B	Pressure			Conditi	on				Status	pass		
Sensor C	omponen	t Cell B	3 Flow			Conditi	on 0.74 l	pm			Status	pass		
Sensor C	omponen	t Cell A	A Tmp.			Conditi	on 30.6 (2			Status	pass		
Sensor C	omponen	t Cell A	Pressure			Condition	on 716.4	mmHg			Status	pass		
Sensor C	omponen	t Cell A	Noise			Conditi	on 0.9 pp	b			Status	pass		
Sensor C	omponen	t Cell A	Freq.			Conditi	on 87.6 k	κHz			Status	pass		
Sensor C	omponen	t Cell A	Flow			Conditi	on 0.74 I	pm			Status	pass		
Sensor C	omponen	t Batter	ry Backup			Conditi	on N/A				Status	pass		
Sensor C	omponen	t Zero	Voltage			Conditi	on N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number	Га Site	1	Techni	ician	Site V	isit Date/	Param	eter	Owner ID	
RM Young	13994	ASH135		Eric H	ebert	10/07	7/2014	Temper	ature	06389	_
				Mf	g	Extec	h	Pa	rameter Te	mperature	
				Ser	rial Number	H232	679	Tf	er Desc. R	D	
				Tfe	er ID	01228	3				
DAS 1:	DAS	2:		Slo	pe		1.0049	6 Inte	rcept	-0.23009	
Abs Avg Err Ab	os Max Er Abs A	Avg Err Abs	Max Er	Ce	rt Date		1/8/201	4 Cor	rCoff	1.00000	
0.02	0.05										
UseDesc.	Test type	InputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	0.28	0.51		0.000		0.6	5	С	0.05	
primary Tem	p Mid Range	22.75	22.8	7	0.000		22.	9	С	0	
primary Tem	p High Range	45.20	45.2	1	0.000		45.	2	С	0.01	
Sensor Compone	ent Shield		Cond	ition N	Moderately clea	an		Status	pass		
Sensor Compone	ent Blower		Cond	ition 🛚	N/A			Status	pass		
Sensor Compone	ent Blower Status	Switch	Cond	ition 🛚	N/A			Status	pass		
Sensor Compone	ent System Memo		Cond	ition				Status	pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ASH135	Eric Hebert	10/07/2014	Shelter Temperatu	ire none
DAS 1:	DAS 2:		Mfg	Extech	Parameter	Shelter Temperatur
Abs Avg ErrAbs0.55	s Max Er Abs Avg 0.87	Err Abs Max Er	Serial Number	H232679	Tfer Desc.	RTD
			Tfer ID	01228		
			Slope	1.0049	6 Intercept	-0.23009
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.07	23.19	0.000	23.5	С	0.28
primary	Temp Mid Range	21.85	21.97	0.000	22.8	С	0.87
primary	Temp Mid Range	23.12	23.23	0.000	22.7	С	-0.49

Infrastructure Data For

Site ID	ASH135	Technician Eric Hebe	ert Site Visit Date 10/07/2014
Shelter N	Aake	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-17)	640 cuft
AND BRIDE			

Sensor Component	Sample Tower Type	Condition	Туре А	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	Fair	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	ASH135	Eric Hebert	10/07/2014	System Memo	Apex	3668		
There is no plastic bag for	r the installed filt	er. The operator us	ses the received	bag for the installed	d filter to ship the	removed filter t	o the lab.	

Field Systems Comments

1 Parameter: DasComments

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested once each month.

3 Parameter: SitingCriteriaCom

There is an evergreen plantation 20 meters south of the site.

4 Parameter: ShelterCleanNotes

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

F-02058-1500-S1-rev002

Site ID ASH135	Technician Eric Hebert	Site Visit Date 10/0	7/2014			
	EDA	USGS Man	Squa Pan			
Site Sponsor (agency)	EFA	Mar Saala				
Operating Group	private	Map Scale				
AQS #	23-003-9991	Map Date				
Meteorological Type	R.M. Young					
Air Pollutant Analyzer	Ozone	QAPP Latitude	46.6039			
Deposition Measurement	dry	QAPP Longitude	-68.4142			
Land Use	agriculture, woodland - mixed	QAPP Elevation Meters	235			
Terrain	gently rolling	QAPP Declination	18.7			
Conforms to MLM	Marginally	QAPP Declination Date	2/22/2006			
Site Telephone	(207) 435-6482	Audit Latitude	46.603832			
Site Address 1	Radar Road	Audit Longitude	-68.413227			
Site Address 2		Audit Elevation	231			
County	Aroostook	Audit Declination	-18.2			
City, State	Ashland, ME	Present				
Zip Code	04732	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 M	odel 8810 (s/n 2149-17)	Shelter Size 640 cuft			
Shelter Clean	Notes The shelter is in good condition	n, clean, and very well organize	d.			
Site OK	Notes					
Driving Directions From towar is app	Driving Directions From I-95 take exit #286 which is route 212. Take route 212 west to route 11. Turn north on route 11 and continue toward Ashland. Approximately 2 miles south of Ashland turn left (west) on Goding Road at the DEP sign. The site is approximately 1.5 miles straight on Goding Rd. (go straight at the 90 deg curve).					

ASH135

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 10/07/2014

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		\checkmark
City 10,000 to 50,000 population	10 km		\checkmark
City 1,000 to 10,000 population	5 km		\checkmark
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m		\checkmark
Tree line	50 m	20 m	
Obstacles to wind	10 times obstacle height		\checkmark

Siting Distances OK

Siting Criteria Comment

There is an evergreen plantation 20 meters south of the site.

Fi	eld Sy	stems Data	a Form		F-02058-1500-S3-rev0
Site	e ID	ASH135	Technician Eric Hebert		Site Visit Date 10/07/2014
1	Are win being in	d speed and dired fluenced by obsti	ction sensors sited so as to avoid ructions?		N/A
2	Are win (i.e. win horizon tower ir	d sensors mounte d sensors should tally extended bo nto the prevailing	ed so as to minimize tower effects? be mounted atop the tower or on a om >2x the max diameter of the wind)		N/A
3	Are the	tower and sensor	rs plumb?	✓	N/A
4	Are the avoid ra	temperature shie adiated heat sourc	lds pointed north or positioned to ces 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 so	olar radiation sen	sor plumb?	✓	N/A
7	Is it site light?	d to avoid shadin	g, or any artificial or reflected	✓	N/A
8	Is the ra	ain gauge plumb?		✓	N/A
9	Is it site towers,	d to avoid shelter etc?	ing effects from buildings, trees,	✓	N/A
10	Is the su facing n	irface wetness sei orth?	nsor sited with the grid surface	✓	N/A
11	Is it inc	lined approximation	tely 30 degrees?	✓	N/A

natural or man-made, that may affect the monitoring parameters:

F-02058-1500-S4-rev002

Site	ID	ASH135	Technician	Eric Hebert		Site Visit Date 10/07/2014	
1	Do all th condition	e meterological senso n, and well maintained	rs appear to be d?	intact, in good		N/A	
2 Are all the meteorological sensors operational online, and reporting data?						N/A	
3	Are the s	shields for the temper	ature and RH s	ensors clean?			
4	Are the a	aspirated motors wor	king?		✓	N/A	
5	Is the sol scratche	lar radiation sensor's s?	lens clean and f	free of	✓	N/A	
6	Is the su	rface wetness sensor g	grid clean and u	indamaged?	✓	N/A	
7	Are the s condition	sensor signal and pow n, and well maintained	er cables intact d?	, in good	✓		
8	Are the s from the	sensor signal and pow elements and well ma	er cable connec aintained?	tions protected	✓		

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:

Fi	eld Sy	stems Data Fo	rm		F-02058-15	500-S5-rev002
Site	e ID	ASH135	Technician Eric H	lebert	Site Visit Date 10/07/2014]
	Siting C	riteria: Are the polluta	nt analyzers and de	position equip	nent sited in accordance with 40 CFR 5	8, Appendix E
1	Do the s unrestri	cample inlets have at le	ast a 270 degree arc	of		
2	Are the	sample inlets 3 - 15 me	ters above the grour	nd? ✓		
3	Are the sample inlets > 1 meter from any major obstruction and 20 meters from trees?					
	<u>Pollutar</u>	nt analyzers and deposi	tion equipment oper	ations and ma	<u>intenance</u>	
1	Do the a conditio	analyzers and equipme on and well maintained	nt appear to be in go ?	od 🗸		
2	Are the reportin	analyzers and monitor ng data?	s operational, on-lin	e, and		
3	Describ	e ozone sample tube.			1/4 teflon by 12 meters	
4	Describ	e dry dep sample tube.			3/8 teflon by 12 meters	
5	Are in-li indicate	ine filters used in the o location)	zone sample line? (if	yes 🗹	At inlet only	
6	Are sam obstruct	nple lines clean, free of tions?	kinks, moisture, and	1		
7	Is the ze	ero air supply desiccan	unsaturated?			
8	Are the	re moisture traps in the	e sample lines?	\checkmark	Flow line only	
9	Is there clean?	a rotometer in the dry	deposition filter line	e, and is it 🔽	Clean and dry	

Fi	eld Sy	stems Data Fo	orm			F-0 2	2058-15	00-S6-rev002	
Site	e ID	ASH135	Technician	nician Eric Hebert		Site Visit Da	ate 10/07/2014	4	
	<u>DAS, se</u>	nsor translators, and	peripheral equi	pment operatio	ns a	nd maintenance			
1	Do the l well ma	DAS instruments appe intained?	ear to be in good	l condition and					
2	Are all modem	the components of the , backup, etc)	DAS operation	al? (printers,	✓				
3	Do the a lightnin	analyzer and sensor sig g protection circuitry	gnal leads pass (?	through	✓	Met sensors only	у		
4	Are the signal connections protected from the weather and well maintained?				\checkmark				
5	Are the	signal leads connected	l to the correct	DAS channel?	✓				
6	Are the ground	DAS, sensor translato ed?	ors, and shelter j	properly	✓				
7	Does th	e instrument shelter h	ave a stable pow	ver source?	✓				
8	Is the in	strument shelter temp	oerature control	lled?					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	ample tower stable and	l grounded?						
11	Tower o	comments?							

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

Field Systems Data	Fo	rm			F-0 2	2058-	- 1500-S	57-rev0	02
Site ID ASH135		Techn	ician	Eric Hebert Site Visit Date	10/07/201	4			
Documentation									
Does the site have the requi	red in	strumen	t and e	equipment manuals?					
Wind speed sensor Wind direction sensor	Yes	No	N/A ✓	Data logger Data logger	Yes	No ✓	N/A □ ☑		
Temperature sensor Relative humidity sensor				Strip chart recorder Computer					
Solar radiation sensor Surface wetness sensor				Modem Printer					
Wind sensor translator Temperature translator				Zero air pump Filter flow pump					
Humidity sensor translator Solar radiation translator				Surge protector UPS					
Tipping bucket rain gauge Ozone analyzer				Lightning protection device Shelter heater		 			
Filter pack flow controller Filter pack MFC power supply	y			Shelter air conditioner					
Does the site have the requ	uired a	and mos	t recen	t QC documents and report forms?					
Station Log	Pres	sent			Curr	ent			

Station Log	\checkmark		\checkmark
SSRF	\checkmark		\checkmark
Site Ops Manual	\checkmark	June 2007	\checkmark
HASP	\checkmark	Nov 2009	\checkmark
Field Ops Manual			
Calibration Reports	\checkmark		\checkmark
Ozone z/s/p Control Charts			
Preventive maintenance schedul			\checkmark

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

ASH135 Technician Eric Hebert Site Visit Date 10/07/2014 Site ID Site operation procedures Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

	Frequency
\checkmark	N/A
\checkmark	Weekly
	N/A
\checkmark	N/A
\checkmark	Weekly
\checkmark	N/A
	> > > >

✓

 \checkmark

✓

✓

✓

 \checkmark

✓

 \checkmark

Frequency

Semiannually

As needed

As needed

Weekly

Monthly

Weekly

Weekly

N/A

Daily

Daily

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

OC Check Performed	OC	Check	Performed
--------------------	----	-------	-----------

1

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

Do multi-point calibration gases go through the complete
sample train including all filters?

2	Do automatic and manual z/s/p gasses go through the
	complete sample train including all filters?

3	Are the automatic and ma	anual z/s/p checks mo	nitored and
	reported? If yes, how?		

	Unknown
✓	
✓	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 once each month.

Compliant

Compliant

F-02058-1500-S8-rev002

✓

 \checkmark

✓

✓

 \checkmark

✓

✓

 \checkmark

 \checkmark

✓

Fi	eld Sy	stems Data Form	l		F-02058-1500-S9-rev0(
Sit	e ID	ASH135 To	echnician	Eric Hebert		Site Visit Date	10/07/2014			
	<u>Site ope</u>	eration procedures								
1	Is the fi	lter pack being changed eve	ery Tuesda	ay as scheduled?		Filter changed morir	nings			
2	2 Are the Site Status Report Forms being completed and filed correctly?									
3	Are dat schedul	a downloads and backups b ed?	eing perf	ormed as		No longer required				
4	4 Are general observations being made and recorded? How?					SSRF				
5	5 Are site supplies on-hand and replenished in a timely fashion?									
6	6 Are sample flow rates recorded? How?				✓	SSRF, call-in				
7	7 Are samples sent to the lab on a regular schedule in a timely fashion?				✓					
8	Are filt and shi	ers protected from contamin pping? How?	nation du	ring handling	✓	Clean gloves on and off				
9	Are the operation	site conditions reported reg ons manager or staff?	gularly to	the field						
QC	Check P	erformed	Fre	quency			Compliant			
I	Multi-poi	nt MFC Calibrations	✓ Sem	niannually						
I	Flow System Leak Checks									
I	Filter Pack Inspection									
I	Flow Rate Setting Checks									
	Visual Check of Flow Rate Rotometer Weekly									
1	In-line Fil	lter Inspection/Replacement	Sem Sem	niannually						
5	Sample L	ine Check for Dirt/Water	✓ Wee	ekly			\checkmark			
D	de energi	dditional annianation (mba	to one when a	n alastala if massa	~ ~ ~ ~ ~) waa and in a sam didi	and listed above on a	and the set for the set		

ASH135

F-02058-1500-S10-rev002

Site ID	
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Technician Eric Hebert

Site Visit Date 10/07/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D630	unknown	000430
DAS	Campbell	CR3000	2122	000343
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	028871488	01458
Flow Rate	Apex	AXMC105LPMDPC	54777	000648
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4222-C	0808311148	06471
Ozone	ThermoElectron Inc	49i A1NAA	1009241793	000620
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124696	000375
Sample Tower	Aluma Tower	A	none	03536
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	13994	06389
UPS	APC	RS900	unknown	06797
Zero air pump	Werther International	C 70/4	000836208	06923

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PNF	F126-Eric H	ebert-10/30/2014				
1	10/30/2014	Computer	Dell	000264	D520	unknown
2	10/30/2014	DAS	Campbell	000346	CR3000	2125
3	10/30/2014	Elevation	Elevation	None	1	None
4	10/30/2014	Filter pack flow pump	Thomas	06030	107CAB18	060400022677
5	10/30/2014	Flow Rate	Арех	000655	AXMC105LPMDPCV	illegible
6	10/30/2014	Infrastructure	Infrastructure	none	none	none
7	10/30/2014	Modem	Raven	06597	V4221-V	0844349884
8	10/30/2014	Ozone	ThermoElectron Inc	000695	49i A1NAA	1030244801
9	10/30/2014	Ozone Standard	ThermoElectron Inc	000437	49i A3NAA	CM08200013
10	10/30/2014	Sample Tower	Aluma Tower	000178	В	none
11	10/30/2014	Shelter Temperature	Campbell	none	107-L	none
12	10/30/2014	Siting Criteria	Siting Criteria	None	1	None
13	10/30/2014	Temperature	RM Young	missing	41342	none
14	10/30/2014	Zero air pump	Werther International	06886	C 70/4	000815259

DAS Data Form

0 DAS Time Max Error:

Mfg	Serial Number Site 7		echnician	Site Visit Date	Parameter	Use Desc.	
Campbell	2125	PN	F126	Eric Hebert	10/30/2014	DAS	Primary
Das Date: Das Time: Das Day:	10/30/2014 11:13:00 303	Audit Date Audit Time Audit Day	10/30/2014 11:13:00 303	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Low Channe Avg Diff: 0.000	el: <u>Max Diff:</u> 02 0.0	High Channe Avg Diff: 0003 0.0002	Max Diff: 2 0.0003	Slope Cert Date	1.0000	0 Intercept 2 CorrCoff	0.00000
				Mfg Serial Number Tfer ID Slope	Fluke 95740243 01312 1.0000	Parameter Tfer Desc. Intercent	DAS
				Cert Date	12/28/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.0005	-0.0008	V	V	-0.0003	
7	0.1000	0.1004	0.1004	V	V	0.0000	
7	0.3000	0.2994	0.2992	V	V	-0.0002	
7	0.5000	0.4996	0.4994	V	V	-0.0002	
7	0.7000	0.6996	0.6995	V	V	-0.0001	
7	0.9000	0.8996	0.8994	V	V	-0.0002	
7	1.0000	0.9992	0.9990	V	V	-0.0002	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	chnician	Site Visit Da	ate Param	neter	Owner ID
Apex	illegible		PNF126	Eri	c Hebert	10/30/2014	Flow R	ate	000655
					Mfg	BIOS	P	arameter Flow	/ Rate
					Serial Number	131818	Т	fer Desc. BIO	S 220-H
					Tfer ID	01417			
					Slope	1.0	0000 Inte	ercept	0.00000
					Cert Date	1/8/	2014 Co	rCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.4	12	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	0.99	94	
1.10%	1.32%				Rotometer R	eading:	1.6	35	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	PctDifference
primary	pump off	0.000	0.000	0.06	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.02	0.000	0.01	l/m	l/m	
primary	test pt 1	1.511	1.510	1.56	0.000	1.49	l/m	l/m	-1.32%
primary	test pt 2	1.509	1.510	1.56	0.000	1.49	l/m	l/m	-1.32%
primary	test pt 3	1.512	1.510	1.56	0.000	1.50	l/m	l/m	-0.66%
Sensor Compo	onent Leak Tes	it		Conditio	n		Status	pass	
Sensor Compo	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Compo	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Compo	onent Rotomete	er Conditior	n	Conditio	n Clean and dry		Status	pass	
Sensor Compo	onent Moisture	Present		Conditio	n See comments	3	Status	pass	
Sensor Compo	onent Filter Dis	tance		Conditio	n 4.5 cm		Status	pass	
Sensor Compo	onent Filter Dep	oth		Conditio	tion 1.5 cm		Status	pass	
Sensor Compo	onent Filter Azi	muth		Conditio	n 45 deg		Status	pass	
Sensor Compo	onent System M	/lemo		Conditio	n		Status	pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	echnician		Site Visi	t Date	Parame	ter	Owner]	D
ThermoElectron Inc	1030244801	PNF126	E	ric Hebert		10/30/20	014	Ozone		000695	
Slope: () Intercept () CorrCoff ()	D.98882 Slope: D.45144 Intercept 1.00000 CorrCoff	0.0000	0 0 0	Mfg Serial N Tfer ID	umber	ThermoE 49CPS-7 01110	Electron 70008-36	Inc Pa	rameter (er Desc. (ozone Ozone primar	y stan
DAS 1: A Avg % Diff: A N	DAS 2: //ax % Di A Avg %	%Dif A Max	% Di	Slope			1.00707	7 Inter	cept	-0.2	1032
0.6%	0.8%			Cert Da	ite		1/8/2014	4 Corr	Coff	1.00	0000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctD	ifference:	
primary	1	0.35	0.	55	0.9	90	ppb				
primary	2	29.59	29	.59	29.	.83	ppb			0.81%	
primary	3	47.23	47	.10	47.	.05	ppb			-0.11%	
primary	4	77.66	77	.32	76.	.88	ppb			-0.57%	
primary	5	117.80	117	7.18	116	5.30	ppb			-0.75%	
Sensor Compone	nt Cell B Noise		Conditi	on 1.1 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	on	Conditi	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditi	on -0.10				Status	pass		
Sensor Compone	nt Span		Conditi	Condition 1.003			Status	pass			
Sensor Compone	nt Cell B Freq.		Conditi	Condition 90.6 kHz				Status	pass		
Sensor Compone	nt System Memo		Conditi	Condition				Status	pass		
Sensor Compone	nt Sample Train		Conditi	Condition Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditi	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditi	on 0.65 l	om			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditi	on 34.9 (2			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditi	on 633 m	mHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditi	on 1.0 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditi	on 100.9	kHz			Status	pass		
Sensor Compone	nt Cell A Flow		Conditi	on 0.61 l	om			Status	pass		
Sensor Compone	nt Battery Backup		Conditi	on N/A				Status	pass		
Sensor Compone	nt Zero Voltage		Conditi	on N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number Ta	Site	1	Fechn i	ician	Site V	isit Date	Param	eter	Owner ID)
RM Young	none	PNF126		Eric H	ebert	10/30	/2014	Temper	ature	missing	
				Mf	g	Eutech	nnics	Ра	rameter Te	emperature	
				Serial Number		01D10	01D102193 Tf		er Desc. R	TD translator	
				Tfe	er ID	01231					
DAS 1.	DAS 2	•		Slo	pe	1.00133 Inter		rcept	-0.057	731	
Abs Avg Err A	bs Avg Err Abs Max Er Abs Avg Err Abs Max				rt Date		12/27/201	3 Cor	rCoff	1.000	000
				Mf	g	Eutech	nnics	Pa	rameter Te	emperature	
				Ser	rial Number	01H00)60	Tf	er Desc. R	TD probe	
				Tfer ID		01230					
				Slo	pe		1.0013	3 Inte	rcept	-0.057	'31
				Cei	rt Date		12/27/201	3 Cor	rCoff	1.000	000
0.28	0.48										
UseDesc.	Test type Ir	nputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Te	mp Low Range	-0.07	-0.01		0.000		0.5	5	С	0.48	
primary Te	mp Mid Range	23.79	23.82	2	0.000		24.	0	С	0.21	
primary Te	mp High Range	48.90	48.89)	0.000		48.	7	С	-0.16	
Sensor Component Shield			Condi	tion N	Moderately clea	an		Status	pass]
Sensor Component Blower				ndition Functioning				Status	pass]
Sensor Component Blower Status Switch				ondition N/A				Status	pass]
Sensor Component System Memo				idition				Status	Is pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	PNF126	Eric Hebert	10/30/2014	Shelter Temperatu	ire none
DAS 1: Abs Avg Err Abs 0.51	DAS 2: s Max Er Abs Avg 0.89	g Err Abs Max Er	Mfg Serial Number Tfer ID	Eutechnics 01D102193 01231	Parameter Tfer Desc.	Shelter Temperatur
			Slope Cert Date	1.0013 12/27/201	3 Intercept3 CorrCoff	-0.05731 1.00000
			Mfg	Eutechnics	Parameter S	Shelter Temperatur
			Serial Number	01H0060	Tfer Desc.	RTD probe
			Tfer ID	01230		
			Slope	1.0013	3 Intercept	-0.05731
			Cert Date	12/27/201	3 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	21.23	21.26	0.000	22.2	С	0.89
primary	Temp Mid Range	23.41	23.44	0.000	23.1	С	-0.34
primary	Temp Mid Range	24.10	24.13	0.000	23.8	С	-0.29

Infrastructure Data For

Site ID	PNF126	Technician Eric He	bert Site Visit Date 10/30/2014
Shelter M	Aake	Shelter Model	Shelter Size
Ekto		8810	640 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	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	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	PNF126	Eric Hebert	10/30/2014	Moisture Present	Apex	4015		
The filter sample tubing h	as drops of mois	ture in low sections	outside the she	lter.				

Field Systems Comments

1 Parameter: DasComments

The towers are not grounded.

2 Parameter: SitingCriteriaCom

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition.

F-02058-1500-S1-rev002

Site ID PNF126	Technician Eric Hebert	Site Visit Date 10/3	0/2014						
			[]						
Site Sponsor (agency)	EPA	USGS Map	Carvers Gap						
Operating Group	USFS/private	Map Scale							
AQS #	37-011-9991	Map Date							
Meteorological Type	R.M. Young								
Air Pollutant Analyzer	Ozone	QAPP Latitude							
Deposition Measurement	dry	QAPP Longitude							
Land Use	woodland - mixed	QAPP Elevation Meters							
Terrain	complex	QAPP Declination							
Conforms to MLM	No	QAPP Declination Date							
Site Telephone	8287331643	Audit Latitude	36.105435						
Site Address 1	end of paved road	Audit Longitude	-82.045015						
Site Address 2	Roaring Creek Road	Audit Elevation	1216						
County	Avery	Audit Declination	-6.3						
City, State	, NC	Present							
Zip Code	28657	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 Me	odel 8810	Shelter Size 640 cuft						
Shelter Clean	Notes The shelter is in fair condition.								
Site OK	Notes								
Driving Directions From bearin	Driving Directions From Hwy 19E north of Plumb tree, turn west onto Roaring Creek Road. Follow the road to end of pavement always bearing right, and continue 200 meters. Site is off dirt road in the field on the right.								

PNF126

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 10/30/2014

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		\checkmark
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		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m	5 m	
Large parking lot	200 m		\checkmark
Small parking lot	100 m		\checkmark
Tree line	50 m		\checkmark
Obstacles to wind	10 times obstacle height		\checkmark

Siting Distances OK

Siting Criteria Comment

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

Fi	eld Sy	stems Data	Form			F-02058 -	1500-S3-rev002
Site	ID	PNF126	Technician	ric Hebert	Site Visit Date	10/30/2014	
1	Are win being in	d speed and direct fluenced by obstru	tion sensors sited so a actions?	is to avoid 🗹	N/A		
2	Are win (i.e. wind horizont tower in	d sensors mounted d sensors should b ally extended boo to the prevailing v	l so as to minimize to be mounted atop the t m >2x the max diam wind)	ower effects?	N/A		
3	Are the	tower and sensors	plumb?	\checkmark	N/A		
4	Are the avoid ra	temperature shiel diated heat source	ds pointed north or p es such as buildings,	ositioned to 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)			l unnatural be natural , and areas of			
6	Is the so	lar radiation sense	or plumb?	\checkmark	N/A		
7	Is it site light?	d to avoid shading	, or any artificial or	reflected 🔽	N/A		
8	Is the ra	in gauge plumb?		\checkmark	N/A		
9	Is it site towers,	d to avoid shelteri etc?	ng effects from build	ings, trees,	N/A		
10	Is the su facing n	rface wetness sens orth?	sor sited with the grid	d surface 🗸	N/A		
11	Is it inc	lined approximate	ely 30 degrees?	\checkmark	N/A		

natural or man-made, that may affect the monitoring parameters:

F-02058-1500-S4-rev002

Site	e ID	PNF126	Technician	Eric Hebert		Site Visit Date 10/30/2014	
1	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?			l online, and		Temperature only	
3	Are the s	hields for the temper	ature and RH s	ensors clean?	✓		
4	Are the a	spirated motors wor	king?			N/A	
5	Is the sol scratches	ar radiation sensor's s?	lens clean and f	ree of	✓	N/A	
6	Is the su	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A	
7	Are the s condition	ensor signal and pow n, and well maintaine	ver cables intact d?	, in good			
8	Are the s from the	ensor signal and pow elements and well ma	ver cable connec aintained?	tions protected	✓		

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:

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Sit	e ID	PNF126	Technician	Eric Hebert		Site Visit Date 10/30/2014
	<u>Siting C</u>	Criteria: Are the pollut	ant analyzers ar	nd deposition eq	<u>uipr</u>	nent sited in accordance with 40 CFR 58, Appendix E
1	Do the s unrestri	sample inlets have at le icted airflow?	east a 270 degree	e arc of	✓	
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?					
	<u>Pollutar</u>	nt analyzers and depos	ition equipment	t operations and	mai	intenance
1	Do the a conditio	analyzers and equipme on and well maintained	ent appear to be l?	in good		
2	Are the reportin	analyzers and monitor 1g data?	rs operational, o	on-line, and		
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters
5	Are in-l indicate	ine filters used in the o location)	ozone sample lin	e? (if yes		At inlet only
6	Are sam obstruct	nple lines clean, free of tions?	' kinks, moisture	e, and	✓	
7	Is the ze	ero air supply desiccan	t unsaturated?		✓	
8	Are the	re moisture traps in th	e sample lines?		✓	Flow line only
9	Is there clean?	a rotometer in the dry	v deposition filte	er line, and is it		Clean and dry

Field Systems Data Form						F-02058-1500-S6-rev002			
Site	e ID	PNF126	Technician	Eric Hebert		Site Visit Da	e 10/30/201	4	
DAS, sensor translators, and peripheral equipment operations an						<u>l maintenance</u>			
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 well mai	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 in	strument shelter temp	erature control	led?					
9	Is the m	et tower stable and gro	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?						
11	Tower c	omments?							

The towers are not grounded.
Fie	ld Sy	stems Data	Fo	rm				F-0 2	2058-	-1500-S	57-rev002
Site 1	ID	PNF126		Tech	nician Eric	: Hebert	Site Visit Dat	te 10/30/201	4		
Do	ocument	tation									
Do	oes the s	ite have the requi	red in	strume	ent and equ	ipment manua	<u>ls?</u>				
Wind Wind Temp Relat	l speed s l directi perature tive hun	sensor on sensor e sensor nidity sensor	Yes □ □ □	No	N/A ✓ ✓ ✓	Data lo Data lo Strip cl Compu	gger gger nart recorder ter	Yes	No ✓	N/A □ ✓ □	
Solar Surfa Wind Temp	[•] radiati nce wetn l sensor peraturo	on sensor less sensor translator e translator			> > >	Modem Printer Zero ai Filter fi	r pump low pump				
Hum Solar Tippi	idity ser radiati ing bucl	nsor translator on translator ket rain gauge			> > >	Surge p UPS Lightni	ng protection devi	ice			
Filter Filter	r pack fl r pack M Does the	ow controller IFC power supply site have the real	y 🗌	✓ ✓ □	□ □ ▼	Shelter Shelter	air conditioner				
-		site nuve the requ	Pros	ent	<u>streeent (</u>	<u>e uocumento t</u>		Curr	ent		
Static SSRF Site (on Log ? Ons Mai	nual	[✓ ✓ ✓	Oct 2001				ciit		
HAS Field Calib	P Ops Ma oration 1	anual Reports	[Nov 2009						
Ozon Preve	e z/s/p (entive m	Control Charts naintenance sched	[ul [
1	Is the st	ation log properly	y comp	oleted	during ever	y site visit? 🔽	Minimal information	on			
2	Are the current	Site Status Repor ?	rt Forn	ns beir	ng complete	and 🔽					
3	Are the sample	chain-of-custody transfer to and fr	forms om lab	prope ?	rly used to	document 🗸					

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

PNF126 Technician Eric Hebert Site Visit Date 10/30/2014 Site ID Site operation procedures Trained in Gainesville in 1987 Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark 4 Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

QC Check Performed		Frequ
Multipoint Calibrations	\checkmark	Semia
Visual Inspections	\checkmark	Weekly
Translator Zero/Span Tests (climatronics)		N/A
Manual Rain Gauge Test	\checkmark	N/A
Confirm Reasonableness of Current Values	\checkmark	Weekly
Test Surface Wetness Response	\checkmark	N/A

Frequency	Com
Semiannually	
Weekly	\checkmark
N/A	\checkmark
N/A	\checkmark
Weekly	\checkmark
N/A	\checkmark
	Frequency Semiannually Weekly N/A Weekly N/A

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

QC Check Performed	
Multi-point Calibrations	\checkmark
Automatic Zero/Span Tests	\checkmark
Manual Zero/Span Tests	
Automatic Precision Level Tests	\checkmark
Manual Precision Level Test	
Analyzer Diagnostics Tests	\checkmark
In-line Filter Replacement (at inlet)	\checkmark
In-line Filter Replacement (at analyze	
Sample Line Check for Dirt/Water	\checkmark

Zero Air Desiccant Check

Frequency	Cor
Semiannually	
Daily	
Daily	
Weekly	
Monthly	
N/A	
Weekly	
Weekly	

- **1** Do multi-point calibration gases go through the complete sample train including all filters?
- 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:

Compliant

pliant

F-02058-1500-S8-rev002

Fi	eld Sy	stems Data Form	l				F-02058	-1500-S9-rev002		
Sit	e ID	PNF126	chnician	Eric Hebert		Site Visit Date	10/30/2014			
	<u>Site ope</u>	eration procedures								
1	Is the fi	lter pack being changed eve	ry Tuesda	ay as scheduled?		Filter changed after	noons			
2	Are the correctl	Site Status Report Forms b ly?	eing comj	pleted and filed						
3	Are dat schedul	a downloads and backups b ed?	eing perfo	ormed as		No longer required				
4	Are gen	eral observations being mad	de and reo	corded? 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 filte and shi	ers protected from contamir pping? How?	nation du	ring handling	✓	One set of gloves only				
9	Are the operation	site conditions reported reg ons manager or staff?	ularly to	the field						
QC	Check P	erformed	Free	quency			Compliant			
I	Multi-poi	nt MFC Calibrations	✓ Sem	iannually						
I	Flow Syst	em Leak Checks	✓ Wee	kly						
1	Filter Pac	k Inspection								
1	Flow Rate Setting Checks						\checkmark			
	Visual Check of Flow Rate Rotometer Weekly						\checkmark			
]	n-line Fil	ter Inspection/Replacement	Sem Sem	iannually			\checkmark			
5	Sample L	ine Check for Dirt/Water	✓ Wee	ekly			\checkmark			
	ido onvo	ditional automation (nhat	agranh a	n alzotak if nagoa	~~~~) maganding conditi	and listed above	on one other feetunes		

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000264
DAS	Campbell	CR3000	2125	000346
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022677	06030
Flow Rate	Apex	AXMC105LPMDPC	illegible	000655
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0844349884	06597
Ozone	ThermoElectron Inc	49i A1NAA	1030244801	000695
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200013	000437
Sample Tower	Aluma Tower	В	none	000178
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	none	missing
Zero air pump	Werther International	C 70/4	000815259	06886

Technician Eric Hebert

Field Systems Data Form

PNF126

Site ID

Site Visit Sensors

F-02058-1500-S10-rev002

Site Visit Date 10/30/2014

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number					
ABT	BT147-Sandy Grenville-11/09/2014										
1	11/9/2014	Computer	Dell	000296	D520	unknown					
2	11/9/2014	DAS	Campbell	000413	CR3000	2519					
3	11/9/2014	Elevation	Elevation	None	1	None					
4	11/9/2014	Filter pack flow pump	Thomas	02974	107CAB18	0493002469					
5	11/9/2014	Flow Rate	Арех	missing	AXMC105LPMDPCV	illegible					
6	11/9/2014	Infrastructure	Infrastructure	none	none	none					
7	11/9/2014	Met tower	Universal Tower	06486	unknown	none					
8	11/9/2014	Modem	Raven	06609	H4223-C	0844356221					
9	11/9/2014	Ozone	ThermoElectron Inc	000627	49i A1NAA	1009241772					
10	11/9/2014	Ozone Standard	ThermoElectron Inc	000440	49i A3NAA	CM08200025					
11	11/9/2014	Sample Tower	Aluma Tower	000017	В	AT-61152-A-H8-C					
12	11/9/2014	Shelter Temperature	Campbell	none	107-L	none					
13	11/9/2014	Shield (10 meter)	RM Young	02804	Aspirated 43408	none					
14	11/9/2014	Siting Criteria	Siting Criteria	None	1	None					
15	11/9/2014	Temperature	RM Young	06503	41342	14623					
16	11/9/2014	Zero air pump	Werther International	06930	P 70/4	000829168					

DAS Data Form

DAS Time Max Error:

0

Mfg Serial Number		Number Site	1	Fechnician	Site Visit Date	Parameter	Use Desc.	
Campbell	2519	AB	T147	Sandy Grenville	11/09/2014	DAS	Primary	
Das Date: Das Time:	11/9 /2014 16:43:21	Audit Date Audit Time	11/9 /2014 16:43:21	Mfg Social Number	Datel	Parameter	DAS	
Das Day:	313	Audit Day _	313		01220		Course generator (D	
Low Channe	el:	High Channe	el:	Her ID	01320			
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:					
0.000	1 0.0	001 0.0001	0.0001					
				Mfg	Fluke	Parameter	DAS	
				Serial Number	95740135 Tfer Desc. DVM			
				Tfer ID	01311			
				Slope	1.0000	0 Intercept	0.00000	
				Cert Date	12/28/201	3 CorrCoff	1.00000	
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference		
7	0.0000	0.0000	0.0001	V	V	0.0001		
7	0.1000	0.0999	0.1000) V	V	0.0001		
7	0.3000	0.2997	0.2998	8 V	V	0.0001		
7	0.5000	0.4996	0.4997	v V	V	0.0001		
7	0.7000	0.6996	0.6996	5 V	V	0.0000		
7	0.9000	0.8995	0.8994	V	V	-0.0001		
7	1.0000	0.9993	0.9993	s v	V	0.0000		

Flow Data Form

Mfg	Serial Num	Serial Number Ta Sit		Site Teo		Site Visit D	ate Paran	ieter	Owner ID
Арех	illegible		ABT147 S		ndy Grenville	11/09/2014 Flo		ate	missing
					Mfg	BIOS	P	arameter Fl	ow Rate
					Serial Number	103471		fer Desc ne	exus
							^	Iei Dest.	
					Tfer ID	01420			
					Slope	1.0	0846 Inte	ercept	0.01358
					Cert Date	1/8	/2014 Cor	rCoff	0.99997
					Mfg	BIOS	Р	arameter Fl	ow Rate
					Serial Number	103424	Т	fer Desc. Bl	OS cell
					Tfer ID	01410			
					Clara	1.0	0846 Test		0.01258
					Slope	1.0	10040 Into	ercept	0.01358
					Cert Date	1/8	/2014 Co	rCoff	0.99997
DAS 1:		DAS 2:			Cal Factor Z	ero	0.0)1	
A Avg % Diff:	A Max % Di	A Avg %l	Dif A Max	: % Di	Cal Factor F	ull Scale	1.()1	
0.22%	0.67%				Rotometer R	eading:	1	.5	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	ll PctDifference
primary	pump off	0.000	0.000	-0.02	0.000	-0.03	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	1.520	1.490	1.49	0.000	1.49	49 l/m		0.00%
primary	test pt 2	1.520	1.490	1.48	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.522	1.500	1.49	0.000	1.50 l/m l		l/m	0.00%
Sensor Compo	onent Leak Tes	t		Conditio	n		Status	pass	
Sensor Compo	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Compo	onent Filter Pos	ition		Conditio	n Good		Status	pass	
Sensor Compo	onent Rotomete	er Conditior	1	Conditio	Clean and dry		Status	pass	
Sensor Component Moisture Present			Conditio	n No moisture p	resent	Status	pass		
Sensor Component Filter Distance			Conditio	n 2.5 cm		Status	pass		
Sensor Component Filter Depth				Conditio	1 0.5 cm		Status	pass	
Sensor Component Filter Azimuth				Conditio	n 180 deg		Status	pass	
Sensor Compo	onent System M	lemo		Conditio	n		Status	pass	

Ozone Data Form

Mfg	S	erial Number Ta	Site	Те	chnician		Site Visi	t Date	Paramet	ter	Owner ID	>
ThermoElec	ctron Inc	1009241772	ABT147	S	andy Grei	nville	11/09/20	014	Ozone		000627	
Slope: Intercept CorrCoff	1.0 -0.5	O1003Slope:59769Intercept69995CorrCoff	0.0000 0.0000 0.0000	0 0 0	Mfg Serial N	umber	ThermoE 49C-731	Electron	Inc Par	rameter ozor er Desc. Ozo	ne ne transfer	
DAS 1: A Avg % D 0.8)iff: A Ma 8%	DAS 2: x % Di A Avg % 1.3%	6Dif A Max	% Di	Slope Cert Da	ıte	12	1.00458 /10/2013	³ Inter ³ Corr	cept	-0.114 1.000	.84)00
UseDes	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	rence:	
prin	nary	1	0.04	0.	15	-0.	15	ppb				
prin	nary	2	30.45	30	.42	30.	.02	ppb			-1.31%	
prin	nary	3	50.43	50	.31	49.	.96	ppb			-0.70%	
prin	nary	4	82.51	82	.24	82.	.00	ppb			-0.29%	
prin	nary	5	102.30	101	94	102	.90	ррь			0.94%	1
Sensor Co	omponent	Cell B Noise		Conditi	on 0.9 pp	b			Status	pass]
Sensor Co	omponent	Cell B Tmp.		Conditi	on				Status	pass]
Sensor Co	omponent	Fullscale Voltage		Conditi	on N/A				Status	pass]
Sensor Co	omponent	Inlet Filter Condition	n	Conditi	on Clean				Status	pass]
Sensor Co	omponent	Line Loss		Conditi	on Not te	sted			Status	pass]
Sensor Co	omponent	Offset		Conditi	on 0.20				Status	pass]
Sensor Co	omponent	Span		Conditi	Condition 0.997				Status	pass]
Sensor Co	omponent	Cell B Freq.		Conditi	Condition 96.3 kHz					pass]
Sensor Co	omponent	System Memo		Conditi	Condition					pass]
Sensor Co	omponent	Sample Train		Conditi	on Good				Status	pass]
Sensor Co	omponent	Cell B Pressure		Conditi	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditi	on 0.70 l	om			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditi	on 31.4 (>			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditi	on 717 m	mHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditi	on 0.9 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditi	on 91.8 k	Hz			Status	pass]
Sensor Co	omponent	Cell A Flow		Conditi	on 0.71 l	om			Status	pass		
Sensor Co	omponent	Battery Backup		Conditi	on N/A				Status	pass]
Sensor Co	omponent	Zero Voltage		Conditi	on N/A				Status	pass]

Temperature Data Form

Mfg	Serial Number T	'a Site	,	Technician		Site V	isit Date/	Param	eter	Owner ID	
RM Young	14623	ABT147		Sandy	/ Grenville	11/09	9/2014	Temper	rature	06503	
				Mf	g	Extec	h	Pa	arameter Te	emperature	
				Serial Number		H232	H232734		fer Desc. R	ſD	
				Tfe	er ID	01227	7				
DAS 1:	DAS	2:		Slo	ope		1.0028	8 Inte	rcept	-0.15155	
Abs Avg Err Abs Max Er Abs Avg Err Abs Max			Max Er	Er Cert Date			1/8/2014 Corr(1.00000	
0.12	0.17										
UseDesc.	Test type	InputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	0.00	0.15	5	0.000		0.3	3	С	0.15	
primary Tem	p Mid Range	26.45	26.5	3	0.000		26.	6	С	0.04	
primary Tem	p High Range	48.48	48.4	9	0.000		48.	3	С	-0.17	
Sensor Compone	ent Shield		Cond	ition C	Clean			Status	pass		
Sensor Component Blower			Cond	ition F	Functioning			Status	pass		
Sensor Component Blower Status Switch				ition 🛚	N/A			Status	s pass		
Sensor Compone	ent System Memo		Cond	Condition					s pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ABT147	Sandy Grenville	11/09/2014	Shelter Temperatur	e none
DAS 1: Abs Avg Err Abs 0.30	DAS 2: 5 Max Er Abs Avg 0.38	Err Abs Max Er	Mfg Serial Number Tfer ID	Extech H232734 01227	Parameter St	nelter Temperatur
			Slope Cert Date	1.0028 1/8/201	8 Intercept 4 CorrCoff	-0.15155 1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	16.77	16.87	0.000	17.3	С	0.38
primary	Temp Mid Range	16.43	16.53	0.000	16.3	С	-0.25
primary	Temp Mid Range	15.46	15.57	0.000	15.8	С	0.26

Infrastructure Data For

Site ID AB	T147	Technician	Sandy Grenville		Site Visit Date	11/09/2014	
Shelter Make	S	helter Model		Shelte	r Size		
Ekto	88	310 (s/n 2149-9	Э)	640 cu	ft		
		VIA DI KANA DI KANA		144.755 27175			

Sensor Component	Sample Tower Type	Condition	Туре В	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	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 sample tower is no longer grounded. The lower section of the met tower has been replaced.

2 Parameter: SitingCriteriaCom

Manure is routinely spread on the hay fields surrounding the site during the summer.

3 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

4 Parameter: MetSensorComme

10-meter temperature is operated and maintained on the meteorological tower.

Field Sy	stems Data Form	

F-02058-1500-S1-rev002

Site ID	ABT147		Technician	Sandy Grenvill	e	Site Visit	Date 11/0	9/2014			
					TROP			Homoton			
Site Sponsor	(agency)	EPA			USGS	5 Мар		nampton			
Operating Gr	oup	private			Map	Scale					
AQS #		09-015-9	09-015-9991			Date					
Meteorologica	al Type	R.M. You	ng]						
Air Pollutant	Analyzer	Ozone			QAPP Latitude 41.8402						
Deposition Measurement		dry, wet			QAP	P Longitude	e	-72.0111			
Land Use		agricultur	e, woodland - m	nixed	QAP	P Elevation	Meters	209			
Terrain		rolling			QAP	P Declinatio	n	14.8			
Conforms to MLM		Marginally				P Declinatio	on Date	2/22/2006			
Site Telephone		(860) 974-2273				Latitude		41.84046			
Site Address	1	80 Ayers	Road		Audit	Longitude				-72.010368	
Site Address 2					Audit	Elevation				202	
County		Windham	l		Audit	Declination	n	-14.5			
City, State		Abington,	on, CT				Present				
Zip Code		06230			Fire l	Extinguishe	r ✓	Inspected Nov 1992			
Time Zone		Eastern			First	Aid Kit	✓				
Primary Ope	rator				Safet	y Glasses	\checkmark				
Primary Op.	Phone #				Safet	y Hard Hat	\checkmark				
Primary Op.	E-mail				Clim	oing Belt	\checkmark				
Backup Oper	ator				Secur	ity Fence					
Backup Op.	Phone #				Secur	e Shelter	\checkmark				
Backup Op.	E-mail				Stabl	e Entry Stej	₽				
Shelter Work	ing Room♥	Make	Ekto	Μ	lodel 8	810 (s/n 214	9-9)	Shelter Size	640 cuft		
Shelter Clean		Notes	The shelter is c	lean and well o	organized	1.					
Site OK	\checkmark	Notes									
Driving Directions From Hartford take I-84 east to exit 69. Continue on route 74 east to route 44. Take route 44 east to Abington. At the traffic light in Abington, turn right (south) on route 97. Continue approximately 1.3 miles to Ayers Road which will be on the left. Ayers Road is a single lane paved road. The site is through the gate at the end of the road, in the field at the top of the hill past the barn.											

Field Systems Data Form

ABT147

F-02058-1500-S2-rev002

Site ID

Tech

Technician Sandy Grenville

Site Visit Date 11/09/2014

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		\checkmark
City > 50,000 population	40 km		\checkmark
City 10,000 to 50,000 population	10 km		\checkmark
City 1,000 to 10,000 population	5 km		\checkmark
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m	10 m	
Large parking lot	200 m		\checkmark
Small parking lot	100 m		\checkmark
Tree line	50 m		\checkmark
Obstacles to wind	10 times obstacle height]	

Siting Distances OK

Siting Criteria Comment

Manure is routinely spread on the hay fields surrounding the site during the summer.

Fi	eld Systems Data Form	F-02058-1500-S3-rev002					
Site	ABT147 Technician Sandy Grenville	Site Visit Date 11/09/2014					
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 N/A					
11	Is it inclined approximately 30 degrees?	N/A					
Pro nat	vide any additional explanation (photograph or sketch if nec ural or man-made, that may affect the monitoring parameter	essary) regarding conditions listed above, or any other features, rs:					

10-meter temperature is operated and maintained on the meteorological tower.

Field Systems Data Form

m F-02058-1500-S4-rev002

Site	ID	ABT147	Technician	Sandy Grenville		Site Visit Date 11/09/2014	
1	Do all th condition	e meterological senso 1, and well maintained	rs appear to be d?	intact, in good	✓	N/A	
2	Are all the reporting	ne meteorological sens g data?	sors operational	l online, and		N/A	
3	Are the s	hields for the temper	ature and RH s	ensors clean?	✓		
4	Are the a	aspirated motors worl	king?		✓		
5	Is the sol scratches	ar radiation sensor's s?	lens clean and f	ree of	✓	N/A	
6	Is the su	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A	
7	Are the s condition	ensor signal and pow 1, and well maintained	er cables intact d?	, in good			
8	Are the s from the	ensor signal and pow elements and well ma	er cable connec aintained?	tions protected	✓		

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:

Fi	eld Systems Data Form	F-02058-1500-S5-rev002						
Site	ABT147 Technician Sandy Grenville		Site Visit Date 11/09/2014					
	Siting Criteria: Are the pollutant analyzers and deposition eq	luipi	nent 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	l ma	intenance					
1	Do the analyzers and equipment appear to be in good condition and well maintained?		Ozone sample pump not functioning					
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					

Fi	eld Sy	stems Data Fo	orm		F-0 2	2058-15	00-S6-rev002		
Site	e ID	ABT147	Technician	Sandy Grenville		Site Visit Da	te 11/09/201	4	
	<u>DAS, se</u>	nsor translators, and	peripheral equi	pment operatio	ns ai	nd maintenance			
1	Do the l well ma	DAS instruments appe intained?	ar to be in good	l condition and					
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 well ma	signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	l to the correct]	DAS channel?	✓				
6	Are the grounde	DAS, sensor translato ed?	ors, and shelter	properly					
7	Does the	e instrument shelter h	ave a stable pov	ver source?	✓				
8	Is the in	strument shelter temp	perature control	lled?					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	ample tower stable and	l grounded?						
11	Tower o	comments?							

The sample tower is no longer grounded. The lower section of the met tower has been replaced.

Fie	eld Sy	stems Data	Fo	rm					F-0 2	2058-	1500-8	57-rev002
Site	ID ¹	ABT147		Tecl	hnician San	idy Grenville		Site Visit Date	11/09/2014	1		
D	ocument	tation										
D	oes the s	ite have the requir	ed in	<u>strum</u>	ent and equi	ipment man	uals?					
Wind Tem Rela Solar Surf Wind Tem Hum Solar Tipp Ozor	d speed s d directi perature tive hun r radiati ace wetn d sensor perature sidity sen r radiati ing buch ne analys	sensor on sensor e sensor nidity sensor on sensor translator e translator esor translator on translator on translator set rain gauge zer	Yes			Data Data Strip Com Mod Print Zero Filte Surg UPS Ligh Shelt	l logge l logge o chart puter em ter air pu r flow ge prot tning j ter hea	r r recorder imp pump ector protection device iter	Yes	No No No No No No No No No No	N/A	
Filte	r pack f	low controller				Shelt	ter air	conditioner		V		
Filte	г раск М	AFC power supply										
]	Does the	site have the requ	ired a	and m	<u>ost recent Q</u>	C documen	<u>ts and</u>	<u>report forms?</u>				
			Pre	sent					Curre	ent		
Stati	on Log											
SSR	F											
Site	Ops Mai	nual			Oct 2001							
HAS	P				Feb 2014							
Field	l Ops M	anual										
Calil	bration 1	Reports										
Ozoi	ie z/s/p (Control Charts	_									
Prev	entive m	aintenance schedu	ıl									
1	Is the st	ation log properly	comj	pleted	during ever	y site visit?						
2	Are the current	Site Status Report ?	t Fori	ns bei	ng complete	d and						
3	Are the sample	chain-of-custody f transfer to and fro	orms om lal	prop o?	erly used to	document						
4	4 Are ozone z/s/p control charts properly completed and					ontrol charts not u	sed					

current?

Field Systems Data Form

Site	ID ABT147 Technician Sandy Grenville	Site Visit Date	11/09/2014	
1	Site operation procedures 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	A Performed
----------	--------------------

Frequency

Multipoint Calibrations	\checkmark	N/A	\checkmark
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	N/A	\checkmark

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

QC Cl	ieck	Perf	orm	ed
-------	------	------	-----	----

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

	Frequency	Co
✓	Semiannually	
✓	Daily	
✓	As needed	
✓	Daily	
✓	As needed	
✓	Weekly	
✓	Every 2 weeks	
	N/A	
✓	Weekly	
\checkmark	Weekly	

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

	Unknown
∕	
	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:

mpliant

Compliant

F-02058-1500-S8-rev002

Fi	Field Systems Data Form						F-02058-1500-S9-rev				
Sit	e ID	ABT147	Techr	nician	Sandy Grenville		Site Visit Date	11/09/2014			
	<u>Site ope</u>	eration procedures									
1	Is the fi	lter pack being change	ed every '	Fuesd	ay as scheduled?		Filter changed morir	nings			
2	Are the Site Status Report Forms being completed and filed correctly?										
3	Are dat schedul	a downloads and back ed?	ups being	g perf	ormed as		No longer required				
4	Are ger	neral observations bein	ig made a	nd re	corded? How?		SSRF, logbook				
5	Are site supplies on-hand and replenished in a timely fashion?										
6	Are san	nple flow rates recorde	ed? How?	•		✓	SSRF, call-in				
7	Are san fashion	nples sent to the lab or ?	a regula	r sche	dule in a timely						
8	Are filt and shi	ers protected from cor pping? How?	taminati	o <mark>n du</mark>	ring handling	✓	Clean gloves on and off				
9	Are the operation	site conditions report ons manager or staff?	ed regula	rly to	the field						
QC	Check P	erformed		Fre	quency			Compliant			
I	Multi-poi	nt MFC Calibrations		Sen	niannually						
I	Flow Syst	em Leak Checks	~	Wee	ekly						
Filter Pack Inspection											
Flow Rate Setting Checks Weekly					\checkmark						
Visual Check of Flow Rate Rotometer Weekly					\checkmark						
1	n-line Fi	lter Inspection/Replace	ement	Sem	niannually			\checkmark			
5	Sample L	ine Check for Dirt/Wa	iter 🔽	Wee	ekly						
	do onv	additional applanation	(nhotogr	onh o	n akatah if nagaa) noronding conditi	and listed above	n ann ath an factures		

Field Systems Data Form

ABT147

F-02058-1500-S10-rev002

Site ID

Tech

Technician Sandy Grenville

Site Visit Date 11/09/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000296
DAS	Campbell	CR3000	2519	000413
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	0493002469	02974
Flow Rate	Apex	AXMC105LPMDPC	illegible	missing
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	06486
Modem	Raven	H4223-C	0844356221	06609
Ozone	ThermoElectron Inc	49i A1NAA	1009241772	000627
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200025	000440
Sample Tower	Aluma Tower	В	AT-61152-A-H8-C	000017
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	02804
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14623	06503
Zero air pump	Werther International	P 70/4	000829168	06930

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number				
WS7	/ST109-Sandy Grenville-11/10/2014									
1	11/10/2014	Computer	Dell	000291	D520	unknown				
2	11/10/2014	DAS	Campbell	000427	CR3000	2526				
3	11/10/2014	Elevation	Elevation	None	1	None				
4	11/10/2014	Filter pack flow pump	Thomas	00476	107CA18	000025705				
5	11/10/2014	Flow Rate	Арех	000466	AXMC105LPMDPCV	43970				
6	11/10/2014	Infrastructure	Infrastructure	none	none	none				
7	11/10/2014	Met tower	Universal Tower	03532	unknown	none				
8	11/10/2014	Modem	Raven	06598	V4221-V	0844349943				
9	11/10/2014	Ozone	ThermoElectron Inc	000611	49i A1NAA	1009241795				
10	11/10/2014	Ozone Standard	ThermoElectron Inc	000696	49i A3NAA	1030244812				
11	11/10/2014	Sample Tower	Aluma Tower	03531	A	none				
12	11/10/2014	Shelter Temperature	Campbell	none	107-L	none				
13	11/10/2014	Shield (10 meter)	RM Young	00947	Aspirated 43408	none				
14	11/10/2014	Siting Criteria	Siting Criteria	None	1	None				
15	11/10/2014	Temperature2meter	RM Young	04317	41342	4014				
16	11/10/2014	Zero air pump	Werther International	06934	P 70/4	000821881				

DAS Data Form

DAS Time Max Error:

0

Mfg	Serial	Number Site	. I	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2526	WS	ST109	Sandy Grenville	11/10/2014	DAS	Primary
Das Date: Das Time: Das Day:	11/10/2014 16:34:45 314	Audit Date Audit Time Audit Day	11/10/2014 16:34:45 314	Mfg Serial Number Tfer ID	Datel 15510194 01320	Parameter Tfer Desc.	DAS Source generator (D
Avg Diff:	1: Max Diff:	Avg Diff:	Max Diff:				
0.000	1 0.0	002 0.000	1 0.0002				
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740135	Tfer Desc.	DVM
				Tfer ID	01311		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	12/28/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.0001	0.0001	V	V	0.0002	
7	0.1000	0.0998	0.0999	V	V	0.0001	
7	0.3000	0.2996	0.2998	V	V	0.0002	
7	0.5000	0.4996	0.4996	v V	V	0.0000	
7	0.7000	0.6995	0.6995	V	V	0.0000	
7	0.9000	0.8993	0.8994	V	V	0.0001	
7	1.0000	0.9992	0.9993	V	V	0.0001	

Flow Data Form

Mfg	Serial Num	iber Ta	Site	Тес	hnician	Site Visit D	ate Paran	neter	Owner ID
Apex	43970		WST109	Sa	ndy Grenville	11/10/2014	Flow F	Rate	000466
					Mfg	BIOS	I	Parameter	low Rate
					Serial Number	103471	1	lfer Desc. n	exus
					Tfer ID	01420			
					Slope	1.0	0846 Int	ercept	0.01358
					Cert Date 1/8/201		/2014 Co	rrCoff	0.99997
					Mfg	BIOS	Parameter F		low Rate
	Serial Number 103424]	lfer Desc. B	IOS cell			
	Tf		Tfer ID	01410					
				Slope	1.0	0846 Int	ercept	0.01358	
					Cert Date 1/8/20		/2014 Co	rrCoff	0.99997
DAS 1: DAS 2:			Cal Factor Z	ero	-0.	01			
A Avg % Diff: A Max % Di A Avg %Dif A Ma		Dif A Max	x % Di	Cal Factor F	ull Scale	0.	99		
0.67%	0.67%				Rotometer R	eading:	1	.5	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	all PctDifference
primary	pump off	0.000	0.000	-0.01	0.000	-0.02 1/m		l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.01	l/m	l/m	
primary	test pt 1	1.521	1.490	1.51	0.000	1.50	l/m	l/m	0.67%
primary	test pt 2	1.515	1.490	1.51	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.513	1.490	1.51	0.000	1.50	l/m	l/m	0.67%
Sensor Comp	onent Leak Tes	t		Conditio	n		Statu	s pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Statu	s pass	
Sensor Comp	onent Filter Pos	ition		Conditio	n Good		Statu	s pass	
Sensor Comp	onent Rotomete	er Conditio	า	Conditio	n Clean and dry		Statu	s pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Statu	s pass	
Sensor Component Filter Distance		Conditio	n 3.5 cm		Statu	s pass			
Sensor Component Filter Depth		Conditio	n 0.5 cm		Statu	s pass			
Sensor Compo	onent Filter Azir	nuth		Conditio	n 45 deg		Statu	s pass	
Sensor Component System Memo			Conditio	n		Statu	s pass		

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Visit Date		Parameter		Owner I	D
ThermoElectron Inc	1009241795	WST109	Sa	andy Grei	nville	11/10/2	014	Ozone		000611	
Slope:	1.00183 Slope: 0.02369 Intercent	0.0000	0	Mfg	lum h an	ThermoE	Electron	Inc Par	rameter ozo		
CorrCoff	0.99998 CorrCoff	0.0000	0	Serial N	umber	490-731	04-373	116	er Desc. 020		
				Tfer ID		01100					
DAS 1:	DAS 2:			Slope			1.00458	B Inter	cept	-0.11	484
A Avg % Diff: A N	Max % Di A Avg %	6Dif A Max	% Di	Cert Da	ite	12	2/10/2013	- 3 Corr	Coff	1.00	0000
0.4%	0.6%		[
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDiffe	erence:	
primary	1	0.34	0.4	45	0.3	30	ppb			0.000/	
primary	2	30.38	30.	35	30.	29	ppb			-0.20%	
primary	3	51.36	51.	24	51.	56	ppb			0.62%	
primary	4	100.84	/9.	03	/9.	4/	ppb			0.56%	
primary	5	100.84	100	.49	100	.30	рро	Г		-0.19%	
Sensor Compone	nt Cell B Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	ิท	Conditio	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Conditio	n Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	on -0.2				Status	pass		
Sensor Compone	nt Span		Conditio	n 1.005				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	90.2 k	Hz			Status	pass		
Sensor Compone	nt System Memo		Conditio	on				Status	pass		
Sensor Compone	nt Sample Train		Conditio	on Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditio	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditio	on 0.69 l	om			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 32.5 ()			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	on 718 m	mHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditio	on 89.4 k	Hz			Status	pass		
Sensor Compone	nt Cell A Flow		Conditio	on 0.69 l	om			Status	pass		
Sensor Compone	nt Battery Backup		Conditio	n/A				Status	pass		
Sensor Compone	nt Zero Voltage	t Zero Voltage			Condition N/A						

Temperature Data Form

Mfg	Serial Number 7	la Site	7	Techn i	ician	Site V	isit Date/	Param	eter	Owner ID	
RM Young	4014	WST109		Sandy	' Grenville	11/10	0/2014	Temper	ature	04317	
				Mf	g	Extec	h	Pa	arameter Te	emperature	
				Serial Number		H232	H232734 T		er Desc. R	ſD	
				Tfer ID		01227					
DAS 1:		Slo	pe		1.0028	8 Inte	ercept -0.1515		5		
Abs Avg Err Abs Max Er Abs Avg Err Abs M				ax Er Cert Date			1/8/201	4 Cor	rCoff	1.00000	C
0.14	0.21										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	orr. OutputTmpS		Signal OutputSignalEng		OSE Unit	Difference	
primary Tem	p Low Range	0.00	0.15		0.000	0.1		С	-0.05		
primary Tem	p Mid Range	24.99	25.07	7	0.000		24.	9	С	-0.21	
primary Tem	p High Range	49.36	49.37	7	0.000		49.	2	С	-0.17	
Sensor Compone	nt Shield		Condi	ition C	Clean			Status	pass		
Sensor Component Blower				ition F	Functioning			Status	pass		
Sensor Component Blower Status Switch				Condition Functioning			Status pass				
Sensor Component System Memo				Condition					us pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none WST109		Sandy Grenville	11/10/2014	Shelter Temperatu	ire none
DAS 1:	DAS 2:	For Abo Mars For	Mfg	Extech	Parameter S	Shelter Temperatur
Abs Avg Err Ab 0.77 0.77	1.45	Err Abs Max Er	Serial Number	H232734	Tfer Desc.	RTD
			Tfer ID	01227		
			Slope	1.0028	8 Intercept	-0.15155
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	18.32	18.42	0.000	18.2	С	-0.21
primary	Temp Mid Range	22.15	22.24	0.000	21.6	С	-0.64
primary	Temp Mid Range	25.15	25.23	0.000	23.8	С	-1.45

Infrastructure Data For

Site ID	WST109	Technician Sandy Gr	enville Site Visit Date 11/10/2014
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-16)	640 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Poor	Status	Fail
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 sample tower is kinked at the hinge point and is in poor condition. One leg of the met tower is split. Both of these conditions were reported following the two previous site audit visits.

2 Parameter: SiteOpsProcedures

The state of NH DES performs monthly multi-point audits of the ozone analyzer. Ozone sample train leak checks are being conducted every two weeks.

3 Parameter: SitingCriteriaCom

The site is in a small clearing surrounded by mountain forest. There is a small parking lot used by forest service employees located 50 meters from the site.

4 Parameter: SiteOKNotes

State of NH Department of Environmental Services contact is Tom Fazzina (603) 271-0911 and tfazzina@DES.state.NH.US

5 Parameter: ShelterCleanNotes

The shelter floor and roof have been repaired. Hand rails have been installed on platform.

6 Parameter: MetSensorComme

10-meter temperature is being operated and maintained on the meteorological tower.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BEL	.116-Eric H	ebert-11/10/2014				
1	11/10/2014	Computer	Dell	000266	D520	unknown
2	11/10/2014	DAS	Campbell	000341	CR3000	2120
3	11/10/2014	Elevation	Elevation	None	1	None
4	11/10/2014	Filter pack flow pump	Thomas	02755	107CAB18	1192001881
5	11/10/2014	Infrastructure	Infrastructure	none	none	none
6	11/10/2014	Met tower	Universal Tower	06484	unknown	none
7	11/10/2014	Modem	Raven	06475	H4222-C	0808311155
8	11/10/2014	Ozone	ThermoElectron Inc	000684	49i A1NAA	1030244795
9	11/10/2014	Ozone Standard	ThermoElectron Inc	000373	49i A3NAA	0726124685
10	11/10/2014	Precipitation	Texas Electronics	06332	TR-525i-HT	43527-807
11	11/10/2014	Relative Humidity	Vaisala	06749	HMP50UA	E3420005
12	11/10/2014	Sample Tower	Aluma Tower	000127	В	none
13	11/10/2014	Shelter Temperature	Campbell	none	107-L	44281
14	11/10/2014	Shield (10 meter)	RM Young	05042	Aspirated 43408	none
15	11/10/2014	Shield (2 meter)	RM Young	05041	Aspirated 43408	none
16	11/10/2014	Siting Criteria	Siting Criteria	None	1	None
17	11/10/2014	Solar Radiation	Licor	04935	LI-200	PY47675
18	11/10/2014	Solar Radiation Translator	RM Young	04888	70101-X	none
19	11/10/2014	Surface Wetness	RM Young	04608	58101	none
20	11/10/2014	Temperature	RM Young	06308	41342VO	12533
21	11/10/2014	Temperature2meter	RM Young	06309	41342VO	12534
22	11/10/2014	Wind Direction	RM Young	03416	AQ05103-5	17096wdr
23	11/10/2014	Wind Speed	RM Young	03416	AQ05103-5	17096wsp
24	11/10/2014	Zero air pump	Teledyne	000776	701H	606

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial N	umber Site	1	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2120	BEI	_116	Eric Hebert	11/10/2014	DAS	Primary
Das Date:	11/12/2014	Audit Date	11/12/2014	Mfg	Datel	Parameter	DAS
Das Time: Das Day:	15:12:00 316	Audit Time Audit Day	15:12:01 316	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channel	l:	High Channe	d:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0002	.0002 0.0004		0.0004	Cert Date	Cert Date 2/13/2012 Corre		1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740243	Tfer Desc.	DVM
				Tfer ID	01312		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	12/28/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.0004	-0.0006	i V	V	-0.0002	
7	0.1000	0.0998	0.0996	i V	V	-0.0002	
7	0.3000	0.2996	0.2996	i V	V	0.0000	
7	0.5000	0.4997	0.4995	V	V	-0.0002	
7	0.7000	0.6996	0.6995	V	V	-0.0001	
7	0.9000	0.8999	0.8995	V	V	-0.0004	
7	1.0000	0.9999	0.9996	i V	V	-0.0003	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	chnician	Site Visit D	ate Paran	neter	Owner ID
Apex	illegible		BEL116	Eri	ic Hebert	11/10/2014	Flow R	late	000596
					Mfg	BIOS	P	arameter Flow	w Rate
					Serial Number	131818	Г	fer Desc. BIC	S 220-H
					Tfer ID	01417			
					Slope	1.(00000 Int	ercept	0.00000
					Cert Date	1/8	8/2014 Co	rrCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	0.0	05	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	1.(05	
2.80%	3.23%				Rotometer R	eading:	1.6	65	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	PctDifference
primary	pump off	np off 0.000 0.000		-0.07	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	-0.02	0.000	0.03	l/m	l/m	
primary	test pt 1	1.547	1.550	1.46	0.000	1.50	l/m	l/m	-3.23%
primary	test pt 2	1.549	1.550	1.46	0.000	1.51	l/m	1/m	-2.58%
primary	test pt 3	1.552	1.550	1.46	0.000	1.51	l/m	l/m	-2.58%
Sensor Compo	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Compo	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Compo	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Compo	onent Rotomete	er Conditio	n	Conditio	Clean and dry		Status	pass	
Sensor Compo	onent Moisture	Present		Conditio	n No moisture pr	resent	Status	pass	
Sensor Component Filter Distance		Conditio	n 6.0 cm		Status	pass			
Sensor Component Filter Depth		Conditio	n 1.5 cm		Status	pass			
Sensor Component Filter Azimuth			Conditio	lition 180 deg			pass		
Sensor Component System Memo			Conditio	n	Status	pass			

Ozone Data Form

Mfg	Serial Number Ta	Site	Те	Technician Si		Site Visit Date		e Parameter		Owner]	D
ThermoElectron Inc	1030244795	BEL116	E	ric Hebert		11/10/20	014	Ozone		000684	
Slope: 1 Intercept -C CorrCoff C	Slope: 0.41489 Intercept 0.99992 CorrCoff	0.0000 0.0000 0.0000	0 Mfg 0 Serial Number 0 Tfer ID			ThermoElectron IncPar49CPS-70008-364Tfe01110			rameter	ozone Ozone primar	y stan
DAS 1:	DAS 2:			Slope			1 00707	7 Inter	aant	-0.2	1032
A Avg % Diff: A M	Iax % Di A Avg %	6 Dif A Max	% Di	Slope			1.00707		cept	-0.2	1032
0.4%	0.6%			Cert Da	ite		1/8/2014	4 Corr	Coff	1.00	0000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctD	oifference:	
primary	1	0.11	0.	31	-0.	77	ppb				
primary	2	28.79	28	.79	28.	.96	ppb			0.59%	
primary	3	46.76	46	.64	46.	.71	ppb			0.15%	
primary	primary 4 77.96		77	.62	77.	.88	ppb			0.33%	
primary	5	114.11	113	3.51	113	.00	ppb			-0.45%	
Sensor Componer	t Cell B Noise		Conditi	on 0.7 pp	b			Status	pass		
Sensor Componer	nt Cell B Tmp.		Conditi	on				Status	pass		
Sensor Componer	t Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Componer	Inlet Filter Condition	Conditi	on Clean				Status	pass			
Sensor Componer	t Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Componer	nt Offset		Conditi	on -0.10				Status	pass		
Sensor Componer	nt Span		Conditi	on 0.997				Status	pass		
Sensor Componer	t Cell B Freq.		Conditi	on 91.9 k	Hz			Status	pass		
Sensor Componer	System Memo		Conditi	on				Status	pass		
Sensor Componer	t Sample Train		Conditi	on Good				Status	pass		
Sensor Componer	t Cell B Pressure		Conditi	on				Status	pass		
Sensor Componer	t Cell B Flow		Conditi	on 0.64	om			Status	pass		
Sensor Componer	t Cell A Tmp.		Conditi	on 34.9 (2			Status	pass		
Sensor Componer	t Cell A Pressure		Conditi	on 723 m	mHg			Status	pass		
Sensor Componer	t Cell A Noise		Conditi	on 0.6 pp	b			Status	pass		
Sensor Componer	nt Cell A Freq.		Conditi	on 96.3 k	Hz			Status	pass		
Sensor Componer	Cell A Flow		Conditi	on 0.69	om			Status	pass		
Sensor Componen	at Battery Backup		Conditi	lition N/A				Status	pass		
Sensor Componer	t Zero Voltage		Conditi	ndition N/A					pass		

Wind Speed Data Form

Mfg	S	erial Number Ta		Site		Те	echnician	Site Visit Date	Parameter	Owner I	Owner ID	
RM Young	1	17096wsp B			BEL116		ric Hebert	11/10/2014	Wind Speed	03416		
							Mfg Serial Number Tfer ID	RM Young CA04013 01253	Paramet Tfer Des	er wind speed	otor (h	
Prop or Cups SN 65736							Slope	1.0000	0000 Intercept 0.00			
Prop or Cups 7 Prop Correction	Forque on Fact	0.0512	0.3 to 0.4			.4	Cert Date	1/16/20	14 CorrCoff	1.00000		
Abs Avg Err [Abs Max Er [DAS 1 Low R	: ange Hi 0.05 0.20	i <mark>gh Rar</mark> 0. 0.	1ge 00%	DAS 2: Low Ra	nge I	High Range					
UseDescription: In		put Device	Inpu	ut RPM II		out m/s	Out V	DAS m/s	Diff/ %Diff	Diff	WsM	
primary		none		0		0.20	0.0	0.0		-0.20		
primary	primary 01253			200		1.02	0.0	1.0		0.00		
primary	primary 0125		4	400		2.05	0.0	2.1	2.1			
primary		01253	8	800		4.10	0.0	4.1		0.00		
primary		01253		1200		6.14	0.0	6.1	0.00%			
primary	orimary 01253		2	400	400 1		0.0	12.3	0.00%			
primary		01253 40		000	20.48		0.0	20.5	0.00%			
primary	01253		9	400	00 48.13		0.0	48.1	0.00%			
Sensor Comp	onent	Condition				Conditi	on Good		Status pass			
Sensor Component		Prop or Cups Condition			Conditi	on Good	Status pass]		
Sensor Component		Sensor Heater				Conditi	on N/A]		
Sensor Comp	Torque				Conditi	on Good	Status pass					
Sensor Comp	Sensor Plumb				Conditi	on Plumb	Status pass					
Sensor Component		System Memo				Conditi	on	Status pass				

Wind Direction Data Form

Mfg	Serial Num	ıber Ta	Site		Tech	nnician		Site Visit Date		Parameter		Owner ID		
RM Young	17096wdr		BEL116		Eric	ic Hebert		11/10/2014 Wind		Wind D	irection	03416	03416	
					N S T	Ifg erial Nun 'fer ID	ıber	RM Youn 01264	9	P: T	arameter \ fer Desc. \	wind direction	wheel	
Vane SN: N VaneTorque	/A 12 to	C. A	. Align. d	eg. true: 180										
		N	lfg		Ushikata P			arameter wind direction						
					S	erial Nun	ıber	192034 T			fer Desc. transit			
					Т	fer ID		01270						
				Slope			1.00000 Inte			ercept 0.00000				
				C	ert Date		1/30/2014			rCoff 1.000		0000		
Abs Avg Err [Abs Max Er [DAS 1: Orientation 2.0	Linearity	D 7: 0 1.0	AS 2: rientatio	on Lin	earity:								
UseDescription	n TferID	In	put Raw	Linea	rity Ou	ıtput V	Out	put Deg.	Difference		Change	Error		
primary	01264		0			0.000		0	0		48	3	_	
primary	01264		45			0.000		45	0		45	0		
primary	01264	_	90			0.000		133	2		44	-1	-	
primary	01264		135			0.000		178	2		45	0		
primary	01264		225			0.000		223	2		45	0	_	
primary	01264		270			0.000		266	4		43	-2		
primary	01264		315			0.000		312	3		46	1		
primary	01270		90			0.000		94	4			4		
primary	01270		180			0.000		182				2	_	
primary	01270		360			0.000		1		1		1	-	
Sensor Component Torque				C	ondition			-		Status	pass			
Sensor Comp	onent Sensor P		Condition Plumb				Status pass							
Sensor Comp	Conditio			n N/A				Status	pass					
Sensor Comp	Conditio			n Good				Status	pass					
Sensor Component Condition				C	ondition	Good		Status pas		pass	pass			
Sensor Component Vane Condition				C	ondition	on Good				Status pass				
Sensor Comp	lemo		C	ondition	lition			Status pass						
Temperature Data Form

Sensor Component System Memo

Mfg	Serial Number Ta	a Site	Те	chnician	Site V	isit Date	Param	eter	Owner II)
RM Young	12533	BEL116	Er	ric Hebert	11/1	0/2014	Temper	ature	06308	
				Mfg	Euteo	hnics	Pa	rameter Te	mperature	
				Serial Nur	nber 01D1	02193	Tf	er Desc. RT	D translator	
				Tfer ID	0123	1]			
DAS 1:	DAS 2	2:		Slope		1.0013	3 Inte	rcept	-0.057	731
Abs Avg Err	Abs Max Er Abs A	vg Err Abs	Max Er	Cert Date		12/27/201	3 Cor	rCoff	1.000	000
				Mfg	Euteo	hnics	Pa	rameter Te	mperature	
				Serial Nur	nber 01H0	060	Tf	er Desc. R	D probe	
				Tfer ID	01230)				
				Slope		1.0013	3 Inte	rcept	-0.057	731
				Cert Date		12/27/201	3 Cor	rCoff	1.000	000
0.09	0.13									
UseDesc.	Test type I	nputTmpRaw	InputTmpCo	orr. Outpu	tTmpSignal	OutputSig	gnalEng	OSE Unit	Difference	
primary	Temp Low Range	0.13	0.19		0.000	0.0	7	С	-0.12	
primary	Temp Mid Range	23.01	23.04		0.000	23.0)3	С	-0.01	
primary	Temp High Range	46.65	46.65		0.000	46.7	'8	С	0.13	
Sensor Con	nponent Shield		Conditio	Moderate	ely clean		Status	pass]
Sensor Con	nponent Blower		Conditio	Function	ing		Status	pass]
Sensor Con	ponent Blower Status St	witch	Conditio	Not funct	tioning		Status	Fail]

Condition

Status pass

2 Meter Temperature Data For

Calc. Difference

Mfg	Serial Number Ta	Site	Technician	n Site Vis	it Date P	Paramete	er	Owner ID	
RM Young	12534	BEL116	Eric Heber	t 11/10/2	014 T	emperatu	ure2meter	06309	
			Mfg Serial N Tfer ID	Eutechn Number 01H006 01230 01230	iics 0	Para Tfer	nmeter Tem Desc. RTD	perature probe	
DAS 1:	DAS 2:		Slope		1.00133	Interce	ept	-0.05731	1
Abs Avg Err Abs	Max Er Abs Avg	g Err Abs Max H	Er Cert Da	ate 12	2/27/2013	CorrC	off	1.00000	D
			Mfg	Eutechn	iics	Para	meter Tem	perature	
			Serial N	Number 01D102	193	Tfer	Desc. RTD	translator	
			Tfer ID	01231					
			Slope		1.00133	Interce	ept	-0.05731	1
			Cert Da	ate 12	2/27/2013	CorrC	off	1.00000	D
0.16	0.25								
UseDescription	Test type Input	TmpRaw InputTr	npCorrected (DutputTmpSignal	OutputSig	gnalEng	OSE Unit	Difference	
primary Te	mp Low Rang	0.13	0.19	0.000		0.06	С	-0.13	
primary Te	mp Mid Rang	23.01	23.04	0.000		23.13	C C	0.09	
primary Te	emp High Rang	46.65	46.65	0.000		46.90	C	0.25	
Sensor Componen	nt Shield	C	ondition Mode	erately clean		Status pa	ass		
Sensor Componer	nt Properly Sited	C	ondition Prope	erly sited	5	Status pa	ass		
Sensor Componen	nt Blower	C	ondition Funct	tioning	5	Status pa	ass		
Sensor Componen	nt Blower Status Swit	ch Co	ondition Not fu	unctioning	5	Status Fa	ail		
Sensor Componen	nt System Memo	C	ondition		5	Status pa	ass		

Solar Radiation Data Form

Mfg	Serial Number	Ta Site	Тес	chnician	Site Visit Date	Parameter	Owner ID
Licor	PY47675	BEL116	Eri	ic Hebert	11/10/2014	Solar Radiation	04935
Mfg	RM Young			Mfg	RM Young	Parameter	olar radiation
SN/Owner ID	none 0	4888		Serial Number		Tfer Desc.	SR transfer translat
Parameter	Solar Radiation Tra	nslator		Tfer ID	01240		
DAS 1:	DA	S 2:		Slope	1.0267	8 Intercept	-16.91000
% Diff of Avg	%Diff of Max %I)iff of Avg %	Diff of Max	Cert Date	6/14/201	4 CorrCoff	0.99800
				Mfg	Licor	Parameter s	olar radiation
				Serial Number		Tfer Desc.	SR transfer sensor
				Tfer ID	01241		
				Slope	1.0267	8 Intercept	-16.91000
				Cert Date	6/14/201	4 CorrCoff	0.99800
0.0%	0.0%	0.0%	0.0%				
Sensor Comp	onent Sensor Clear	I	Conditio	n Clean		Status pass	
Sensor Comp	onent Sensor Level		Conditio	n Level		Status pass	
Sensor Comp	onent Properly Site	t	Conditio	n Properly sited		Status pass	
Sensor Comp	onent System Mem	0	Conditio	n		Status pass	

Humidity Data Form

Mfg	Serial Nun	nber Ta Site		Technician	echnician		Date Pa	arameter	Owner ID
Vaisala	E3420005	BEL	.116	Eric Hebert		11/10/201	4 R	elative Humidity	06749
				Mfg		Rotronic		Parameter Re	lative Humidity
				Serial Nu	mber	75296		Tfer Desc. GT	1
				Tfer ID		01220			
				Slope		1	.00000	Intercept	0.00000
	DAS 1:		DAS 2:	Cert Date	e	1/	/5/2010	CorrCoff	1.00000
	Low Range	High Range	Low Range	High Range	e				
Abs Avg Err	1.5	2.2							
Abs Max Er	1.9	2.2							
UseDesc.	Test type	Device	Input RH	GTL Raw	RH (Corr. D	AS Volt	s DAS %RH	Difference
primary	RH Low Range	GTL	32.8	0.0	32	8	0.000	30.9	-1.9
primary	RH Low Range	GTL	52.9	0.0	52	9	0.000	54.0	1.1
primary	RH High Range	GTL	93.6	0.0	93	.6	0.000	95.9	2.2
Sensor Com	ponent RH Filter		Con	dition Clean			S	tatus pass	
Sensor Com	ponent Shield		Con	dition Modera	tely clea	an	S	tatus pass	
Sensor Com	ponent Blower		Con	dition N/A			S	tatus pass	
Sensor Component Blower Status Switch Cond				ndition N/A Status pass					
Sensor Com	ponent System M	Nemo	Con	dition			S	tatus pass	

Precipitation Data Form

Mfg	:	Serial N	umber Ta	Site		Т	echni	ician		Site	Visit Date	Param	ete	r	Owner II)
Texas Electror	nics	43527-8	307	BEL116		E	Eric He	ebert		11/1	0/2014	Precipi	tatic	n	06332	
							Mf	g		PMF)	P	ara	meter P	recipitation	
DAS 1:			DAS 2:				Ser	rial Nun	ıber	EW-	06134-50	Т	fer	Desc. 2	50ml graduate	
A Avg % Diff 4.0%	f: A M	ax % D 6.0	i A Avg %	6Dif A I	Max 9	% Di	Tfe	er ID		0125	50					
							Slo	pe			1.0000	0 Inte	erce	pt	0.000	00
							Cei	rt Date			9/5/200	5 Cor	rCo	off	1.000	00
UseDesc.	Test	type	TferVolume	Iteration	Tim	ePerTip	E	Eq.Ht	DAS	eng	Eq.HtUnit	OSE U	nit	TferUni	ts PctDifferen	ice
primary	tip che	eck	10 manual	1	2	2 sec		0.10	0.1	0	in	in		ml		_
primary	test 1		231.5	1	8 -	12 sec		0.50	0.5	53	in	in		ml	6.0	%
primary	test 2		231.5	2	8 -	12 sec		0.50	0.4	19	in	in		ml	-2.0	%
Sensor Com	ponen	t Prope	rly Sited			Conditi	ion P	Properly	sited			Status	ра	SS		
Sensor Com	ponen	t Gauge	e Drain Scree	en		Conditi	ion Ir	nstalled				Status	ра	SS		
Sensor Com	ponen	t Funne	l Clean			Conditi	ion C	Clean				Status	pa	SS		
Sensor Com	ponen	t Condi	tion			Conditi	ion G	Good				Status	ра	SS		
Sensor Com	ponen	t Gauge	Screen			Conditi	ion Ir	nstalled				Status	pa	SS		
Sensor Com	ponen	t Gauge	e Clean			Conditi	ion C	Clean				Status	ра	SS		
Sensor Com	ponen	t Level				Conditi	ion L	evel				Status	pa	SS		
Sensor Com	ponen	t Senso	r Heater			Conditi	ion F	unctioni	ng			Status	ра	SS		
Sensor Com	ponen	t Syster	n Memo			Conditi	ion					Status	ра	SS		

Shelter Temperature Data For

Campbell 44281 BEL116 Eric Hebert 11/10/2014 Shelter Temperature none DAS 1: DAS 2: Mfg Eutechnics Parameter Shelter Temperature none Abs Avg Err Abs Max Er Abs Max Er Serial Number 01D102193 Tfer Desc. RTD trans 0.66 0.78 Tfer ID 01231 Tfer Desc. RTD trans Slope 1.00133 Intercept -	ner ID
DAS 1: DAS 2: Mfg Eutechnics Parameter Shelter Ter Abs Avg Err Abs Max Er Abs Max Er Serial Number 01D102193 Tfer Desc. RTD trans 0.66 0.78 Image: Shelter Ter Serial Number 01231 Image: Shelter Ter Mfg 1.00133 Image: Shelter Ter Slope 1.00133 Image: Shelter Ter	ıe
Cert Date12/27/2013CorrCoffMfgEutechnicsParameter Shelter TerSerial Number01H0060Tfer Desc. RTD proberTfer ID01230Tfer Desc. RTD proberSlope1.00133InterceptCert Date12/27/2013CorrCoff	⁻ emperatur Islator -0.05731 1.00000 Femperatur be -0.05731 1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	27.25	27.27	0.000	26.8	С	-0.49
primary	Temp Mid Range	26.74	26.76	0.000	26.0	С	-0.78
primary	Temp Mid Range	25.64	25.66	0.000	24.9	С	-0.72

Surface Wetness Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	BEL116	Eric Hebert	11/10/2014	Surface Wetness	04608
			Mfg	Ohmite	Parameter su	rface wetness
			Serial Number	296-1200	Tfer Desc. de	cade box
			Tfer ID	01210		
			Slope	1.0000	0 Intercept	0.00000
			Cert Date	1/4/201	1 CorrCoff	1.00000

Manual Test Pass

UseDescription	Test Type	Tfer kOhms	OutputSignal	DAS eng	OutputSignalEngUni	TferUnits	OutputSignalUnit
primary	wet	N/A	0.000	1.02	V	N/A	V
primary	dry	N/A	0.000	0.01	V	N/A	V
							·
Sensor Compor	nent Properly Sited	ł	Condition	Properly sited	Sta	tus pass	
Sensor Compor	Grid Clean		Condition	Clean	Sta	tus pass	
Sensor Compor				Clouin			
Sensor Compor	ent Grid Angle		Condition	about 45 deg	Sta	tus pass	
Sensor Compor	Grid Orientati	on	Condition	North	Stat	tus pass	
		-					
Sensor Compor	ent Grid Condition	n	Condition	Good	Sta	tus pass	
Sensor Compor	Grid Type		Condition	Grid without ho	les Stat	tus pass	
2 cmoor compo	71-				Stu		
Sensor Compor	nent System Memo	0	Condition		Star	tus pass	

Infrastructure Data For

Site ID	BEL116	Technician Eric He	ebert Site Visit Date 11/10/2014
Shelter	Make	Shelter Model	Shelter Size
Unknow	'n	Unknown	Unknown
and the second second			

Sensor Component	Sample Tower Type	Condition	Туре В	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	Fair	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: SitingCriteriaCom

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

F-02058-1500-S1-rev002

Site ID WST109	Technician Sandy Gre	nville Site Visit Date 11/1	0/2014					
Site Spanson (aganan)	EDA	USGS Man	Woodstock					
Site Sponsor (agency)		Mon Scale						
Operating Group	IES/USFS	Map Scale						
AQS #	33-009-9991	Map Date						
Meteorological Type	R.M. Young							
Air Pollutant Analyzer	Ozone	QAPP Latitude	43.9446					
Deposition Measurement	dry, wet	QAPP Longitude	-71.7008					
Land Use	woodland - mixed	QAPP Elevation Meters	258					
Terrain	complex	QAPP Declination	15.9					
Conforms to MLM	No	QAPP Declination Date	12/28/2004					
Site Telephone	(603) 726-4935	Audit Latitude	43.944519					
Site Address 1	234 Mirror Lake Road	Audit Longitude	-71.700787					
Site Address 2		Audit Elevation	255					
County	Grafton	Audit Declination	-15.3					
City, State	Campton, NH	Present						
Zip Code	03223	Fire Extinguisher 🔽	New Sept 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 Ekto	Model 8810 (s/n 2149-16)	Shelter Size 640 cuft					
Shelter Clean	Notes The shelter floor and roof	have been repaired. Hand rails hav	ve been installed on platform.					
Site OK	Notes State of NH Department of tfazzina@DES.state.NH.U	f Environmental Services contact is JS	Tom Fazzina (603) 271-0911 and					
Driving Directions From contin	I-93 take exit 30 and go south on round to the end of the road. The site is	ttazzına@DES.state.NH.US 3 take exit 30 and go south on route 3 for approximately 2 miles. Turn right on Mirror Lake road and to the end of the road. The site is through the gate on the right						

WST109

F-02058-1500-S2-rev002

Site ID

Technician Sandy Grenville

Site Visit Date 11/10/2014

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		\checkmark
City > 50,000 population	40 km		\checkmark
City 10,000 to 50,000 population	10 km		\checkmark
City 1,000 to 10,000 population	5 km		\checkmark
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m	50 m	
Tree line	50 m	10 - 30 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is in a small clearing surrounded by mountain forest. There is a small parking lot used by forest service employees located 50 meters from the site.

Fi	eld Systems Data Form	F-02058-1500-S3-rev002				
Site	WST109 Technician Sandy Grenville	Site Visit Date 11/10/2014				
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				
Pro nat	wide any additional explanation (photograph or sketch if nece ural or man-made, that may affect the monitoring parameters	sary) regarding conditions listed above, or any other featur	res,			

10-meter temperature is being operated and maintained on the meteorological tower.

Field Systems Data Form F-02058-1500-S4-rev002 Site Visit Date 11/10/2014 WST109 Technician Sandy Grenville Site ID Temperature only Do all the meterological sensors appear to be intact, in good condition, and well maintained? ✓ Temperature only Are all the meteorological sensors operational online, and

	reporting data:		
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?	✓	

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Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Site	e ID	WST109	Technician	Sandy Grenville		Site Visit Date 11/10/2014
	Siting C	Criteria: Are the pollut	ant analyzers a	nd deposition eq	uipr	ment sited in accordance with 40 CFR 58, Appendix E
1	Do the sunrestri	sample inlets have at lo icted airflow?	east a 270 degre	e arc of	✓	
2	Are the	sample inlets 3 - 15 m	eters above the	ground?	✓	
3	Are the and 20	sample inlets > 1 mete meters from trees?	er from any maj	or obstruction,		
	<u>Pollutar</u>	nt analyzers and depos	sition equipmen	t operations and	mai	<u>aintenance</u>
1	Do the a condition	analyzers and equipmo on and well maintained	ent appear to be 1?	e in good	✓	
2	Are the reportin	analyzers and monito ng data?	rs operational, (on-line, and	✓	
3	Describ	e ozone sample tube.				1/4 teflon by 15 meters
4	Describ	e dry dep sample tube				3/8 teflon by 15 meters
5	Are in-l indicate	ine filters used in the o location)	ozone sample lir	ne? (if yes		At inlet only
6	Are san obstruc	ple lines clean, free of tions?	f kinks, moistur	e, and		Moisture in tubing only
7	Is the ze	ero air supply desiccar	nt unsaturated?		✓	
8	Are the	re moisture traps in th	e sample lines?			Flow line only
9	Is there clean?	a rotometer in the dry	y deposition filte	er line, and is it		Clean and dry

Fi	eld Systems Data Form		F-02	2058-15	00-S6-rev002	
Site	e ID WST109 Technician Sandy Grenville	Э	Site Visit D	ate 11/10/2014	4	
	DAS, sensor translators, and peripheral equipment operation	ons a	nd maintenance	2		
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 onl	ly		
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?					
9	Is the met tower stable and grounded?		Stable		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 kinked at the hinge point and is in poor condition. One leg of the met tower is split. Both of these conditions were reported following the two previous site audit visits.

Field Sy	stems Data	Fo	rm				F-02	058-	1500-8	57-rev(002
Site ID	WST109		Techni	cian	Sandy Grenville	Site Visit Date	1/10/2014				
Document	tation										
Does the s	ite have the requi	red in	strument	t and	<u>equipment manuals?</u>						
Wind speed	sensor	Yes	No	N//	A Data logge	•	Yes	No V	N/A		
Wind directi	on sensor				Data logger	r					
Temperature	e sensor				Strip chart	recorder			\checkmark		
Relative hun	nidity sensor			✓	Computer						
Solar radiati	on sensor			✓	Modem			\checkmark			
Surface wetn	less sensor			✓	Printer						
Wind sensor	translator			✓	Zero air pu	mp		\checkmark			
Temperature	e translator			✓	Filter flow	pump		\checkmark			
Humidity ser	nsor translator			\checkmark	Surge prote	ector		\checkmark			
Solar radiati	on translator			✓	UPS						
Tipping bucl	ket rain gauge				Lightning p	protection device			\checkmark		
Ozone analyz	zer				Shelter hea	ter					
Filter pack f	low controller				Shelter air	conditioner					
Filter pack N	AFC power supply	7		\checkmark							
Does the	site have the requ	ired a	nd most	rece	nt QC documents and	report forms?					
		Pres	ent				Curre	nt			

\checkmark		\checkmark
\checkmark		\checkmark
	Oct 2001	
\checkmark	Nov 2014	\checkmark
\checkmark	July 1990	
\checkmark		\checkmark
		\checkmark
\checkmark		\checkmark
	Y Y Y Y Y Y Y	✓

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2

3

4

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

Site	ID WST109 Technician Sandy Grenville)	Site Visit Date 11/10/2014
1	Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	g 🗌	The site operator was trained by the previous operator, who was trained by the 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

Multipoint Calibrations	\checkmark	Semiannually	✓
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	N/A	\checkmark

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

QC Check Performed

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

- Frequency ✓ ✓ Semiannually \checkmark \checkmark Daily \checkmark ✓ As needed ✓ ✓ Daily \checkmark \checkmark As needed ✓ ✓ Weekly ✓ ✓ Every 2 weeks \checkmark \checkmark N/A \checkmark \checkmark Weekly ✓ ✓ Every 2 weeks
- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?
- Are the automatic and manual z/s/p checks monitored and 3 reported? If yes, how?

	Unknown
✓	
✓	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 state of NH DES performs monthly multi-point audits of the ozone analyzer. Ozone sample train leak checks are being conducted every two weeks.

Compliant

Compliant

F-02058-1500-S8-rev002

Field Systems Data Form								F-02058-1	500-S9-rev002
Sit	e ID	WST109	Technicia	an	Sandy Grenville	!	Site Visit Date	11/10/2014	
	<u>Site ope</u>	eration procedures							
1	Is the fi	lter pack being changed e	every Tue	sda	ay as scheduled	~	Filter changed morir	nings	
2 Are the Site Status Report Forms being completed and filed correctly?					pleted and filed				
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 filte and shij	ers protected from contar pping? How?	nination o	lur	ring handling	✓	Clean gloves on and	d off	
9 Are the site conditions reported regularly to the field operations manager or staff?									
QC	Check P	erformed	F	rec	quency			Compliant	
I	Aulti-poi	nt MFC Calibrations	✓ s	em	iannually				
I	Flow System Leak Checks								
I	Filter Pack Inspection								
I	Flow Rate Setting Checks					\checkmark			
Ţ	/isual Ch	eck of Flow Rate Rotome	eter 🗹 🕅	/ee	kly			\checkmark	
I	n-line Fil	ter Inspection/Replaceme	ent 🗹 S	em	iannually			\checkmark	
5	Sample L	ine Check for Dirt/Water	✓ W	/ee	kly			\checkmark	
D		dditional annianation (ni	.		n alaatah if maaaa	~ ~ ~ ~ ~) was a share a set	and listed above on	ann ath an factures

WST109

F-02058-1500-S10-rev002

Site ID

Techr

Technician Sandy Grenville

Site Visit Date 11/10/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000291
DAS	Campbell	CR3000	2526	000427
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	000025705	00476
Flow Rate	Арех	AXMC105LPMDPC	43970	000466
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03532
Modem	Raven	V4221-V	0844349943	06598
Ozone	ThermoElectron Inc	49i A1NAA	1009241795	000611
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244812	000696
Sample Tower	Aluma Tower	A	none	03531
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	00947
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	4014	04317
Zero air pump	Werther International	P 70/4	000821881	06934

F-02058-1500-S1-rev002

Site ID BEL116	Technician Eric Hebert	Site Visit Date 11/10)/2014			
Site Spansor (agency)	FPA	USGS Map	Laurel			
On the G		Man Scale				
Operating Group	BARC/private	Map Scale				
AQS #	24-033-9991	Map Date				
Meteorological Type	R.M. Young					
Air Pollutant Analyzer	Ozone, SO2, NOy, NOx, CO, Hg	QAPP Latitude	39.0283			
Deposition Measurement	dry, wet, Hg	QAPP Longitude	-76.8175			
Land Use	urban - agriculture	QAPP Elevation Meters	46			
Terrain	flat	QAPP Declination	11.25			
Conforms to MLM	No	QAPP Declination Date	2/23/2006			
Site Telephone	(301) 474-3019	Audit Latitude	39.028177			
Site Address 1	BARC old airport	Audit Longitude	-76.817127			
Site Address 2	Springfield Road	Audit Elevation	47			
County	Prince George's	Audit Declination	-11			
City, State	Laurel, MD	Present				
Zip Code	20708	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 Unknown Mc	del Unknown	Shelter Size Unknown			
Shelter Clean	Notes					
Site OK	Notes					
Driving Directions From the Baltimore - Washington Parkway (route 295) take exit 11(Powder Mill Road). Go east for approximately 0.5 miles and turn right (south) onto Springfield Road. Continue approximately 0.8 miles and look for a gate on the left. The site is on the right of the dirt road approximately 1 mile through the two gates.						

BEL116

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 11/10/2014

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		\checkmark
City > 50,000 population	40 km	25 km	
City 10,000 to 50,000 population	10 km		\checkmark
City 1,000 to 10,000 population	5 km		\checkmark
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m		\checkmark
Tree line	50 m		\checkmark
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

Site ID BEL116 Technician Eric Hebert Site Visit Date 11/10/2014	
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? ✓	
10 Is the surface wetness sensor sited with the grid surface facing north?	
11 Is it inclined approximately 30 degrees? Image: About 45 degrees	

F-02058-1500-S4-rev002

Site	e ID BEL116 Technician Eric He	ebert	Site Visit Date 11/10/2014
1	Do all the meterological sensors appear to be intact, condition, and well maintained?	in good 🔽	
2	Are all the meteorological sensors operational online reporting data?	e, and 🔽	
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?		
6	Is the surface wetness sensor grid clean and undama	aged?	
7	Are the sensor signal and power cables intact, in goo condition, and well maintained?	▶ Dd	
8	Are the sensor signal and power cable connections p from the elements and well maintained?	orotected 🗹	

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site ID BEL116 Technician Eric Hebert			Site Visit Date 11/10/2014
	Siting Criteria: Are the pollutant analyzers and deposition e	quip	ment 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	d ma	<u>intenance</u>
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

Fie	eld Sy	stems Data Fo	orm			F-02	2058-15	500-S6-rev002		
Site	Site ID BEL116 Eric Hebert			Site Visi	t Date	11/10/2014	1]		
	DAS, ser	nsor translators, and p	eripheral equi	pment operation	ns ai	nd maintenai	<u>ıce</u>			
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?				e weather and	✓					
5	Are the	signal leads connected	to the correct	DAS channel?	✓					
6 Are the DAS, sensor translators, and shelter properly grounded?				properly	✓					
7	Does the	instrument shelter ha	ive a stable pov	ver source?	✓					
8	Is the in	strument shelter temp	erature control	lled?						
9	Is the m	et tower stable and gro	ounded?			Stable			Grounded	
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?								

Field Sy	stems Data	For	·m				F-02	058-	1500-	S7-rev	002
Site ID	BEL116		Tech	nician	Eric Hebert	Site Visit Date	e 11/10/2014				
Document	ation										
Does the si	ite have the requir	ed ins	trume	<u>nt and</u>	equipment manuals?	-					
Wind speed s Wind direction Temperature Relative hum Solar radiation Surface wethon Wind sensor Temperature Humidity sen Solar radiation Tipping buck Ozone analyz	ensor on sensor idity sensor on sensor ess sensor translator translator isor translator on translator et rain gauge				Data logg Data logg Strip char Computer Modem Printer Zero air p Filter flow Surge pro UPS Lightning Shelter he	er er er er trecorder yump v pump tector protection device eater					
Filter pack fle Filter pack M	ow controller IFC power supply				Shelter ai	r conditioner					
Does the	site have the requi	ired a	<u>nd mo</u> ent	st rece	nt QC documents and	<u>l report forms?</u>	Currer	ıt			
Station Log SSRF											

SSRF	\checkmark		
Site Ops Manual	\checkmark	Feb 2014	
HASP	\checkmark	Feb 2014	
Field Ops Manual	\checkmark	Feb 2014	
Calibration Reports	\checkmark		
Ozone z/s/p Control Charts			
Preventive maintenance schedul			

1

2

3

4

Cu	rrent
	✓
	✓
	✓
	✓
	✓

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

BEL116 Technician Eric Hebert Site Visit Date 11/10/2014 Site ID Site operation procedures Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark 4 Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

QC	Check	Perf	formed
----	-------	------	--------

Frequency

Multipoint Calibrations	\checkmark	Semiannually	✓
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	Weekly	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	Weekly	\checkmark

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

OC	Check	Perf	formed
VV.	Chick	I UII	unicu

Multi-point Calibrations Automatic Zero/Span Tests Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet) In-line Filter Replacement (at analyze** Sample Line Check for Dirt/Water **Zero Air Desiccant Check**

Image: Semiannually Semiannually Daily Daily Veekly Every 2 weeks I/A Veekly	(
Semiannually	
Daily	
Daily	
Weekly	
Every 2 weeks	
N/A	
Weekly	
N/A	

- 1 Do multi-point calibration gases go through the complete sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?

3	Are the automatic and manual z/s/p checks monitored and
	reported? If yes, how?

	Unknown
✓	
✓	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:

npliant

Compliant 1

F-02058-1500-S8-rev002

1 1

Fi	eld Sy	stems Data Fo	rm					F-02058	-1500-S9-rev002
Sit	e ID	BEL116	Technic	cian	Eric Hebert		Site Visit Date	11/10/2014	
	<u>Site ope</u>	ration procedures							
1	Is the fi	lter pack being changed	l every Tu	iesd	ay as scheduled?		Filter changed morr	nings	
2	Are the correctl	Site Status Report For y?	ms being o	com	pleted and filed				
3	Are dat schedul	a downloads and backu ed?	ps being	perf	ormed as		No longer required		
4	Are gen	eral observations being	made an	d re	corded? How?	✓	SSRF		
5	Are site fashion	supplies on-hand and 1 ?	eplenishe	d in	a timely	✓			
6	Are san	nple flow rates recorded	l? How?			✓	SSRF, call-in		
7	Are san fashion	nples sent to the lab on a ?	a regular :	sche	edule in a timely				
8	Are filte and shij	ers protected from conta pping? How?	amination	u du	ring handling	✓	Clean glove on and	off	
9	Are the operation	site conditions reported ons manager or staff?	l regularl	y to	the field				
QC	Check P	erformed		Fre	quency			Compliant	
I	Multi-poi	nt MFC Calibrations	\checkmark	Sen	niannually				
I	Flow Syst	em Leak Checks	\checkmark	Wee	ekly				
I	Filter Pac	k Inspection							
I	Flow Rate	e Setting Checks	\checkmark	Wee	ekly				
Ţ	Visual Ch	eck of Flow Rate Roton	neter 🔽	Wee	ekly			\checkmark	
I	n-line Fil	ter Inspection/Replacer	ment 🗹	Sen	niannually			\checkmark	
5	Sample Li	ine Check for Dirt/Wat	er 🗸	Wee	ekly			\checkmark	
Ducz	ido opre e	ditional avalanction (nhotogra	ah a	n akatah if nasaa) maganding agenditi	ong listed above	on any other features

BEL116

F-02058-1500-S10-rev002

Site ID

Techni

Technician Eric Hebert

Site Visit Date 11/10/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000266
DAS	Campbell	CR3000	2120	000341
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	1192001881	02755
Flow Rate	Apex	AXMC105LPMDPC	illegible	000596
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	06484
Modem	Raven	H4222-C	0808311155	06475
Ozone	ThermoElectron Inc	49i A1NAA	1030244795	000684
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124685	000373
Precipitation	Texas Electronics	TR-525i-HT	43527-807	06332
Relative Humidity	Vaisala	HMP50UA	E3420005	06749
Sample Tower	Aluma Tower	В	none	000127
Shelter Temperature	Campbell	107-L	44281	none
Shield (10 meter)	RM Young	Aspirated 43408	none	05042
Shield (2 meter)	RM Young	Aspirated 43408	none	05041
Siting Criteria	Siting Criteria	1	None	None
Solar Radiation	Licor	LI-200	PY47675	04935
Solar Radiation Translator	RM Young	70101-X	none	04888
Surface Wetness	RM Young	58101	none	04608
Temperature	RM Young	41342VO	12533	06308
Temperature2meter	RM Young	41342VO	12534	06309
Wind Direction	RM Young	AQ05103-5	17096wdr	03416
Wind Speed	RM Young	AQ05103-5	17096wsp	03416
Zero air pump	Teledyne	701H	606	000776

APPENDIX B

CASTNET Site Spot Report Forms

EEMS Spot Report

Data Compiled:

5/21/2016 3:36:03 PM

SiteVisitDateSiteTechnician11/09/2014ABT147Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	9	0.12	с	Р
2	Temperature max error	Р	4	0.5	9	0.17	с	Р
3	Ozone Slope	Р	0	1.1	4	1.01003	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.59769	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.8	%	Р
7	Ozone % difference max	Р	7	10	4	1.3	%	Р
8	Flow Rate average % difference	Р	10	5	2	0.22	%	Р
9	Flow Rate max % difference	Р	10	5	2	0.67	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	35	0.0001	V	Р

Field Systems Comments

1 Parameter: DasComments

The sample tower is no longer grounded. The lower section of the met tower has been replaced.

2 **Parameter:** SitingCriteriaCom

Manure is routinely spread on the hay fields surrounding the site during the summer.

3 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

4 Parameter: MetSensorComme

10-meter temperature is operated and maintained on the meteorological tower.

EEMS Spot Report

Data Compiled: 10/21/2015 1:04:19 PM

SiteVisitDateSiteTechnician10/03/2014ACA416Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	Р	3	0.5	8	0.17	m/s	Р
2	Wind Speed max error below 5m/s in m/s	Р	3	0.5	8	0.20	m/s	Р
3	Wind Speed average % difference above 5 m/s	Р	3	5	8	10.2	%	Fail
4	Wind Speed max % difference above 5 m/s	Р	3	5	8	38.6	%	Fail
5	Wind Speed Torque average error	Р	3	0.5	1	0.30	g-cm	Р
6	Wind Speed Torque max error	Р	3	0.5	1	0.3	g-cm	Р
7	Wind Direction Input Deg True average error (de	Р	2	5	10	2.6	degrees	Р
8	Wind Direction Input Deg True max error (deg)	Р	2	5	10	5	degrees	Р
9	Wind Direction Linearity average error (deg)	Р	2	5	16	1.5	degrees	Р
10	Wind Direction Linearity max error (deg)	Р	2	5	16	3	degrees	Р
11	Wind Direction Torque average error	Р	2	20	1	10	g-cm	Р
12	Wind Direction Torque max error	Р	2	20	1	10	g-cm	Р
13	Temperature average error	Р	5	0.5	3	0.17	c	Р
14	Temperature max error	Р	5	0.5	3	0.27	c	Р
15	Delta Temperature average error	Р	6	0.5	1	0.02	c	Р
16	Delta Temperature average error	Р	5	0.5	2	0.04	c	Р
17	Delta Temperature max error	Р	5	0.5	2	0.05	c	Р
18	Delta Temperature max error	Р	6	0.5	1	0.02	c	Р
19	Relative Humidity average below 85%	Р	6	10	9	1.3	%	Р
20	Relative Humidity max below 85%	Р	6	10	9	2.0	%	Р
21	Solar Radiation % diff of avg	Р	9	10	8	2.56	%	Р
22	Solar Radiation % diff of max STD value	Р	9	10	8	1.8	%	Р
23	Precipitation average % difference	Р	1	10	2	2.0	%	Р
24	Precipitation max % difference	Р	1	10	2	4.0	%	Р
25	Ozone Slope	Р	0	1.1	4	1.02704	unitless	Р
26	Ozone Intercept	Р	0	5	4	0.18362	ppb	Р
27	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
28	Ozone % difference avg	Р	7	10	4	2.9	%	Р
29	Ozone % difference max	Р	7	10	4	3.4	%	Р
30	Flow Rate average % difference	Р	13	5	2	6.3	%	Fail
31	Flow Rate max % difference	Р	13	5	2	6.44	%	Fail
32	DAS Time maximum error	Р	0	5	1	0.00	min	Р
33	DAS Voltage average error	Р	15	0.003	28	0.0003	V	Р
34	DAS Voltage average error	Р	2	0.003	28	0.0000	V	Р

SiteV	isitDate	Site	Technician		_				
10/03/2	2014	ACA416	Eric Hebert		_				
35	Surface W	/etness Response	Р	10	100	1	99.4		Р
36	Shelter Te	emperature average error	Р	5	1	6	1.24	с	Fail
37	Shelter Te	emperature max error	Р	5	1	6	2.27	с	Fail

10/03/2014 ACA416

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:	Flow Rate	SensorComponent:	Moisture Present	CommentCode	72				
	The filter sample tubing has drops of moisture in low sections outside the shelter.									
3	Parameter:	Ozone	SensorComponent:	System Memo	CommentCode	208				
	The ozone sample train is composed of materials other than the recommended materials which are Teflon and glass only.									

4	Parameter:	Precipitation	SensorComponent:	Properly Sited	CommentCode	193
---	------------	---------------	------------------	----------------	-------------	-----

Objects violate the 45 degree rule for the tipping bucket rain gage.

Field Systems Comments

1 Parameter: SiteOpsProcComm

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

2 Parameter: SiteOpsProcedures

The meteorological and ozone instrument checks and maintenance are performed by the State of Maine DEP.

3 Parameter: DocumentationCo

The site operator reported that low flow rate conditions had been observed and reported to ARS recently. The Flow controller has been replaced since then to correct the issue.

4 **Parameter:** ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: PollAnalyzerCom

The ozone sample inlet still has a stainless steel fittings. The recommended material for ozone sample train is Teflon or glass. The site operator indicated that the fittings would be changed.

6 Parameter: MetSensorComme

The wind speed translator span is set to 25 m/s and not 50 m/s. This may have affected the low output observed at the highest wind speed challenge.

7 Parameter: MetOpMaintCom

The sensor signal cables are beginning to show signs of wear.

EEMS Spot Report

Data Compiled:

5/21/2016 3:58:58 PM

SiteVisitDateSiteTechnician10/07/2014ASH135Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.02	с	Р
2	Temperature max error	Р	4	0.5	12	0.05	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99168	unitless	Р
4	Ozone Intercept	Р	0	5	4	-1.27949	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99992	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.7	%	Р
7	Ozone % difference max	Р	7	10	4	3.5	%	Р
8	Flow Rate average % difference	Р	10	5	3	1.96	%	Р
9	Flow Rate max % difference	Р	10	5	3	1.96	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	42	0.0001	V	Р

10/07/2014 ASH135

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.

Field Systems Comments

1 Parameter: DasComments

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested once each month.

3 Parameter: SitingCriteriaCom

There is an evergreen plantation 20 meters south of the site.

4 Parameter: ShelterCleanNotes

The shelter is in good condition, clean, and very well organized.
Data Compiled:

5/21/2016 4:57:00 PM

SiteVisitDateSiteTechnician11/10/2014BEL116Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	3	0.16	c	Р
2	Temperature2meter max error	Р	5	0.5	3	0.25	c	Р
3	Wind Speed average error below 5m/s in m/s	Р	3	0.5	8	0.05	m/s	Р
4	Wind Speed max error below 5m/s in m/s	Р	3	0.5	8	0.20	m/s	Р
5	Wind Speed average % difference above 5 m/s	Р	3	5	8	0.0	%	Р
6	Wind Speed max % difference above 5 m/s	Р	3	5	8	0.0	%	Р
7	Wind Speed Torque average error	Р	3	0.5	1	0.35	g-cm	Р
8	Wind Speed Torque max error	Р	3	0.5	1	0.4	g-cm	Р
9	Wind Direction Input Deg True average error (de	Р	2	5	8	2.0	degrees	Р
10	Wind Direction Input Deg True max error (deg)	Р	2	5	8	4	degrees	Р
11	Wind Direction Linearity average error (deg)	Р	2	5	16	1.0	degrees	Р
12	Wind Direction Linearity max error (deg)	Р	2	5	16	3	degrees	Р
13	Wind Direction Torque average error	Р	2	20	1	12	g-cm	Р
14	Wind Direction Torque max error	Р	2	20	1	12	g-cm	Р
15	Temperature average error	Р	4	0.5	12	0.09	с	Р
16	Temperature max error	Р	4	0.5	12	0.13	с	Р
17	Relative Humidity average above 85%	Р	6	10	1	2.2	%	Р
18	Relative Humidity max above 85%	Р	6	10	1	2.2	%	Р
19	Relative Humidity average below 85%	Р	6	10	2	1.5	%	Р
20	Relative Humidity max below 85%	Р	6	10	2	1.9	%	Р
21	Precipitation average % difference	Р	1	10	2	4.0	%	Р
22	Precipitation max % difference	Р	1	10	2	6.0	%	Р
23	Ozone Slope	Р	0	1.1	4	1.00369	unitless	Р
24	Ozone Intercept	Р	0	5	4	-0.41489	ppb	Р
25	Ozone correlation	Р	0	0.995	4	0.99992	unitless	Р
26	Ozone % difference avg	Р	7	10	4	0.4	%	Р
27	Ozone % difference max	Р	7	10	4	0.6	%	Р
28	Flow Rate average % difference	Р	10	5	2	2.8	%	Р
29	Flow Rate max % difference	Р	10	5	2	3.23	%	Р
30	DAS Time maximum error	Р	0	5	1	0.02	min	Р
31	DAS Voltage average error	Р	7	0.003	49	0.0002	V	Р
32	Surface Wetness Response	Р	12	0.5	1	1.02		Р

11/10/2014 BEL116

Eric Hebert

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

Data Compiled: 4/9

4/9/2015 9:31:09 PM

SiteVisitDate	Site	Technician			
11/25/2014	BFT142	Sandy Grenville			

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.03135	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.65714	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99993	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.2	%	Р
5	Ozone % difference max	Р	7	10	4	2.9	%	Р

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4/9/2015 8:23:34 PM

SiteVisitDate	Site	Technician
11/13/2014	BWR139	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00631	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.08494	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.6	%	Р
5	Ozone % difference max	Р	7	10	4	1.2	%	Р

Data Compiled:

4/9/2015 9:10:19 PM

SiteVisitDate	Site	Technician
11/21/2014	CDR119	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98684	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.57024	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.4	%	Р
5	Ozone % difference max	Р	7	10	4	3.5	%	Р

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4/9/2015 9:21:32 PM

SiteVisitDate	Site	Technician
11/24/2014	CND125	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99966	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.05026	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.1	%	Р
5	Ozone % difference max	Р	7	10	4	0.2	%	Р

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4/9/2015 7:48:11 PM

SiteVisitDate	Site	Technician
10/27/2014	GRS420	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99279	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.12506	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.4	%	Р
5	Ozone % difference max	Р	7	10	4	0.8	%	Р

Data Compiled:

ed: 5/21/2016 5:27:52 PM

SiteVisitDateSiteTechnician10/06/2014HOW191Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	9	0.05	с	Р
2	Temperature max error	Р	4	0.5	9	0.09	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98661	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.31884	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.0	%	Р
7	Ozone % difference max	Р	7	10	4	2.5	%	Р
8	Flow Rate average % difference	Р	10	5	3	0.88	%	Р
9	Flow Rate max % difference	Р	10	5	3	1.32	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	35	0.0001	V	Р

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator reported that gloves are not consistently used to handle the filter pack.

2 Parameter: SitingCriteriaCom

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

3 Parameter: ShelterCleanNotes

The custom built shelter is clean and organized.

4 Parameter: MetSensorComme

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

Data Compiled:

6/9/2016 6:54:00 PM

SiteVisitDateSiteTechnician09/30/2014HWF187Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.14	c	Р
2	Temperature max error	Р	4	0.5	12	0.29	с	Р
3	Ozone Slope	Р	0	1.1	4	0.97152	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.17924	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	3.2	%	Р
7	Ozone % difference max	Р	7	10	4	3.4	%	Р
8	Flow Rate average % difference	Р	10	5	2	1.12	%	Р
9	Flow Rate max % difference	Р	10	5	2	1.35	%	Р
10	DAS Time maximum error	Р	0	5	1	0.25	min	Р
11	DAS Voltage average error	Р	7	0.003	42	0.0002	V	Р

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	Moisture Present	CommentCode	72
	The filter samp	ble tubing has drops of m	oisture in low sections out	tside 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.

Data Compiled:

4/9/2015 9:00:48 PM

SiteVisitDate	Site	Technician
11/19/2014	PAR107	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99033	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.42713	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.6	%	Р
5	Ozone % difference max	Р	7	10	4	1.8	%	Р

Data Compiled:

4/9/2015 8:01:31 PM

SiteVisitDate	Site	Technician
11/03/2014	PED108	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98841	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.05787	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.2	%	Р
5	Ozone % difference max	Р	7	10	4	1.3	%	Р

Data Compiled:

5/21/2016 9:33:36 PM

SiteVisitDateSiteTechnician10/30/2014PNF126Eric Hebert

1:00	Audited Deveryora		<u> </u>	Cuitouio I	Counto		L In:te	Deee/Feil
Line	Audited Parameter	DAS	Cn. #	Criteria +/-	Counts	QaResult	Units	Pass/Fall
1	Temperature average error	Р	4	0.5	3	0.28	с	Р
2	Temperature max error	Р	4	0.5	3	0.48	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98882	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.45144	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.6	%	Р
7	Ozone % difference max	Р	7	10	4	0.8	%	Р
8	Flow Rate average % difference	Р	10	5	2	1.1	%	Р
9	Flow Rate max % difference	Р	10	5	2	1.32	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	42	0.0002	V	Р

Field Performance Comments

1	Parameter: Flow Rate		SensorComponent:	Moisture Present	CommentCode 72
	T	1 . 1 . 1			

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 Parameter: DasComments

The towers are not grounded.

2 Parameter: SitingCriteriaCom

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition.

Data Compiled:

4/9/2015 8:49:32 PM

SiteVisitDate	Site	Technician
11/18/2014	SHN418	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00083	unitless	Р
2	Ozone Intercept	Р	0	5	4	1.29253	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.6	%	Р
5	Ozone % difference max	Р	7	10	4	5.0	%	Р

Data Compiled:

4/9/2015 8:35:38 PM

SiteVisitDate	Site	Technician
11/17/2014	VPI120	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99285	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.42120	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.5	%	Р
5	Ozone % difference max	Р	7	10	4	1.2	%	Р

Data Compiled:

4/9/2015 8:22:55 PM

SiteVisitDate	Site	Technician
11/14/2014	WSP144	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99369	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.05217	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.9	%	Р
5	Ozone % difference max	Р	7	10	4	2.0	%	Р

Data Compiled:

5/21/2016 9:57:03 PM

SiteVisitDateSiteTechnician11/10/2014WST109Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.14	с	Р
2	Temperature max error	Р	4	0.5	3	0.21	с	Р
3	Ozone Slope	Р	0	1.1	4	1.00183	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.02369	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.4	%	Р
7	Ozone % difference max	Р	7	10	4	0.6	%	Р
8	Flow Rate average % difference	Р	10	5	4	0.67	%	Р
9	Flow Rate max % difference	Р	10	5	4	0.67	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	42	0.0001	V	Р

11/10/2014 WST109

Field Systems Comments

1 Parameter: DasComments

The sample tower is kinked at the hinge point and is in poor condition. One leg of the met tower is split. Both of these conditions were reported following the two previous site audit visits.

2 **Parameter:** SiteOpsProcedures

The state of NH DES performs monthly multi-point audits of the ozone analyzer. Ozone sample train leak checks are being conducted every two weeks.

Parameter: SitingCriteriaCom 3

The site is in a small clearing surrounded by mountain forest. There is a small parking lot used by forest service employees located 50 meters from the site.

4 **Parameter:** SiteOKNotes

State of NH Department of Environmental Services contact is Tom Fazzina (603) 271-0911 and tfazzina@DES.state.NH.US

5 Parameter: ShelterCleanNotes

The shelter floor and roof have been repaired. Hand rails have been installed on platform.

Parameter: MetSensorComme 6

10-meter temperature is being operated and maintained on the meteorological tower.

APPENDIX C

CASTNET Ozone Performance Evaluation Forms

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRS	420-Eric H	ebert-10/27/2014				
1	10/27/2014	Computer	Hewlett Packard	none	6560 b	5CB1520H5W
2	10/27/2014	DAS	Environmental Sys Corp	none	8832	unknown4
3	10/27/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943903
4	10/27/2014	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460051
5	10/27/2014	Sample Tower	Aluma Tower	90945	В	none
6	10/27/2014	Zero air pump	Werther International	none	PC70/4	531385

Mfg	Serial Number Ta	Site	Те	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElectron Inc	1023943903	GRS420	E	ric Hebert		10/27/20	014	Ozone		none	
Slope:	0.99279 Slope: 0.12506 Intercep	0.0000 t 0.0000	00	Mfg Serial N	Jumber	ThermoE	Electron I	Inc Pa	rameter o	ozone Ozone primar	v stan
CorrCoff	0.99999 CorrCof	f 0.0000	00	Tfer ID		01110]			
DAS 1:	DAS 2	:		Slope			1 00707	Inter	cent	-0.21	1032
A Avg % Diff: A N	Max % Di A Avg	%Dif A Max	% Di	Cert De	ite		1/8/2014		Coff	1.00	0000
0.4%	0.8%										
UseDescription:	: ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDi	fference:	
primary	1	0.33	0.	53	0.5	53	ppb				
primary	2	28.00	28	.01	27.	.91	ppb			-0.36%	
primary	3	46.61	46	.49	46.	.42	ppb			-0.15%	
primary	4	79.35	79	.00	78.	.74	ppb			-0.33%	
primary	5	113.46	112	2.87	112	.00	ppb			-0.77%	
Sensor Compone	Cell B Noise		Conditi	on 0.6 pr	b			Status	pass		
Sensor Compone	ent Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compone	ent Fullscale Voltage)	Conditi	on 1.000	5			Status	pass		
Sensor Compone	Inlet Filter Condi	tion	Conditi	on Clear				Status	pass		
Sensor Compone	ent Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compone	ent Offset		Conditi	on 0.000				Status	pass		
Sensor Compone	ent Span		Conditi	on 1.001				Status	pass		
Sensor Compone	ent Cell B Freq.		Conditi	on 82.1 k	Hz			Status	pass		
Sensor Compone	ent System Memo		Conditi	on				Status	pass		
Sensor Compone	ent Sample Train		Conditi	on Good				Status	pass		
Sensor Compone	Cell B Pressure		Conditi	on				Status	pass		
Sensor Compone	Cell B Flow		Conditi	on 0.71 l	pm			Status	pass		
Sensor Compone	Cell A Tmp.		Conditi	on 31.7 ()			Status	pass		
Sensor Compone	ent Cell A Pressure		Conditi	on 686 m	nmHg			Status	pass		
Sensor Compone	ent Cell A Noise		Conditi	on 0.7 pp	b			Status	pass		
Sensor Compone	ent Cell A Freq.		Conditi	on 87.0 k	Hz			Status	pass		
Sensor Compone	ent Cell A Flow		Conditi	on 0.70 l	_pm			Status	pass		
Sensor Compone	Battery Backup		Conditi	on N/A				Status	pass		
Sensor Compone	ent Zero Voltage		Conditi	on 0.000	6			Status	pass		

Site V	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PED	108-Eric H	lebert-11/03/2014				
1	11/3/2014	DAS	Campbell	000406	CR3000	2511
2	11/3/2014	Ozone	ThermoElectron Inc	000732	49i A1NAA	1105347319
3	11/3/2014	Ozone Standard	ThermoElectron Inc	000215	49i A3NAA	0622717856
4	11/3/2014	Sample Tower	Aluma Tower	000788	В	unknown
5	11/3/2014	Zero air pump	Werther International	06883	C 70/4	000815257

Mfg	Se	rial Number Ta	Site	Те	chnician		Site Visi	t Date	Parame	ter	Owner]	D
ThermoElectron Ir	nc 11	105347319	PED108	E	ric Hebert		11/03/20	014	Ozone		000732	
Slope: Intercept CorrCoff	0.98 -0.05 1.00	3841Slope:5787Intercept0000CorrCoff	0.0000	0 0	Mfg Serial N	umber	ThermoE 49CPS-7	Electron 70008-30	Inc Pa 64 Tfo	rameter Cer Desc. C	ozone Ozone primar	y stan
DAS 1: A Avg % Diff: A 1.2%	Max	DAS 2:	oDif A Max	% Di	Tfer ID Slope Cert Da	te		1.0070 1/8/201	7 Inter 4 Corr	cept Coff	-0.2	1032 0000
UseDescriptio	n:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDi	ifference:	
primary		1	0.22	0.	42	0.3	30	ppb				
primary		2	26.27	26	.29	25.	.96	ppb			-1.26%	
primary		3	49.36	49	.22	48.	.60	ppb			-1.26%	
primary		4	83.10	82	.72	81.	.80	ppb			-1.11%	
primary		5	115.48	114	4.87	113	.40	ppb			-1.28%	
Sensor Compor	nent	Cell B Noise		Conditi	<mark>on</mark> 2.0 pp	b			Status	pass		
Sensor Compo	nent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compo	nent	Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Compo	nent	Inlet Filter Conditio	n	Conditi	on Clean				Status	pass		
Sensor Compo	nent	Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compo	nent	Offset		Conditi	on 0.10				Status	pass		
Sensor Compo	nent	Span		Conditi	on 0.995				Status	pass		
Sensor Compo	nent	Cell B Freq.		Conditi	on 105.4	kHz			Status	pass		
Sensor Compo	nent	System Memo		Conditi	on				Status	pass		
Sensor Compo	nent	Sample Train		Conditi	on Good				Status	pass		
Sensor Compo	nent	Cell B Pressure		Conditi	on				Status	pass		
Sensor Compo	nent	Cell B Flow		Conditi	on 0.72	om			Status	pass		
Sensor Compo	nent	Cell A Tmp.		Conditi	on 29.2 ()			Status	pass		
Sensor Compo	nent	Cell A Pressure		Conditi	on 731 m	imHg			Status	pass		
Sensor Compo	nent	Cell A Noise		Conditi	on 1.3 pp	b			Status	pass		
Sensor Compor	nent	Cell A Freq.		Conditi	on 94.0 k	Hz			Status	pass		
Sensor Compon	nent	Cell A Flow		Conditi	on 0.72 l	m			Status	pass		
Sensor Compo	nent	Battery Backup		Conditi	on N/A				Status	pass		
Sensor Compo	nent	Zero Voltage		Conditi	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BWI	R139-Eric H	lebert-11/13/2014				
1	11/13/2014	DAS	Campbell	000431	CR3000	2536
2	11/13/2014	Ozone	ThermoElectron Inc	000731	49i A1NAA	1105347309
3	11/13/2014	Ozone Standard	ThermoElectron Inc	000697	49i A3NAA	1030244814
4	11/13/2014	Sample Tower	Aluma Tower	missing	В	none
5	11/13/2014	Zero air pump	Werther International	06877	C 70/4	000815258

Mfg	Serial Number Ta	Site	Те	chnician		Site Visi	it Date	Parame	eter	Owner]	D
ThermoElectron Inc	1105347309	BWR139	Eri	ic Hebert		11/13/2	014	Ozone		000731	
Slope: 1 Intercept -C CorrCoff C	.00631 Slope: 0.08494 Intercept 0.99997 CorrCoff	0.0000	0	Mfg Serial N Tfer ID	lumber	ThermoE 49CPS-7	Electron I 70008-36	Inc Pa	rameter (er Desc. (ozone Ozone primar	y stan
DAS 1.	DAS 2.			Classes			1 00707	7		0.2	1022
A Avg % Diff: A M 0.6%	Iax % Di A Avg % 1.2%	6Dif A Max	% Di	Cert Da	ite		1/8/2014	4 Corr	Coff	1.00	0000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site	Unit:	PctD	ifference:	
primary	1	0.18	0.3	8	0.0	08	ppb				
primary	2	26.95	26.	96	27.	.07	ppb			0.41%	
primary	3	48.90	48.	76	49.	.04	ppb			0.57%	
primary	4	76.67	76.	34	77.	.23	ppb			1.17%	
primary	5	115.23	114	.62	114	.90	ppb			0.24%	
Sensor Componer	t Cell B Noise		Conditio	n 0.6 pp	b			Status	pass		
Sensor Componer	t Cell B Tmp.		Conditio	n				Status	pass		
Sensor Componer	t Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Componer	nt Inlet Filter Condition	on	Conditio	n Clean	1			Status	pass		
Sensor Componer	1t Line Loss		Conditio	n Not te	sted			Status	pass		
Sensor Componer	1t Offset		Conditio	n 0.000				Status	pass		
Sensor Componer	1t Span		Conditio	n 1.023				Status	pass		
Sensor Componer	t Cell B Freq.		Conditio	n 87.0 k	Hz			Status	pass		
Sensor Componer	t System Memo		Conditio	n				Status	pass		
Sensor Componer	t Sample Train		Conditio	n Good				Status	pass		
Sensor Componer	t Cell B Pressure		Conditio	n				Status	pass		
Sensor Componer	t Cell B Flow		Conditio	n 0.70 l	pm			Status	pass		
Sensor Componer	t Cell A Tmp.		Conditio	n 30.8 (2			Status	pass		
Sensor Componer	t Cell A Pressure		Conditio	n 741 m	nmHg			Status	pass		
Sensor Componer	t Cell A Noise		Conditio	0.7 pp	b			Status	pass		
Sensor Componer	t Cell A Freq.		Conditio	n 111.3	kHz			Status	pass		
Sensor Componer	Cell A Flow		Conditio	n 0.71 l	pm			Status	pass		
Sensor Componer	t Battery Backup		Conditio	n N/A				Status	pass		
Sensor Componer	t Zero Voltage		Conditio	N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
WSF	P144-Eric H	ebert-11/14/2014				
1	11/14/2014	DAS	Campbell	000430	CR3000	2525
2	11/14/2014	Ozone	ThermoElectron Inc	000734	49i A1NAA	1105347317
3	11/14/2014	Ozone Standard	ThermoElectron Inc	000543	49i A3NAA	0929938240
4	11/14/2014	Sample Tower	Aluma Tower	000126	В	none
5	11/14/2014	UPS	APC	06267	RS900	unknown
6	11/14/2014	Zero air pump	Werther International	06880	C 70/4	000814273

Mfg	Ser	ial Number Ta	Site		Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectron Inc	: 11(05347317	WSF	P144	E	ric Hebert		11/14/20	014	Ozone		000734	
Slope: Intercept CorrCoff	0.993 0.052 0.999	369Slope:217Intercept998CorrCoff		0.0000	0 0 0	Mfg Serial N Tfer ID	umber	ThermoE 49CPS-7 01110	Electron 70008-36	Inc Pa	rameter o er Desc. o	zone Dzone primary	y stan
DAS 1:		DAS 2:				Slope			1 0070	7 Inter	t	_0.21	1032
A Avg % Diff: A N	Max	% Di A Avg %	6Dif	A Max	% Di	Slope			1/0/004		rcept	-0.21	032
0.9%		2.0%				Cert Da	ite		1/8/201	4 Corr	Coff	1.00	000
UseDescription	:	ConcGroup:	Tfe	er Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDi	fference:	
primary		1		0.19	0.	39	0.7	78	ppb				
primary		2	2	27.14	27	.15	26.	.61	ppb			-1.99%	
primary		3	4	19.35	49	.21	48.	.89	ppb			-0.65%	
primary		4	7	77.55	77	.21	76.	.83	ppb			-0.49%	
primary		5	1	16.20	115	5.59	115	.00	ppb			-0.51%	
Sensor Compone	ent C	Cell B Noise			Conditi	on 1.3 pp	b			Status	pass		_
Sensor Compone	ent C	Cell B Tmp.			Conditi	on				Status	pass		
Sensor Compone	ent F	ullscale Voltage			Conditi	on N/A				Status	pass		
Sensor Compone	ent lr	nlet Filter Conditio	on		Conditi	on Clean				Status	pass		
Sensor Compone	ent L	ine Loss			Conditi	on Not te	sted			Status	pass		
Sensor Compone	ent C	Offset			Conditi	on 0.40				Status	pass		
Sensor Compone	ent S	Span			Conditi	on 0.997				Status	pass		
Sensor Compone	ent C	Cell B Freq.			Conditi	on 100.5	kHz			Status	pass		
Sensor Compone	ent S	System Memo			Conditi	on				Status	pass		
Sensor Compone	ent S	Sample Train			Conditi	on Good				Status	pass		
Sensor Compone	ent C	Cell B Pressure			Conditi	on				Status	pass		
Sensor Compone	ent C	Cell B Flow			Conditi	on 0.69 l	om			Status	pass		
Sensor Compone	ent C	Cell A Tmp.			Conditi	on 31.7 ()			Status	pass		
Sensor Compone	ent C	Cell A Pressure			Conditi	on 732 m	mHg			Status	pass		
Sensor Compone	ent C	Cell A Noise			Conditi	on 0.9 pp	b			Status	pass		
Sensor Compone	ent C	Cell A Freq.			Conditi	on 99.6 k	Hz			Status	pass		
Sensor Compone	ent C	Cell A Flow			Conditi	on 0.73 l	om			Status	pass		
Sensor Compone	ent B	Battery Backup			Conditi	on Funct	ioning			Status	pass		
Sensor Compone	ent Z	Zero Voltage			Conditi	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VPI	120-Eric He	ebert-11/17/2014				
1	11/17/2014	DAS	Campbell	000402	CR3000	2514
2	11/17/2014	Ozone	ThermoElectron Inc	000730	49i A1NAA	1105347325
3	11/17/2014	Ozone Standard	ThermoElectron Inc	000443	49i A3NAA	CM08200019
4	11/17/2014	Sample Tower	Aluma Tower	000631	В	none
5	11/17/2014	Zero air pump	Werther International	06879	C 70/4	000814275

Mfg	Se	rial Number Ta	Site	Те	chnician		Site Visit Date		Parameter		Owner ID	
ThermoElectron In	c 1'	105347325	VPI120	E	ric Hebert		11/17/2014		Ozone		000730	
Slope:	0.99	9285 Slope: 2120 Intercept	5 Slope: 0.00000 0 Intercept 0.00000			Mfg Serial Number			Inc Par 64 Tfe	rameter o er Desc. o	zone)zone primary	y stan
CorrCoff	1.00	0000 CorrCoff	0.0000	0	Tfer ID		01110					
DAS 1:		DAS 2:			Slope			1 0070	7 Inter	cont	-0.21	032
A Avg % Diff: A	Max	x % Di A Avg %	6Dif A Max	% Di	Slope			1/0/201			1.00	000
0.5%		1.2%			Cert Da	ite		1/6/201	4 Corr	Coff	1.00	1000
UseDescription	n:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDi	fference:	
primary		1	0.25	0.4	45	0.7	77	ppb				
primary		2	26.32	26	.34	26.	66	ppb			1.21%	
primary		3	49.24	49	.10	49.	21	ppb			0.22%	
primary		4	77.17	76	.83	76.	75	ppb			-0.10%	
primary		5	103.31	102	2.79	102	.40	ppb			-0.38%	
Sensor Compor	nent	Cell B Noise		Conditi	on 0.6 pp	b			Status	pass		
Sensor Compor	nent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compor	nent	Fullscale Voltage		Condition	on N/A				Status	pass		
Sensor Compor	nent	Inlet Filter Conditio	n	Conditi	on Mode	rately clea	an		Status	pass		
Sensor Compon	nent	Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compor	nent	Offset		Condition	on -0.70				Status	pass		
Sensor Compor	nent	Span		Condition 1.004					Status	pass		
Sensor Compor	nent	Cell B Freq.		Conditi	on 92.7 k	Hz			Status	pass		
Sensor Compor	nent	System Memo		Condition	on				Status	pass		
Sensor Compor	nent	Sample Train		Conditi	on Good				Status	pass		
Sensor Compon	nent	Cell B Pressure		Conditi	on				Status	pass		
Sensor Compor	nent _	Cell B Flow		Conditi	on 0.69 l	pm			Status	pass		
Sensor Compor	nent	Cell A Tmp.		Conditi	on 33.4 ()			Status	pass		
Sensor Compor	nent	Cell A Pressure		Conditi	on 652 m	mHg			Status	pass		
Sensor Compor	nent	Cell A Noise		Conditi	on 0.6 pp	b			Status	pass		
Sensor Compor	nent	Cell A Freq.		Conditi	on 103.2	kHz			Status	pass		
Sensor Compon	nent	Cell A Flow		Conditi	on 0.69 l	om			Status	pass		
Sensor Compon	nent	Battery Backup		Conditi	on N/A				Status	pass		
Sensor Compor	nent	Zero Voltage		Conditi	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SHN	1418-Eric H	ebert-11/18/2014				
1	11/18/2014	DAS	Environmental Sys Corp	90603	8816	2272
2	11/18/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	0903334535
3	11/18/2014	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460009
4	11/18/2014	Sample Tower	Aluma Tower	923307	В	none
5	11/18/2014	Zero air pump	Werther International	none	C 70/4	000855578

Mfg	Sei	rial N	umber Ta	Site		Те	chnician		Site Visit Date		Date Parameter		er Owner ID	
ThermoElectron In	c 09	03334	4535	SHN	418	Er	ic Hebert		11/18/2014		Ozone		none	
Slope: Intercept CorrCoff	1.00 1.29 1.00	083 253 000	Slope: Intercept CorrCoff		0.0000 0.0000 0.0000	0 0	Mfg Serial Number			Electron 70008-36	Inc Pa	rameter of the sector of the s	ozone Ozone primary	y stan
DAS 1: A Avg % Diff: A 2.6%	Max	% Di	DAS 2: i A Avg %	6Dif	A Max	% Di	Tfer ID Slope Cert Da	ıte	01110	1.0070 1/8/201	7 Inter 4 Corr	ccept Coff	-0.21	032)000
UseDescription	n:	Со	ncGroup:	Tfe	er Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctD	ifference:	
primary			1		0.27	0.4	47	1.	83	ppb				
primary			2	2	26.89	26.	.91	28	.26	ppb			5.02%	
primary			3	5	50.43	50.	.28	51.	.44	ppb			2.31%	
primary			4	7	9.75	79.	.39	80.	.74	ppb			1.70%	
primary			5	1	05.68	105	5.14	106	5.60	ppb			1.39%	
Sensor Compon	ent (Cell B	Noise			Conditio	on 1.2 pp	b			Status	pass		
Sensor Compon	ent C	Cell B	Tmp.			Conditio	on				Status	pass		
Sensor Compon	nent F	Fullsca	ale Voltage			Conditio	on 0.999	8			Status	pass		
Sensor Compon	nent	nlet F	ilter Conditio	n		Conditio	on Clean	1			Status	pass		
Sensor Compon	nent L	line L	OSS			Conditio	on Not te	sted			Status	pass		
Sensor Compon	ent (Offset				Conditio	Condition -1.5				Status	pass		
Sensor Compon	ent S	Span				Conditio	Condition 1.012				Status	pass		
Sensor Compon	ent (Cell B	Freq.			Condition 92.5 kHz					Status	pass		
Sensor Compon	ient S	Syster	n Memo			Condition					Status	pass		
Sensor Compon	ent S	Sampl	le Train			Conditio	on Good				Status	pass		
Sensor Compon	ent (Cell B	Pressure			Conditio	on				Status	pass		
Sensor Compon	ent (Cell B	Flow			Conditio	on 0.66 l	pm			Status	pass		
Sensor Compon	ent (Cell A	Tmp.			Conditio	on 31.6 ()			Status	pass		
Sensor Compon	ent (Cell A	Pressure			Conditio	on 655 m	nmHg			Status	pass		
Sensor Compon	ent (Cell A	Noise			Conditio	on 0.9 pp	b			Status	pass		
Sensor Compon	ent (Cell A	Freq.			Conditio	on 88.6 k	κHz			Status	pass		
Sensor Compon	Omponent Cell A Flow			Conditio	lition 0.65 lpm				Status	pass				
Sensor Compon	ent E	Batter	y Backup			Conditio	on N/A				Status	pass		
Sensor Compon	nent Z	t Zero Voltage (Conditio	Condition 0.0002					pass			

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number	
PAR	2107-Eric H	ebert-11/19/2014					
1	11/19/2014	DAS	Campbell	000333	CR3000	2112	
2	11/19/2014	Ozone	ThermoElectron Inc	000685	49i A1NAA	1030244789	
3	11/19/2014	Ozone Standard	ThermoElectron Inc	000436	49i A3NAA	CM08200012	
4	11/19/2014	Sample Tower	Aluma Tower	03449	А	none	
5	11/19/2014	Zero air pump	Werther International	06932	C 70/4	000829174	

Mfg	Se	erial Number Ta	Site	Те	chnician		Site Visit Date		Parameter		Owner I	D
ThermoElectron	Inc 1	030244789	PAR107	E	ric Hebert		11/19/2014		Ozone		000685	
Slope:	0.9	9033 Slope:	0.00000	D	Mfg			lectron I	Inc Pa	rameter 0	zone	
Intercept	-0.4	2713 Intercept	0.00000	D	Serial Number			49CPS-70008-364 Tf			zone primary	/ stan
CorrCoff	0.9	9999 CorrCoff	0.00000	D	Tfor ID	01110]				
DAS 1:		DAS 2:			Slope		[1.00707	Inter	cent	-0.21	032
A Avg % Diff:	A Max	x%Di AAvg%	6Dif A Max 9	% Di	Slope						4.00	002
1.6%		1.8%			Cert Da	ite		1/8/2014	+ Corr	Coff	1.00	000
UseDescripti	ion:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDi	fference:	
primary		1	0.30	0.	50	-0.	19 r	opb				
primary		2	26.02	26	.04	25.	57 p	opb			-1.80%	
primary		3	49.43	49	.29	48.	53 p	opb			-1.54%	
primary		4	86.50	86	.10	84.	90 p	opb			-1.39%	
primary		5	114.18	113	3.58	111	.90 p	opb			-1.48%	
Sensor Comp	onent	Cell B Noise		Conditi	on 1.1 pp	b			Status	pass		
Sensor Comp	onent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Comp	onent	Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Comp	onent	Inlet Filter Conditio	'n	Conditi	on Clean	1			Status	pass		
Sensor Comp	onent	Line Loss		Conditi	on Not te	sted			Status [pass		
Sensor Comp	onent	Offset		Condition	on 0.50				Status	pass		
Sensor Comp	onent	Span		Conditi	on 0.997				Status [pass		
Sensor Comp	onent	Cell B Freq.		Conditi	on 90.1 k	κHz			Status	pass		
Sensor Comp	onent	System Memo		Conditi	on				Status	pass		
Sensor Comp	onent	Sample Train		Conditi	on Good				Status	pass		
Sensor Comp	onent	Cell B Pressure		Conditi	on				Status	pass		
Sensor Comp	onent	Cell B Flow		Conditi	on 0.65 l	pm			Status	pass		
Sensor Comp	onent	Cell A Tmp.		Condition	on 31.6 ()			Status	pass		
Sensor Comp	onent	Cell A Pressure		Conditi	on 687 m	nmHg			Status	pass		
Sensor Comp	onent	Cell A Noise		Conditi	on 1.3 pp	b			Status	pass		
Sensor Comp	onent	Cell A Freq.		Conditi	on 92.2 k	Hz			Status	pass		
Sensor Comp	onent	Cell A Flow		Conditi	on 0.64 l	pm			Status	pass		
Sensor Comp	onent	Battery Backup		Conditi	on N/A				Status	pass		
Sensor Comp	onent	Zero Voltage		Conditi	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CDI	R119-Eric H	lebert-11/21/2014				
1	11/21/2014	DAS	Campbell	000332	CR3000	2111
2	11/21/2014	Ozone	ThermoElectron Inc	000623	49i A1NAA	1009241790
3	11/21/2014	Ozone Standard	ThermoElectron Inc	000365	49i A3NAA	0726124688
4	11/21/2014	Sample Tower	Aluma Tower	928376	В	AT-51060-56
5	11/21/2014	Zero air pump	Werther International	06903	C 70/4	000899159

Mfg	Ser	rial Number Ta	Site	Те	chnician		Site Visit	t Date	Parameter		Owner I	D
ThermoElectron Inc	: 10	09241790	CDR119	E	ric Hebert		11/21/2014		Ozone		000623	
Slope:	0.98	684 Slope:	0.0000	0	Mfg		ThermoE	lectron I	Inc Pa	rameter 0	zone	
Intercept	-0.57	024 Intercept	0.0000	0	Serial Number			0008-36	64 Tfe	er Desc. C	zone primary	y stan
CorrCoff	1.00	000 CorrCoff	0.0000	0	Tfor ID		01110		1			
DAS 1:		DAS 2:			Slope			1 00707	Inter	cent	-0.21	032
A Avg % Diff: A	Max	% Di A Avg %	6Dif A Max	% Di	Stope		L	1.007.07		cept	0.21	002
2.4%		3.5%			Cert Da	ite		1/8/2014	4 Corr	Coff	1.00	000
UseDescription	:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDi	fference:	
primary		1	0.24	0.4	44	-0.	10 p	opb				
primary		2	27.17	27	.18	26.	24 J	opb			-3.46%	
primary		3	50.65	50	.50	49.	20 J	ppb			-2.57%	
primary		4	87.79	87	.38	85.	70 J	ppb			-1.92%	
primary		5	117.63		/.01	114	.90	ppb	Г		-1.80%	
Sensor Compone	ent C	Cell B Noise		Condition	on 1.7 pp	b			Status	pass		
Sensor Compone	ent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compone	ent F	Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Compone	ent I	nlet Filter Conditio	n	Conditi	on Dirty				Status	Fail		
Sensor Compone	ent L	Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compone	ent	Offset		Conditi	on 0.30				Status	pass		
Sensor Compone	ent S	Span		Conditi	on 0.993				Status	pass		
Sensor Compone	ent C	Cell B Freq.		Conditi	on 93.6 k	Hz			Status	pass		
Sensor Compone	ent S	System Memo		Condition	on				Status	pass		
Sensor Compone	ent S	Sample Train		Conditi	on Good				Status	pass		
Sensor Compone	ent C	Cell B Pressure		Conditi	on				Status	pass		
Sensor Compone	ent	Cell B Flow		Condition	on 0.77 l	pm			Status	pass		
Sensor Compone	ent	Cell A Tmp.		Conditi	on 28.4 (>			Status	pass		
Sensor Compone	ent	Cell A Pressure		Conditi	on 728 m	nmHg			Status	pass		
Sensor Compone	ent	Cell A Noise		Condition	on 1.7 pp	b			Status	pass		
Sensor Compone	ent	Cell A Freq.		Condition	on 95.4 k	κHz			Status	pass		
Sensor Compone	ent	Cell A Flow		Condition	on 0.72 l	pm			Status	pass		
Sensor Compone	ent	Battery Backup		Condition	on N/A				Status	pass		
Sensor Compone	ent Z	Zero Voltage		Conditi	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CNL	D125-Sandy	Grenville-11/24/2014				
1	11/24/2014	DAS	Campbell	000499	CR3000	3816
2	11/24/2014	Ozone	ThermoElectron Inc	000692	49i A1NAA	1030244803
3	11/24/2014	Ozone Standard	ThermoElectron Inc	000376	49i A3NAA	0726124693
4	11/24/2014	Zero air pump	Werther International	06868	C 70/4	000814284

Mfg	Serial Number Ta	Site	Те	echnician		Site Visit Date		Parameter		ner ID
ThermoElectron Inc	1030244803	CND125	S	andy Grei	nville	11/24/20	11/24/2014 Ozone		000692	
Slope: 0	.99966 Slope:	0.0000) Mfg T			ThermoE	lectron I	nc Par	ameter ozone	
Intercept -0	.05026 Intercept	0.0000	0 Serial Number 4			49C-73104-373 Tfo			r Desc. Ozone tra	ansfer
CorrCoff 1	.00000 CorrCoff	0.0000	0	Tfer ID		01100]		
DAS 1.	DAS 2.						4 00 450			0.44404
A Avg % Diff: A M	ax % Di A Avg %	6Dif A Max	% Di	Slope			1.00458		cept	-0.11484
0.1%	0.2%			Cert Da	ite	12	/10/2013	B Corr(Coff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDifference	:
primary	1	0.07	0.	18	0.0)6	ppb			
primary	2	29.98	29	.95	29.	94	ppb		-0.0	13%
primary	3	50.84	50	.72	50.	75	ppb		0.0	6%
primary	4	81.21	80	.95	80.	80	ppb		-0.1	9%
primary	5	100.64	100).29	100	.20	ppb		-0.0	9%
Sensor Componen	t Cell B Noise		Conditi	on 0.7 pp	b			Status F	bass	
Sensor Componen	t Cell B Tmp.		Conditi	on				Status [Dass	
Sensor Componen	t Fullscale Voltage		Conditi	on N/A				Status [Dass	
Sensor Componen	t Inlet Filter Condition	n	Conditi	on Clean	1			Status [Dass	
Sensor Componen	t Line Loss		Conditi	on Not te	sted			Status [Dass	
Sensor Componen	t Offset		Conditi	on -0.20				Status [Dass	
Sensor Componen	t Span		Condition 1.003					Status F	bass	
Sensor Componen	t Cell B Freq.		Condition 89.7 kHz					Status [bass	
Sensor Componen	t System Memo		Conditi	on				Status [Dass	
Sensor Componen	t Sample Train		Conditi	on Good				Status F	Dass	
Sensor Componen	t Cell B Pressure		Conditi	on				Status [Dass	
Sensor Componen	t Cell B Flow		Conditi	on 0.72	pm			Status [bass	
Sensor Componen	t Cell A Tmp.		Conditi	on 34.3 (2			Status [Dass	
Sensor Componen	t Cell A Pressure		Conditi	<mark>on</mark> 718 m	nmHg			Status F	Dass	
Sensor Componen	t Cell A Noise		Conditi	on 0.7 pp	b			Status F	Dass	
Sensor Componen	t Cell A Freq.		Conditi	on 92.5 k	Hz			Status F	Dass	
Sensor Componen	t Cell A Flow		Conditi	on 0.72	pm			Status F	Dass	
Sensor Componen	t Battery Backup		Conditi	on N/A				Status F	Dass	
Sensor Componen	t Zero Voltage		Conditi	on N/A				Status F	Dass	
EEMS Spot Report

Data Compiled: 4/9

4/9/2015 9:31:09 PM

SiteVisitDate	Site	Technician		
11/25/2014	BFT142	Sandy Grenville		

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.03135	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.65714	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99993	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.2	%	Р
5	Ozone % difference max	Р	7	10	4	2.9	%	Р

Ozone Data Form

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Paramet	er	Owner II)
ThermoElec	tron Inc	1045347307	BFT142	Sa	andy Grer	nville	11/25/20	014	Ozone		000738	
Slope: [Intercept [CorrCoff [1.0 -0.0	03135 Slope: 65714 Intercept 99993 CorrCoff	0.0000	0	Mfg Serial Number		ThermoElectron Inc P 49C-73104-373 T		Inc Par	ameter ozor r Desc. Ozo	ne ne transfer	
DAS 1: A Avg % D 2.2	Diff: A Ma	DAS 2: ax % Di A Avg % 2.9%	6Dif A Max	% Di	Slope Cert Da	ıte	12	1.00458	3 Intero 3 Corro	cept Coff	-0.114	484 000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	rence:	
prin	nary	1	0.06	0.1	17	-0.	83	ppb				
prin	nary	2	30.91	30.	88	31.	.25	ppb			1.20%	
prin	nary	3	50.54	50.	42	51.	.76	ppb			2.66%	
prin	nary	4	80.90	80.	64	83.	.00	ppb			2.93%	
prin	nary	5	101.26	100	.91	102	2.80	ppb			1.87%	
Sensor Co	omponent	Cell B Noise		Conditio	n 0.5 pp	b			Status [Dass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status [Dass]
Sensor Co	omponent	Fullscale Voltage		Conditio	N/A				Status [Dass]
Sensor Co	omponent	Inlet Filter Condition	on	Conditio	Clean				Status [oass		
Sensor Co	omponent	Line Loss		Conditio	Not te	sted			Status [bass]
Sensor Co	omponent	Offset		Conditio	0.000				Status [bass]
Sensor Co	omponent	Span		Conditio	n 1.039				Status [Dass]
Sensor Co	omponent	Cell B Freq.		Conditio)n 87.7 k	Hz			Status [Dass]
Sensor Co	omponent	System Memo		Conditio)n				Status [Dass		
Sensor Co	omponent	Sample Train		Conditio	Good				Status [Dass		
Sensor Co	omponent	Cell B Pressure		Conditio	on				Status [Dass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.70 l	pm			Status [bass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 34.2 (>			Status [Dass		
Sensor Co	omponent	Cell A Pressure		Conditio	on 743 m	mHg			Status [Dass		
Sensor Co	omponent	Cell A Noise		Conditio	on 0.6 pp	b			Status [Dass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 89.0 k	Hz			Status [Dass		
Sensor Co	omponent	Cell A Flow		Conditio)n 0.76 l	om			Status [Dass		
Sensor Co	omponent	Battery Backup		Conditio	n N/A				Status [Dass]
Sensor Co	omponent	Zero Voltage		Conditio	n N/A				Status [bass		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BFT	142-Sandy	Grenville-11/25/2014				
1	11/25/2014	DAS	Campbell	000498	CR3000	3815
2	11/25/2014	Ozone	ThermoElectron Inc	000738	49i A1NAA	1045347307
3	11/25/2014	Ozone Standard	ThermoElectron Inc	000453	49i A3NAA	CM08200027
4	11/25/2014	Sample Tower	Aluma Tower	000632	В	unknown
5	11/25/2014	Zero air pump	Werther International	06897	C 70/4	000821893